VCS Consultation Document:

Proposal for Inclusion of Peatland Rewetting and Conservation (PRC) under the VCS Agriculture, Forestry and Other Land Use (AFOLU) Program

19 May 2010

1. Introduction

1.1 Background

The scope of the VCS AFOLU Program includes four project categories; Afforestation, Reforestation and Revegetation (ARR), Agricultural Land Management (ALM), Improved Forest Management (IFM) and Reduced Emissions from Deforestation and Degradation (REDD). Conversion and drainage of peatlands (e.g., for agricultural production, or peat extraction for energy or horticultural use) and peat fires cause significant emissions of CO_2 and other greenhouse gasses globally. To date, there has been no comprehensive global set of guidelines for the development of GHG emission reduction projects on peatlands. VCS ARR, ALM, IFM and REDD projects occurring on peatlands are currently eligible under the VCS; however, the *Guidance for AFOLU Projects* does not currently provide further guidance or requirements for addressing the particular issues related to peatland dynamics (e.g., hydrology) that would facilitate the development of Peatland Rewetting and Conservation (PRC) projects. Additionally, projects that focus on rewetting drained peatland or conserving undrained non-forested peatland without being combined with another AFOLU project type are not currently eligible.

The purpose of this document is to outline the proposal for including PRC under the VCS Program for the purpose of stakeholder consultation. All comments on, or questions about, the proposal should be sent to the VCS Association at secretariat@v-c-s.org by 6pm GMT 19 July 2010.

1.2 Current Scope of the VCS Program

The scope of the VCS AFOLU Program currently includes four project categories (ARR, ALM, IFM, and REDD), and does not cover Peatland Rewetting and Conservation. The VCS Board can approve extensions to the scope of the VCS Program.

2. Proposal for Including PRC Under the VCS Program

2.1 General

There are currently no guidelines for the development of peat rewetting or conservation methodologies or projects under the VCS or VCS-approved GHG programs. Developers will need to develop new methodologies and submit them for approval under the VCS double approval process. In order to provide guidance to developers and to ensure PRC projects are eligible and quality methodologies are approved, the proposed approach for including PRC under the VCS Program is to integrate the requirements for PRC projects into the existing VCS AFOLU documents:

- *Guidance for Agriculture, Forestry and Other Land Use Projects*
- *Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination*

The proposed changes to each of the documents are outlined below. To avoid duplication, requirements included in the *Guidance for AFOLU Projects* which will appear in the Tool for AFOLU Methodological Issues are not repeated here. Only new or changed sections of the documents (including relevant section headings) are included below (in red), as comments and questions as part of this stakeholder consultation should focus solely on the PRC requirements.

2.2 Updates to the *Guidance for Agriculture, Forestry and Other Land Use Projects*

Amended for inclusion of Peatland Rewetting and Conservation (PRC)

…

1) Guidance to the Program Guidelines where Relevant to AFOLU Projects

Section 3.5.2 of the Program Guidelines: Validator and Verifier

> *For the sake of brevity, the text from section 3.5.2 of the Program Guidelines has not been repeated here.*

Guidance:

VCS verifiers can only perform validations/verifications within the sectoral scopes for which they are accredited. There are two VCS AFOLU sectoral scopes: (1) Afforestation/reforestation, improved forest management, reduced emissions from deforestation & degradation and peatland rewetting and conservation – covering ARR, IFM, REDD and PRC projects; and (2) Agricultural land management – covering ALM projects (including ALM and PRC).

Validators & Verifiers are considered accredited for the AFOLU activities under the VCS if they are:

- Accredited for scope 14 (Afforestation & Reforestation) of the CDM
- Accredited for scopes 14.1 & 14.2 of ISO 14065 by ANSI

2) Guidance to the VCS 2007.1 Requirements in Relation to AFOLU Projects

Section 3.4 of the VCS 2007.1: Additional Requirements for AFOLU, ancillary impacts

> *AFOLU projects shall identify potential negative environmental and socio-economic impacts and shall take steps to mitigate them prior to generating Voluntary Carbon Units (VCUs).*
>
> *AFOLU projects that convert native ecosystems to generate carbon credits are not eligible under the VCS. Documented evidence shall be provided in the VCS PD that no ARR or ALM project areas were cleared of native ecosystems within the ten year period prior to the proposed Project Start Date, or, for PRC, drained after 1 January 2008.*

Guidance:

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The VCS does not wish to provide potential perverse incentives for the clearing and/or draining of native ecosystems in order to generate carbon credits from AFOLU activities. Therefore, in order to be eligible for crediting under the VCS, ARR, ALM and PRC project proponents must demonstrate that the project area was not cleared and/or drained of native ecosystems, such as forests, grasslands, scrublands, wetlands or peatlands to create VCUs. Such proof is not required if such clearing or conversion took place at least ten years prior to the proposed VCS project start (for ARR and ALM), or if drainage took place before 1 January 2008[1] (for PRC). The burden of proof rests with the project proponent.

3) Guidance to the Tool for AFOLU Methodological Issues

Eligible AFOLU Activities

For the sake of brevity, the Eligible AFOLU Activities text from the Methodological Tool has not been repeated here.

Guidance:

Afforestation, Reforestation, and Revegetation (ARR)

…

ARR activities on peat soil shall use the additional PRC guidance provided in each section.

Agricultural Land Management (ALM)

Land use and management activities that have been demonstrated to reduce net greenhouse gas (GHG) emissions on cropland and grassland (see IPCC 2006 GL for AFOLU[2]) by increasing carbon (C) stocks (in soils and woody biomass) and/or decreasing CO_2, N_2O and/or CH_4 emissions from soils are eligible for certification under the VCS as ALM projects. Three broad categories of activities are included: (A) improved cropland management; (B) improved grassland management and, (C) cropland and grassland land-use conversions. ALM activities on peat soil shall use additional PRC guidance provided in each section. Land conversions of cropland or grassland to forest vegetation are considered ARR activities and are not discussed here. Biofuel crop production activities are eligible for crediting under VCS AFOLU only to the extent that they generate measurable increases in carbon stocks (above-ground, below-ground, and/or soil). Biofuel crop production activities on drained peatland or on peatland cleared of or converted from

[1] This date avoids inclusion of areas drained after the Bali Conference of Parties - when global awareness on the importance of addressing GHG emissions from peatlands was raised – thus not generating perverse incentives whilst still allowing legitimate project activities into the VCS system.

[2] www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.htm

native ecosystems are not eligible under VCS AFOLU.[3] Biofuel crop production on rewetted peatland[4] shall use additional PRC guidance provided in each section.

