

VCS Methodology

VM0007

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REDD+ Methodology Framework (REDD+MF)

Version 1.56

~~9 March 2015~~ 14 February 2017

Sectoral Scope 14

Methodology developed by:



[Revision to include project activities on peatlands \(version 1.5 of this methodology\) prepared by Permian Global, Silvestrum and Greifswald University](#)



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[Revision to include tidal wetland restoration and conservation activities \(version 1.6 of this methodology\) prepared by Silvestrum Climate Associates and Restore America's Estuaries](#)

[This methodology was revised to include tidal wetland restoration and conservation activities with support from the Commission for Environmental Cooperation, The Curtis and Edith Munson Foundation, The Ocean Foundation, Conservation International, and The Nature Conservancy. Restore America's Estuaries and Silvestrum Climate Associates also wish to acknowledge the authors: Igino Emmer, Silvestrum Climate Associates; Brian Needelman and Kyle Derby, University of Maryland; Steve Crooks, Silvestrum Climate associates; Pat Megonigal, Smithsonian Environmental Research Center; Matthew Oreska, University of Virginia; and Steve Emmett-Mattox, Restore America's Estuaries.](#)



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## 1 SOURCES

This methodology is comprised of a number of modules and tools each of which has been assigned an abbreviated title (e.g., CP-AB) which are referenced throughout the modules and tools. This methodology uses the latest versions of the following methodologies, modules and tools:

Methodologies:

- CDM methodology AR-ACM0003 *Afforestation and reforestation of lands except wetlands*

Carbon pool modules:

- VMD0001 *Estimation of carbon stocks in the above- and belowground biomass in live tree and non-tree pools (CP-AB)*
- VMD0002 *Estimation of carbon stocks in the dead-wood pool (CP-D)*
- VMD0003 *Estimation of carbon stocks in the litter pool (CP-L)*
- VMD0004 *Estimation of carbon stocks in the soil organic carbon pool (mineral soils) (CP-S)*
- VMD0005 *Estimation of carbon stocks in the long-term wood products pool (CP-W)*

Baseline modules:

- VMD0006 *Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation and planned degradation (BL-PL)*
- VMD0007 *Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation (BL-UP)*
- VMD0008 *Estimation of baseline emission from forest degradation caused by extraction of wood for fuel (BL-DFW)*
- VMD0041 *Estimation of baseline carbon stock changes and greenhouse gas emissions in ARR project activities on peat and mineral soil (BL-ARR)*
- [VMD0042](#) *Estimation of baseline soil carbon stock changes and greenhouse gas emissions in peatland rewetting and conservation project activities (BL-PEAT)*
- [VMD00XX](#) *Estimation of baseline carbon stock changes and greenhouse gas emissions in tidal wetland restoration and conservation project activities (BL-TW)*

Leakage modules:

- VMD0009 *Estimation of emissions from activity shifting for avoiding planned deforestation and planned degradation (LK-ASP)*
- VMD0010 *Estimation of emissions from activity shifting for avoiding unplanned deforestation (LK-ASU)*

- VMD0011 *Estimation of emissions from market-effects (LK-ME)*
- VMD0012 *Estimation of emissions from displacement of fuelwood extraction (LK-DFW)*
- VMD0043 *Estimation of emissions from displacement of pre-project agricultural activities (LK-ARR)*
- VMD0044 *Estimation of emissions from ecological leakage (LK-ECO)*

Emissions modules (applicable to baseline, project scenario and leakage):

- VMD0013 *Estimation of greenhouse gas emissions from biomass and peat burning (E-BPB)*
- VMD0014 *Estimation of emissions from fossil fuel combustion (E-FFC)*
- CDM tool *Estimation of direct N<sub>2</sub>O emissions from nitrogen application (E-NA)*

Monitoring modules:

- VMD0015 *Methods for monitoring of greenhouse gas emissions and removals in REDD project activities (M-REDD)*
- VMD0045 *Methods for monitoring greenhouse gas emissions and removals in ARR project activities on peat and mineral soil (M-ARR)*
- VMD0046 *Methods for monitoring of soil carbon stock changes and greenhouse gas emissions and removals in peatland rewetting and conservation project activities (M-PEAT)*
- [VMD00XX \*Methods for monitoring of carbon stock changes and greenhouse gas emissions and removals in tidal wetland restoration and conservation project activities \(M-TW\)\*](#)

Miscellaneous modules:

- VMD0016 *Methods for stratification of the project area (X-STR)*
- VMD0017 *Estimation of uncertainty for REDD+ project activities (X-UNC)*
- [VMD0019 \*Methods to Project Future Conditions\*](#)
- [VMD00XX \*Demonstration of Additionality of WRC Projects \(ADD-AM\)\*](#)

Tools:

- CDM Tool for testing significance of GHG emissions in A/R CDM project activities (T-SIG)<sup>1</sup>
- CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (T-ADD)<sup>2</sup>

<sup>1</sup> Available at: <https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf>

<sup>2</sup> Available at: <https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-02-v1.pdf>

- VCS AFOLU Non-Permanence Risk Tool (T-BAR)

## 2 SUMMARY DESCRIPTION OF THE METHODOLOGY

Additionality and Crediting Method	
Additionality	<a href="#">WRC projects in tidal wetlands: Activity method</a> <a href="#">All other project activities: Project Method</a>
Crediting Baseline	Project Method

This REDD+ Methodology Framework document is the basic structure of a modular REDD+ methodology. It provides the generic functionality of the methodology, which frames pre-defined modules and tools that perform a specific function. It constitutes, together with the modules and tools it calls upon, a complete REDD+ baseline and monitoring methodology.

The modules and tools called upon in this document are applicable to:

- [Project activities that reduce emissions from planned \(APD\) and unplanned \(AUDD\) deforestation](#)
- [Activities that reduce emissions from forest degradation](#)
- [Afforestation, reforestation and revegetation activities \(ARR\)](#)
- [Project activities that reduce emissions from planned \(APWD\) and unplanned \(AUWD\) wetland degradation](#)
- [Wetland restoration activities \(RWE\)](#)

or combinations of these, ~~as well as to any of these activities when they occur on peatlands and are combined with peatland rewetting or conservation~~ ~~the restoration or conservation of s~~ ~~(being sub-categories of wetland restoration and conservation – WRC).~~

Hereafter in this ~~module methodology~~ and all other modules ~~in-related to this~~ methodology ~~VM0007~~ applied to avoiding planned deforestation projects, ~~where the term~~ “planned deforestation” ~~is used, it~~ refers to both planned deforestation and planned degradation.

The reference to this methodology and the modules used to construct the project-specific methodology must be given in the project description (PD).

### Identification of the Most Plausible VCS-eligible Activity(ies)

To identify the type of VCS-eligible REDD+ project activity, use the ~~following~~ decision tree ~~in~~ [Table 1 below](#). The decision tree must be used to provide a broad indication of likely baseline type and applicability. Ultimately, the relevant baseline modules (*BL-UP* – avoiding unplanned deforestation ~~and wetland degradation~~; *BL-PL* – avoiding planned deforestation, ~~and~~ planned degradation, ~~and planned wetland degradation~~; *BL-DFW* – avoiding forest degradation (fuelwood/charcoal); ~~BL-ARR - degraded~~ land suited for ARR; ~~and, where applicable, BL-PEAT~~ – peatland ~~and BL-TW – tidal wetland~~) must be applied with relevant applicability conditions and criteria.

Provide all the necessary evidence to demonstrate the type of eligible activity as given in each module.

A project can include areas subject to different eligible activities (e.g., Area A = avoiding planned deforestation; Area B = avoiding unplanned deforestation; Area C = avoiding degradation; Area D = reforestation; Area E = peatland rewetting and reforestation; [Area F = tidal wetland restoration and reforestation](#)). In such cases the areas that are eligible for different categories must be captured by different strata and clearly delineated (*i.e.*, [no spatial overlap](#)), and the procedures outlined below applied to each of them separately. [Projects may be uncombined REDD, ARR and/or WRC](#). Projects may combine WRC with REDD<sub>+</sub> or WRC with ARR<sub>+</sub> in a single area, in which case they must apply concomitantly the procedures for both categories [provided in this methodology, unless the expected emissions from the soil organic carbon pool or change in the soil organic carbon pool in the project scenario is deemed \*de minimis\*. The tool T-SIG must be used to justify the omission of carbon pools and emission sources.](#)

The demonstration of eligibility must be reported in the PD.

Tables 1 [and 2](#) below provide a decision tree for identifying the types of REDD+ and ARR project activities eligible under this methodology.

**Table 1:** Decision Tree for Determining REDD<sub>+</sub> Project Activity Type [and ARR Suitability](#)

Is the forest land expected to be converted to non-forest land in the baseline case, or expected to be subject to authorized conversion to a managed tree plantation in the baseline case?			
<b>YES<sup>3</sup></b>		<b>NO</b>	
Is the land legally authorized and documented to be converted to non-forest or a managed tree plantation?		Is the forest in the baseline expected to degrade by fuelwood extraction or charcoal production?	
<b>YES<sup>4</sup></b>	<b>NO</b>	<b>YES</b>	<b>NO</b>
Avoiding planned deforestation/planned degradation	Avoiding unplanned deforestation	Avoiding forest degradation	Proposed project is not a VCS REDD <sub>+</sub> <sup>5</sup> activity currently covered by the methodology
<a href="#">Is part of the land non-forest land or with degraded forest?</a>			
<b>YES</b>		<b>NO</b>	
<a href="#">Suitable for ARR</a>		<a href="#">No additional activity</a>	

**Table 2:** [Determining ARR Suitability](#)

<a href="#">Is part or all of the land non-forest land or with degraded and unmanaged forest?</a>
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<sup>3</sup> If the answer is “yes”, evidence must be provided based on the application of the appropriate baseline module (*BL-PL* for APD and *BL-UP* for AUDD).

<sup>4</sup> If the answer is “yes”, evidence must be provided based on the application of ~~the Module BL-PL module~~. Projects are required to show legal permissibility to deforest, suitability of project area for conversion and intent to deforest.

<sup>5</sup> If degradation is occurring through legal or sanctioned timber production ~~then~~ this is an eligible IFM activity.

<a href="#"><u>YES</u></a>	<a href="#"><u>NO</u></a>
<a href="#"><u>Suitable for ARR</u></a>	<a href="#"><u>Not suitable for ARR</u></a>

If the project area includes peatland already drained,<sup>6</sup> [or tidal wetlands already degraded](#)<sup>7</sup> or that would be drained [or degraded](#) in the baseline case, [the](#) project must combine the project activities identified above with the WRC category, as set out in Table 3 below.

**Table 3:** Determination of WRC [and](#) Combined Categories

Baseline Scenario		Project Activity	Combined Categories
Pre-Project Condition	Land <a href="#"><u>UseCover</u></a>		
Drained peatland <a href="#"><u>or degraded tidal wetland</u></a>	Non-forest	<a href="#"><u>Peatland rewetting or tidal wetland restoration</u></a> <sup>#</sup> and conversion to forest/revegetation	<a href="#"><u>WRGRWE+ARR</u></a>
		<a href="#"><u>Wetland restoration</u></a>	<a href="#"><u>RWE</u></a>
	Forest with deforestation/ <a href="#"><u>forest</u></a> degradation	<a href="#"><u>Peatland rewetting or tidal wetland restoration</u></a> and avoiding deforestation/ <a href="#"><u>forest</u></a> degradation	<a href="#"><u>WRGRWE+REDD</u></a>
Undrained peatland <a href="#"><u>or intact tidal wetland</u></a>	<a href="#"><u>Non-forest</u></a>	<a href="#"><u>Avoiding drainage and/or interrupted sediment supply</u></a> <a href="#"><u>Avoiding conversion to open water or impounded wetland</u></a> <a href="#"><u>Avoiding devegetation</u></a> <a href="#"><u>Avoiding degradation</u></a>	<a href="#"><u>CIW*</u></a>
	Forest with deforestation/ <a href="#"><u>forest</u></a> degradation	Avoiding drainage <a href="#"><u>or wetland degradation</u></a> and <a href="#"><u>avoiding</u></a> deforestation/ <a href="#"><u>forest</u></a> degradation	<a href="#"><u>WRGCIW+REDD</u></a> <sup>8</sup>

<sup>#</sup> [Includes wetland creation \(see VCS AFOLU Rrequirements\).](#)

<sup>\*</sup> [Includes Avoiding Unplanned Wetland Degradation \(AUWD\) and Avoiding Planned Wetland Degradation \(APWD\).](#)

<sup>6</sup> [See VCS Program Definitions](#)

<sup>7</sup> [See Section 3](#)

<sup>8</sup> [Includes Avoiding Unplanned Wetland Degradation \(AUWD\) and Avoiding Planned Wetland Degradation \(APWD\).](#)



~~REDD+ projects under the methodology are divided between the following activity types: avoiding unplanned deforestation/degradation due to collection of wood for fuel and production of charcoal (AUDD), avoiding planned deforestation (APD), forest rehabilitation/afforestation, (ARR), and peatland rewetting and conservation (RWE). Projects can be REDD, REDD+ARR, WRC+ARR, WRC+REDD+ARR. Improved forest management (IFM) is not covered by this methodology.~~

In [Table 4](#) below the modules and tools are listed and it is indicated when use of modules/tools is mandatory under each activity type.

