Verified Carbon Standard
A VERRA STANDARD

AFOLU Non-Permanence Risk Tool

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1 INTRODUCTION AND SCOPE

This tool provides the procedures for conducting the non-permanence risk analysis and buffer determination required for Agriculture Forestry and Other Land Use (AFOLU) projects. The tool sets out the requirements for project proponents, implementing partners and validation/verification bodies to assess risk and determine the appropriate risk rating.

The first version of the tool was developed by the VCS AFOLU Advisory Group in 2007 and 2008, which was composed of working groups of leading experts in each of the AFOLU project categories, and involved an extensive peer review process. In 2010, as part of VCS Program Version 3, the tool was revised and put out to public stakeholder consultation. After considerable public input and with oversight from the VCS AFOLU Steering Committee, the tool was revised by Verra. More than 25 independent reviewers, including preeminent risk experts, investors, NGO representatives and project developers, supported these efforts and provided detailed feedback during the evolution of the tool.

This document shall be updated from time-to-time and readers should ensure that they are using the most current version of the document.

1.1 Scope

1.1.1 This document sets out the procedures for conducting the non-permanence risk analysis to determine the non-permanence risk rating ("risk rating"), which shall be used to determine the number of buffer credits that an AFOLU project shall deposit into the AFOLU pooled buffer account (the procedure for deposit of buffer credits is set out in the VCS Program document *Registration and Issuance Process*). Risk ratings are based on an assessment of risk factors which are added together to determine the total risk rating, as set out in Section 2. This document and the AFOLU pooled buffer account are subject to periodic reconciliation and revision based on a review of existing AFOLU verification reports and an assessment of project performance, as set out in the *VCS Program Guide*.

1.1.2 In addition to the requirements set out in this document, AFOLU projects shall comply with all applicable VCS Program rules and requirements.

1.1.3 Project proponents shall clearly document and substantiate the risk analysis covering each risk factor applicable to the project. During the analysis, the validation/verification body shall evaluate the risk assessment undertaken by the project proponent and assess all data, rationales, assumptions, justifications and documentation provided by the project proponent to support the non-permanence risk rating.

1.1.4 Non-permanence risk analysis only needs to be applied to GHG removals or avoided emissions through carbon sinks. Project activities generating emissions reductions of N_2O, CH_4 or fossil-derived CO_2 are not subject to buffer withholding, since these GHG benefits cannot be reversed.

2 RISK ANALYSIS AND BUFFER DETERMINATION

2.1 Step 1: Risk Analysis

2.1.1 The potential transient and permanent losses in carbon stocks shall be assessed over a period of 100 years and be based on the conditions present and the information available at the time of the risk analysis, unless otherwise specified in Sections 2.2 to 2.4, to determine the appropriate risk rating. For example, projects with a project start date in the past, or projects analyzing risk at a subsequent verification event shall assess the potential transient and permanent losses for the next 100 years based on the conditions present and available at the time of risk analysis.

2.1.2 The risk analysis shall be conducted as follows:

1) Risk factors are classified into three categories: internal risks, external risks and natural risks, and further into sub-categories such as project management, financial viability and community engagement. The project shall be evaluated against each of the risk factors in each category and sub-category as set out in Sections 2.2 (internal risks), 2.3 (external risks) and 2.4 (natural risks), assigned a risk score for each risk factor, and shall follow the calculation formulas in each table to determine the risk rating for the sub-category and category.

2) Where applicable, and where the project proponent demonstrates that related mitigation activities will be (at validation) or are being (at verification) applied, the risk rating for the sub-category will be reduced, as determined in Sections 2.2 to 2.4.

3) As set out in Sections 2.2 to 2.4, some sub-category tables allow the sub-category risk rating to be a number lower than zero, specifically where mitigation activities in the sub-category have the potential to reduce risks in other sub-categories. Where risk mitigation synergies do not exist, the tables set a minimum rating of zero, even in cases where the calculation would otherwise determine a rating lower than zero.