A. Improved cropland management activities

Improved cropland management activities include the adoption of practices that demonstrably reduce net GHG emissions from a defined land area by increasing soil C stocks, reducing soil N_2O emissions, and/or reducing CH_4 emissions.[5]

- …
- Improved cropland management activities on peatland shall use the additional PRC guidance provided in each section.

B. Improved grassland management activities

These activities include the adoption of practices that increase soil C stocks and/or reduce N_2O and CH_4 emissions.

- ….
- Improved grassland management on peatland shall use the additional PRC guidance provided in each section.

C. Cropland and grassland land-use conversions

Cropland conversion to perennial grass vegetation is likely to be the dominant land use conversion for ALM projects. However, some grassland conversions to cropland production (e.g., introducing orchard crops or agroforestry practices on degraded pastures) could increase soil and biomass C stocks (thereby reducing net GHG emissions). Under such conditions, these conversion practices would also be considered eligible for project certification. However, projects converting grasslands must demonstrate that they do not harm local ecosystems as outlined in the general AFOLU guidance (see section "B. Community and/or environmental impacts of projects").

- …
- Conversion of drained, farmed organic (e.g., peat) soils[6] to perennial non-woody vegetation where there is substantial reduction or elimination of drainage is an eligible practice and shall use the PRC guidance provided in each section.

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[3] Biofuels derived from crops grown on drained peat soils invariably result in more emissions to the atmosphere than the use of the fossil fuels they replace (Couwenberg J, IMCG Newsletter 2007/3, 12-14).

[4] Although a number of biofuel crops require drainage, some forms of biomass production on peat - the so-called paludicultures - are compatible with rewetting and may even lead to peat accumulation in the long run. This activity is feasible with crops that grow on wet peatlands and that do not consume the peat body, such as reeds, sedges, alder and willow. The economic revenues of these activities may, in combination with carbon credit income, lead to viable land use options and stimulate peatland rewetting.

[5] Guidance relating to manure management is provided elsewhere in the VCS (i.e., outside of AFOLU scope).

Biofuel crop production activities are eligible for crediting under VCS AFOLU only to the extent that they generate measurable long-term increases in carbon stocks (above-ground, below-ground, and/or soil) or substantially reduce soil organic carbon losses.

Improved Forest Management (IFM)

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The following improved forest management practices, in upland forests and wetland forests (e.g. peat-swamps, mangroves, etc.) and planted forests (plantations), qualify as eligible activities under the VCS:

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4. **Conversion of low-productive forests to high-productive forests (LtHP)**, or improving the stocking of poorly stocked forests, can also increase the carbon stock. Low productivity forests usually satisfy one of the following conditions: they qualify as forest as defined by the host country, but do not contain much timber of commercial value; they are either degraded or in the process of degrading due to frequent disturbance (fire, animal grazing, fuelwood gathering, etc.); or they have a very slow growth rate or low crown cover. Project activities may include the introduction of other tree species with higher timber value or growth rate, the mitigation of disturbance events, the adoption of enrichment planting to increase the density of trees, and/or other forest management techniques (e.g., fertilization, liming) to increase carbon stocks. Drainage of peatland to increase forest productivity is not eligible under the VCS.

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Reduced Emissions from Deforestation and Degradation (REDD)

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Deforestation is generally considered to be the direct, human-induced conversion of forest land to non-forest land. Thus, the estimation of deforestation is affected by how 'forest' and 'non-forest' are defined. Forest definitions are myriad; however, common to most definitions are threshold parameters including minimum forest area, tree height and level of crown cover. Under the Kyoto Protocol, a "forest" is defined according to these three parameters as selected by the host country. To be eligible for VCS crediting, REDD project forests must meet internationally accepted definitions of what constitutes a forest, e.g., based on UNFCCC host-country thresholds or FAO definitions[7]. The definition of a forest may include mature forests, secondary forests[8], and degraded forests. Wetland forests (e.g., peat swamp forests or mangrove forests) are also eligible for crediting under VCS REDD, as long as they meet the forest definition requirements

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[6] 'Organic soils' refer to peat- or muck-derived soils with high organic matter content, and not to 'organically farmed' soils.

[7] See FAO Global Forest Resources Assessment 2000 Appendix 2 Terms and Definitions: http://www.fao.org/DOCREP/004/Y1997E/y1997e1m.htm#bm58

[8] For VCS purposes, secondary forests are forests that have been cleared and have recovered naturally or artificially, that are at least 10 years old and meet, or have the potential to meet, the lower bound of the forest threshold parameters at maturity.

mentioned above. VCS REDD projects involving peat forest shall additionally use the PRC guidance provided in each section.

…

Peatland Rewetting and Conservation (PRC)

A peatland is an area with a layer of naturally accumulated organic material (peat) of at least 30 cm in thickness at the surface (excluding the plant layer), which consists of at least 30% organic material by dry weight. Peat originates due to water saturation. Peat soil is either saturated with water for long periods or (artificially) drained.

As in REDD projects, most PRC projects avoid or reduce GHG emissions, as opposed to increasing GHG removals. Activities that generate net reductions of GHG emissions from peatland are eligible under the VCS as PRC projects or combined projects (such as REDD on peatland). Project activities that actively lower the water level are not eligible.

Three broad categories of activities are considered:

1. **Rewetting[9] (or reducing drainage depth) of drained[10] peatland (RDP)**

2. **Conservation of undrained non-forested peatland (CUP)**

3. **Combined categories: AFOLU activities carried out on peatland**

ARR, ALM, IFM, REDD may all exist on peatland, in combination with RDP or CUP (see below). For these AFOLU activities, the corresponding guidance applies and the soil organic carbon pool shall be considered following the additional guidance for PRC, unless deemed insignificant by project participants based on the *de minimis* rule of 5%. Projects where the emission reductions or GHG removals associated with the peat layer are deemed significant shall apply the corresponding VCS risk assessment tables.

The following sub-categories exist:

- ARR+RDP[11]
- ALM+RDP[12]
- IFM+RDP and IFM+CUP

[9] "Rewetting" implies the elevation of the average annual water table in drained peatland by partially or entirely reversing the existing drained state, resulting in reduced net GHG emissions.

[10] "Drained" means "having a lower than natural average annual water level due to accelerated water loss or decreased water supply resulting from human activities and constructions, both on- and/or off-site".

[11] Various tree species may grow under peat forming, wet conditions. Biomass carbon sequestration may exceed oxidative peat losses over timescales deemed permanent under the VCS standard.

[12] This is a valid option if the water table of agricultural peatland is raised to a level that can still support agriculture (e.g. paludiculture).

- REDD+RDP and REDD+CUP

The following table identifies baseline scenarios and project interventions that are eligible under the VCS as PRC activities and the applicable VCS guidance for each project type.