~~Where any of these project activities take place on peatland, the project must adhere to both the respective project category modules and the relevant WRC modules, unless the expected emissions from the soil organic carbon pool or change in the soil organic carbon pool in the project scenario is deemed below *de minimis*. The tool T-SIG must be used to justify the omission of carbon pools and emission sources.~~

**Table 4:** Determination of When Module/Tool Use is Mandatory (M) or Optional (O)

	Module	Avoiding Unplanned Deforestation/Degradation/AUDD	Avoiding Planned Deforestation/APD	Avoiding Degradation (Fuelwood/Charcoal)/AD#	ARR	RWE		AUWD		REDD or ARR on Peatland/A-PWD	
						Peatland	Tidal Wetlands	Peatland	Tidal Wetlands	Peatland	Tidal Wetlands
<b>Always Mandatory</b>	<b>REDD+-MF</b>	M	M	M	M	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	M	<u>M</u>
	<b>M-REDD</b>	M	M	M	-	←	←	←	←	←	←
	<b>M-ARR</b>	-	-	-	M	←	←	:	:	←	:
	<b>M-PEAT</b>	-	-	-	-	<u>M</u>	:	<u>M</u>	:	M	:
	<b>M-TW</b>	:	:	:	:	:	<u>M</u>	:	<u>M</u>	:	<u>M</u>
	<b>T-ADD</b>	M	M	M	M	<u>M</u>	@	<u>M</u>	@	M	@
	<b>T-BAR</b>	M	M	M	M	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	M	<u>M</u>
	<b>X-UNC</b>	M	M	M	M	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	M	<u>M</u>
	<b>X-STR</b>	M	M	M	X***	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	M	<u>M</u>
<b>Baselines</b>	<b>BL-UP</b>	M	-	-	-	:	:	←	←	←	:
	<b>BL-PL</b>	-	M	-	-	:	:	:	:	←	←
	<b>BL-DFW</b>	-	-	M	-	:	:	←	←	←	:

	<b>BL-ARR</b>	-	-	-	M	-	-	-	-	←	-
	<b>BL-PEAT</b>	-	-	-	-	<u>M</u>	-	<u>M</u>	-	M	-
	<b>BL-TW</b>	-	-	-	-	-	<u>M</u>	-	<u>M</u>	-	<u>M</u>
<b>Leakage</b>	<b>LK-ASU</b>	M	-	-	-	-	-	←	←	←	-
	<b>LK-ASP</b>	<u>-(m)<sup>6</sup></u>	M	-	-	-	-	-	-	←	←
	<b>LK-DFW</b>	-	-	M	-	-	-	←	←	←	-
	<b>LK-ARR</b>	-	-	-	M	←	←	-	-	←	-
	<b>LK-ECO</b>	-	-	-	-	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	M	<u>M</u>
	<b>LK-ME</b>	(m) <sup>1</sup>	(m) <sup>1</sup>	(m) <sup>2</sup>	-	-	-	←	←	←	←
<b>Pools*</b>	<b>CP-AB</b>	M	M	M	X <sup>***</sup>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>
	<b>CP-D</b>	(m) <sup>3</sup>	(m) <sup>3</sup>	(m) <sup>3</sup>	X <sup>***</sup>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	X <sup>****</sup>	<u>X<sup>****</sup></u>
	<b>CP-L</b>	O	O	O	X <sup>***</sup>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	X <sup>****</sup>	<u>X<sup>****</sup></u>
	<b>CP-S</b>	O	O	O	X <sup>***</sup>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	X <sup>****</sup>	<u>X<sup>****</sup></u>
	<b>CP-W</b>	(m) <sup>1</sup>	(m) <sup>1</sup>	-	-	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>	<u>X<sup>****</sup></u>
<b>Emissions*</b>	<b>E-BPB</b>	M	M	M	X <sup>**</sup>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	M	<u>M</u>
	<b>E-FFC</b>	O	O	O		<u>(m)<sup>5</sup></u>	<u>(m)<sup>5</sup></u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
	<b>E-NA</b>	(m) <sup>4</sup>	O	O	-	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	X	<u>X</u>

# [Avoiding Degradation \(Fuelwood / Charcoal\)](#)

- [Not applicable](#)

← See instructions under REDD and ARR categories [for combined activities](#)

M Modules marked with an M are fully mandatory: [\(i.e., the indicated modules and tools must be used\)](#)

O Modules marked with an O are fully optional: [\(i.e., the indicated pools and sources can be included or excluded as decided by the project, but if included in the baseline they must also be included in the project scenario\)](#)

X Modules marked with an X are excluded

(m)<sup>1</sup> Mandatory where the process of deforestation involves timber harvesting for commercial markets

(m)<sup>2</sup> Mandatory where fuelwood or charcoal is harvested for commercial markets

(m)<sup>3</sup> Mandatory if this carbon pool is greater in baseline (post-deforestation/degradation) than project scenario and significant; otherwise can be conservatively omitted

- (m)<sup>4</sup> Mandatory where leakage prevention activities include increases in the use of fertilizers
- [\(m\)<sup>5</sup> Mandatory where RWE project activities on tidal wetlands include fossil fuel combustion](#)
- [\(m\)<sup>6</sup> Mandatory where AUDD project activities involve the avoidance of future deforestation under deforestation or conversion concessions which are without legal authorization and documentation at the project start date](#)
- \* VCS requirements and the tool *T-SIG* must be used to justify the omission of carbon pools and emission sources
- \*\* Procedures provided in [Module M-ARR](#)
- \*\*\* Procedures provided in [Modules BL-ARR](#) and *M-ARR*
- \*\*\*\* Procedures provided in [Modules BL-PEAT](#) and *M-PEAT* or [BL-TW](#) and *M-TW* (if WRC activities are combined with REDD, CP modules must be used except Module *CP-S*)
- [@ For tidal wetlands, an activity method is applicable \(see Module \*ADD-AM\*\)](#)

### 3 DEFINITIONS

In addition to the definitions set out in VCS document *Program Definitions*, the following definitions apply to this methodology:

#### **Baseline Period**

The period of time with a fixed baseline (10 years), applicable to REDD and WRC baselines

#### **Degraded Wetland**

[A wetland which has been altered by human or natural impact through the impairment of physical, chemical and/or biological properties, and in which the alteration has resulted in a reduction of the diversity of wetland-associated species, soil carbon and/or the complexity of other ecosystem functions which previously existed in the wetland.](#)

#### **Expert Judgment**

Judgment on methodological choice and choice of input data and to fill gaps in the available data, to select data from a range of possible values or on uncertainty ranges as established in the *IPCC 2006 Good Practice Guidance*. Obtaining well-informed judgments from domain experts regarding best estimates and uncertainties of inputs to the quantification of emission reductions is an important aspect in various procedures throughout this methodology. The guidance provided in Chapter 2, Volume 1 (Approaches to Data Collection) must be used, in particular, Section 2.2 and Annex 2A.1 of the *IPCC 2006 Guidelines for National Greenhouse Gas Inventories*.

#### **Historical Reference Period**

The historical period prior to the project start date that serves as the source of data for defining the baseline.

#### **Organic Soil**

Soil with a surface layer of material that has a sufficient depth and percentage of organic carbon to meet thresholds set by the IPCC (Wetlands supplement) for organic soil. Where used in this methodology, the term peat is used to refer to organic soil.

### **Tidal Wetlands**

A subset of wetlands under the influence of the wetting and drying cycles of the tides (e.g., marshes, seagrass meadows, tidal forested wetlands and mangroves). Sub-tidal seagrass meadows are not subject to drying cycles, but are still included in this definition.

### **Tidal Wetland Restoration**

Restoration of degraded tidal wetlands in which establishment of prior ecological conditions is not expected to occur in the absence of the project activity. For the purpose of this methodology, this definition also includes activities that create wetland ecological conditions on mudflats or within open or impounded water.

### **Wetland**

An area that meets an internationally accepted definition of wetland, such as from the IPCC, Ramsar Convention on Wetlands, those established by law or national policy, or those with broad agreement in the peer-reviewed scientific literature for specific countries or types of wetlands. Common wetland types include peatland, salt marsh, tidal freshwater marsh, mangroves, wet floodplain forests, prairie potholes and seagrass meadows.

## **3.1 Acronyms**

APD Averting Planned Deforestation

APWD Averting Planned Wetland Degradation

ARR Afforestation, Reforestation and Revegetation

AUDD Averting Unplanned Deforestation and forest Degradation

AUWD Averting Unplanned Wetland Degradation

CUPP Conservation of Undrained or Partially Drained Peatland

PD Project Description

RDP Rewetting of Drained Peatland

REDD Reducing Emissions from Deforestation and forest Degradation

RWE Restoration of Wetlands Ecosystems

CIW Conservation of Intact Wetlands

VCS Verified Carbon Standard

VCU Verified Carbon Unit

VVB Validation and Verification Body

WRC Wetlands Restoration and Conservation

## 4 APPLICABILITY CONDITIONS

### 4.1 General

This REDD+ Methodology Framework is a compilation of modules and tools that together define the project activity and necessary methodological steps. By choosing the appropriate modules, a project-specific methodology can be constructed. The justification of the choice of modules and why they are applicable to the proposed project activity must be given in the PD.

Specific applicability conditions exist for each module and must be met for the module to be used.

This methodology includes unplanned forest degradation caused only by extraction of wood for fuel. No modules are included for activities to reduce emissions from forest degradation caused by illegal harvesting of trees for timber.<sup>9</sup>

Use of this methodology is subject to the following applicability conditions, noting the project must also comply with the applicability conditions of the applied modules and tools.

### 4.2 All Project Activities

#### ~~4.2~~ General

All land areas registered under the CDM or under any other GHG program (both voluntary and compliance-oriented) must be transparently reported and excluded from the project area. The exclusion of land in the project area from any other GHG program must be monitored over time and reported in the monitoring reports.

## 4.3 REDD

### 4.3.1 All REDD Activity Types

REDD activity types are applicable under the following conditions:

- Land in the project area has qualified as forest (following the definition used by VCS: in addition, see Section 5.1.2) for at least the 10 years ~~before~~ prior to the project start date. Mangrove forests are excluded from any tree height requirement in a forest definition, as they consist of (close to) 100% mangrove species, which often do not reach the same height as other tree species, and occupy contiguous areas and their functioning as a forest is independent of tree height.
- If land within the project area is peatland or tidal wetlands and emissions from the soil carbon pool are deemed significant, the relevant WRC modules (see Table 3) must be applied alongside other relevant modules.
- Baseline deforestation and forest degradation in the project area fall within one or

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<sup>9</sup> Illegal timber harvest may be occurring in the project area in the baseline but conservatively no benefit can be calculated for preventing timber harvests, and any emissions arising from timber harvests in the project case must be monitored and deducted from calculated project net emission reductions.

more of the following categories:

- Unplanned deforestation (VCS category AUDD)
- Planned deforestation/degradation (VCS category APD)
- Degradation through extraction of wood for fuel (fuelwood and charcoal production) (VCS category AUDD)
- Leakage avoidance activities must not include:
  - Agricultural lands that are flooded to increase production (e.g., [rice paddy](#))
  - Intensifying livestock production through use of feed-lots<sup>10</sup> and/or manure lagoons.<sup>11</sup>

#### 4.3.2 **Avoiding Unplanned Deforestation**

Avoiding unplanned deforestation activities are applicable under the following conditions:

- Baseline agents of deforestation must: (i) clear the land for [tree harvesting](#), settlements, crop production (agriculturalist) or ranching [or aquaculture](#), where such clearing for crop production or ranching [or aquaculture](#) does not amount to large scale industrial agriculture [or aquaculture](#) activities<sup>12</sup>; (ii) have no documented and uncontested legal right to deforest the land for these purposes; and (iii) be either residents in the [reference region](#) for [deforestation](#) (cf. [Section 5.1.2](#) below) or immigrants. Under any other condition this methodology must not be used.
- [Where the project activity involves the avoidance of future deforestation under deforestation or conversion concessions, which are without legal authorization and documentation at the project start date](#)
- If, in the baseline scenario of avoiding unplanned deforestation project activities, post-deforestation land use constitutes reforestation, this methodology may not be used

#### 4.3.3 **Avoiding Planned Deforestation/Degradation**

Avoiding planned deforestation/degradation activities are applicable under the following condition:

- ~~Conversion~~ [Where conversion](#) of forest lands to a deforested condition must be legally permitted

#### 4.3.4 **Avoiding Forest Degradation (Fuelwood/Charcoal)**

Avoiding forest degradation activities are applicable under the following conditions:

<sup>10</sup> Feedlots are defined as areas in which naturally grazing animals are confined to an area which produces no feed and are fed on stored feeds.