4) The total risk rating for each category (internal, external and natural) shall be determined by summing the ratings for each sub-category in the category. While some sub-categories may have negative values, the total rating for any category may not be less than zero.

5) Where a project is assessed as Fail for any risk factor, the project shall fail the entire risk analysis. Where the overall risk rating, or the summed risk rating for each category is unacceptably high, as set out in Section 2.5.3, the project shall fail the entire risk analysis. Where a project fails the risk assessment, it is not eligible for crediting until such time as

the project has adequately addressed the risk to the extent it would no longer be assessed as Fail.

6) An overall risk rating percentage shall be determined based on the ratings from each risk category as set out in Section 2.5.

2.1.3 Where risks are relevant to only a portion of the project geographic area, the geographic area may be divided. Where a project is divided into more than one geographic area for the purpose of risk analysis, a single overall risk rating shall be determined for each geographic area and the project's monitoring and verification reports shall list the overall risk rating for each area and the corresponding net change in the project's carbon stocks in the same area.

2.2 Internal Risks

2.2.1 Project management (PM) shall be assessed using Table 1, noting the following:

1) Each project management risk factor set out in Table 1 shall be assessed. Where a risk factor does not apply to the project, the score shall be zero for such factor.

2) Management teams are those responsible for day-to-day project management and the implementation of project activities. Management teams may be made up of the project proponent, the implementing partner (see the VCS Program document *Program Definitions* for definition of implementing partner) and/or carbon project development partners who have contractual commitments to support the activities of the project.

3) Evidence that species planted are adapted to the same or similar agro-ecological zone(s) in which the project is located may be demonstrated through: publications in scientific journals; technical reports from government agencies, NGOs or research groups; or, successful use over time by other projects registered under the VCS Program or an approved GHG program.

4) Ongoing enforcement refers to the need to protect carbon stocks in the project area from encroachment by outside actors; for example, where a REDD project faces risk from outside actors entering the project area for the purposes of illegal logging.

5) Adaptive management plans are those that identify, assess and create a mitigation plan for potential risks to the project, including those identified in this document, and any other obstacles to project implementation. They include a process for monitoring progress and documenting lessons learned or corrections that may be needed, and incorporating them into project decision-making in future monitoring periods. The onus is on the project proponent to demonstrate that such plans are in place, that such plans have considered the realm of potential risks and obstacles to the project, and that a system is in place for adapting to changing circumstances.

Table 1. Project Management

Project Management		
a)	Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located.	2
b)	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued.	2
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (i.e., any area of required experience is not covered by at least one individual with at least 5 years' experience in the area).	2
d)	Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area.	2
e)	**Mitigation:** Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (e.g., individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.	−2
f)	**Mitigation:** Adaptive management plan in place.	−2
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)] Total may be less than zero.		

2.2.2 Financial viability (FV) shall be assessed using Table 2, noting the following:

1) The financial viability of a project is based on 1) the number of years until cash flow breakeven is reached, and 2) the funding that has already been secured relative to what is needed to implement and operate the project until reaching the cash flow breakeven.

2) The cash flow breakeven point is the year in which the cumulative cash flow is positive (i.e., cash flow in exceeds cash flow out) and stays positive. Breakeven should be calculated on a cash flow basis based on generally accepted accounting principles. Cash flow in may include commercial revenue streams associated with the project, secured revenue and conservatively projected revenues from the sale of GHG credits, other funding sources such as donor funds, upfront investments, or carbon prepayments, equity or loans. Cash flow out shall include, at a minimum, project implementation costs, costs associated with GHG credit generation (e.g., validation, verification and registration), and, where applicable, interest expenses, repayment of loans or forward purchase agreements and any required equity distributions.

3) The percentage of needed funding secured shall be calculated by adding up all funding and revenue already secured and dividing this by the total cash out up to and including the year the project reaches breakeven.