BASELINE	PROJECT ACTIVITY	APPLICABLE VCS GUIDANCE
Already drained peatland		
Non forested	Rewetting *+ conversion to forest/ revegetation* *+ paludiculture/ erosion avoidance*	RDP + ARR + ALM
Forested *+ deforestation* *+ degradation*	Rewetting *+ avoided deforestation* *+ improved forest management*	RDP + REDD + IFM
Drainage of peatland		
Non-forested	Avoided drainage	CUP
Forested *+ deforestation* *+ degradation*	Avoided drainage *+ avoided deforestation* *+ improved forest management*	CUP + REDD + IFM

The restoration of conditions for peat accumulation requires high and stable water levels over the long-term and the presence of vegetation that may produce peat. Carbon sequestration rates resulting from rewetting drained peatland tend to be low compared to emissions avoided. Carbon sequestration in peat through restoration is therefore considered to have a relatively small contribution to GHG mitigation in PRC projects. In addition, while methods exist to monitor small changes in peat carbon stocks, their application at project scales is likely not to be cost effective or practical. Carbon sequestration from restoring peat forming conditions is therefore not elaborated as a separate activity type, however, should a credible methodology be developed and approved for monitoring such practice, it is an eligible activity under VCS.

A distinct positive relationship exists between N fertilization and N_2O emissions from peatland. Furthermore, increased N supply may lead to increased peat decomposition. However, because reliable onsite monitoring of both N_2O emission changes, as well as the quantity and timing of N input (from artificial fertilizer and manure from grazing animals) is complicated and challenging to verify, reducing emissions from N fertilization on peatland is not eligible for crediting under the VCS.

A. Rewetting of Drained Peatland (RDP)

A clear relationship between GHG emissions and water levels has been established in the literature (Couwenberg *et al*. 2010) with most changes occurring at water levels close to the surface. Rewetting in PRC projects (or AFOLU projects with a PRC component) does not require the restoration of the average water table to the level of the peat surface, However, the VCS envisages RDP projects that raise water levels to close to the surface in order to generate GHG benefits. The project may implement measures that establish a higher water table compared to the baseline scenario, and cause the rate of peat subsidence due to oxidation to decrease or cease within the project period, observing the permanence requirements outlined in Step 6.

As fire reduction activities in drained[13] peatland are not likely to be effective without rewetting, fire-related emissions reduction projects excluding rewetting as part of their interventions are not eligible under the VCS.

Peatland rewetting projects explicitly addressing the frequency and intensity of anthropogenic peatland fires[14] have the option of using a default value ('fire premium') for reduced emissions from peat fires equal to **25% of the reduced emissions from peat oxidation**. A project will only be eligible to apply this default value if:

a. Over the 10-year period ending 5 years[15] before the project start date, the cumulative area burned exceeded 50% of the project area (including repeated burning of the same area); and,

b. The fire management plan proposed by the project proponent at validation reflects the best practices available and takes into account specific project circumstances; and,

c. At each verification documentation is provided demonstrating that fire management activities have been implemented according to the proposed plan.

If project proponents want to claim greater reductions from fire management, they may apply IPCC GPG 2006 Tier-3 methods, as further outlined in the VCS guidance for baseline setting in Step 4.

[13] 'Drained' is defined as "having a lower average annual water level due to accelerated water loss or decreased water supply resulting from human activities and constructions, both on- and off-site." Also, selectively logged peat swamp forests in SE Asia are drained in line with this definition if there are logging canals, which is generally the case.

[14] For the purpose of this guidance, "anthropogenic peatland fires" are exclusively those occurring in drained peatlands. VCS PRC Guidelines may be amended in the future to include activities that stop repeated direct human induced fires (i.e., fires that are repeatedly and purposefully ignited, such as for vegetation control in UK blanket bogs) in undrained peatlands, if the practice becomes well-documented and credible approaches for accounting for such activities are developed. In the case of indirect human induced fires in undrained peatland, credible baseline setting, monitoring and verification are deemed untenable given the current state of knowledge.

[15] This is to avoid situations where anticipated project sites are burnt with the purpose to demonstrate eligibility to use the default value.

B. Conservation of Undrained Peatland (CUP)

Peatland drainage can be planned (designated and sanctioned) or unplanned (unsanctioned), as in the case of deforestation (see REDD guidance). Planned and unplanned drainage of peatland can therefore encompass a wide variety of activities such as those listed under REDD while adding a peatland drainage component.

Avoiding peatland drainage can affect emissions and removals of GHGs in several ways:

- By avoiding increased CO_2 emission from peat oxidation
- By avoiding increased fire incidence
- By enabling carbon sequestration through peat accumulation

Activities covered under the CUP project category are those that are designed to stop or reduce planned or unplanned drainage in the project area and in areas that are hydrologically connected to it.

If the project intends to maintain the pre-project drainage level, requiring the maintenance of drainage channels (i.e., periodic deepening upon peat subsidence), it is not eligible under the VCS.

The following CUP practices qualify as eligible activities under the VCS:

- Avoiding planned peatland drainage (APPD): Reduces GHG emissions by avoiding drainage of undrained peatlands that are legally authorized and documented to be planned for conversion to drained land. APPD project proponents must provide the verifier with evidence showing that the project area was planned to be converted.
- Avoiding unplanned peatland drainage (AUPD): Reduces GHG emissions by avoiding drainage of pristine peatland at the drainage frontier that has been expanding historically, or will expand in the future, as a result of improved access, often through construction of roads or canals. Because of hydrological connectivity and consequent verification problems, AUPD is not eligible in case of mosaic pattern peatland encroachment (cf. VCS REDD).

C. Combined activities: AFOLU activities carried out on peatland

Rewetting of drained peatland can occur without further conversion of land use (RDP) or it can occur together with ARR (e.g., by planting Alder or many other adapted tree or shrub species), ALM (e.g. 'paludiculture[16]'), IFM or REDD, referred to as ARR+RDP, ALM+RDP, IFM+RDP or REDD+RDP, respectively.

[16] Paludiculture (lat. 'palus' for swamp) is the cultivation of biomass on undrained (incl. rewetted) peatland. The peatland must be sufficiently wet so as to avoid long-term net peat losses.

Conservation of undrained peatland can happen on non-forest land (CUP) or occur together with REDD or IFM (referred to as REDD+CUP, or IFM+CUP, respectively). In these cases, the REDD or IFM guidance together with the CUP guidance apply.

The following activities reduce net GHG emissions from drained peatland by combining rewetting or avoidance of drainage with AFOLU activities. The guidance for ARR, ALM, IFM and REDD shall be applied in conjunction with the guidance for rewetting or avoidance of peatland drainage.

