VCS Module

VMD0042

Estimation of baseline soil carbon stock changes and greenhouse gas emissions in peatland rewetting and conservation project activities (BL-PEAT)

Version 1.1

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Sectoral Scope 14

Module developed by:

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Table of Contents

1 SOURCES

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

This module uses the latest versions of the following tools and modules:

- CDM *Tool for testing significance of GHG emissions in A/R CDM project activities (T-SIG)*
- *VMD0001 Estimation of carbon stocks in the above- and belowground biomass in live tree and non-tree pools (CP-AB)*
- *VMD0006 Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation/forest degradation and planned wetland degradation (BL-PL)*
- *VMD0007 Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation and unplanned wetland degradation (BL-UP)*
- *VMD0013 Estimation of greenhouse gas emissions from biomass and peat burning (E-BPB)*
- V*MD0016 Methods for stratification of the project area (X-STR)*
- *VMD0015 Methods for monitoring of greenhouse gas emissions and removals in REDD project activities (M-REDD)*
- *VMD0046 Methods for monitoring of soil carbon stock changes and greenhouse gas emissions and removals in peatland rewetting and conservation project activities (M-PEAT)*

2 SUMMARY DESCRIPTION OF THE MODULE

This module applies to the baseline scenario of wetlands restoration and conservation (WRC) project activities on peatlands that are expected to be or remain (partly) drained in the absence of the project activity.

In combination with VCS Modules *M-PEAT* and *E-BPB*, this module provides procedures to estimate reductions of drainage-related GHG emissions (from oxidation and fires) by rewetting of drained peatland (RDP) project activities, and prevention of peat emissions due to microbial oxidation and from fire in conservation of undrained or partially drained peatland (CUPP) projects. These project activities are both sub-categories of restoration of wetland ecosystems (RWE) and conservation of intact wetlands (CIW) of the WRC project category.

3 DEFINITIONS

In addition to the definitions set out in VCS document *Program Definitions* and VCS methodology VM0007 *REDD+ MF*, the following definitions and acronyms apply to this methodology:

3.1 Defined Terms

Domed Peatland

Peat landform usually located between interfluvial divides[1]

Proxy Area

The area from which regional information on the occurrence and extent of fires or patterns in emission proxies is obtained

Water Table Depth[2]

Depth of the water table relative to the soil surface. Depth may be positive (above surface) or negative (below surface).

3.2 Acronyms

CIW Conservation of Intact Wetlands

CUPP Conservation of Undrained or Partially Undrained Peatland

GHG Greenhouse Gas

RDP Rewetting of Drained Peatlands

RWE Restoration of Wetland Ecosystems

WRC Wetland Restoration and Conservation

4 APPLICABILITY CONDITIONS

This module is applicable to RDP and CUPP activities on project areas that meet the VCS definition for peatland.[3] The scope of this module is limited to domed peatlands in the tropical climate zone.

The following applicability conditions apply:

- It must be demonstrated by using the latest version of *T-SIG* that N_2O emissions in the project scenario are not significant, or that N_2O emissions will not increase in the project scenario compared to the baseline scenario, and therefore N_2O emissions need not be accounted for.
- In the baseline scenario the peatland must be drained or partially drained. At the start of the project the peatland may still be undrained.

[1] See e.g., Jaenicke *et al.* 2008; Dommain *et al*. 2010

[2] In some other methodologies this term may be referred to as drainage depth.

[3] These project activities are both sub-categories of Restoration of Wetland Ecosystems (RWE) and Conservation of Intact Wetlands (CIW) of the Wetlands Restoration and Conservation (WRC) project category.

5 PROCEDURES

5.1 General

5.1.1 General Procedures and Assumptions

The following general procedures and assumptions apply:

- The estimation of GHG emissions from the oxidation of peat soil is based on their relationship with proxies such as land use classes, land management practices, vegetation cover, water table depth and/or subsidence rates, micro-topography, or is based on IPCC default factors.
- The estimation of carbon loss and GHG emissions from peat fires is based on the mass of peat lost by fire and emission factors from IPCC or scientific literature.
- Live tree vegetation may be present and subject to carbon stock changes (e.g., due to growth, harvesting or fires) in both the baseline and project scenarios. These changes are addressed in Modules *CP-AB*, *M-REDD*, *BL-ARR*, *E-BPB*.
- If peatland rewetting and best-practice fire management (zero burning, fire control, etc, as determined by the relevant authorities[4]) have been implemented as project activities, peat fires occurring in the project scenario are assumed to be catastrophic events.
- In peatland rewetting and conservation projects, emissions from peat fires are always lower compared to the baseline emissions and emissions from peat fires can conservatively be neglected. Accounting for peat fire emissions in the baseline is therefore optional.
- Belowground biomass carbon stocks are included in the peat component and must not be accounted for separately, except where forest occurs on shallow peat (as defined in Module *X-STR*), when Module *CP-AB* is used.
- Default factors and standards used to ascertain GHG emission data and any supporting data for baseline scenarios 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*.

5.1.2 Proxy Areas

For the establishment of proxy areas refer to the requirements set out in Section 1.3 of Module *BL-PL*, noting the following:

- Substitute the term deforestation with conversion.
- The proxy areas must have drained peat soil (for the delineation of peat soil see Section 5.2 of Module *X-STR*).

[4] Verifiable evidence must be provided in the PD.

- Omit bullet seven which states the following conditions must be met:
  - The forest types surrounding the proxy area or in the proxy area prior to deforestation must be in the same proportion as in the project area (±20%).
  - Soil types that are suitable for the land-use practice used by the agent of deforestation in the project area must be present in the proxy area in the same proportion as the project area (±20%). The ratio of slope classes “gentle” (slope <15%) to “steep” (slope ≥15%) in the proxy areas shall be (±20%) the same of the ratio in the project area.
  - Elevation classes (500m classes) in the proxy area must be in the same proportion as in the project area (±20%).

5.2 Assessing GHG Emissions in the Baseline Scenario

The net GHG emissions from the peat soil in the baseline scenario are estimated as

$$GHG_{BSL-PEAT} = \sum_{t=1}^{t^*} \sum_{i=1}^{M} (A_{peatsoil-BSL,i,t} \times GHG_{peatsoil-BSL,i,t} + A_{ditch-BSL,i,t} \times GHG_{peatditch-BSL,i,t} + A_{peastburn-BSL,i,t} \times GHG_{peatburn-BSL,i,t}) \quad (1)$$

Where:

$GHG_{BSL\text{-}PEAT}$	Net GHG emissions in the WRC baseline scenario on peatland up to year t^* (t CO_2e)
$GHG_{peatsoil\text{-}BSL,i,t}$	GHG emissions from the peat soil within the project boundary in the baseline scenario in stratum i at year t (t CO_2e ha^{-1} yr^{-1})
$GHG_{peatditch\text{-}BSL,i,t}$	GHG emissions from water bodies in the baseline scenario in stratum i at year t (t CO_2e ha^{-1} yr^{-1})
$GHG_{peatburn\text{-}BSL,i,t}$	GHG emissions from burning of peat in the base line scenario in stratum i at year t (t CO_2e ha^{-1} yr^{-1})
$A_{peatsoil\text{-}BSL,i,t}$	Area of peatland (not open water, not burnt) in stratum i in year t in the baseline scenario (ha)
$A_{ditch\text{-}BSL,i,t}$	Area of ditch and other open water in stratum i in year t in the baseline scenario (ha)
$A_{peatburn\text{-}BSL,i,t}$	Area of peat burnt in stratum i in year t in the baseline scenario (ha)
i	1, 2, 3 …M strata in the baseline scenario (unitless)
t	1, 2, 3, … t^* times elapsed since the project start (yr)

For all strata i where the project duration exceeds the peat depletion time (PDT or t_{PDT}), for $t > t_{PDT\text{-}BSL,I}$ the following applies:

$$GHG_{peatsoil\text{-}BSL,i,t} = 0 \quad (2)$$

$$GHG_{peatditch\text{-}BSL,i,t} = 0 \quad (3)$$

$$GHG_{peatburn\text{-}BSL,i,t} = 0 \quad (4)$$

Where:

$t_{PDT\text{-}BSL,i}$	Peat Depletion Time in the baseline scenario in stratum *i* in years elapsed since the project start; estimated in Module *X-STR* (yr)
$GHG_{peatsoil\text{-}BSL,i,t}$	GHG emissions from the peat soil within the project boundary in the baseline scenario in stratum *i* at year *t* (t CO_2e ha^{-1} yr^{-1})
$GHG_{peatditch\text{-}BSL,i,t}$	GHG emissions from water bodies at year *t* (t CO_2e ha^{-1} yr^{-1})
$GHG_{peatburn\text{-}BSL,i,t}$	GHG emissions from burning of peat in the base line scenario in stratum *i* at year *t* (t CO_2e ha^{-1} yr^{-1})
i	1, 2, 3 …M_{BSL} strata in the baseline scenario (unitless)
t	1, 2, 3, … *t** time elapsed since the project start (yr)

5.3 Assessing Baseline GHG Emissions due to Peat Drainage ($GHG_{peatsoil,BSL,i,t}$)

Baseline GHG emissions from drained peat are estimated based on proxies with calibrated GHG emission profiles in strata *i*, or IPCC default factors. Proxies include land use type, land management practices, vegetation cover, water table depth, subsidence rate and micro-topography. Evidence must be provided of the validity of the chosen proxy for assessing GHG fluxes by referring to published data and peer reviewed literature or expert judgment. The spatial distribution and extent of chosen proxies may be obtained from literature sources, land management handbooks, proxy areas or (preferably local) expert judgment and conservativeness must be justified.

For carbon losses from peatland drainage in the baseline, using different proxies may be more appropriate depending on the type of land use. For example, for fallow, deforested land a single emission factor may be suitable, whereas water table depth may be used to define finer scaled strata in plantations. Areas within the project boundary with different emission characteristics in association with the proxies chosen must be treated as different strata.

For each stratum, the GHG emissions due to peat soil in the project boundary are estimated as follows:

$$GHG_{peatsoil\text{-}BSL,i,t} = GHG_{proxy\text{-}BSL,i,t} \quad (5)$$

Where:

$GHG_{peatsoil\text{-}BSL,i,t}$	GHG emissions from the peat soil within the project boundary in the baseline scenario in stratum *i* at year *t* (t CO_2e ha^{-1} yr^{-1})
$GHG_{proxy\text{-}BSL,i,t}$	GHG emissions in relation to the chosen proxy in the baseline scenario in stratum *i* at year *t* (t CO_2e ha^{-1} yr^{-1})
i	1, 2, 3 …M_{BSL} strata in the baseline scenario (unitless)
t	1, 2, 3, … *t** time elapsed since the project start (yr)

GHG emissions from the peat soil per stratum as a result of drainage in the baseline scenario are estimated as follows:

$$GHG_{proxy\text{-}BSL,i,t} = GHG_{proxy\text{-}CO2,i,t} + GHG_{proxy\text{-}CH4,i,t} \quad (6)$$

Where:

$GHG_{proxy\text{-}BSL,i,t}$	GHG emissions in relation to the chosen proxy in the baseline scenario in stratum *i* at year *t* (t CO_2e ha^{-1} yr^{-1})
$GHG_{proxy\text{-}CO2,i,t}$	Emission of CO_2 in relation to the chosen proxy in stratum *i* at year *t* (t CO_2e ha^{-1} yr^{-1})
$GHG_{proxy\text{-}CH4,i,t}$	Emission of CH_4 in relation to the chosen proxy in stratum *i* at year *t*; can conservatively be omitted in the baseline scenario (t CO_2e ha^{-1} yr^{-1})
i	1, 2, 3 …M_{BSL} strata[5] in the baseline scenario (unitless)
t	1, 2, 3, … *t** time elapsed since the project start (yr)

The project may establish project-specific values for $GHG_{proxy\text{-}CO2}$ and $GHG_{proxy\text{-}CH4}$ (see Module *M-PEAT* for procedures). Also values from appropriate peer reviewed literature sources pertaining to land use type, land management practices, vegetation cover, water table depths or water table depth classes, ditch densities and similar circumstances may be used as well as appropriate IPCC default factors. For literature values, the accuracy must be defined or conservativeness must be justified. When using values derived from subsidence measurements, lateral water-borne carbon losses from the field are included in $GHG_{proxy\text{-}CO2,i,t}$ and care should be taken that emissions are not double-counted, e.g., as CO_2 emissions from ditches ($GHG_{peatditch\text{-}CO2,i,t}$). Emissions from peat exposed to aerobic decomposition by spreading or piling following the establishment or maintenance of ditches may be taken into account by applying emission values from appropriate literature or conservatively be omitted. In the baseline scenario emissions of CH_4 can conservatively be omitted.