4) Projects may demonstrate that funding has been secured through, for example, financial statements, bank records, executed commodity purchase agreements, executed emission reduction purchase agreements or other signed contractual agreements. Evidence shall be provided that agreement counterparties are in good financial standing, to demonstrate the ability to meet the financial obligations. Given execution uncertainties, options contracts shall not be counted as secured funding. When preparing the cash flow breakeven analysis, the assumptions on revenue from both carbon and other commercial sources (e.g., timber) must be conservative and clearly document the source, pricing assumptions, frequency of verification and other relevant variables.

5) Callable financial resources are those not included in secured funding, but that are readily available to the project. The availability of such resources may be indicated through letters of credit, revolving credit lines or other financial backing, as evidenced by signed agreements and which demonstrate the project's ability to access funding as needed.

Table 2: Financial Viability

Financial Viability		
a)	Project cash flow breakeven point is greater than 10 years from the current risk assessment	3
b)	Project cash flow breakeven point is greater than 7 and up to 10 years from the current risk assessment	2
c)	Project cash flow breakeven point greater than 4 and up to 7 years from the current risk assessment	1
d)	Project cash flow breakeven point is 4 years or less from the current risk assessment	0
e)	Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven	3
f)	Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven	2
g)	Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven	1
h)	Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven	0

i)	**Mitigation**: Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven	-2
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] Total may not be less than zero		

2.2.3 Opportunity cost (OC) shall be assessed using Table 3, noting the following:

1) Opportunity cost analysis shall be undertaken based on the alternative land uses identified in the project's additionality assessment (except where (1) applies). The onus is on the project proponent to demonstrate and substantiate what constitutes credible alternative land use scenarios within this area, and shall at a minimum include the activities identified in the baseline scenario. The opportunity cost analysis shall include a net present value (NPV) analysis, covering the project crediting period, of such alternatives as compared to the project, taking into consideration a conservative estimate of revenue from GHG credit sales and other project revenue streams, and potential price fluctuations of commodities impacted by the project. The financial discount rates used shall be based on published sources and represent the appropriate risk for the relevant land use scenario. Estimates of prices for GHG credit sales shall be based on published sources such as market intelligence reports. The analysis shall be undertaken in a transparent manner and shall provide all relevant assumptions, parameters, and data sources such that a reader may reproduce the analysis and determine the same results.

2) Where the majority of baseline activities over the length of the project crediting period are subsistence-driven, an NPV analysis is not required, but an assessment of the net impacts of the project on the social and economic well-being of the communities who derive livelihoods from the project area (see Section 0) shall be undertaken. Based on this assessment, the project shall be assigned an opportunity cost score as set out in Table 3.

3) A non-profit is an organization that does not distribute any surplus funds to owners or shareholders, but instead uses them to help pursue its goals, such as poverty alleviation, community development or biodiversity conservation. Governments and government agencies, although they may meet this definition, are not considered non-profit organizations for the purpose of this tool.

Table 3: Opportunity Cost

Opportunity Cost		
a)	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated	8
b)	NPV from the most profitable alternative land use activity is expected to be between 50% and up to100% more than from project activities	6
c)	NPV from the most profitable alternative land use activity is expected to be between 20% and up to 50% more than from project activities	4
d)	NPV from the most profitable alternative land use activity is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated	0
e)	NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity	-2
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	-4
g)	**Mitigation**: Project proponent is a non-profit organization	-2
h)	**Mitigation**: Project is protected by legally binding commitment (see Section 0) to continue management practices that protect the credited carbon stocks over the length of the project crediting period	-2
i)	**Mitigation**: Project is protected by legally binding commitment (see Section 0) to continue management practices that protect the credited carbon stocks over at least 100 years	-8
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)] Total may be less than 0		

2.2.4 Project longevity (PL) shall be assessed using Table 4, noting the following:

1) Project longevity is the number of years beginning from the project start date that project activities will be maintained, which may be longer than the project crediting period where projects can demonstrate that activities that maintain carbon stocks on which GHG credits have previously been issued will continue beyond the project crediting period. The project longevity score shall be determined by the formulae set out in Table 4.