ARR on peatland (ARR+RDP)

While existing oxidation in drained conditions is accounted for in the baseline, AFOLU activities must not enhance peat oxidation. This requires at least some degree of rewetting. ARR+RDP on already drained peatland without full rewetting can be accepted in cases where the biomass carbon stock increases more than the peat carbon stock decreases by oxidation over a period of centuries[17,18]. ARR activities that require active peatland drainage-- lowering the water level-- (including harvesting, when it implies drainage[19]) are not eligible under the VCS, as they are likely to enhance net GHG emissions.

ALM on peatland (ALM+RDP)

Under the VCS, project activities that involve regular tillage and/or N fertilization on peat soil or that actively lower the water level in peatlands are not eligible. The following ALM+RDP practices qualify as eligible activities under the VCS:

- Rewetting of peatland combined with adapted wet agriculture ('paludiculture'). This may involve both reducing emissions from the peat itself as well as from substituting fossil fuels with, for example, renewable biomass cultivated on the rewetted peatland. If the latter is claimed, the project proponent must demonstrate that such substitution will take place.[20]

- Reducing peat erosion due to overgrazing and high-intensity use on sloping peatland.[21,22] Activities to reduce soil organic carbon losses include reducing gully erosion, stopping overgrazing, and active revegetation.

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[17] Laine, J. & Minkkinen, K. 1996. Forest drainage and the greenhouse effect. In: Vasander, H. (Ed.) Peatlands in Finland. Finnish Peatland Society, Helsinki, pp. 159-164.

[18] See also the permanence requirements of PRC projects in Step 6.

[19] Wood harvesting in tropical swamp forests supported by drainage may increase CO_2 emissions. Wood harvesting as such (also without drainage) may cause additional GHG fluxes. Wood harvesting in tropical swamp forests can result in changes to the quality and quantity of organic matter inputs from vegetation, a decline in net peat accumulation (Brady 1997), and an increase in soil surface temperatures and peat decomposition (Brady 2004). Substantial wood harvesting may destroy the ability of vegetation to act as a major hydrological regulation device to maintain adequate hydrological conditions for sustaining the peat body (Dommain *et al.* 2010). Where selective logging is combined with artificial drainage, decomposition and subsidence of the peat may proceed at annual rates of 3.5–6.0 cm (Brady 1997), which will be accompanied by an increase in CO_2 release.

[20] Merely lowering the intensity of land use does not necessarily lead to a reduction of GHG emissions: low input grasslands on peat soil may emit just as much CO2 as high input grasslands

[21] In many steppe and mountain regions with a dry climate, but also in cold/humid regions ("blanket bogs"), peatlands are the most productive and attractive, or the only available lands for grazing. Overgrazing in such a situation frequently leads to vegetation damage and peat soil degradation. Burrowing small mammals that colonize the degraded peat may additionally stimulate peat oxidation.

- Reducing wind erosion due to devegetation or sparse vegetation (overgrazing, soil degradation, croplands). In cases of reducing soil erosion, emissions may conservatively be calculated by assuming that all the eroded peat substance is oxidized to CO_2.

IFM and REDD on peatland (IFM+RDP, IFM+CUP, REDD+RDP and REDD+CUP)

When peatland has been drained for deforestation or degradation, the loss of carbon from the forest is accompanied by the GHG fluxes resulting from drainage, and the latter may be accounted for by following the PRC guidance. Even in the absence of direct drainage by ditches or canals, deforestation may still lead to peat oxidation (e.g., by increased sunlight on the forest floor, by disturbance of the natural hydrological system of the peat surface, and by removal of tree biomass necessary to keep water levels in tropical peat swamps high). However, given the current limited state of knowledge regarding baseline emissions from peat oxidation caused by deforestation (rather than drainage), such baseline GHG emissions shall not be included under the VCS.

A REDD project activity on forested peatland may not increase drainage. With respect to the forest biomass component, the guidance provided for IFM or REDD applies.

D. Avoided Peat Mining (APM)

Peat may be used as fuel, soil improver or horticultural substrate. Due to the existence of extensive local, regional and global markets, projects that avoid peat mining are likely to suffer significant (and potentially 100%) leakage emissions and are therefore not eligible. Project activities that serve the demand side by providing alternatives for peat as fuel or substrate may generate emission reductions, but are outside the scope of VCS AFOLU.

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Step 2 of the "Tool for Methodological Issues": determine the project boundary

For the sake of brevity, the text from Step 2 of the Tool for Methodological Issues has not been repeated here.

Guidance:

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Eligible gases: Projects must account for any significant sources (sinks are optional) of carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4) that are reasonably attributable to project activities. As outlined in Step 3.10 of the Tool for Methodological Issues, certain GHG sources may be considered "insignificant" and do not have to be accounted for. Other GHG sources may be considered "insignificant" and do not have to be accounted for if together such omitted

[22] Peatland erosion may lead to an increased emission of dissolved organic carbon (DOC) and particulate organic carbon (POC), causing increased (offsite) emissions of CO_2 and CH_4 (when deposited in wet depressions, ponds and streams).

decreases in carbon pools and increases in GHG emissions amount to less than 5 percent of the total CO_2e benefits generated by the project.[23] Emissions of N_2O shall be accounted for in ALM projects, unless insignificant, if any nitrogen fertilizer and/or manure is applied, or N-fixing species are planted, during the crediting period. In PRC project activities, reducing N_2O emission is not eligible for crediting under the VCS.

Carbon pools*:* VCS projects should consider the following five carbon pools: above-ground biomass, below-ground biomass, dead wood, litter and soil carbon (including peat). Activities that reduce the harvest of timber may also reduce the production of long-lived wood products. Therefore, accounting for the change in wood products must be included to avoid overestimating the net GHG benefit of the project. The IPCC 2003 Good Practice Guidance for greenhouse gas inventories[24] sets a precedent for including this pool if it changes. The IFM section that follows also provides guidance concerning how to include wood products as a carbon pool. Pools can be omitted if their exclusion leads to conservative estimates of the number of carbon credits generated.[25]

Step 3 of the "Tool for Methodological Issues": determine the carbon pools

The carbon pools that shall be accounted for are listed in Table 1 below.

Emissions of N_2O shall also be accounted for in ALM projects, unless insignificant, if any nitrogen fertilizer and/or manure is applied, or N-fixing species planted, during the crediting period.

Guidance:

REDD

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Soil carbon need not be included if the planned or unplanned conversion was to pasture grasses or other perennial crops given that the body of scientific evidence shows such conversions of tropical forests do not significantly decrease soil carbon stocks. However, conversion of forests to annual crops can cause a large decrease in soil carbon stocks, so the project developer may find it advantageous to include this in their methodology, though as indicated in the table below it is an optional pool. For wetland forests on peat soils, inclusion of soil carbon is warranted as large emissions of CO_2 can result if the land is drained during deforestation/degradation and rapid oxidation of the peat occurs. In such cases, the PRC guidance shall be used.