<sup>11</sup> Anaerobic lagoons that function as receptacles for animal waste flushed from animal pens. Anaerobic organisms present in the manure and the environment decompose the waste in the lagoon.

<sup>12</sup> Small-scale / large-scale agriculture [or aquaculture](#) is to be defined and justified by the project.

- Fuelwood collection and charcoal production must be non-renewable<sup>13</sup> in the baseline period.
- If degradation is caused by either illegal or legal tree extraction for timber, this methodology cannot be used.

#### 4.4 ARR

ARR activities are applicable under the following conditions:

- The project area is non-forest land or land with degraded forest.<sup>14</sup>
- ~~The project scenario does not involve the harvesting of trees. Therefore, procedures for the estimation of long-term average carbon stocks are not provided.~~
- ~~The project scenario does not involve the application of nitrogen fertilizers. In strata with drained<sup>15</sup> organic soil, ARR activities must be combined with rewetting.~~

ARR activities are not eligible under the following condition:

- The project scenario involves the application of nitrogen fertilizers.

WNote, where project activities on wetlands are excluded by the applicability conditions of applied modules or tools, ~~these such applicability conditions~~ can be disregarded for the purpose of their use within this methodology, as quantification procedures for ~~the~~ peat and tidal wetland soils are provided in Modules BL-PEAT, and M-PEAT, BL-TW and M-TW.

However, for ARR project activities where at least a part of the project activity is implemented on organic soils or wetlands, and that wish not to account for soil emissions-, intentional manipulation of the water table is not allowed. This implies that:

- ~~...~~The project activity shall not involve manipulation of hydrology (or otherwise affect hydrology), and
- Not more than 10% of their area may be disturbed as result of soil preparation for planting, and
- Species planted are restricted to those likely to have occurred under historic natural forest conditions in the project area, per best available knowledge (i.e., relevant literature and/or consultation with local experts)."

#### 4.5 WRC

##### 4.5.1 All WRC Activity Types

WRC activities are not eligible under the following conditions:

<sup>13</sup> As defined in Module BL-DFW

<sup>14</sup> Note that restoring carbon stocks in degraded and managed forest (e.g., enrichment planting) is not an eligible activity as it falls in the category of Improved Forest Management (IFM). Restoring carbon stocks in a degraded but unmanaged forest is an ARR activity.

<sup>15</sup> This requirement supports mangrove reforestation in the natural habitat. ARR activities located in tidal systems where the tidal regime is restored or continues to be in place are eligible.

- Project activities lower the water table, unless the project converts open water to tidal wetlands, or improves the hydrological connection to impounded waters.
- Changes in hydrology result in the accumulation or maintenance of soil carbon stock, noting a) this pertains to projects that sequester carbon through sedimentation and/or vegetation development and b) this does not pertain to projects that increase salinity to reduce CH<sub>4</sub> emissions. Projects that aim to decrease CH<sub>4</sub> emissions through increased salinity must account for any changes in SOC stocks.
- Hydrological connectivity of the project area with adjacent areas leads to a significant increase in GHG emissions outside the project area.
- Project activities include the burning of organic soil.
- Nitrogen fertilizer(s), such as chemical fertilizer or manure, are applied in the project area during the project crediting period.

#### **4.5.2 RWE Project Activities**

##### **General**

For RWE project activities,<sup>16</sup> prior to the project start date, the project area must meet the following conditions:

- a) The area is free of any land use that could be displaced outside the project area, as demonstrated by at least one of the following, where relevant:
- The project area has been abandoned for two or more years prior to the project start date; or
  - Use of the project area for commercial purposes (i.e., trade) is not profitable as a result of salinity intrusion, market forces, or other factors. In addition, timber harvesting in the baseline scenario within the project area does not occur; or
  - Degradation of additional wetlands for new agricultural/aquacultural sites within the country will not occur or is prohibited and by enforced law.

OR

- b) The area is under a land use that could be displaced outside the project area, although in such case, baseline emissions from this land use shall not be accounted for.

OR

- c) The area is under a land use that will continue at a similar or greater level of service or production during the project crediting period (e.g., reed or hay harvesting, collection of fuelwood, subsistence harvesting, commercial fishing).

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<sup>16</sup> That is, not combined with REDD or ARR project activities; these conditions are included to avoid leakage.



The project proponent must demonstrate (a), (b) or (c) above, based on verifiable information such as laws and bylaws, management plans, annual reports, annual accounts, market studies, government studies or land use planning reports and documents.

### **Peatland Rewetting**

This methodology is applicable to rewetting drained peatland (RDP) activities on project areas that meet the VCS definition for peatland<sup>17</sup>.

RDP activities are not eligible under the following conditions:

- If in combination with fire reduction on peatland that excludes rewetting as part of the project activity
- If in combination with ARR activities that enhance peat oxidation; therefore, this activity requires at least some degree of rewetting unless ARR is carried out in a tidal system where the tidal regime is restored or continues to be in place
- Activities where drainage is continued or maintained

### **Tidal Wetland Restoration**

Project activities restoring tidal wetlands may include any of the following, or combinations of the following:

- Creating, restoring and/or managing hydrological conditions (e.g., removing tidal barriers, improving hydrological connectivity, restoring tidal flow to wetlands or lowering water levels on impounded wetlands)
- Altering sediment supply (e.g., beneficial use of dredge material or diverting river sediments to sediment-starved areas)
- Changing salinity characteristics (e.g., restoring tidal flow to tidally-restricted areas)
- Improving water quality (e.g., reducing nutrient loads leading to improved water clarity to expand seagrass meadows, recovering tidal and other hydrologic flushing and exchange or reducing nutrient residence time)
- (Re-)introducing native plant communities (e.g., reseeding or replanting)
- Improving management practice(s) (e.g., removing invasive species, reduced grazing)
- The prescribed burning of herbaceous and shrub aboveground biomass (cover burns) as a project activity may occur

#### **4.5.3 CIW Project Activities**

(i) are seen. This methodology is applicable to rewetting drained peatland (RDP) and conservation of undrained and partially drained peatland (CUPP) activities on project areas that meet the VCS

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<sup>17</sup> RDP and CUPP project activities are both subcategories of Restoration of Wetland Ecosystems (RWE) and Conservation of Intact Wetlands (CIW) of the Wetlands Restoration and Conservation (WRC) project category.

definition for peatland (see above)<sup>18</sup>. The scope of this methodology is limited to domed peatlands in the tropical climate zone.

Furthermore, WRCUPP activities are not eligible under the following conditions:<sup>i</sup>

- ~~Fire reduction projects on peatland that exclude rewetting as part of the project activity are not eligible~~

~~Rewetting of drained peatland and conservation of undrained or partially drained peatland may be implemented in combination with REDD project activities.~~ f in combination with REDD project activities on peatland must not that increase drainage.

- ~~Rewetting of drained peatland may be implemented as a separate activity or in combination with ARR project activities. ARR activities must not enhance peat oxidation and therefore, this activity requires at least some degree of rewetting~~

#### S.....

Project activities conserving tidal wetlands may include:

- Protecting at-risk wetlands (e.g., establishing conservation easements, establishing community supported management agreements, establishing protective government regulations, and preventing disruption of water and/ or sediment supply to wetland areas)
- Improving water management on drained wetlands
- Maintaining or improving water quality for seagrass meadows
- Recharging sediment to avoid drowning of coastal wetlands
- Creating accommodation space for wetlands migrating with sea-level rise

#### Avoiding Unplanned Wetland Degradation (AUWD)

Avoiding unplanned wetland degradation activities<sup>19</sup> are eligible under the following condition:

- Baseline agents of wetland degradation (i) cause an alteration in the hydrology of the project area (involving drainage, interrupted sediment supply, or both) and/or a loss of soil organic carbon; (ii) have no documented and uncontested legal right to degrade the wetland; and (iii) are either residents in the reference region for wetland degradation (see Section 5.1.4 below) or immigrants. Under any other condition, this methodology must not be used.

#### Avoiding Planned Wetland Degradation (APWD)

Avoiding planned wetland degradation activities<sup>20</sup> are eligible under the following condition:

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<sup>18</sup> ~~RDP and CUPP project activities are both subcategories of Restoration of Wetland Ecosystems (RWE) and Conservation of Intact Wetlands (CIW) of the Wetlands Restoration and Conservation (WRC) project category.~~

<sup>19</sup> ~~That is, not combined with REDD project activities. In combined activities, the applicability conditions for REDD apply, and those outlined in Modules BL-TW and M-TW.~~

<sup>20</sup> ~~That is, not combined with REDD project activities. In combined activities, the applicability conditions for REDD apply, and those outlined in Modules BL-TW and M-TW.~~

- [Conversion of intact wetlands to a degraded condition must be legally permitted.](#)

[s, must meet the following conditions., and .al, or greater., commercial fishing.](#)

## 5 PROJECT BOUNDARY

The following categories of boundaries must be defined:

- 1) The geographic boundaries relevant to the project activity
- 2) The temporal boundaries
- 3) The carbon pools that the project will consider
- 4) The sources and associated types of greenhouse gas emissions that the project will affect

### 5.1 Geographical Boundaries

#### 5.1.1 General

The spatial boundaries<sup>21</sup> of a project must clearly be defined, so as to facilitate accurate measuring, monitoring, accounting, and verifying of the project's emissions reductions and removals. The REDD project activity may contain more than one discrete area of land. When describing physical project boundaries, the following information must be provided per discrete area:

- Name of the project area (e.g., compartment number, allotment number, local name); Unique ID for each discrete parcel of land
- Map(s) of the area (preferably in digital format)
- Geographic coordinates of each polygon vertex along with the documentation of their accuracy (from a geo-referenced digital map – data must be provided in the format specified / required by the VCS)
- Total land area; and
- Details of landholder and user rights

The geographical boundaries of a project are fixed (*ex\_ante*) and cannot change over the project lifetime (*ex\_post*). Where multiple baselines exist (e.g., planned deforestation, unplanned deforestation, forest degradation, degraded land) there must be no overlap in boundaries between areas appropriate to each of the baselines. Thus, two project types cannot occur on the same piece of land, other than those including a WRC component (i.e., combined REDD+WRC, ARR+WRC).

<sup>21</sup> [For WRC project activities, including subtidal seagrass areas, where relevant.](#)

### 5.1.2 REDD

The boundary of the REDD activity must be clearly delineated and defined and include only land qualifying as forest for a minimum of 10 years prior to the project start date. [Mangrove forests are excluded from any tree height requirement in a forest definition, as nearly 100% or all of their vegetation consists of mangrove species, which often do not reach the same height as other tree species, and they occupy contiguous areas. Ecologically, their functioning as a forest is independent of tree height.](#)

In REDD project activities, various kinds of boundaries must be distinguished, depending on the REDD category (planned or unplanned deforestation, forest degradation), [i.e.](#), in case of:

- Avoiding planned deforestation: project area and proxy area(s). Refer to [Module BL-PL](#) for the detailed procedures to define these boundaries.
- Avoiding unplanned deforestation: project area, reference regions for deforestation, and leakage belt area. Refer to [Module BL-UP](#) for definitions and the detailed procedures to define these boundaries.
- Avoiding forest degradation: Refer to [Module BL-DFW](#) (for degradation due to removals for wood fuel or charcoal) for the detailed procedures to define these boundaries.

[These procedures also apply to combined REDD+CIW project activities.](#)

Methods for establishing the boundaries of areas subject to leakage from activity shifting are provided in the following modules:

- For avoiding planned deforestation/degradation: [Module LK-ASP](#)
- For avoiding unplanned deforestation: [Module BL-UP](#)

### 5.1.3 ARR

The project area must not have been not cleared of native ecosystems to create GHG emissions reductions/removals. Such proof is not required where such clearing took place prior to the 10-year period prior to the project start date. Areas that do not meet this requirement must be excluded from the project area.

### 5.1.4 WRC

[For RWE project activities, t](#)he project area must not have been ~~not~~ drained or converted to create GHG emissions reductions/removals. Such proof is not required where such draining or conversion took place prior to 1 January 2008. Areas that do not meet this requirement must be excluded from the project boundary.

