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Carbon Standards for Natural Climate Solutions (NCS) Credits

We must act now to stay within 1.5°C of global warming and avoid catastrophic climate change by drastically reducing our emissions this decade and reaching net zero by 2050.[1]

A key part of this effort lies in decarbonizing the Agriculture, Food and Other Land Use (AFOLU) sector, which accounts for approximately 22% of all global greenhouse gas (GHG) emissions at present.[2] For this purpose, nature-based solutions addressing climate change – or Natural Climate Solutions (NCS) – are the best-understood and most cost-effective approaches available.[3]

NCS activities include a number of crucial climate mitigation interventions highlighted in the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, such as the conservation, improved management, and restoration of forests and other ecosystems as well as improved and sustainable crop and livestock management.[4] Corporate support for these actions, from direct finance to capacity building, can play a pivotal role in addressing nature loss and inequality while accelerating the transition to Net Zero.

The objective of this brief is to outline the role of NCS carbon credits and the organizations ("standards") that certify them, present the criteria commonly used to assess their integrity and provide high-level information on specific standards in the form of factsheets. Standards are a vital tool in selecting high integrity NCS, and understanding them is critical as companies consider using NCS credits.

Using NCS credits: insetting and Beyond Value Chain Mitigation

NCS typically address climate change by reducing emissions already taking place (termed "reductions") or by removing greenhouse gases from the atmosphere ("removals"). Reductions and/or removals can be verified by an independent third party – a "carbon standard" – that records one carbon "credit" per ton of CO2 equivalent avoided/reduced or removed. Carbon credits can be generated from many different activities; Natural Climate Solutions represents a set of approaches to do so.

As outlined in the associated brief *The Role of Natural Climate Solutions in reaching Net Zero*, NCS can contribute to a company's climate action in several different ways. The NCS Alliance has developed complementary guidance in their report Natural Climate Solutions and the Voluntary Carbon Market: A Guide for C-suite Executives.

For businesses with value chains in the Agriculture, Forest and Other Land Use (AFOLU) sector, NCS is a fundamental part of decarbonizing the value chain through "insetting"; more information on this is available in the associated brief *Insetting and Scope 3 climate action: applying and accounting for Natural Climate Solutions (NCS) in land sector value chains*. For all companies looking to raise ambition and mitigate beyond their value chains (e.g. Beyond Value Chain Mitigation (BVCM) in line with the Net Zero Standard), NCS are a powerful lever for delivering climate mitigation while also benefitting nature and people. For more on this topic, see the associated brief *"Core Benefits" Standards and the impact of Natural Climate Solutions (NCS) on sustainable development*.

In both cases, carbon credits are used as a fundamental metric of climate impact from NCS activities. As momentum builds for tackling the climate, nature and inequality crises, many companies are using voluntary carbon markets to source credits; demand for NCS credits on these markets has soared from approximately USD$272 million in 2020 to around USD$2 billion in 2022.[5]

Identifying "high integrity" NCS credits

As demand increases, both as part of AFOLU sector decarbonization and broader private sector BVCM, the integrity of these credits becomes even more important. There is no universal definition of "high integrity" yet, for NCS or even carbon credits in general. As a result, several multistakeholder groups have drafted their own sets of principles to define high integrity NCS.

The primary motivation is to ensure that this carbon finance mechanism scales climate action and achieves sustainable development rather than undermining it. Examples of these principles include the International Carbon Reductions and Offset Alliance's (ICROA) *Code of Best Practice*[6], the NCS Alliance guidance in *Natural Climate Solutions for Corporates*[7], the *Tropical Forest Credit Integrity Guide* (coordinated by eight major NGOs and centring around the input of Indigenous People and Local Communities)[8], the Carbon Credit Quality Initiative's *Methodology for assessing the quality of carbon credits*[9] and the Integrity Council for the Voluntary Carbon Markets' (IC-VCM) draft *Core Carbon Principles*.[10]

Each set of principles differs, but common criteria for projects and the standards that certify them are listed below:

Assessing the performance of carbon standards against these sets of principles is not straightforward; there is a wide range of factors at play across NCS activities and the marketplace. However, several initiatives – including ICROA and the International Civil Aviation Organization (ICAO) – do report the performance of carbon standards against their own criteria. The IC-VCM is currently developing a similar assessment framework.[11] The degree of "acceptance" by these organizations is useful as a proxy in understanding the credibility of each standard.

Table 1: Common integrity criteria for carbon credits

Real/genuine impact	Permanence	Public engagement
Additionality	Leakage	Clear and transparent accounting
Realistic, credible baselines	Unique (not double issued/sold)	Strong legal underpinning
Measurable/monitored	Upholding sustainable development	Tracked in a public registry
Independently verified and reported	Transparent program governance	

Factsheets for NCS carbon credit standards

As the definition of "high integrity NCS" – and the market for credits of this type – develops, it is important that companies understand the mechanisms and tools available to support their due diligence and purchasing processes, including carbon standards. Alongside this brief is a set of factsheets detailing several major standards delivering NCS credits at present, including the following:

- American Carbon Registry (ACR)
- Architecture for REDD+ Transactions for The REDD+ Environmental Excellence Standard (ART TREES)
- Clean Development Mechanism (CDM)
- Climate Action Reserve (CAR)
- Gold Standard (GS)
- Verified Carbon Standard (VCS)

Building on the discussion of fundamental principles and market acceptance outlined above, each factsheet provides information on a carbon standard with a particular focus on NCS carbon credits and their approach to certification. The reference material shared in the factsheets is intended to support companies in the early stages of selecting credits. They are designed to complement existing assessments of carbon standards and to feed into established due diligence processes for credit selection. The following information is included:

- *general information*: logo, name, organization behind the standard and a brief description.
- *market "acceptance"*: carbon standard reputation analysis based on whether it is accepted by recognized organizations/ schemes.
- *NCS certification*: geographical coverage of host countries, eligible NCS project types and numbers on certified NCS carbon projects, issued volumes and the number of canceled/retired credits until May 2021 (data extracted from the carbon standards registries and/or Trove Intelligence).
- *addressing NCS-specific risks*: information on the carbon standard approach to mitigate or compensate for NCS projects risks related to additionality, permanence, leakage, lack of ensuring core benefits and approach to jurisdictional REDD+ nesting.
- *NCS-specific methodologies*: list of NCS methodologies that are approved under the carbon standard and that are key to calculating how the activities of a carbon project reduce emissions against a baseline.