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[23] The following EB tool can be used to test the significance of emissions sources - http://cdm.unfccc.int/EB/031/eb31_repan16.pdf

[24] Winjum, J. K., S. Brown, and B. Schlamadinger. 1998. Forest harvests and wood products: sources and sinks of atmospheric carbon dioxide. Forest Science 44:272-284; and Lim, B., S. Brown, and B. Schlamadinger. 1999. Carbon accounting for forest harvesting and wood products: a review and evaluation of possible approaches. Environmental Science and Policy 2: 207-216; Also see Chapter 12, IPCC Guidelines for National GHG Inventories, 2006.

[25] See, for example, the A/R CDM tool for the conservative exclusion of soil organic carbon http://cdm.unfccc.int/EB/033/eb33_repan15.pdf

PRC

An important carbon pool in PRC projects is soil organic carbon (SOC) in the peat layer. As this carbon may give rise to CH_4 emissions, the estimation of GHG benefits from PRC projects shall not solely be based on carbon stock changes as proxy for GHG emissions, unless it can be demonstrated that CH_4 emissions do not occur at significant levels. Transient peaks of CH_4 emissions after rewetting shall be addressed by adequate monitoring methodologies and in the project description. Furthermore, any assessment of soil organic carbon stock changes under PRC must consider the entire depth of the peat layer (e.g., by using subsidence poles fixed to the mineral subsoil) and may not be restricted to a layer that is thinner than the total peat depth.

For carbon accounting, carbon pools that when summed – as a result of project activities – show a net increase in emissions or a net decrease in carbon stock below a threshold of 5% of total emission reductions or removals by sinks need not be accounted for. For all other carbon pools, changes resulting from project activities shall be estimated in both the baseline and project case.[26] The same applies when accounting for GHG emissions by sources. Combined projects (ARR+RDP, ALM+RDP, IFM+RDP, IFM+CUP, REDD+RDP and REDD+CUP) shall follow the PRC guidance in addition to the ARR, ALM, IFM or REDD guidance.

Step 4 of the "Tool for Methodological Issues": establish a project baseline

For the sake of brevity, the text from Step 4 of the Tool for Methodological Issues has not been repeated here.

Guidance:

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PRC projects shall estimate their baseline GHG emissions through a three-step process consisting of:

1) Determining the peat depletion time (the time during which emissions would occur in the baseline until the peat has disappeared due to gradual oxidation or other losses) within the project boundary based on peat depth maps, water levels and associated CO_2 emissions and subsidence rates.

2) Projecting water levels or any other justifiable proxy of GHG emissions throughout the crediting period.

3) Estimating net baseline GHG emissions during the crediting period, which include those associated with the projected water levels or any other justifiable proxy of GHG emissions, plus emissions from other activities such as biomass loss or fires, as well as

[26] For VCS AFOLU projects, GHG sources that account for less than 5% of the total CO_2-eq generated by the project are considered "insignificant." The following CDM EB tool can be used to test the significance of emissions sources: http://cdm.unfccc.int/EB/031/eb31_repan16.pdf

carbon sequestration, where applicable. Emissions of CH_4 from drained peatlands are negligible and can conservatively be neglected in the baseline.

PRC projects shall consider peat depth and oxidation rate within the project boundary in such a way that no emissions reductions may be claimed for a given area of peatland for longer than the time it would have taken for the peat to be completely lost under baseline conditions. To this end, a conservative peat depletion time may be estimated based, for instance, on the relationship between water level and subsidence[27], considering peat depths in the project area. RDP projects comprising a peat fire reduction component shall deduct the amount of peat assumed to burn when estimating peat depletion times.[28]

RDP: When establishing a baseline for a rewetting project, emissions shall be estimated based on the current and historic layout of the drainage system and the long-term (e.g. 30-year) average climate variables influencing water levels prior to project start.

Rewetting projects shall also consider non-human induced rewetting brought about by 1) collapsing dikes, closing ditches, or animal activities (e.g., beavers), and 2) progressive subsidence, leading to raising relative water levels, increasingly thinner aerobic layers, and reduced CO_2 emission rates. Baseline emissions shall be estimated conservatively, considering, where there is no clear indication that the water level would remain constant or would be lowered, that the water level in the project area would rise during the crediting period due to any or all of the aforementioned causes.

CUP: When establishing a baseline for a project avoiding unplanned peat drainage (AUPD), project proponents shall use a reference period of at least 10 years for modeling a spatial trend in drainage, taking into account the most recent available long-term (e.g., 30-year) average weather, and the observed drainage practices (e.g., canal width, depth, length, maintenance).

In the case of avoiding planned peatland drainage projects (APPD), project documentation must demonstrate that the land would have been drained if not for the APPD project. The project proponent must provide verifiable evidence to demonstrate that, based on government-planned (for publicly owned and managed land), community-planned (for publicly owned and community-managed land), concession-holder planned (for publicly owned and concession holder managed) or landowner-planned (for privately owned land) land use changes, the project area was intended to be drained. The annual rate of drainage shall be based on the common practice in the area – that is, how much peatland is typically drained each year by similar baseline activities.

RDP and CUP: CO_2 emissions associated with baseline conditions may be estimated through alternatives to direct on-site gas flux measurements, such as through well-documented relationships between CO_2 emissions and other variables such as vegetation types, water level[29]

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[27] For instance, by using the peat depletion water level relationship of 0.9 cm a^{-1} for tropical peatlands, 0.6 cm for subtropical peatlands, and 0.4 cm for temperate peatlands for each 10 cm of additional drainage depth (Couwenberg *et al.* 2010)

[28] If peat depletion times are estimated based only on oxidation rates due to drainage, the outcome would be a longer period than when first subtracting the amount of peat that is considered to burn in the baseline.

[29] Because of the dominant relationship, drainage depth can be used as a proxy for CO_2 emissions in the absence of better emission data. (Couwenberg *et al.* 2010)

or subsidence, or through remote sensing techniques that adequately assess and monitor soil moisture. Where relevant, the micro-topography of the project area (i.e., the proportion of hummocks and hollows, vegetation patterns) shall be taken into account. Emissions of CH_4 from drained peatland are negligible and can be conservatively neglected in the baseline.

Projects combining PRC and AFOLU activities: These shall use the relevant PRC guidance for the soil carbon pool and the respective AFOLU guidance for the other pools whilst estimating the baseline (e.g., REDD+CUP, ARR+RDP), unless the former may be deemed insignificant based on the *de minimis* rule of 5%.