The maximum eligible quantity of GHG emission reductions in WRC project activities ~~on~~ [peatland](#) is limited to the difference between the remaining peat carbon stock in the project and baseline scenarios after 100 years. If a significant difference at the 100-years mark cannot be demonstrated, the project area is not eligible for carbon crediting. The assessment must be

executed ex ante using conservative parameters. Procedures are provided in [Module X-STR](#).

[WRC project activities in tidal zones must take account of effects of sea-level rise on project boundaries. Procedures are provided in Module X-STR.](#)

[In CIW project activities that are not combined with REDD activities, various typeskinds of boundaries must be distinguished, depending on the CIW category \(i.e., planned or unplanned wetland degradation\). For example, i.e., in the case of:](#)

- [Avoiding planned wetland degradation \(APWD\), the: project area and proxy area\(s\) must be defined. Refer to Module \*BL-PL\* for the detailed procedures to define these boundaries.](#)
- [Avoiding unplanned wetland degradation \(AUWD\), the: project area, reference regions for wetland degradation, and leakage belt area must be defined. Refer to Module \*BL-UP\* for definitions and the detailed procedures to define these boundaries.](#)

## 5.2 Temporal Boundaries

The following temporal boundaries must be specified:

### 5.2.1 Start Date and End Date of the Historical Reference Period

#### REDD

The historical reference period is the temporal domain from which information on historical deforestation is extracted, analyzed and projected into the future. A historical reference period must be defined for all eligible REDD categories. The starting date of this period must be between 9 and 12 years in the past and the end date must be within two years [of before](#) project start date.

#### WRC

While developing WRC baselines, [the](#) project must reference a period of at least 10 years [in order to](#) model a spatial trend in drainage, [and it must take](#) into account long-term (20-year) average climate variables, for which procedures are provided in [Modules \*BL-PEAT\* and \*BL-TW\*](#).

### 5.2.2 Start Date and End Date of the Project Crediting Period

#### General

The project crediting period is the period of time for which GHG emission reductions or removals generated by the project are eligible for crediting with the VCS Program. The project must have a robust operating plan covering this period.

The project crediting period for [REDD+AFOLU](#) projects must be between 20 and 100 years. The duration of the project activity/crediting period must be reported in the PD.

#### REDD

Projections of baseline emissions must be presented in the PD for the first 10-year period after the project start~~ing~~ date. Emission reductions/removals can only be claimed for 10-year periods, for which the baseline is fixed and a monitoring plan has been implemented.

### WRC

Projections of baseline emissions from ~~peatland-wetlands~~ must be presented in the PD for the first 10-year period after the start of the project. Emission reductions/removals can only be claimed for 10-year periods for which the baseline is fixed and a monitoring plan has been implemented.

Peat Depletion Time (PDT) and Soil organic carbon Depletion Time (SDT)

~~Peat depletion may be accelerated by peat fires and is attained if the peat has disappeared or if a stable water table inhibits further oxidation of the peat.~~ The PDT or SDT for a stratum in the baseline scenario equals the period during which the project can claim emission reductions from rewetting, restoration or conservation. Procedures for determining the PDT or SDT are provided in Module X-STR.

Peat depletion may be accelerated by peat fires and is attained if the peat has disappeared or if a stable water table inhibits further oxidation of the peat.

Since the PDT and SDT are part of the baseline assessment, they must be reassessed every 10 years.

### **5.2.3 Duration of the Monitoring Periods**

The minimum duration of a monitoring period is one year and the maximum duration is 10 years.

Baseline projections must be annual and be available for each proposed future verification date.

Data on baseline deforestation and degradation rates, as well as on the hydrological layout and climatic variables in ~~the peatlandwetland~~ areas, must be presented, as well as data collection collected for future baseline revision.

## **5.3 Carbon Pools**

### **5.3.1 General**

Any significant decreases in carbon stock in the project scenario and any significant increases in carbon stock in the baseline scenario must be accounted for. In addition, decreases in the baseline scenario and increases in the project scenario can be accounted for. Where ARR or REDD activities take place on ~~peatlandwetlands~~, the project must account for expected emissions from the soil organic carbon pool or change in the soil organic carbon pool in the project scenario, unless they are deemed *de minimis*. The significance of this pool may be determined by using the tool *T-SIG*.

Selection of carbon pools and the appropriate justification must be presented in PD.

### 5.3.2 REDD

The carbon pools (and corresponding methodology modules) included in or excluded from the boundary of REDD project activities are shown in [Table 4](#).

Harvested wood products and dead wood must be included when they increase more or decrease less in the baseline than in the project scenario. In all other cases, only aboveground biomass is mandatory. If a carbon pool is included in the baseline accounting, it must also be included in project scenario and leakage accounting.

Where the carbon pool in harvested wood products and dead wood increases more or decreases less in the baseline case than in the project case, the tool *T-S/G* must be used to determine whether significant. Insignificant pools can always be ignored.

### 5.3.3 ARR

The carbon pools included in or excluded from the boundary of the ARR component are shown in [Table 5](#) below. The selection of carbon pools and the appropriate justification must be provided in the PD.

**Table 5:** Carbon Pools in Baseline and Project Scenario of ARR Project Activities

Carbon pool	Included?	Justification / Explanation
Aboveground tree biomass	Included	Mandatory pool in ARR project activities
Aboveground non-tree biomass	Included	Carbon stock in this pool may increase in the baseline scenario and may increase or decrease due to the implementation of the project activity
Belowground biomass	Included	Carbon stock in this pool may increase in the baseline scenario and is expected to increase due to the implementation of the project activity
Litter		
<del>Terrestrial</del> <del>mineral soil</del>	Optional	Given the applicability conditions that the project area for ARR is non-forest land or land with degraded forest <del>and that the project scenario does not involve the harvesting of trees</del> , the litter carbon pool will increase due to project implementation. It is therefore conservative not to include litter. If included, litter must be accounted for using procedures in <a href="#">Modules <i>GP-L</i>, <i>BL-ARR</i> and <i>M-ARR</i></a> .
<del>On</del> <del>W</del> <del>peatland</del> <del>land</del> <del>ds</del>	Optional	This pool is not mandatory on <del>peatland-wetlands</del> but may be included. <del>Given the applicability conditions that the project area for ARR is non-forest land or land with degraded forest</del>

		<del>and that the project scenario does not involve the harvesting of trees, the litter carbon pool will increase due to project implementation. It is therefore conservative not to include litter.</del> If included, litter must be accounted for using procedures in <u>Modules CP-L, BL-ARR and M-ARR.</u>
Dead wood		
<del>Terrestrial</del> <del>mineral soil</del>	Optional	Given the applicability conditions that the project area for ARR is non-forest land or land with degraded forest <del>and that the project scenario does not involve the harvesting of trees,</del> the deadwood carbon pool will increase due to project implementation. It is therefore conservative not to include dead wood. If included, dead wood must be accounted for using procedures in <u>Modules CP-D, BL-ARR and M-ARR.</u>
<del>On</del> <del>peatland</del> <del>Wetlands</del>	Optional	This pool is not mandatory on <del>peatland-wetlands</del> but may be included. <del>Given the applicability conditions that the project area for ARR is non-forest land or land with degraded forest and that the project scenario does not involve the harvesting of trees, the dead wood carbon pool will increase due to project implementation. It is therefore conservative not to include dead wood.</del> If included, dead wood must be accounted for using procedures in <u>Modules CP-D, BL-ARR and M-ARR.</u>
Soil		
<del>On</del> <del>Terrestrial</del> <del>mineral soil</del>	Included	Carbon stock in this pool may increase due to the implementation of the project activity and this increase can be assessed as a carbon stock change.
<del>On</del> <del>peatland</del> <del>Wetlands</del>	Included	Carbon stock in this pool may increase due to the implementation of the <u>ARR</u> project activity. <u>However, for organic soil</u> this increase is not accounted for. Emissions from soil organic carbon are estimated in <u>Modules BL-PEAT and M-PEAT.</u>
Wood products	Excluded	This pool is optional as per VCS rules.

### 5.3.4 WRC

The carbon pools included in or excluded from the boundary of the WRC component<sup>22</sup> are shown in [Table 6](#) below. The selection of carbon pools and the appropriate justification must be provided in the PD.

<sup>22</sup> If combined with REDD or ARR, see Tables 4 and 5 for additional information of pools.



**Table 6:** Carbon Pools in Baseline and Project Scenario of WRC Project Activities

Carbon pool	Included?	Justification / Explanation
Aboveground tree biomass	Excluded	Covered under REDD or ARR
Aboveground <del>non-treeshrub</del> biomass	Excluded	Covered under REDD or ARR
<u>Herbaceous biomass</u>	<u>Included</u>	<u>Procedures in Modules <i>BL-ARR</i> and <i>M-ARR</i> account for emissions from this pool based on proxies and default factors</u>
Belowground biomass	Included	This pool is not distinguished from the soil pool in WRC procedures
Litter	Excluded	Covered under REDD or ARR
Dead wood	Excluded	Covered under REDD or ARR
Soil	Included	<del>The WRC procedures in Modules <i>BL-PEAT</i> and <i>M-PEAT</i></del> <u>wetland monitoring</u> account for emissions from the soil pool based on proxies and default factors.
Wood products	Excluded	Covered under REDD or ARR

## 5.4 Sources of GHG Emissions

### 5.4.1 General

The project must account for any significant increases in emissions of carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) relative to the baseline that are reasonably attributable to the project activity, with additional guidance provided in Tables 6, 7 and 8.

*T-SIG* may be used to determine whether an emissions source is significant. If a source is included in the estimation of baseline emissions<sup>23</sup>, it must also be included in the calculation of project and leakage emissions.

### 5.4.2 REDD

The GHG emission sources included in or excluded from the boundary of the REDD project activity are shown in [Table 7](#) below. The selection of sources and the appropriate justification must be provided in the PD.

~~Table 6: GHG Sources Included In or Excluded From the REDD Project Boundary~~

Sources	Gas	Included?	Justification / Explanation
<u>Biomass</u>	<u>CO<sub>2</sub></u>	<u>Excluded</u>	<u>However, carbon stock decreases due to burning</u>

<sup>23</sup> E.g., CH<sub>4</sub> or N<sub>2</sub>O emission from agriculture that results from deforestation or fire to clear forest land.

	burning			are accounted as a carbon stock change
		CH <sub>4</sub>	Included	Non-CO <sub>2</sub> gases emitted from woody biomass burning – it is conservative to exclude in the baseline but must be included in the project case if fire occurs.
		N <sub>2</sub> O	Included	
	Combustion of fossil fuels	CO <sub>2</sub>	Included	Can be neglected if excluded from baseline accounting.
		CH <sub>4</sub>	Excluded	Potential emissions are negligible
		N <sub>2</sub> O	Excluded	Potential emissions are negligible
	Use of fertilizers	CO <sub>2</sub>	Excluded	Potential emissions are negligible
		CH <sub>4</sub>	Excluded	Potential emissions are negligible
		N <sub>2</sub> O	Included	Can be excluded if excluded from baseline accounting except in the situation where fertilizer use is enhanced as a leakage avoidance mechanism.

**Table 7:** GHG Sources Included In or Excluded From the REDD Project Boundary

Source		Gas	Included?	Justification/Explanation
Baseline	Burning of woody biomass	CO <sub>2</sub>	Included	Carbon stock decreases due to burning are accounted as a carbon stock change.
		CH <sub>4</sub>	Included	Non-CO <sub>2</sub> gases emitted from woody biomass burning - it is conservative to exclude.
		N <sub>2</sub> O	Included	
	Combustion of fossil fuels	CO <sub>2</sub>	Included	
		CH <sub>4</sub>	Excluded	Potential emissions are negligible
		N <sub>2</sub> O	Excluded	Potential emissions are negligible
	Use of fertilizers	CO <sub>2</sub>	Excluded	Potential emissions are negligible
		CH <sub>4</sub>	Excluded	Potential emissions are negligible
		N <sub>2</sub> O	Included	It is conservative to exclude
Project	Burning of woody biomass	CO <sub>2</sub>	Included	Carbon stock decreases due to burning are accounted as a carbon stock change.
		CH <sub>4</sub>	Included	Non-CO <sub>2</sub> gases emitted from woody biomass burning - must be included if fire occurs.
		N <sub>2</sub> O	Included	
	Combustion of fossil fuels	CO <sub>2</sub>	Included	
		CH <sub>4</sub>	Excluded	Potential emissions are negligible
		N <sub>2</sub> O	Excluded	Potential emissions are negligible
	Use of fertilizers	CO <sub>2</sub>	Excluded	Potential emissions are negligible
		CH <sub>4</sub>	Excluded	Potential emissions are negligible
		N <sub>2</sub> O	Included	Can be excluded if excluded from baseline

Source	Gas	Included?	Justification/Explanation
			<a href="#">accounting except in the situation where fertilizer use is enhanced as a leakage avoidance mechanism.</a>

### 5.4.3 ARR

The GHG emission sources included in or excluded from the boundary of the ARR component are shown in [Table 8](#) below. The selection of sources and the appropriate justification must be provided in the PD.