2) Evidence shall be provided that project ownership (see the VCS Standard for specification with respect to project ownership) can be maintained for the entire project longevity (e.g.,

where control is secured through a concession that is shorter than the project longevity, such concession is renewable for the full longevity period being claimed).

3) For all AFOLU project types, the entire project longevity shall be covered by management and financial plans as submitted to local government or financial institutions, or otherwise made public, in which the intention to continue management practices is stated and planned for, and may include external evidence such as municipal land-use plans, institutional structures, or tools such as ecological-economic zoning.

4) For ARR and IFM projects with harvesting, project longevity may include the length of time the activities that maintain carbon stocks will continue, either through the continuation of the project activity or by replanting or re-growth of the trees after the last harvest in the project crediting period. Such commitment to continue the management practice, or to replant or allow re-growth shall be demonstrated through evidence such as certification of sustainable forest management under Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC) or other internationally recognized schemes, or contractual agreements for timber supply beyond the last harvest in the project crediting period. Re-growth may be considered only where project areas, after harvesting, will be managed for regeneration (naturally or with assistance), maintaining the current species mix and allowing trees to re-grow to an age equivalent to at least the age at which trees were harvested, as demonstrated in management plans.

5) Legal agreement or requirement to continue the management practice refers to any legally enforceable agreement or requirement, such as a conservation easement or protected area law that would require the continuation of the management practice that sequesters carbon or avoids emissions for the entire project longevity. In ARR and IFM projects with harvesting, where allowing re-growth of harvested areas is required by law, this may be demonstrated by citing the appropriate legal statute and common practice. Any project with a legally binding agreement that covers at least a 100-year period from the project start date shall be assigned a score of zero for project longevity.

6) Where AFOLU project longevity is less than 30 years, the project fails the risk assessment and it is not eligible for crediting.

Table 4: Project Longevity

Project Longevity		
a)	Without legal agreement or requirement to continue the management practice	= 24 - (project longevity/5)
b)	With legal agreement or requirement to continue the management practice	= 30 - (project longevity/2)
Total Project Longevity (PL) Total may not be less than zero		

2.2.5 The total risk rating for internal risk shall be determined using Table 5, noting that the total internal risk rating may take into account negative ratings from internal risk sub-categories, where such sub-categories note that the rating may be less than zero (i.e., project management and opportunity cost). The total internal risk rating, however, may not be less than zero.

Table 5: Total Internal Risk

Total Internal Risk	
Total Internal Risk (PM + FV + OC + PL) Total may not be less than zero.	

2.3 External Risks

2.3.1 Land and resource tenure (LT) shall be assessed using Table 6, noting the following:

1) The project proponent shall select the appropriate risk score for the land/resource access/use rights and the ownership situation applicable to the project.
2) Any additional withholding required for disputes over land/resource ownership or access/use rights shall be added to the risk score.
3) The mitigation discount may be subtracted where it can be demonstrated that such mitigation is in place.
4) Land and resource tenure refers to the systems of rights to lands, territories and resources, including obligations, rules, institutions and processes regulating ownership of, access to and use of land and associated resources. Tenure and resource rights may be synonymous with property rights and encompass full ownership as well as lesser usufructuary rights to use or have access to the project area and the resources within it, such as rights to fell timber or collect fallen branches.

5) Land may be government, community or privately owned. Ownership refers to a title or right that encompasses full control of the land in perpetuity, and may include the right to transfer or sell land or resource access/use rights.

6) A conservation easement is a permanent legally binding restriction voluntarily placed on an area of land to protect its associated resources, where project ownership and management is defined and transfers with any changes in ownership.

7) A protected area is a clearly defined area recognized, dedicated and managed through legal or other means to achieve the long-term conservation of nature with associated ecosystem services and cultural values, including national parks, nature reserves, wilderness areas, wildlife management areas and landscape protected areas, which may be managed by government, communities or other entities.