Fire management: In case of a demonstrable threat of frequent on-site fires, and under the conditions outlined in the section on eligible AFOLU activities (PRC) above, RDP project proponents can claim credits (a 'fire premium') from emission reductions from anthropogenic fire to the amount of 25% of the reduced emissions from drainage-related peat oxidation per the requirements outlined in the RPD section above. The demonstration that the area is now, and in future will be, under risk of anthropogenic fires may be established through fire maps and historical databases on fires in the project area.

RDP projects in areas extremely prone to fire may also aim to obtain emission reductions over the 'fire premium' by performing a full assessment of the peat carbon loss due to fires in the baseline. The baseline shall be established in a conservative way and consider fire occurrence and intensity in the project region (e.g., through temperature and precipitation data, cf. El Niño activity). The estimated carbon loss shall be expressed in CO_2 equivalents and may be calculated using fire depth and volumetric organic carbon content[30] of the peat and assuming all carbon is lost to the atmosphere in the form of CO_2.[31] Fire events with a recurrence period exceeding the project lifetime shall not be included in the ex-ante baseline assessment to avoid inflating baseline emissions. The baseline shall be revised at least once every ten years, based on information on the actual damage by the fires experienced outside the project area in the region where the project is located. In case of fire management projects (i.e., using the 'fire premium' or applying Tier-3 approaches) project participants shall avoid double counting by deducting the baseline emissions from fire whilst estimating peat depletion times.

Rewetting projects including fire reduction activities, applying either the 'fire premium' or Tier-3 methods, shall follow the VCS guidance for REDD, if land use changes are identified as the cause (or one of the causes) of fires in the project region.

For all PRC project activities, project proponents shall reassess the project baseline at least once every 10 years, and have it validated at the same time as the next VCS verification, for the same reasons as outlined under REDD.

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[30] Volumetric carbon content equals bulk density of the organic material (dry mass per unit wet peat [g cm^{-3}]) × carbon content of the organic material [g g^{-1}].

[31] Emissions from peat fires include CO, CH_4, N_2O, NO_x, volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) as well as black carbon (soot). Neglecting CH_4 and N_2O emissions clearly results in a conservative estimate of effective radiative forcing. The same applies to non-Kyoto gases and compounds such as CO, NO_x and soot. The fraction of carbon emitted in the form of VOCs and PAHs is negligible (Muraleedharan *et al.* 2000). Accounting CO as if it were CO_2 is an allowed approximation under a conservative approach as the residence time of CO in the atmosphere is low (some months) and CO is a (weak) direct and (strong) indirect greenhouse gas. (Source: Muraleedharan, T.R., Radojevic, M., Waugh, A., Caruana, A. (2000) Emissions from peat combustion of peat: an experimental study. Atmospheric Environment 34 (2000) 3033-3035.).

Step 5 of the "Tool for Methodological Issues": assess and manage leakage

For the sake of brevity, the text from Step 5 of the Tool for Methodological Issues has not been repeated here.

Guidance:

…

In the context of AFOLU projects, leakage is defined as any increase in greenhouse gas emissions that occurs outside a project's boundary (but within the same country[32]), but is measurable and attributable to the project activities. Leakage caused by market effects is not considered except for the case where timber or peat production is significantly affected (see guidance provided under IFM and PRC sections below, respectively).

…

Leakage in relation to **REDD**

...

If leakage prevention measures for any eligible REDD activity include tree planting, agricultural intensification, fertilization, increased peatland drainage, fodder production and/or other measures to enhance cropland and grazing land areas, then the increase in GHG emissions associated with these activities (e.g., CO_2 from machinery use and N_2O from fertilization of cropland) shall be estimated and subtracted from the project's net emissions reductions (subject to *de minimis* rule of 5%).

Leakage in relation to **PRC**

PRC project activities may be prone to leakage, particularly activity shifting, which implies the displacement of drainage activities and drainage-related activities (e.g., deforestation of forested peatlands) from the project area to outside the project area, leading to an increase in GHG emissions. Assessment and management of leakage for each of the PRC eligible activities is discussed below.

Projects involving rewetting of forested peatland are likely to reduce the productivity of the forest or make harvesting more difficult, which could lead to fewer forest products available (e.g., fuelwood, food) and thus result in leakage (i.e., emissions from logging and/or drainage elsewhere). The guidance for leakage in REDD project activities under the VCS shall be applied to deal with this type of leakage, accounting for, where applicable, the expected emissions from drainage. Likewise, if rewetting in the project area leads to higher water levels beyond the project boundary, the productivity of forest in these surrounding areas could decrease, or, nitrate in

[32] Following the CDM and VCS policy of not accounting for international leakage.

adjacent cropland soil may be converted into N_2O upon increase in soil moisture. Project proponents shall, therefore, demonstrate that higher water levels caused by the project will not lead to these effects outside the project area. Otherwise, the areas that could be affected shall be identified and the resulting leakage shall be quantified and accounted for.

Projects combining rewetting and AFOLU activities shall apply the above guidance along with the specific guidance for each project type.

Conservation of undrained peatland (CUP) can be on non-forest land or occur together with REDD or IFM (REDD+CUP or IFM+CUP, respectively). In the latter cases, the IFM or REDD guidance for leakage applies, together with the following provisions specific to CUP projects, according to which leakage shall be assessed and managed:

1. **Avoiding planned peatland drainage (APPD)**: Under this situation, displacement of baseline activities can be controlled and measured directly by monitoring the activities of the baseline deforestation agent(s) (i.e., the entity(ies) who were originally planning on deforesting the project area). These entities (including individuals, communities, private companies or local/national governments) may have ownership of, manage, or have legally sanctioned rights to use multiple parcels of forest land within the country that could be used to make up for the generation of goods and/or services lost through implementation of the carbon project. In such cases, the entity shall demonstrate to the VCS verifier that the management plans and/or land-use designations of the entity's lands have not materially changed as a result of the PRC project (e.g., designating new lands as concessions, draining pristine peatlands for agricultural production, or increasing fertilizer use to enhance agricultural yields) because such changes could lead to reductions in carbon stocks or increases in GHG emissions. At each verification documentation shall be provided covering the entity's other lands where leakage could occur, including, as a minimum, their location(s), existing land use(s), and management plans. Any leakage identified shall be quantified and subtracted from the net carbon benefits claimed by the project.

2. **Avoiding unplanned peatland drainage (AUPD)**: The project proponent shall identify leakage potential and address the socio-economic factors that drive peatland draining. Activities that sustainably reduce drainage may include, for instance, the establishment of: agricultural practices on wet peatland (paludiculture) and sustainable collection of wet peatland products.[33] Developers of AUPD projects shall design and implement activities to minimize leakage, and monitor and account for leakage using approved methodologies.