**Table 7:** GHG Sources Included In or Excluded From the ARR Project Boundary

Sources	Gas	Included?	Justification / Explanation of choice
Burning of woody biomass	CO <sub>2</sub>	Excluded	<a href="#">However, carbon stock decreases due to burning are accounted as a carbon stock change</a>
	CH <sub>4</sub>	Included	<a href="#">Burning of woody biomass for the purpose of site preparation, or as part of forest management, is allowed</a>
	N <sub>2</sub> O	Included	<a href="#">Burning of woody biomass for the purpose of site preparation, or as part of forest management, is allowed</a>

**Table 8:** GHG Sources Included In or Excluded From the ARR Project Boundary

Source	Gas	Included?	Justification/Explanation
Baseline Burning of woody biomass	CO <sub>2</sub>	Included	<a href="#">Carbon stock decreases due to burning are accounted as a carbon stock change</a>
	CH <sub>4</sub>	Included	<a href="#">Non-CO<sub>2</sub> gases emitted from woody biomass burning - it is conservative to exclude.</a>
	N <sub>2</sub> O	Included	
Project Burning of woody biomass	CO <sub>2</sub>	Included	<a href="#">Carbon stock decreases due to burning are accounted as a carbon stock change</a>
	CH <sub>4</sub>	Included	<a href="#">Burning of woody biomass for the purpose of site preparation, or as part of forest management, is allowed</a>
	N <sub>2</sub> O	Included	

[Table 7](#) with the selection of sources and the appropriate justification must be presented in the PD.

### 5.4.4 WRC

The GHG emission sources included in or excluded from the boundary of the WRC component are shown in [Table 9](#) below. The selection of sources and the appropriate justification must be

provided in the PD.

**Table 9:** GHG Sources Included In or Excluded From the WRC Project Boundary

Source		Gas	Included?	Justification/Explanation
Baseline	Oxidation of drained peat	CO <sub>2</sub>	Included	Considered under carbon pools
		CH <sub>4</sub>	Included	Required unless <i>de minimis</i> or conservatively omitted
		N <sub>2</sub> O	Excluded	Excluded as per applicability condition in Module <i>BL-PEAT</i>
	Peat or biomass combustion	CO <sub>2</sub>	Included	Procedures provided in Module <i>E-BPB</i>
		CH <sub>4</sub>	Included	Procedures provided in Module <i>E-BPB</i>
		N <sub>2</sub> O	Included	Procedures provided in Module <i>E-BPB</i>
	Combustion of fossil fuels	CO <sub>2</sub>	Included	It is conservative to exclude
		CH <sub>4</sub>	Excluded	Deemed <i>de minimis</i> in VCS AFOLU Requirements
		N <sub>2</sub> O	Excluded	Deemed <i>de minimis</i> in VCS AFOLU Requirements
Project	Oxidation of drained peat	CO <sub>2</sub>	Included	Considered under carbon pools
		CH <sub>4</sub>	Included	Required unless <i>de minimis</i>
		N <sub>2</sub> O	Excluded	Excluded as per applicability condition in Module <i>BL-PEAT</i>
	Peat or biomass combustion	CO <sub>2</sub>	Included	Procedures provided in Module <i>E-BPB</i>
		CH <sub>4</sub>	Included	Procedures provided in Module <i>E-BPB</i>
		N <sub>2</sub> O	Included	Procedures provided in Module <i>E-BPB</i>
	Combustion of fossil fuels	CO <sub>2</sub>	Included	Mandatory where RWE project activities on tidal wetlands include fossil fuel combustion
		CH <sub>4</sub>	Excluded	Deemed <i>de minimis</i> in VCS AFOLU Requirements
		N <sub>2</sub> O	Excluded	Deemed <i>de minimis</i> in VCS AFOLU Requirements

**Table 8:** GHG Sources Included In or Excluded From the WRC Project Boundary

Sources	Gas	Included?	Justification / Explanation
Oxidation of drained peat	CO <sub>2</sub>	Included	Considered under carbon pools
	CH <sub>4</sub>	Included	Required unless <i>de minimis</i> or conservatively omitted
	N <sub>2</sub> O	Excluded	Excluded as per applicability condition in module <i>BL-</i>

			<i>PEAT</i>
Peat combustion	CO <sub>2</sub>	Included	<i>Procedures provided in module E-BPB</i>
	CH <sub>4</sub>	Included	<i>Procedures provided in module E-BPB</i>
	N <sub>2</sub> O	Included	<i>Procedures provided in module E-BPB</i>
Combustion of fossil fuels	CO <sub>2</sub>	Excluded	<i>Deemed de minimis in VCS AFOLU Requirements</i>
	CH <sub>4</sub>	Excluded	<i>Deemed de minimis in VCS AFOLU Requirements</i>
	N <sub>2</sub> O	Excluded	<i>Deemed de minimis in VCS AFOLU Requirements</i>

## 6 BASELINE SCENARIO

### 6.1 Determination of the Most Plausible Baseline Scenario

[For projects not eligible to apply the activity method for demonstrating additionality \(see Chapter Section 7\)](#)~~For each of the included project activities~~, the most plausible baseline scenario must be determined using *T-ADD*, listed in Section 2 above. The tool has been designed for A/R CDM project activities, but is used [for](#) this methodology [by](#) applying the notes provided [for](#) Table [10](#), below.

**Table 10:** Translation between VCS and CDM Terminology

Where the tool refers to:	It must be understood as referring to:
A/R, afforestation, reforestation, or forestation	REDD, ARR or WRC project activity
Net greenhouse gas removals by sinks	Net greenhouse gas emission reductions
CDM	VCS
DOE	VVB
tCERs, ICERs	VCUs

Footnotes 1 and 3 included in *T-ADD* can be disregarded. In case there is a conflict between the CDM tool requirements 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).

[Where project proponents use available data sourced from a jurisdictional baseline that meets the requirements set out in the VCS JNR Requirements, those data sources may be used under this methodology, where conservative, even where data accuracy may be less stringent than required by this methodology.](#)

### 6.2 Re-assessing the Baseline Scenario

The project baseline must be revised at the following frequencies:

- For planned deforestation projects, the baseline must be revised every 10 years for ongoing planned deforestation.
- For unplanned deforestation, the project baseline must be revised every 10 years from the project start date.
- For degradation, the baseline must be revised every 10 years.
- For WRC areas, the project must, for the duration of the project, reassess the baseline every 10 years and have this validated at the same time as the subsequent verification.

The date of the next scheduled revision must be specified. The starting point for the baseline revision of the project will be [the](#) forest cover projected to exist at the end of the baseline period. Projections for each baseline revision will be subject to independent verification.

Reassessments must capture changes in the drivers and/or behavior of agents that cause the change in land use and/or land management practices and changes in carbon stocks. The new baseline scenario must be incorporated into revised estimates of baseline emissions. This baseline reassessment must include the evaluation of the validity of proxies for GHG emissions.

For REDD and WRC project activities, *ex-ante* baseline projections beyond a 10-year period are not required. For this assessment, the historic reference period is extended to include the original reference period and all subsequent monitoring periods up to the beginning of the current monitoring period.

## 7 ADDITIONALITY

### 7.1 Project method – all project activities not eligible to use the activity method other than tidal wetland conservation and restoration

[Tool T-ADD](#) must be used to identify credible alternative land use scenarios and evaluate both the alternatives and the proposed project scenarios and to demonstrate the additionality of the project.

~~The assessment and demonstration of additionality must be presented in the PD.~~

Default factors and standards used to ascertain GHG emission data and any supporting data for demonstrating additionality must be publicly available from a recognized, credible source, such as *IPCC 2006 Guidelines for National GHG Inventories* or the *IPCC 2003 Good Practice Guidelines for Land Use, Land-Use Change and Forestry*.

### 7.1.2 Activity Method – all tidal wetlands conservation and restoration project activities

[This methodology uses an activity method for the demonstration of additionality of tidal wetlands conservation and restoration project activities. For such project activities,](#)

[use Module ADD-AM \(Demonstration of Additionality of WRC Projects\).](#)

## 8 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

### 8.1 Baseline Emissions

For emissions and removals in the baseline scenario, the following modules (and modules and tools referred to therein) must be used:

- For REDD project activities: Module *BL-PL* or *BL-UP*, whichever is relevant
- For ARR project activities: Module *BL-ARR*
- For WRC project activities: Module *BL-PEAT* or *BL-TW*, whichever is relevant; for single (i.e. not combined with REDD project activities) CIW project activities also Module *BL-PL* or *BL-UP*, whichever is relevant

#### 8.1.1 General

Each activity type included in the project must estimate an individual baseline following the provisions and specific modules mentioned below. Combined activities (i.e., ARR or REDD with a WRC component) must develop a unique baseline considering peat or tidal wetland soils, as the soil carbon pool and incorporating the resulting emission estimates to the calculation of emissions and carbon stock changes of the ARR and/or REDD activities.

The same procedure must be followed *ex ante* and *ex post*. For parameters that will be monitored subsequent to project initiation, guidance is given in the parameter tables of the relevant modules for the values that must be used in *ex-ante* calculations.

#### 8.1.2 REDD

The baseline of the REDD project activity is estimated *ex ante*. It can be monitored in a reference area (unplanned deforestation) or proxy area (planned deforestation) for the purpose of periodically adjusting the baseline. *Ex-ante* baseline estimations are therefore used in both the *ex-ante* and *ex-post* estimation of net carbon stock changes and greenhouse gas emission reductions.

Methods for estimating net baseline carbon stock changes and greenhouse gas emissions are provided in the following modules:

- For planned deforestation/degradation: Module *BL-PL*
- For unplanned deforestation: Module *BL-UP*
- For forest degradation from extraction of wood for fuel: Module *BL-DFW*
- ~~The baseline net GHG removals must be estimated using module *BL-ARR*.~~

#### 8.1.3 ARR

The net GHG removals in the baseline scenario must be estimated using Module *BL-ARR*.

### 8.1.38.1.4 WRC

Baseline net emissions from the soil ~~(peat)~~ carbon pool in combined projects must be estimated using [Module \*BL-PEAT\* or \*BL-TW\*, whichever is relevant \(see Table 3\)](#). [For peat strata within tidal wetlands, Module \*BL-PEAT\* must be used.](#)

[For CIW project activities \(e.g., conservation of salt marshes without a tree biomass component\), Module \*BL-UP\* or \*BL-PL\* \(whichever is relevant\) must be used applying the conversion table below.](#)

**Table 11:** Translation between REDD and WRC Terminology

<a href="#">Where the module refers to:</a>	<a href="#">It must be understood as referring to:</a>
<a href="#">Deforestation / deforested / cleared</a>	<a href="#">Wetland degradation / degraded / degraded</a>
<a href="#">AUDD</a>	<a href="#">AUWD</a>
<a href="#">APD</a>	<a href="#">APWD</a>
<a href="#">REDD project</a>	<a href="#">CIW project</a>
<a href="#">conversion of forest land to non-forest land</a>	<a href="#">conversion of intact wetlands to degraded wetlands or non-wetlands</a>
<a href="#">Forest area / forested</a>	<a href="#">Wetland area / intact wetlands</a>
<a href="#">Forest class</a>	<a href="#">Vegetation class</a>

[When applying \*BL-UP\* for AUWD project activities, disregard the references to Module \*CP-S\* in Part 4 and instead use Module \*BL-TW\* for soil accounting. When comparing landscape factors for the reference region \(Section 1.1.1.1\), elevation classes must be appropriate to the use in tidal wetlands, to be justified by the project proponent. Hydrology and salinity are additional landscape factors to be considered.](#)

[When applying \*BL-PL\* for single APWD project activities, disregard Parts 2, 3 and 4 and instead use Module \*BL-TW\*.](#)

## 8.2 Project Emissions

For emissions and removals in the project scenario the following modules [\(and modules and tools referred to therein\)](#) must be used:

- ~~For REDD project activities: [Module \*M-REDD\*](#)~~
- ~~For ARR project activities: module *M-MONREDD*~~
- [For ARR project activities: Module \*M-ARR\*](#)
- For WRC project activities [Module \*M-PEAT\* or \*M-TW\*, whichever is relevant](#)

### 8.2.1 General

The same procedure must be followed *ex ante* and *ex post*. For parameters that will be monitored subsequent to project initiation, guidance is given in the parameter tables of the relevant modules



for the values that must be used in *ex-ante* calculations.