8) Project ownership shall be demonstrated as set out in the *VCS Standard*. In some cases, however, there may be overlapping rights, such as where customary rights overlap with legal ownership. Evidence shall be provided that due process has been undertaken to discover any disputes over ownership and land/resource access/usage rights, including to determine whether there are overlapping boundaries or competing claims on the land or resources that may place carbon stocks in pools included in the project boundary at risk of reversal. The onus is upon the project proponent to demonstrate such process has been undertaken, failing which the project shall fail the risk assessment and shall not be eligible. Evidence may include survey responses, correspondence with relevant land title agencies/departments or evidence that project has secured title insurance.

9) Where disputes exist over potential ownership, land/resource access/usage rights or where there are overlapping access/usage rights within the project area (including water usage rights that may affect the hydrology and/or sediment in WRC project areas, such as causing the water table in the project area to drop or otherwise impacting the hydrology of the project area, resulting in higher GHG emissions), the project proponent shall apply the risk scores listed in Table 6. It shall be demonstrated, in addition to the VCS Program requirements for project ownership, that the project has endorsement (such as a legal agreement or memorandum of understanding) from all entities with credible ownership claims or land/resource access/use rights (such as customary rights holders), including from formal and/or traditional authorities.

10) WRC projects are subject to upstream and sea impacts (e.g., changes in water and sediment flows, tidal processes or sea level rise), whether driven by natural processes or resulting from policy decisions that may undermine credits that have been issued. Unless demonstrated that such impacts on issued credits are irrelevant or expected to be insignificant within the next 10 years, or that there is a plan in place for effectively mitigating such impacts, WRC projects shall apply the risk score listed in Table 6 below. Note that WRC projects must also demonstrate that hydrologically connected areas adjacent to the project boundary shall not have a significant negative impact on the project area (see the *VCS Standard* for the full requirements).

Table 6: Land Tenure and Resource Access/Impacts

Land Tenure and Resource Access/Impacts		
a)	Ownership and resource access/use rights are held by same entity(s)	0
b)	Ownership and resource access/use rights are held by different entity(s) (e.g., land is government owned and the project proponent holds a lease or concession)	2
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership	10
d)	There exist disputes over access/use rights (or overlapping rights)	5
e)	WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts.	5
f)	**Mitigation**: Project area is protected by legally binding commitment (e.g., a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period	-2
g)	**Mitigation**: Where disputes over land tenure, ownership or access/use rights exist, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims	-2
Total Land Tenure (LT) as applicable, ((a or b) + c + d + e + f +g] Total may not be less than zero		

2.3.2 Community engagement (CE) shall be assessed using Table 7, noting the following:

1) Community engagement shall be assessed for projects where local populations, including those living within or surrounding the project area (given as within 20 km of the project boundary), are reliant on the project area, such as for essential food, fuel, fodder, medicines or building materials. Where local populations are not reliant on the project area, the risk is not relevant to the project and the risk rating for community engagement (CE) shall be zero. Evidence may include social assessments such as household surveys and participatory rural appraisals.

2) Households can be determined as consulted and involved in participatory planning where there have been direct meetings and planning with associations or community groups that are legally recognized to represent the households.

3) To achieve the mitigation credit, it shall be demonstrated that a current participatory assessment of the positive and negative impacts of the project activities on the local communities who derive livelihoods from the project area has been completed and

demonstrates net positive benefits on the social and economic well-being of these communities. A participatory assessment is considered current where it is completed at least five years prior to the risk analysis. Certification against the Climate, Community & Biodiversity (CCB) Standards or SOCIALCARBON Standard may be used to demonstrate that a project satisfies this mitigation requirement.

Table 7: Community Engagement

Community Engagement		
a)	Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	10
b)	Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted	5
c)	**Mitigation**: The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area	-5
Total Community Engagement (CE) [where applicable, (a + b + c)] Total may be less than zero		

2.3.3 Political risk (PC) shall be assessed using Table 8, noting the following:

1) A governance score (of between -2.5 and 2.5) shall be calculated from the mean of Governance Scores across the six indicators of the World Bank Institute's Worldwide Governance Indicators (WGI)[1], averaged over the most recent five years of available data. Governance scores shall be translated into risk scores as set out in Table 9.