If leakage prevention measures for any eligible CUP activity include tree planting, agricultural intensification, fertilization, deforestation, fodder production and/or other measures to enhance cropland and grazing land areas, then the increase in GHG emissions associated with these activities shall be estimated and subtracted from the project's net emissions reductions (subject to

[33] These mitigating activities can be supplemented by providing economic opportunities for local communities that encourage protection, such as employment as protected-area guards or ecotourism guides, or by training in sustainable peatland use and assisting communities securing markets for peat forest products.

the *de minimis* rule of 5%).

Rewetting projects including fire reduction activities, applying either the pre-determined estimate baseline emissions or Tier-3 methods, shall follow the guidance for REDD, if land use changes are identified as the cause (or one of the causes) of anthropogenic fires in the project region.

Step 6 of the "Tool for Methodological Issues": estimate and monitor net project greenhouse gas benefits

For the sake of brevity, the text from Step 6 of the Tool for Methodological Issues has not been repeated here.

Guidance:

Estimating net emissions reductions and GHG removals.

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ARR

….

The (ex-ante) determination and quantification of the project scenario should follow the guidance provided by the IPCC or approved A/R CDM methodologies, accounting for specific project conditions. In general, it is recommended that national or regional biomass tables be used in calculations. Additionally, the project proponent should use the following guidance for quantifying specific carbon pools:

- ….

- Soil (non peat) – see IPCC 2006 GL for AFOLU, with the appropriate calculations for the amount of soil organic carbon in non-forest lands as mentioned from elsewhere in the same document.

…

PRC

PRC projects shall follow the general VCS guidance for estimating net GHG emissions reductions. In addition:

In the case of RDP and CUP projects, *ex-ante* project emissions may be estimated through hydrological modeling of proxies for GHG emissions after the implementation of project activities and applying the same approach to estimate GHG emissions as used for estimating the baseline. Proxies may include water levels, soil moisture, vegetation and other site parameters that have a well-documented relationship with GHG emissions. If considered in the baseline estimations, the micro topography of the project area must be taken into account. Monitoring may be carried out

by using similar proxies in sampling plots. Net emissions reductions must be calculated using the same methods as for the *ex-ante* estimates but using monitored data.

As long as drainage of peatland continues, there will be emissions eventually causing the peat to vanish. There may be projects not fully rewetting or not maintaining undrained conditions in conservation, thus allowing some degree of drainage. In such cases, peat depletion in the baseline should be expected to occur much sooner than in the project scenario. If, in the project case, after 100 years a significantly thicker peat layer has remained than in the baseline case, a significant climate benefit has been achieved. For project proponents – when not fully rewetting or not maintaining undrained conditions- to demonstrate that such benefit will be achieved by their project, they shall estimate -*ex ante* and based on verifiable assumptions- the remaining peat carbon stock in both the baseline and project scenario in a 100-year timeframe (t_{100}), taking into account uncertainties in modelling. The difference between project and baseline at t_{100} is the maximum quantity of emission reductions that may be claimed. Projects unable to establish and demonstrate a significant difference in peat carbon stocks between the baseline and project for at least 100 years are not eligible.

As rewetting may involve initial high peaks of methane emissions, RDP projects shall explicitly address these "transient dynamics" by:

- Implementing credible methods to prevent such peak emissions (e.g. by site selection, biomass removal (e.g. for bioenergy), or gradual water level change); or
- Accounting for these emissions.

Regarding emissions of CH_4 in RDP, the project scenario shall explicitly addresses small-scale spatial and temporal differences in site conditions (including water level and plant species composition.[34]

In addition to the above guidance, PRC projects with AFOLU components shall apply the respective guidance by project type in order to estimate the project`s total net GHG benefits.

Peatland fire reduction projects claiming emission reductions above the 'fire premium' must use accepted methods (i.e., following IPCC´s 2006 GL Tier 3) based on monitored project GHG emissions from fire.

…

4) **Guidance to the Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination (hereafter referred to as "the Risk Tool")**

[34] Methane is formed from organic or gaseous carbon compounds by methanogenic archaea living in the anaerobic, water-saturated peat layers. A major part of the CH_4 formed originates from relatively labile carbon compounds brought to the anoxic peat layers by deep-rooted plants, such as sedges, or by leaching. In the upper, more oxic peat layers methanotrophic bacteria oxidize part of the CH_4 diffusing upwards to CO_2. Many wetland plants possess aerenchyma, porous tissue to provide the roots with oxygen. At sites where such plants dominate (sedge fens especially), much CH_4 is transported into the atmosphere via these plants' aerenchyma, thus avoiding the oxidative peat layers. (Strack, M. 2008. Peatlands and Climate Change, International Peat Society 2008, Couwenberg 2009; Couwenberg *et al*. 2010).

Sub-step 1a of the Risk Tool: conduct a risk assessment

Generic risk factors that shall be assessed for all AFOLU project types are listed in Table 1 [Not repeated here]

Guidance

Guidance on determining the appropriate overall risk level of a given project, based on major risk factors associated with specific project activities, is provided in table form in the five project sections (ARR, ALM, IFM, REDD and PRC). In addition to using the tabular guidance, assessors (whether the project proponent or verifier) may choose to apply the "risk likelihood × significance" risk assessment methodology outlined in Appendix A of the Risk Tool.

Sub-step 1b of the Risk Tool: Determination of the risk factors associated with the specific project types

For the sake of brevity, the text of the Risk Tool has not been repeated here.

…

Additional Guidance on PRC

Risks related to PRC projects are of a special character because the baseline in most cases represents a continuous and substantial GHG emission. In RDP projects, for example, this implies that every year that the peatland remains rewetted, a substantial reduction of GHG emissions is realized, which – certainly in case of thick peats – is not immediately reversed if the previous drainage situation temporarily returns. This attenuates the non-permanence risk of PRC projects in comparison with REDD projects and justifies lower risk ratings.

Hydrological connectivity is a particular trait of PRC projects that represents a potential non-permanence risk, especially when project participants do not have control over the whole catchment in which the project area is located. Consequently, the likeliness of drainage in the areas hydrologically connected to the project during the crediting period must be considered when assessing the non-permanence risks of PRC projects. For instance, peatlands in the tropics are subject to heavy pressure from land development for palm oil and pulpwood, making projects relatively vulnerable to changes in economic returns that may tempt land managers to abandon the GHG mitigating practice.

ARR+RDP, ALM+RDP, IFM+RDP, IFM+CUP, REDD+RDP and REDD+CUP shall apply the corresponding VCS risk assessment tables. If any of the two components qualifies as "fail", the project will not be accepted under the VCS. The buffer withholdings pertaining to the ARR, IFM or REDD activity must be estimated separately from the peat-related activity. The buffer is applied to each respective project activity's net carbon stock change within the project boundary.