### 8.2.2 REDD

Methods for estimating net carbon stock changes and GHG emissions in the project scenario are provided in [Module M-REDD](#).

### 8.2.3 ARR

The net GHG removals in the project scenario must be estimated using [Module M-ARR](#).

### 8.2.4 WRC

Net GHG emissions from the soil ~~(peat)~~ carbon pool in the project scenario in combined projects must be estimated using [Module M-PEAT or M-TW, whichever is relevant](#). [For peat strata within tidal wetlands, Module M-PEAT must be used](#).

## 8.3 Leakage

Leakage must be considered for all activities, using the following leakage modules:

- For planned deforestation/degradation [and planned wetland degradation](#): [Module LK-ASP](#)
- For unplanned deforestation [and unplanned wetland degradation](#): [Module LK-ASU](#)
- For fuel-wood/charcoal collection: [Module LK-DFW](#)
- For pre-project agricultural [or aquacultural](#) activities: [Module LK-ARR](#)

[In AUDD project activities involving the avoidance of future deforestation under logging concessions or conversion concessions which are without legal authorization and documentation at the project start date \(see Section 4.3.2\), the leakage procedures in Module LK-ASP where a class of deforestation agents can be identified must be used](#).

For WRC project activities that are not combined with REDD or ARR, where pre-project activities may be displaced to undrained or partially drained peatland areas [or to tidal wetlands with organic soils](#), the procedures provided for activity shifting to peatland areas in [Module LK-ASP](#) (planned drainage of peatland) or [Module LK-ASU](#) (unplanned drainage of peatland) must be used.

[Combined RWE-ARR projects may use Module LK-ASP](#).

For WRC projects activities, the following module must be used:

- For ecological leakage: [Module LK-ECO](#)

The significance of leakage and the significance of carbon pools may be determined using *T-SIG*.

Where applicable, leakage due to market effects must be considered using [Module LK-ME](#). Market effects must be considered where the project leads to a decrease in the production of timber, fuelwood, or charcoal.

Where, pre-project, unsustainable fuelwood collection is occurring within the project boundary, [Modules BL-DFW](#) and [LK-DFW](#) must be used to determine potential leakage.

Where leakage prevention activities include tree planting, aquacultural intensification, agricultural intensification, fertilization, fodder production, other measures to enhance cropland and/or grazing land areas, leakage management zones or a combination of these, then any significant increase in GHG emissions associated with these activities must be accounted for, unless deemed [below de minimis](#), as determined using [T-SIG](#).

Leakage prevention activities may lead to the increase in combustion of fossil fuels; however, any increase in emissions is considered insignificant.

Where leakage prevention leads to a significant increase in the use of fertilizers, [Module E-NA](#) must be used. [T-SIG](#) can be used to determine significance.

As per the applicability conditions, leakage prevention may not include the flooding of agricultural lands (e.g., for new rice paddies) nor the creation of livestock feedlots and/or manure lagoons. Leakage prevention may also not include the drainage of peatland.

The list of leakage sources with appropriate justification must be presented.

Positive leakage may not be accounted for.

## 8.4 Summary of GHG Emission Reduction and/or Removals

### 8.4.1 General

The total net greenhouse gas emissions reductions of the project are calculated as:

$$NER_{REDD+} = NER_{REDD} + NGR_{ARR} + NER_{WRC} \quad (1)$$

Where:

$NER_{REDD+}$  Total net GHG emission reductions of the REDD+ project activity up to year  $t^*$  (t CO<sub>2</sub>e)

$NER_{REDD}$  Total net GHG emission reductions of the REDD project activity up to year  $t^*$  (t CO<sub>2</sub>e)

$NGR_{ARR}$  Total net GHG removals of the ARR project activity up to year  $t^*$  (t CO<sub>2</sub>e)

$NER_{WRC}$  Total net GHG emission reductions of the WRC project activity up to year  $t^*$  (t CO<sub>2</sub>e)

[The project proponent](#) must present conservative *ex-ante* estimations of the total net GHG

emissions reductions of the project activity.

For *ex-ante* estimation for specific parameters, project must refer to the parameter tables in the appropriate modules.

### 8.4.2 REDD

The total net greenhouse gas emissions reductions of the REDD project activity are calculated as follows:

$$NER_{REDD} = \Delta C_{BSL-REDD} - \Delta C_{WPS-REDD} - \Delta C_{LK-REDD} \quad (2)$$

Where:

$NER_{REDD}$	Total net GHG emission reductions of the REDD project activity up to year $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{BSL-REDD}$	Net GHG emissions in the REDD baseline scenario up to year $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{WPS-REDD}$	Net GHG emissions in the REDD project scenario up to year $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{LK-REDD}$	Net GHG emissions due to leakage from the REDD project activity up to year $t^*$ (t CO <sub>2</sub> e)

$$\Delta C_{BSL-REDD} = \Delta C_{BSL,planned} + \Delta C_{BSL,unplanned} + \Delta C_{BSL,degrad-FWC} \quad (3)$$

Where:

$\Delta C_{BSL-REDD}$	Net GHG emissions under the REDD baseline scenario up to year $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{BSL,planned}$	Net GHG emissions in the baseline scenario from planned deforestation up to year $t^*$ – <u>from Module BL-PL</u> (t CO <sub>2</sub> e)
$\Delta C_{BSL,unplanned}$	Net GHG emissions in the baseline scenario from unplanned deforestation up to year $t^*$ – <u>from Module BL-UP</u> (t CO <sub>2</sub> e)
$\Delta C_{BSL,degrad-FWC}$	Net GHG emissions in the baseline scenario from degradation caused by fuelwood collection and charcoal making up to year $t^*$ – <u>from Module BL-DFW</u> (t CO <sub>2</sub> e)

$$\Delta C_{LK-REDD} = \Delta C_{LK-AS,planned} + \Delta C_{LK-AS,unplanned} + \Delta C_{LK-AS,degrad-FWC} + \Delta C_{LKM} \quad (4)$$

Where:

$\Delta C_{LK-REDD}$	Net GHG emissions due to leakage from the REDD project activity up to year $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{LK-AS,planned}$	Net GHG emissions due to activity shifting leakage for projects preventing planned deforestation up to year $t^*$ – <u>from Module LK-ASP</u> (t CO <sub>2</sub> e)
$\Delta C_{LK-AS,unplanned}$	Net GHG emissions due to activity shifting leakage for projects preventing unplanned deforestation up to year $t^*$ – <u>from Module LK-ASU</u> (t CO <sub>2</sub> e)

$\Delta C_{LK-ME}$	Net GHG emissions due to market-effects leakage up to year $t^*$ – <a href="#">from Module LK-ME</a> (t CO <sub>2</sub> e)
$\Delta C_{LK-AS, degrad-FW/C}$	Net GHG emissions due to activity shifting leakage for degradation caused by extraction of wood for fuel up to year $t^*$ – <a href="#">from Module LK-DFW</a> (t CO <sub>2</sub> e)

### 8.4.3 ARR

The total net greenhouse gas removals of the ARR project activity are calculated as follows:

$$NGR_{ARR,t} = \Delta C_{WPS-ARR} - \Delta C_{BSL-ARR} - \Delta C_{LK-ARR} \quad (5)$$

Where:

$NGR_{ARR}$	Total net GHG removals of the ARR project activity up to year $t^*$ (t CO <sub>2</sub> e)
$\Delta C_{BSL-ARR}$	Net GHG removals in the ARR baseline scenario up to year $t^*$ – <a href="#">from Module BL-ARR</a> (t CO <sub>2</sub> e)
$\Delta C_{WPS-ARR}$	Net GHG emissions in the ARR project scenario up to year $t^*$ – <a href="#">from Module M-ARR</a> (t CO <sub>2</sub> e)
$\Delta C_{LK-ARR}$	Net GHG emissions due to leakage from the ARR project activity up to year $t^*$ (t CO <sub>2</sub> e)

[Where ARR projects include harvesting, the loss of carbon due to harvesting must be included in the quantification of project emissions. The maximum number of GHG credits available to projects does not exceed the long-term average GHG benefit, which is calculated using the procedure in Module M-ARR.](#)

### 8.4.4 WRC

The total net GHG emission reduction of the WRC project activity is calculated as follows:

$$NER_{WRC} = (GHG_{BSL-PEATWRC} - GHG_{WPS-PEATWRC} + \text{Fire Reduction Premium}) + (GHG_{BSL-TW} - GHG_{WPS-TW}) - GHG_{LK-ECO} \quad (6)$$

Where:

$NER_{WRC}$	Total net GHG emission reductions in the WRC project up to year $t^*$ (t CO <sub>2</sub> e)
$GHG_{BSL-PEATWRC}$	Net GHG emissions in the WRC baseline scenario <a href="#">on peatland</a> up to year $t^*$ – <a href="#">from Module BL-PEAT</a> (t CO <sub>2</sub> e)
$GHG_{WPS-PEATWRC}$	Net GHG emissions in the WRC project scenario <a href="#">on peatland</a> up to year $t^*$ – <a href="#">from Module M-PEAT</a> (t CO <sub>2</sub> e)
<i>Fire Reduction Premium</i>	Greenhouse gas emission reduction from peat combustion due to rewetting and fire management up to year $t^*$ (t CO <sub>2</sub> e)
<u><math>GHG_{BSL-TW}</math></u>	<a href="#">Net GHG emissions in the WRC baseline scenario on tidal wetlands up to year <math>t^*</math> – from Module BL-TW</a> (t CO <sub>2</sub> e)
<u><math>GHG_{WPS-TW}</math></u>	<a href="#">Net GHG emissions in the WRC project scenario on tidal wetlands up to</a>

year  $t^*$  – from Module M-TW (t CO<sub>2</sub>e)

$GHG_{LK-ECO}$

Net GHG emissions due to ecological leakage from the WRC project activity up to year  $t^*$  – from Module LK-ECO (t CO<sub>2</sub>e)

#### 8.4.5 Calculation of VCS Buffer

The number of credits to be held in the AFOLU pooled buffer account is determined as a percentage of the total carbon stock benefits. For REDD project activities, this is equal to the net emissions in the baseline minus emissions from fossil fuel use and fertilizer use minus the net emissions in the project case minus emissions from fossil fuels and fertilizer use. Leakage emissions do not factor into the buffer calculations.

For REDD projects, the calculation of the net change in carbon stocks applied in this methodology includes an adjustment for emissions from fossil fuel combustion and direct N<sub>2</sub>O emissions and excludes emissions from biomass burning. Besides other GHG fluxes, biomass burning involves a carbon stock change. The procedure, therefore, provides a conservative (larger) estimate of the buffer withholding.

For WRC project activities on peatland – where carbon stock changes are not estimated – the proxy for the net change in carbon stocks applied in this methodology is  $NER_{WRC}$ . As this proxy includes all net GHG emissions reductions, it provides a conservative (larger) estimate of the buffer.