2) The mitigation discount may be applied if any of the following applies:

   a) The country is receiving REDD+ Readiness funding from the World Bank Forest Carbon Partnership Facility, UN-REDD or other bilateral or multilateral donors, and is implementing a REDD+ policy framework covering key components such as GHG credit ownership, clear government authority over REDD+ projects and/or national measurement, reporting and verification systems.

   b) The country is participating in the CCBA/CARE REDD+ Social and Environmental Standards initiative.[2]

   c) The jurisdiction in which the project is located is participating in the Governors' Climate and Forest Taskforce (GCF).

[1] The World Bank Institute Worldwide Governance Indicators are available at: http://info.worldbank.org/governance/wgi/index.asp

[2] See www.climate-standards.org/redd+/

d) The country has an established national FSC or PEFC standards body.

e) The country has an established Designated National Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project.

Table 8: Political Risk

Political Risk		
a)	Governance score of less than -0.79	6
b)	Governance score of -0.79 to less than -0.32	4
c)	Governance score of -0.32 to less than 0.19	2
d)	Governance score of 0.19 to less than 0.82	1
e)	Governance score of 0.82 or higher	0
f)	**Mitigation**: Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3.	-2
Total Political (PC) [as applicable (a, b, c, d or e) + f)] Total may not be less than zero		

2.3.4 The total risk rating for external risk shall be determined using Table 9, noting that the total external risk rating may take into account negative ratings from external risk sub-categories, where such sub-categories note that the rating may be less than zero (i.e., Community Engagement). The total external risk rating, however, may not be less than zero.

Table 9: Total External Risk

External Risk	
Total External Risk (LT + CE + PC) Total may not be less than zero	

2.4 Natural Risks

2.4.1 Natural risks (NR) shall be assessed using Table 10, noting the following:

1) Natural risk is based on likelihood (i.e., the historical average number of times the event has occurred in the project area over the last 100 years) and significance (i.e., the average significance of each event). Any significant natural risk (i.e., a risk affecting more than 5%

of the project area) that has occurred over the past 100 years in the project area shall be considered applicable to the project. The frequency and significance of events shall be estimated based on historical records, probabilities, remote sensing data, peer-reviewed scientific literature and/or documented local knowledge, such as survey data in project areas, and may include projected climate change impacts. Where data are available for at least 20 years, but less than 100 years, projects shall conservatively extrapolate using available data. Where such data are not available for the project area, likelihood and significance shall be determined based on conservative estimates (i.e., not underestimating the possible frequency or severity) of historical events in the region in which the project is located.

2) The significance of natural risks shall be determined by the damage that the project would sustain if the event occurred, expressed as an estimated percentage of average carbon stocks in the project area that would be lost in a single event.

3) Mitigation of natural risk factors may be applied where evidence is provided that prevention measures are in place and/or the project has a proven history of effectively containing natural risk. Examples of mitigation/prevention measures include, inter alia, the following:

   a) Fire risk: Fuel removal, establishment of fire breaks and fire towers, and ready access to adequate fire-fighting equipment.

   b) Risk of pest/disease outbreaks: Planting of biodiverse species, selection of pest/disease resistant species, and co-planting of vegetation that inhibits pest infestation during the early growing period.

   c) Extreme weather risk: Planting of frost tolerant species in areas where winter frost is a risk, use of riparian zones or other buffers for flood or storm control and use of species tolerant for wet soil conditions where flooding risks exist.

   d) Other natural risks: Use of plant species tolerant of salinity fluctuations in estuarine wetlands.