Glossary

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Agriculture, Forestry and Other Land Use (AFOLU)

This includes activities related to:

- Afforestation, Reforestation and Revegetation (ARR)
- Agricultural Land Management (ALM)
- Improved Forest Management (IFM)
- Reduced Emissions from Deforestation and Degradation (REDD)
- Peatland Rewetting and Conservation (PRC)

...

Drained peatland

A peatland having a lower than natural average annual water level due to accelerated water loss or decreased water supply resulting from human activities and constructions, both on- and off-site.

...

Peatland

Peatlands are a subset of the FAO class of histosols (or: organic soils). The FAO (2006/7) definition of organic soil (histosol) is complex; it refers to thickness of soil layers and organic content in relation to their origin, underlying material, clay content and water saturation. The FAO approach to soil classification focuses on agricultural production, not on greenhouse gas emissions.

Under the VCS PRC, a peatland is an area with a layer of naturally accumulated organic material (peat) of at least 30 cm in thickness at the surface (excluding the plant layer), which consists of at least 30% organic material by dry weight. Peat originates because of water saturation. Peat soil is either saturated with water for long periods or (artificially) drained.

Common names for (types of) peatland include mire, bog, fen, moor, muskeg, pocosin and peat swamp (forest).

...

Rewetting

Rewetting implies the elevation of the average annual water table in drained peatland by partially or entirely reversing the existing drained state.

...

Soil organic carbon

In mineral soils, this includes organic carbon in the soil to a specified depth chosen (and substantiated) by the project developer and applied consistently through the time series. Live fine roots (of less than the suggested diameter limit for belowground biomass) are included with soil organic matter where they cannot be distinguished from it empirically,

In organic soils, soil organic carbon encompasses the entire depth of the organic layer (i.e., up to the depth of the mineral substrate). In the case of peatland, this can be several metres.

...

Wetland

Land that is covered or saturated by water for all or part of the year (e.g., peatland). Wetlands (and peatlands) are cross-sector entities and although they represent a separate AFOLU category under IPCC guidelines (covering peat mining and flooded land), other AFOLU activities, including forest management as well as cropland and grazing land management and revegetation may occur on wetlands and in peatlands.

...

Acronyms

...

APM	Avoided Peat Mining
APPD	Avoided Planned Peatland Drainage
APPM	Avoided Planned Peatland Mining

...

AUPD	Avoided Unplanned Peatland Drainage
CDM	Clean Development Mechanism
CUP	Conservation of Undrained Peatland

...

PRC	Peatland Rewetting and Conservation
RDP	Rewetting of Drained Peatland

...

2.3 Updates to the *VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination*

Amended for the inclusion of PRC projects

Sub-step 1b: Determination of the risk factors associated with the specific project types

...

V. Peatland Rewetting and Conservation (PRC)

23. To assess RDP (Rewetting of Drained Peatland) and CUP (Conservation of Undrained Peatland) project risks, the risk ratings listed in Table 10 below shall be assigned.

24. Projects avoiding peat mining (APM) together with rewetting drained areas shall apply the ratings for RDP. Avoided peat mining projects in undrained peatlands shall apply the ratings for CUP (Avoided Planned Peatland Drainage – APPD).

25. Projects combining PRC and AFOLU activities where the emissions reduction or GHG removals associated with the peat layer are significant[35], shall apply the corresponding VCS risk assessment tables. To this end, the PRC and the AFOLU components shall be assessed separately. If any of the components is rated "fail" the project will not be accepted under the VCS.

26. Projects rated "high risk" across three or more of the risk criteria are not considered acceptable from an overall risk perspective, and are thus not eligible for VCS crediting.

Table 10: Risk factors applicable to PRC projects

Risk	RDP	CUP	
		AUPD	APPD
Ownership type and user rights of the project area			
Established NGO or conservation agency owner; or owner-operated private land; or publicly owned and managed land	Low	Low	Low
Publicly owned and community-managed or concession-holder managed land	Low	Low	Low
Privately owned land	Low	Low	Low
Uncertain land tenure	High	High	High
Overlapping claims or concessions	High	High	High
Hydrological connectivity with adjacent areas			
No robust agreement on water management exists with actors in significant part of hydrologically connected areas	Fail	Fail	Fail
Agreements exist with actors in areas hydrologically connected to the project area	Medium	Medium	Medium

[35] Subject to the *de minimis* rule of 5%.

Proven technology			
Technologies (e.g., dam construction and maintenance) proven (in practice or experiment) to result in successful long term carbon benefits	Low	Low	Low
Technologies not proven to result in successful long term emission reductions	High	Medium	Medium
Management capacity of project developer			
Project developer has proven capacity to design and successfully implement PRC and combined activities, or, project developer has limited experience in the design and implementation of activities but advisory team includes experts in peat dynamics	Low	Low	Low
Project developer has limited experience in the design and implementation of activities and no experts in peat dynamics are within advisory team	High	High	High
Future income			
Appropriate management plan, and financial analysis demonstrates that likely income stream(s) will finance future management activities (e.g., carbon finance to be used for project management, tending operations)	Low	Low	Low
Future costs and revenue stream(s) not documented	High	Medium	Medium
Future/current opportunity costs			
Alternative land uses in the project area and in areas hydrologically connected to it, and causing drainage, are unlikely to become attractive in the future	Low	Low	Low
Other land uses, causing drainage, are likely to become more attractive in the future	High	High	High
Other land uses, causing drainage, are likely to become more attractive in the future but the project demonstrates the ability to enforce restrictions on conversion.	Low	Low	Low
Endorsement of project by local population and local/national political establishment			
Endorsement given and not likely to change in the future	Low	Low	Low
Endorsement given but may be subject to change in the future	Medium	Medium	Medium
No endorsement given	High	High	High
Devastating fire potential			
Low fire return interval (> 10 years) in the project region	Low	Low	Low
Project is located in an extremely fire-prone region (fire return interval <10 years), with fire prevention measures in place	Medium	Medium	Medium
Project is located in an extremely fire-prone region (fire return interval <10 years), with no fire prevention measures	High	High	High
Incidence of severe droughts in the project region			
Infrequent (< 1 in 10 yrs)	Low	Low	Low

Frequent (> 1 in 10 yrs)	High	Medium	Medium
Illegal logging potential (if forest is present)			
Presence of illegal logging in the region			
…with forest guards in the project area	Low	Low	Low
…without forest guards in the project area	Medium	Medium	Medium

Table 11 below provides the default buffer withholding ranges for PRC projects associated with low, medium and high non-permanence risk classes. The required buffer withholding percentage shall be the maximum percentage in the buffer range for the determined risk class, unless justification for a lower withholding percentage can be demonstrated.

Table 11: Default buffer withholding percentages for PRC projects

PRC Risk Class	Buffer Range
High	30%-60%
Medium	15%-30%
Low	10%-15%