When using water table depth as a proxy, a relationship between CO_2 emission and water table may be defined based on peer-reviewed literature. Water table depths or water table depth classes (e.g., 0 to -10 cm, -11 to -20 cm, etc.) can be used, depending on data availability. Land use types or land management practices may be linked to emissions via water table depth. It must be demonstrated that the water table used to characterize a land use type or land management practice applies, by referring to literature sources, land management handbooks or (preferably local) expert judgment, and conservativeness must be justified. Emissions from shallow peat strata, where the entire peat layer is above the water table, are determined by peat depth rather than water table depth and must be treated accordingly, by substituting peat thickness for water table depth. Similarly, strata that have alternating peat and mineral soil layers above the water table must be treated separately (e.g., by conservatively treating them as shallow peat strata defined by the thickness of the top layer of peat). Both shallow and interlayered strata can conservatively be treated as mineral soil strata.

Water tables in the baseline may be determined by static (including analytic) hydrologic modeling, using conservative peat hydraulic parameters, including:

- The water table depth in the ditches
- The distance between the ditches

[5] Note that different proxy classes result in different strata.

- Hydrological conductivity of the peat

To derive trends and developments in water table management, the baseline scenario must take into account variables influencing water table depths on the basis of quantitative hydrological modeling and/or expert judgment. Besides the long-term average climate (precipitation, evaporation) prior to project start, these include the common drainage practices associated with the projected land use as well as the current and historic layout of the drainage system in case of RDP projects. The long-term average climate variables must be determined using data from one or more climate stations nearest to the project area and must include at least 20 years of data.

In case of RDP, the historic drainage layout must be mapped using topographic and/or hydrological maps. Historic drainage structures (collapsed ditches) may (still) have higher hydraulic conductivity than the surrounding areas and function as preferential flow paths. The effect of historic drainage structures on current hydrological functioning of the project area must be assessed on the basis of quantitative hydrological modeling and/or (preferably local) expert judgment and in a conservative manner. The baseline scenario may furthermore include re-activation of collapsed ditches. Historic information on the drainage system may serve to set trends in drainage lay-out and depth as well as in frequency of dredging of ditches to maintain required water tables in the field. Derivation of such trends must be done on the basis of (preferably local) expert judgment and in a conservative manner. With respect to hydrological functioning, the baseline scenario must be restricted by climate variables and quantify any impacts on the hydrological functioning as caused by planned measures outside the project area (such as dam construction or groundwater extraction), by demonstrating a hydrological connection to the planned measures (e.g., through ground water carrying soil layers).

In case of abandonment of pre-project land use in the baseline scenario, the baseline scenario must also consider - based on expert judgment taking account of verifiable local experience and/or studies and/or scientific literature and in a conservative way - non-human induced rewetting brought about by collapsing dikes or ditches that would have naturally closed over time, and progressive subsidence, leading to raising relative water table depths, increasingly thinner aerobic layers and reduced CO_2 emission rates. Unless alternative evidence is provided, annual subsidence (as observed or derived from subsidence - water table relationships or models) must be assumed to result in a 1:1 proportional rise of the water table relative to the surface in the area between ditches.

5.4 Assessing Baseline GHG emissions from Ditches and Other Open Water Bodies ($GHG_{peatditch\text{-}BSL,i,t}$)

GHG emissions from ditches and other water bodies in the baseline may be derived on the basis of ditched area and area of open water combined with an emission factor.

$$GHG_{peatditch\text{-}BSL,i,t} = GHG_{peatditch\text{-}CO2,i,t} + GHG_{peatditch\text{-}CH4,i,t}) \quad (7)$$

Where:

$GHG_{peatditch-BSL,i,t}$	GHG emissions from ditch and other open water stratum *i* at year *t* in the baseline scenario (t CO_2e $ha^{-1}yr^{-1}$)
$GHG_{peatditch-CO2,i,t}$	Emission of CO_2 from ditch and open water stratum *i* at year *t* in the baseline scenario (t CO_2e $ha^{-1}yr^{-1}$)
$GHG_{peatditch-CH4,i,t}$	Emission of CH_4 from ditch and open water stratum *i* at year *t* in the baseline scenario (t CO_2e $ha^{-1}yr^{-1}$)
i	1, 2, 3 …M_{BSL} strata[6] in the baseline scenario (unitless)
t	1, 2, 3, … *t** time elapsed since the project start (yr)