Since GHG emission reductions from ARR are unlikely to differ greatly from the net change in carbon stocks, the proxy for the net change in carbon stocks applied in this methodology is  $NGR_{ARR}$ . As this proxy includes all GHG emissions reductions and removals, it provides a conservative (larger) estimate of the buffer withholding.

$$Buffer_{Total} = Buffer_{Planned} + Buffer_{Unplanned} + Buffer_{Degr-EWC} + Buffer_{WRC} + Buffer_{ARR} \quad (7)$$

$$Buffer_{Planned} = \left( \left( DC_{BSL,Planned} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t}) \right)_{BSL\ Planned} - \left( DC_{P,Planned} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t}) \right)_{P\ Planned} \right) \times Buffer\% \quad (8)$$

$$Buffer_{Unplanned} = \left( \left( \Delta C_{BSL,Unplanned} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t}) \right)_{BSL\ Unplanned} - \left( \Delta C_{P,Unplanned} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t}) \right)_{P\ Unplanned} \right) \times Buffer\% \quad (9)$$

$$Buffer_{Degrad-FW/C} = \left( \left( \Delta C_{BSL,Degrad-FW/C} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t}) \right) - \left( \Delta C_{P,Degrad-FW/C} - \sum_{t=1}^{t^*} \sum_{i=1}^M (E_{FC,i,t} + N_2O_{direct,i,t}) \right) \right) \times Buffer\% \quad (10)$$

$$Buffer_{ARR} = NGR_{ARR} \times Buffer\% \quad (11)$$

$$Buffer_{WRC} = NER_{WRC} \times Buffer\% \quad (12)$$

Where:

$Buffer_{Total}$	Total permanence risk buffer withholding (t CO <sub>2</sub> e)
$Buffer_{Planned}$	Buffer withholding for avoiding planned deforestation project activities (t CO <sub>2</sub> e)
$Buffer_{Unplanned}$	Buffer withholding for avoiding unplanned deforestation project activities (t CO <sub>2</sub> e)
$Buffer_{Degrad-FW/C}$	Buffer withholding for avoiding degradation through extraction of fuelwood project areas (t CO <sub>2</sub> e)
$Buffer_{ARR}$	Buffer withholding for ARR project activities (t CO <sub>2</sub> e)
$Buffer_{WRC}$	Buffer withholding for WRC project activities (t CO <sub>2</sub> e)
$\Delta C_{BSL,Planned}$	Net GHG emissions in the baseline from planned deforestation (t CO <sub>2</sub> e)
$\Delta C_{BSL,Unplanned}$	Net GHG emissions in the baseline from unplanned deforestation (t CO <sub>2</sub> e)
$\Delta C_{BSL,Degrad-FW/C}$	Net GHG emissions in the baseline from degradation caused by fuelwood collection and charcoal making (t CO <sub>2</sub> e)
$\Delta C_P$	Net GHG emissions within the project area under the project scenario <sup>24</sup> (t CO <sub>2</sub> e)
$E_{FC,i,t}$	Emission from fossil fuel combustion in stratum $i$ in year $t$ (t CO <sub>2</sub> e)
$N_2O_{direct-N,i,t}$	Direct N <sub>2</sub> O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum $i$ in year $t$ (t CO <sub>2</sub> e)
$Buffer\%$	Buffer withholding percentage <sup>25</sup> (percent)
$NER_{WRC}$	Total net GHG emission reductions in the WRC project up to year $t^*$ (t CO <sub>2</sub> e)
$NGR_{ARR}$	Total net GHG removals of the ARR project activity up to year $t^*$ (t CO <sub>2</sub> e)
$i$	1, 2, 3, ... $M$ strata (unitless)
$t$	1, 2, 3, ... $t^*$ time elapsed since the start of the REDD+ project activity (years)

<sup>24</sup> The project emissions must be divided between the emissions arising from the respective project areas for planned and unplanned deforestation and degradation through fuelwood extraction/charcoal production.

<sup>25</sup> Buffer withholding percentages are based on the project's overall risk classification, the percentage of carbon credits generated by the approved project activity that must be deposited into the AFOLU pooled buffer account to cover non-permanence related project risks. Buffer withholding percentage must be calculated using *T-BAR*. Different percentages will likely be calculated for each of the baseline types as relevant.

#### 8.4.6 Uncertainty Analysis

Project must use [Module X-UNC](#) to combine uncertainty information and conservative estimates and produce an overall uncertainty estimate of the total net GHG emission reductions. The estimated cumulative net anthropogenic GHG emission reductions must be adjusted at each point in time to account for uncertainty as indicated in [Module X-UNC](#)<sup>26</sup>. *X-UNC* calculates an adjusted value for  $NER_{REDD+}$  for any point in time. This adjusted  $Adjusted\_NER_{REDD+}$  must be the basis of calculations at each point in time in [Equation 13](#).

#### 8.4.7 Calculation of Verified Carbon Units

To estimate the number of Verified Carbon Units (VCUs) for the monitoring period  $T = t_2 - t_1$ , this methodology uses the following equation:

$$VCU_t = (Adjusted\_NER_{REDD+,t_2} - Adjusted\_NER_{REDD+,t_1}) \cdot Buffer_t \quad (13)$$

Where:

$VCU_t$	Number of Verified Carbon Units at year $t = t_2 - t_1$ (VCU)
$Adjusted\_NER_{REDD+,t_2}$	Total net GHG emission reductions of the REDD+ project activity up to year $t_2$ <a href="#">and</a> adjusted to account for uncertainty (t CO <sub>2e</sub> )
$Adjusted\_NER_{REDD+,t_1}$	Total net GHG emission reductions of the REDD+ project activity up to year $t_1$ <a href="#">and</a> adjusted to account for uncertainty (t CO <sub>2e</sub> )

<sup>26</sup> The allowable uncertainty under this methodology is +/- 15% of  $NER_{REDD+}$  at the 95% confidence level. Where this precision level is met then no deduction should result for uncertainty. Where uncertainty exceeds 15% of  $NER_{REDD+}$  at the 95% confidence level then the deduction must be equal to the amount that the uncertainty exceeds the allowable level.

$Buffer_{Total}$  Total permanence risk buffer withholding (t CO<sub>2</sub>e)

The adjusted value for  $NER_{REDD+}$  to account for uncertainty must be calculated as:

$$Adjusted\_NER_{REDD+} = NGR_{ARR} + (NER_{REDD} + NER_{WRC}) \times (100\% - NER_{(REDD+ERROR)} + 15\%) + 15\% + 15\%$$

Where:

$Adjusted\_NER_{REDD+}$  Total net GHG emission reductions of the REDD+ project activities up to year  $t^*$  and adjusted to account for uncertainty (t CO<sub>2</sub>e)

$NER_{REDD}$  Total net GHG emission reductions of the REDD project activity up to year  $t^*$  (t CO<sub>2</sub>e)

$NER_{WRC}$  Total net GHG emission reductions of the WRC project activity up to year  $t^*$  (t CO<sub>2</sub>e)

$NER_{REDD+\_ERROR}$  Cumulative uncertainty for the REDD+ (REDD and WRC) project activities up to year  $t^*$  (percent)

$NGR_{ARR}$  Total net GHG removals of the ARR project activity up to year  $t^*$  (t CO<sub>2</sub>e)

For details see [Module X-UNC](#).

## 9 MONITORING

### 9.1 Data and Parameters Available at Validation

Data / Parameter	$\Delta C_{BSL,degrad-FWC}$
Data unit	t CO <sub>2</sub> e
Description	Net greenhouse gas emissions in the baseline from degradation caused by fuelwood collection and charcoal making
Equations	3
Source of data	Module <i>BL-DFW</i>
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module BL-DFW</a>
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$\Delta C_{BSL,planned}$
Data unit	t CO <sub>2</sub> e
Description	Net greenhouse gas emissions in the baseline from planned



	deforestation
Equations	3
Source of data	Module <i>BL-PL</i>
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module <i>BL-PL</i></a>
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$\Delta C_{BSL,unplanned}$
Data unit	t CO <sub>2</sub> e
Description	Net greenhouse gas emissions in the baseline from unplanned deforestation
Equations	3
Source of data	Module <i>BL-UP</i>
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module <i>BL-UP</i></a>
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$\Delta C_{BSL-ARR}$
Data unit	t CO <sub>2</sub> e
Description	Net GHG removals in the ARR baseline scenario up to year $t^*$
Equations	5
Source of data	Module <i>BL-ARR</i>
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module <i>BL-ARR</i></a>

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	6
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 <a href="#">Module <i>BL-PEAT</i></a>
Purpose of Data	Calculation of baseline emissions
Comments	N/A

<a href="#">Data / Parameter</a>	<a href="#">E<sub>FC,i,t</sub></a>
<a href="#">Data unit</a>	<a href="#">t CO<sub>2</sub>e</a>
<a href="#">Description</a>	<a href="#">Emissions from fossil fuel combustion in stratum <i>i</i> in year <i>t</i></a>
<a href="#">Equations</a>	<a href="#">8, 9, 10</a>
<a href="#">Source of data</a>	<a href="#">Module <i>E-FFC</i></a>
<a href="#">Value applied</a>	<a href="#">n/a</a>
<a href="#">Justification of choice of data or description of measurement methods and procedures applied</a>	<a href="#">See Module <i>E-FFC</i></a>
<a href="#">Purpose of Data</a>	<a href="#">Calculation of project emissions</a>
<a href="#">Comments</a>	

## 9.2 Data and Parameters Monitored

Data / Parameter:	$\Delta C_{WPS-REDD}$
Data unit:	t CO <sub>2</sub> e
Description:	Net GHG emissions in the REDD project scenario up to year $t^*$
Equations	2

Source of data:	Module <i>M-REDD</i>
Description of measurement methods and procedures to be applied:	See <a href="#">Module <i>M-REDD</i></a>
Frequency of monitoring/recording:	See <a href="#">Module <i>M-REDD</i></a>
QA/QC procedures to be applied:	See <a href="#">Module <i>M-REDD</i></a>
Purpose of data:	Calculation of project emissions
Calculation method:	See <a href="#">Module <i>M-REDD</i></a>
Comments:	

Data / Parameter	$\Delta C_{LK-AS,degrad-FW/C}$
Data unit	t CO <sub>2</sub> e
Description	Net greenhouse gas emissions due to activity-shifting leakage for degradation caused by extraction of wood for fuel
Equations	4
Source of data	Module <i>LK-DFW</i>
Value applied	
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module <i>LK-DFW</i></a>
Purpose of Data	Calculation of leakage
Comments	

Data / Parameter	$\Delta C_{LK-AS,planned}$
Data unit	t CO <sub>2</sub> e
Description	Net greenhouse gas emissions due to activity shifting leakage for projects preventing planned deforestation
Equations	4
Source of data	Module <i>LK-ASP</i>
Value applied	n/a
Justification of choice of data or description of	See <a href="#">Module <i>LK-ASP</i></a>

measurement methods and procedures applied	
Purpose of Data	Calculation of leakage
Comments	

Data / Parameter	$\Delta C_{LK-AS,unplanned}$
Data unit	t CO <sub>2</sub> e
Description	Net greenhouse gas emissions due to activity shifting for projects preventing unplanned deforestation
Equations	4
Source of data	Module <i>LK-ASU</i>
Value applied	n/a
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module LK-ASU</a>
Purpose of Data	Calculation of leakage
Comments	

Data / Parameter	$\Delta C_{LK-ME}$
Data unit	t CO <sub>2</sub> e
Description	Net greenhouse gas emissions due to market-effects leakage
Equations	4
Source of data	Module <i>LK-ME</i>
Value applied	
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module LK-ME</a>
Purpose of Data	Calculation of leakage
Comments	

Data / Parameter:	$\Delta C_{WPS-ARR}$
Data unit:	t CO <sub>2</sub> e

Description:	Net GHG emissions in the ARR project scenario up to year $t^*$
Equations	5
Source of data:	Module <i>M-ARR</i>
Description of measurement methods and procedures to be applied:	See <a href="#">Module <i>M-ARR</i></a>
Frequency of monitoring/recording:	See <a href="#">Module <i>M-ARR</i></a>
QA/QC procedures to be applied:	See <a href="#">Module <i>M-ARR</i></a>
Purpose of data:	Calculation of project emissions
Calculation method:	See <a href="#">Module <i>M-ARR</i></a>
Comments:	

Data / Parameter:	$\Delta C_{LK-ARR}$
Data unit:	t CO <sub>2</sub> e
Description:	Net GHG emissions due to leakage from the ARR project activity up to year $t^*$
Equations	5
Source of data:	Module <i>LK-ARR</i>
Description of measurement methods and procedures to be applied:	See <a href="#">Module <i>LK-ARR</i></a>
Frequency of monitoring/recording:	See <a href="#">Module <i>LK-ARR</i></a>
QA/QC procedures to be applied:	See <a href="#">Module <i>LK-ARR</i></a>
Purpose of data:	Calculation of leakage
Calculation method:	See <a href="#">Module <i>LK-ARR</i></a>
Comments:	

Data / Parameter:	$GHG_{WPS-WRC}$
Data unit:	t CO <sub>2</sub> e
Description:	Net GHG emissions in the WRC project scenario up to year $t^*$

Equations	6
Source of data:	Module <i>M-PEAT</i>
Description of measurement methods and procedures to be applied:	See Module <i>M-PEAT</i>
Frequency of monitoring/recording:	See <a href="#">Module <i>M-PEAT</i></a>
QA/QC procedures to be applied:	See <a href="#">Module <i>M-PEAT</i></a>
Purpose of data:	Calculation of project emissions
Calculation method:	See Module <i>M-PEAT</i>
Comments:	See Module <i>M-PEAT</i>

Data / Parameter	$GHG_{LK-ECO}$
Data unit	t CO <sub>2</sub> e
Description	Net GHG emissions due to ecological leakage from the WRC project activity up to year <i>t</i>
Equations	6
Source of data	Module <i>LK-ECO</i>
Value applied	n/a
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module <i>LK-ECO</i></a>
Purpose of Data	Calculation of leakage
Comments	

Data / Parameter	$E_{FC,it}$
Data unit	t CO <sub>2</sub> e
Description	Emission from fossil fuel combustion in stratum <i>i</i> in year <i>t</i>
Equations	8, 9, 10
Source of data	Module <i>E-FFC</i>

Value applied	n/a
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module E-FFC</a>
Purpose of Data	Calculation of project emissions
Comments	

Data / Parameter	$N_2O_{direct-N,i,t}$
Data unit	t CO <sub>2</sub> e
Description	Direct N <sub>2</sub> O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum <i>i</i> in year <i>t</i>
Equations	8, 9, 10
Source of data	Module <i>E-NA</i>
Value applied	n/a
Justification of choice of data or description of measurement methods and procedures applied	See <a href="#">Module E-NA</a>
Purpose of Data	Calculation of project emissions
Comments	

### 9.3 Description of the Monitoring Plan

#### 9.3.1 Development of Monitoring Plan

##### General

The monitoring plan must address the following monitoring tasks, which must be included in the monitoring plan:

- Monitoring of project implementation
- Monitoring of actual carbon stock changes and greenhouse gas emissions
- Monitoring of leakage carbon stock changes and greenhouse gas emissions
- Estimation of *ex post* net carbon stock changes and greenhouse gas emissions

For each of these tasks, the monitoring plan must include the following information:

- a. Technical description of the monitoring task

- b. Data to be collected (the list of data and parameters to be collected must be given in PD)
- c. Overview of data collection procedures
- d. Quality control and quality assurance procedure
- e. Data archiving
- f. Organisation and responsibilities of the parties involved in all of the above

### Uncertainty and Quality Management

Quality management procedures are required for the management of data and information, including the assessment of uncertainty, relevant to the project and baseline scenarios. As far as is practical, uncertainties related to the quantification of GHG emission reductions and removals by sinks should be reduced.