4) Natural risk shall be assessed as follows:

   a) All natural risk factors applicable to the project shall be assessed using Table 10. AFOLU projects shall asses at a minimum fire, pest and disease outbreaks, extreme weather events such as hurricanes, and geological risk such as earthquakes and volcanoes. WRC projects shall also assess other natural risks such as changes in the seasonal timing and depth of the water table and, where applicable, wrack deposition in tidal wetlands from storm surges.

   b) Likelihood and significance (LS) and mitigation (M) (if any) shall be assessed for each risk factor identified as set out in the Likelihood and Significance and Mitigation tables below, and multiplied to determine the risk score for each natural risk applicable to the project (i.e., LS × M).

c) Based on the scores for each natural risk factor (i.e., fire (F), pest and disease outbreaks (PD), extreme weather (W) events, geological risk (G), and any other (ON) natural risks identified (use ON_1, ON_2, ON_X where multiple other risks are identified)), the total natural risk is determined by adding the totals for each risk factor (i.e., (F + PD + W + G + ON_X)).

Table 10: Natural Risks

Natural Risks					
Significance	**Likelihood**				
	Less than every 10 years	Every 10 to less than 25 years	Every 25 to less than 50 years	Every 50 to less than 100 years	Once every 100 years or more, or risk is not applicable to the project area
Catastrophic (70% or more loss of carbon stocks)	FAIL	30	20	5	0
Devastating (50% to less than 70% loss of carbon stocks)	30	20	5	2	0
Major (25% to less than 50% loss of carbon stocks)	20	5	2	1	0
Minor (5% to less than 25% loss of carbon stocks)	5	2	1	1	0
Insignificant (less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event)	2	1	1	0	0
No Loss	0	0	0	0	0
LS Score					
Mitigation					
Prevention measures applicable to the risk factor are implemented					0.50
Project proponent has proven history of effectively containing natural risk					0.50

Both of the above	0.25
None of the above	1
Score for each natural risk applicable to the project (determined by (LS × M))	
Fire (F)	
Pest and Disease Outbreaks (PD)	
Extreme Weather (W)	
Geological Risk (G)	
Other natural risk (ON)	
Total Natural Risk (as applicable, F + PD + W + G + ON)	

2.5 Step 2: Overall Non-Permanence Risk Rating and Buffer Determination

2.5.1 The overall non-permanence risk rating shall be determined using Table 11, noting that the overall risk rating shall be rounded up to the nearest whole percentage.

Table 11: Overall Risk Rating

Risk Category		Rating
a)	Internal Risk (from Table 5)	
b)	External Risk (from Table 9)	
c)	Natural Risk (from Table 10)	
Overall risk rating (a + b + c)		

2.5.2 The minimum risk rating shall be 10, regardless of the risk rating calculated using Table 11.

2.5.3 Where the overall risk rating is greater than 60, project risk is deemed unacceptably high and the project fails the entire risk analysis. It shall not be eligible for crediting until such time as risks are adequately addressed or sufficient mitigation measures are implemented such that the project would no longer be assessed as Fail. Further, where the sum of risk ratings for any risk category is greater than the following thresholds, the project fails the entire risk analysis and shall not be eligible for crediting (again, until no longer assessed as Fail):

1) Internal risk: 35
2) External risk: 20
3) Natural risk: 35

2.5.4 To determine the number of buffer credits that shall be deposited in the AFOLU pooled buffer account, the overall risk rating shall be converted to a percentage (e.g., an overall risk rating of 35 converts to 35%). This percentage shall be multiplied by the net change in the project's carbon stocks (stated in the verification report), as set out in the VCS Program document *Registration and Issuance Process*. Where a project is divided into more than one geographic area for the purpose of risk analysis, the overall risk rating percentage for each area shall be multiplied by the net change in the project's carbon stocks (stated in the verification report) in such geographic area.

2.5.5 Buffer credits shall be deposited in the AFOLU pooled buffer account in accordance with the procedures set out in VCS Program document *Registration and Issuance Process*. The rules and requirements for the release and cancellation of buffer credits from the AFOLU pooled buffer account are set out in the same document.

APPENDIX 1: DOCUMENT HISTORY

Version	Date	Comment
v4.0	19 Sep 2019	Initial version released under *VCS Version 4.*

VERRA

Standards for a Sustainable Future

Verified Carbon Standard

Climate, Community & Biodiversity Standards

Sustainable Development Verified Impact Standard