The project may establish project-specific values for $GHG_{peatditch-CO2,i,t}$ and $GHG_{peatditch-CH4,i,t}$ (see Module *M-PEAT* for procedures) or refer to appropriate peer-reviewed literature sources or IPCC default factors. For literature values the accuracy must be defined or conservativeness must be justified. GHG emissions from channels and ditches existing at the project start date will not be higher in the project scenario compared to the baseline scenario (Couwenberg *et al.* 2011) and therefore, GHG emissions from channels and ditches existing at the project start date may conservatively be omitted from GHG accounting. GHG emissions from channels and ditches that are created after the project start date need to be accounted using Equation 7, and therefore the area of these new channels and ditches must be determined. The same guidance applies to other open water bodies, like lakes and ponds.

5.5 Assessing Baseline GHG Emissions due to Peat Fire ($GHG_{peatburn-BSL,i,t}$)

GHG emissions from fires in the baseline can result from:

- Controlled (planned) peat burning during site preparation or (rotational) clearance for plantation/crop establishment
- Uncontrolled peat burning of (abandoned) drained peat areas

Procedures for quantification of GHG emissions from peat fires are provided in Module *E-BPB*. The baseline scenario sets out the frequency of peat fires and the volume (or mass) of peat burnt. Procedures to assess the area and depth of peat burnt from field observations or remote sensing data are provided in Module *M-PEAT*. Module *M-PEAT* also provides a simplified fire reduction premium approach to acknowledge peat fire emissions based on historic burnt area alone.

In case of controlled (planned) burning, frequency of fires and the area and depth of peat burnt associated with the projected land use or land management practice in the baseline can be based on IPCC default factors or derived from common practice applicable to the project area and baseline agent. Common practice with respect to the use of fire in initial and rotational clearance must be based on at least two of the following: 1) land management handbooks, 2) proxy areas, 3) (preferably local) expert judgment or 4) field observations or remote sensing data concerning the baseline agent. Applicability must be justified and conservativeness must be demonstrated. In case

[6] Note that different proxy classes result in different strata.

of rewetting projects, frequency, area and depth of rotational clearance fires in the baseline can be derived from historic practices or observations concerning the project area.

In case of uncontrolled (unplanned) burning, estimates of fire frequency, area and depth may be based on IPCC default factors, literature, field observations or remote sensing data. Applicability must be justified. In case of rewetting projects, frequency, area and depth of unplanned fires in the baseline can be derived from historic observations concerning the project area. Uncontrolled burning of drained land may also occur in the baseline of conservation projects (e.g., when in the baseline scenario land is abandoned after initial drainage and further conversion to plantation or other land use only occurs after a number of years).[7]

Assessment of frequency and extent of uncontrolled burning in the baseline of a conservation project must be established by examining proxy areas, as defined in Section 5.1.2. A sufficient number of parcels are needed to be representative for the proxy area, and hence for the project area. Examination of proxy areas may be through original data collection (field measurements and/or remote sensing analysis) or where appropriate use of directly applicable existing data generated from credible sources.

If baseline fire frequency and impact are assessed using annual historic data, these must be gathered in the project area (in case of rewetting projects) or proxy areas (in case of conservation projects) over a period of minimum 10 to maximum 15 years ending 2 years before the project start date. Evidence must be provided using statistics and/or maps in official reports and/or remote sensing data. Applicability must be justified and conservativeness must be demonstrated.

Re-assessment of the Fire Baseline

The baseline must be re-assessed every 10 years based on observations of fire frequency and extent in the proxy areas.

Proxy areas may need to be re-delineated to capture changes in land cover. In case of rewetting projects that set a fire baseline using only the project area, the assumed frequency of fires must be justified based on observed trends in climate (e.g., El Niño frequency).