To help reduce uncertainties in the accounting of emissions and removals, this methodology uses, whenever possible, the proven methods from the latest available IPCC guidance documents (GPG-LULUCF and Reporting Guidelines) and peer-reviewed literature. Despite this, potential uncertainties still arise from the choice of parameters to be used. Uncertainties arising from input parameters would result in uncertainties in the estimation of both baseline net GHG emissions and project net GHG emissions – especially when global default factors are used. The project must identify key parameters that would significantly influence the accuracy of estimates. Local values that are specific to the project circumstances must then be obtained for these key parameters, whenever possible. These values should be based on:

- Data from well-referenced peer-reviewed literature or other well-established published sources<sup>27</sup>; or
- National inventory data or default factors from IPCC literature that has, whenever possible and necessary, been checked for consistency against available local data specific to the project circumstances; or
- In the absence of the above sources of information, expert opinion may be used to assist with data selection. Experts will often provide a range of data, as well as a most probable value for the data. The rationale for selecting a particular data value must be briefly noted.

~~For any data provided by experts, documentation must also record the expert's name, affiliation, and principal qualification as an expert as well as a 1-page summary CV for each expert consulted, included in an annex.~~

In choosing key parameters, or making important assumptions based on information that is not specific to the project circumstances, such as in use of default factors, the project must select

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<sup>27</sup> Typically, citations for sources of data used should include: the report or paper title, publisher, page numbers, publication date etc. (or a detailed web address). If web-based reports are cited, hardcopies should be included as annexes in the PD if there is any likelihood that such reports may not be permanently available.



values that will lead to an accurate estimation of net GHG emission reductions, taking into account uncertainties.

If uncertainty is significant, [the](#) project must choose data such that it indisputably tends to underestimate, rather than over-estimate, net GHG project benefits.

To ensure that GHG fluxes are estimated in a way that is accurate, verifiable, transparent, and consistent across measurement periods, the project must establish and document clear standard operating procedures and procedures for ensuring data quality. At a minimum, these procedures must include:

- Comprehensive documentation of all field measurements carried out in the project area. This document must be detailed enough to allow replication of sampling in the event of staff turnover between monitoring periods
- Training procedures for all persons involved in field measurement or data analysis. The scope and date of all training must be documented
- A protocol for assessing the accuracy of plot measurements using a check cruise and a plan for correcting the inventory if errors are discovered
- Protocols for assessing data for outliers, transcription errors, and consistency across measurement periods
- Data sheets must be safely archived for the life of the project. Data stored in electronic formats must be backed up

#### [Expert judgement](#)

[The use of expert judgment for the selection and interpretation of methods, selection of input data to fill gaps in available data, and selection of data from a range of possible values or uncertainty ranges, are all well established in the IPCC 2006 good practice guidance. Obtaining well-informed judgments from domain experts regarding best estimates and uncertainties is an important aspect in various procedures throughout this methodology. The project proponent must use the guidance provided in Chapter 2 \(Approaches to Data Collection\), in particular, Section 2.2 and Annex 2A.1 of the IPCC 2006 good practice guidance.](#)

#### Monitoring of Project Implementation

Information must be provided, and recorded, to establish that:

- 1) The geographic position of the project boundary is recorded for all areas of land. The geographic coordinates of the project boundary (and any stratification or buffer zones inside the boundary) are established, recorded and archived. This can be achieved by field survey (e.g., using GPS), or by using georeferenced spatial data (e.g., maps, GIS datasets, orthorectified aerial photography or georeferenced remote sensing images).

The above also applies to the recording of strata, including strata resulting from peatland fires in the project scenario.

- 2) Commonly accepted principles of land use inventory and management are implemented.
  - Standard operating procedures (SOPs) and quality control/quality assurance (QA/QC) procedures for inventories including field data collection and data management must be applied. Use or adaptation of SOPs already applied in national land use monitoring, or available from published handbooks, or from the latest IPCC guidance documents (GPG–LULUCF, Reporting Guidelines, is recommended
  - Apply SOPs, especially for actions likely to cause peat disturbances
  - The project plan, together with a record of the plan as actually implemented during the project must be available for validation or verification, as appropriate

For WRC project activities, continued compliance with the applicability conditions of this methodology must be ensured by monitoring that:

- The water table is not lowered except where the project converts open water to tidal wetlands, or improves the hydrological connection to impounded waters
- The burning of organic soil as a project activity does not occur
- Peatland fires within the project area do not occur in the project scenario. If they do occur as non-catastrophic events, they are accounted for by cancelling the Fire Reduction Premium for the entire project or the individual project activity instance.
- Nitrogen- fertilizers are not used within the project area in the project scenario

Where the project proponent chooses to monitor alterations of water table depth in the project area to demonstrate no alteration of mean annual water table depths in adjacent areas, or that such alteration is limited to levels that do not influence GHG emissions, the project proponent must use water level gauges or vegetation assessments, or a combination of these. Water level gauges must be installed in the project area and readings must be compared with the hydrological modelling results or with the expert judgment on which the establishment of the project area was based. The number and spacing of water level gauges must be based on hydrological modelling or expert judgment.

### REDD

For monitoring changes in forest cover and carbon stock changes, the monitoring plan must use the methods given in Module M-REDD. All relevant parameters from the modules are to be included in the monitoring plan.

### ARR

For monitoring carbon stock changes, the monitoring plan must use the methods given in module M-ARR. All relevant parameters from the modules are to be included in the monitoring plan.

## WRC

For monitoring GHG emissions from peatland [or tidal wetlands](#), the monitoring plan must use the methods given in [Module M-PEAT or M-TW, respectively](#). All relevant parameters from the modules are to be included as the soil carbon pool in the monitoring plan.

### 9.3.2 [Monitoring](#)

*Ex-post* monitoring must have two key aspects:

TASK 1. Monitoring according to monitoring plan

TASK 2. Revising the baseline for future project crediting periods

#### **TASK 1: Monitoring According to the Monitoring Plan**

##### **Monitoring of Key Baseline Variables**

## REDD

Information required to periodically reassess the project baseline must be collected during the entire project crediting period. Key variables to be measured are:

- Changes in forest cover in the Reference Regions for Deforestation (RRD) (at a minimum of every 10 years), as specified in [Module M-REDD](#) and where relevant in [Module BL-UP](#).
- Spatial variable datasets used to model the location of deforestation, as specified in [Module BL-UP](#). As a minimum, the variables used in the first baseline assessment must be monitored at the time of the re-assessment to determine if they have changed.
- ~~Where required, carbon stock data, as specified in [Module M-REDD](#).~~
- ~~\_\_\_\_\_~~

## ARR

Changes in woody biomass carbon stocks in the project area must be measured before each verification as part of the monitoring. Methods must be consistent with the methodology given in [Module M-ARR](#) and any technical guidance specified in the monitoring plan.

## WRC

In projects with a WRC component, the information required to periodically reassess the project baseline must include changes in the drainage layout and climate variables, as specified in [Module ~~MBL-PEAT~~ or ~~BL-TW~~](#) and, where relevant, [Module ~~BL-PEAT~~](#).

### [Monitoring of Actual Carbon Stock Changes and GHG Emissions](#)

## REDD

~~Changes in forest cover in the project area (and leakage belt for unplanned deforestation), must be measured before each verification as part of the monitoring. Methods must be consistent with the methodology given in modules [BL-UP and BL-PL M-REDD](#) and any technical guidance specified in the monitoring plan.~~

Carbon stocks in most cases will not have to be monitored during the baseline period, except in the following cases:

- Where there is an increased accuracy and precision of the *ex-ante* carbon stock estimates, which are also used for *ex-post* calculations. Verifiable evidence must be provided to VCS verifiers that the accuracy and precision of the carbon stock estimates [have](#) improved, compared to previous estimates. Any change in carbon stock densities will be subject to validation.
- Where emissions reductions/removals are claimed for avoiding forest degradation caused by extraction of wood for fuel or charcoal or carbon sequestration in forest land that would have been deforested in the baseline case. In such cases, the methods described in [Module M-REDD](#).

Carbon stocks must be reassessed at every baseline revision.

Where emissions are included in the baseline, they must be monitored in the project case, following the methodological procedures described in the emission modules (*E-BPB*, *E-FFC*, and *E-NA*).

The calculations of actual carbon stock changes and greenhouse gas emissions must be reported using transparent procedures.

~~Changes in water depths in the project area (and leakage belt for unplanned deforestation), must be measured before each verification as part of the monitoring. Methods must be consistent with the methodology given in [Module M-PEAT or M-TW](#) and any technical guidance specified in the monitoring plan.~~

### **Monitoring of Leakage**

All significant sources of leakage identified are subject to monitoring, following the procedures outlined in the monitoring plan. Such procedures must be consistent with the applicable leakage modules (*LK-ASP*, *LK-ASU*, *LK-ME*, *LK-DFW*, *LK-ARR* and *LK-ECO*). All relevant parameters in the leakage modules must be included in the monitoring plan.

The calculations of leakage carbon stock changes and greenhouse gas emissions must be reported.

### **TASK 2: Revising the Baseline for Future Project Crediting Periods**

Baselines must be revised over time because agents, drivers and underlying causes of deforestation as well as drainage layouts and climate variables change dynamically. The

methodological procedure used to update the baseline must be the same as used in the first estimation.

## 10 REFERENCES

IPCC. 2003. Good Practice Guidance for Land Use, Land Use Change and Forestry. Institute for Global Environmental Strategies (IGES). <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html><sup>28</sup>

IPCC. 2006. 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Institute for Global Environmental Strategies (IGES). <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html><sup>29</sup>

Additional information can be found in the modules referenced throughout this methodology.

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<sup>28</sup> <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html>

<sup>29</sup> <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>

## DOCUMENT HISTORY

Version	Date	Comment
v1.0	3 Dec 2010	Initial version
v1.1	7 Sept 2011	The REDD Methodology Framework was updated to limit the reassessment of the unplanned baseline scenario to every ten years. The methodology was also incremented to reflect a revision to the module for estimation of baseline carbon stock changes and greenhouse gas emission from unplanned deforestation (BL-UP), v2.0, which was approved under the VCS Program on 7 September 2011.
v1.2	31 July 2012	Table 2 was removed to avoid confusion with Table 1. Table 1 is now the exclusive source in the methodology for determining included/excluded pools.
v1.3	20 Nov 2012	The REDD Methodology Framework was updated to include avoided planned degradation as an allowable activity: <ul style="list-style-type: none"> <li>Removed the applicability condition “where post-deforestation land use constitutes reforestation this module must not be used”</li> <li>Renamed “planned deforestation” to “planned deforestation and planned degradation”</li> <li>Added the text “hereafter in this module, “deforestation” refers to both deforestation and planned degradation”</li> </ul> A correction made to equation 8 to appropriately calculate the total VCU available for issuance.
v1.4	3 May 2013	Applicability condition for unplanned deforestation “where post-deforestation land use constitutes reforestation this module must not be used” was removed. Equations 4, 5 and 6 were revised to appropriately account for the buffer.
v1.5	9 March 2015	Updated to include REDD+ project activities on peatlands, as well as activities that include ARR. Methodology now includes six new modules: <i>VMD0041 BL-ARR</i> , <i>VMD0042 BL-PEAT</i> , <i>VMD0043 LK-ARR</i> , <i>VMD0044 LK-ECO</i> , <i>VMD0045 M-ARR</i> , and <i>VMD0046 M-PEAT</i> .