6 DATA AND PARAMETERS

6.1 Data and Parameters Available at Validation

Data / Parameter	$GHG_{peatburn\text{-}BSL,i,t}$
Data unit	t CO_2e ha^{-1} yr^{-1}
Description	GHG emissions from burning of peat in the baseline scenario in stratum *i* at year *t*
Equations	1

[7] Miettinen *et al.*, 2011

Source of data	(IPCC) default factors, literature values or direct measurements
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	Procedures for assessing GHG emissions from burning of biomass and peat are provided in Module *E-BPB*.
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$GHG_{proxy\text{-}CO2,i,t}$
Data unit	t CO_2e ha^{-1} yr^{-1}
Description	Emission of CO_2 in relation to the chosen proxy in stratum *i* at year *t*
Equations	6
Source of data	Project-specific values; literature sources
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See Module *M-PEAT*
Purpose of Data	Calculation of baseline emissions
Comments	Proxies must comply with VCS requirements on proxies[8]. It must be demonstrated that the proxy used is strongly correlated with CO_2 emissions by referring to IPCC, literature or own data. When referring to own data, comparison with literature values must be made.

Data / Parameter	$GHG_{proxy\text{-}CH4,i,t}$
Data unit	t CO_2e ha^{-1} yr^{-1}
Description	Emission of CH_4 in relation to the chosen proxy in stratum *i* at year *t*
Equations	6
Source of data	Project-specific values; appropriate literature sources
Value applied	N/A
Justification of choice of data or description of	See Module *M-PEAT*

[8] See Section 2.5.3 of the *VCS Methodology Requirements*, or latest version

measurement methods and procedures applied	
Purpose of Data	Calculation of baseline emissions
Comments	Proxies must comply with VCS requirements on proxies[9]. It must be demonstrated that the proxy used is strongly correlated with CO_2 emissions by referring to IPCC, literature or own data. When referring to own data, comparison with literature values must be made.

Data / Parameter	$GHG_{peatditch\text{-}CO2,i,t}$
Data unit	t CO_2e ha^{-1} yr^{-1}
Description	Emission of CO_2 from ditch and open water stratum *i* at year *t*
Equations	7
Source of data	Project-specific values; appropriate literature sources
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See Module *M-PEAT*
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$GHG_{peatditch\text{-}CH4,i,t}$
Data unit	t CO_2e ha^{-1} yr^{-1}
Description	Emission of CH_4 from ditch and open water stratum *i* at year *t*
Equations	7
Source of data	Project-specific values; appropriate literature sources
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See Module *M-PEAT*
Purpose of Data	Calculation of baseline emissions
Comments	N/A

[9] See Section 2.5.3 of the *VCS Methodology Requirements*, or latest version

Data / Parameter	$A_{peatsoil\text{-}BSL,i,t}$
Data unit	ha
Description	Area of peatland (not open water, not burnt) in stratum *i* in year *t* in the project scenario
Equations	1
Source of data	Module *X-STR*
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See Module *X-STR*
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$A_{ditch\text{-}BSL,i,t}$
Data unit	ha
Description	Total area of ditch and other open water stratum *i* in year *t* in the baseline scenario
Equations	1
Source of data	Module *X-STR*
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See module *X-STR*
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$A_{peatburn\text{-}BSL,i,t}$
Data unit	ha
Description	Area of peat burnt in stratum *i* in year *t* in the project scenario
Equations	1
Source of data	Module *X-STR*
Value applied	N/A
Justification of choice of data or description of	Procedures for the area of burnt peat are provided in Module *M-PEAT*. See Module *X-STR*

measurement methods and procedures applied	
Purpose of Data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$t_{PDT\text{-}BSL,i}$
Data unit	yr
Description	Peat depletion time (PDT) in the baseline scenario in stratum *i* in years elapsed since the project start
Equations	N/A
Source of data	Module *X-STR*
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	See Module *X-STR*
Purpose of Data	Calculation of baseline emissions
Comments	N/A

6.2 Data and Parameters Monitored

None.

7 REFERENCES

Couwenberg, J., Thiele, A., Tanneberger, F., Augustin, J., Bärisch, S., Dubovik, D., Liashchynskaya, N., Michaelis, D., Minke, M., Skuratovich, A. & Joosten, H. (2011). Assessing greenhouse gas emissions from peatlands using vegetation as a proxy. Hydrobiologia, 674, 67-89.

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Jaenicke J, Rieley JO, Mott C, Kimman P, Siegert F (2008) Determination of the amount of carbon stored in Indonesian peatlands. Geoderma, 147, 151-158

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DOCUMENT HISTORY

Version	Date	Comment
v1.0	9 March 2015	Initial version
v1.1	8 Sep 2020	The module was updated to incorporate activities on tidal wetlands and the nomenclature was changed from “WRC” to “PEAT” as relevant throughout.