The factsheets' content reflects the state of play at time of writing, and where a standard is of interest it is recommended to check their website for more information.

The way forward

As demand for NCS credits grows, whether for insetting or Beyond Value Chain Mitigation, there is a clear need for greater understanding of high integrity NCS and the role of carbon standards. The factsheets alongside this brief are intended to present an overview of several of the major standards available, particularly for those companies in the early stages of selecting NCS credits.

Many elements of what constitutes "high integrity" carbon credits are clear, with a variety of initiatives developing principles to help companies and other credit buyers in their due diligence processes. Several organizations carry out assessments of standards as well, which can provide a useful proxy for "acceptance" of the credits they issue. The IC-VCM is currently developing an assessment framework intended for use as a carbon credit integrity benchmark, which will provide companies with an additional level of assurance when active.

NCS offer climate mitigation at scale alongside core benefits for climate, nature and people; carbon credits are a fundamental mechanism for delivering finance to these solutions. In order to realize this potential, companies should commit to supporting high integrity credits for insetting and Beyond Value Chain Mitigation, using the tools available – including carbon standards – to identify where their action on NCS can have the greatest positive impact.

Factsheets

American Carbon Registry (ACR)

General information		
 americancarbonregistry.org	**Standard org.**	Winrock International
	Unit name	Emission Reduction Ton (ERT)
	Description	Fourth largest (by total volume of issued credits) independent voluntary offset program offering credit emission reductions services for both voluntary and compliance markets.

Market acceptance		
ICROA recognized	**CORSIA eligible**	**Other compliance schemes eligible**
Yes	Yes	Washington State CAR

NCS certification			
Geography	Global, but mainly in the U.S.		
Project types	Afforestation/reforestation (A/R) of degraded lands; avoided conversion of grasslands and shrublands to crop production; compost additions to grazed grasslands; improved forest management; and wetland restoration		
NCS projects registered	**NCS credits issued**	**NCS credits retired/canceled**	**NCS credits surplus**
105	130 $MtCO_2e$	5/117 $MtCO_2e$	8 $MtCO_2e$

Addressing NCS-specific risks	
Additionality	Two options: • use an ACR-approved performance standard and pass a regulatory surplus test. • pass a three-pronged test of additionality in which the project must: 1) exceed regulatory/ legal requirements; 2) go beyond common practice; and 3) overcome at least one of three implementation barriers: institutional, financial or technical.
Permanence	• ACR-approved risk analysis tool for both general and project-specific risk factors. • Two options to mitigate this risk: ◦ contributing with ERTs to the ACR buffer pool ◦ providing an insurance product
Leakage	Project proponents must demonstrate that there is no activity-shifting leakage or, in the case that it does exist, market leakage must be assessed and accounted for in the quantification of net project benefits.
Core benefits	Mandates 'positive impact' in general but does not require core benefits and/or SDGs to be reported.
Jurisdictional REDD+	n/a — Jurisdictional REDD+ projects not included in scope.

NCS-specific methodologies
Restoration of California deltaic and coastal wetlands; restoration of pocosin wetlands; avoided conversion of grasslands and shrublands to crop production; compost additions to grazed grasslands; and increased forest carbon sequestration on non-federal U.S. forestlands

(Source: South Pole, 2021, based on ACR 2020)

Architecture for REDD+ Transactions for The REDD+ Environmental Excellence Standard (ART TREES)

General information		
 artredd.org	**Standard org.**	Winrock International
	Unit name	TREES credits
	Description	It is the most recently developed REDD+ jurisdictional scheme. It is promoting a set of requirements for jurisdictional REDD+ programs known as the REDD+ Environmental Excellence Standard (TREES). The ART TREES aims to issue tradable credits in both voluntary and compliance markets (including CORSIA). Under ART TREES rules, REDD+ credits will be generated at the national level, with subnational programs allowed only initially.

Market acceptance		
ICROA recognized	**CORSIA eligible**	**Other compliance schemes eligible**
Yes (conditionally)	Yes	n/a

NCS certification			
Geography	Global, national and sub-national programs.		
Project types	REDD+ activities except enhancement from forests		
NCS projects registered	**NCS credits issued**	**NCS credits retired**	**NCS credits surplus**
ART TREES has approved national REDD+ jurisdictional programs in Costa Rica, Ecuador, Guyana, Papua New Guinea, and Peru; and approved subnational jurisdictional REDD+ programs in the following countries: Brazil (Amapa, Maranhão, Tocantins), Colombia (Amazon region), Ghana (10 southwestern regions), Nepal (Bagmati, Gandaki and Lumbini), Vietnam (11 subnational programs).	At time of writing, no issued credits are visible on the public registry yet.		

Addressing NCS-specific risks	
Additionality	Ensured by issuing only emission reductions that are below the TREES Crediting Level. Only reported emission reductions that are verifiably lower than the TREES Crediting Level will be eligible for receiving emission reduction credits.
Permanence	Participants in ART are required to report following calendar years 1, 3 and 5 of each crediting period. If reported annual emissions exceed the TREES Crediting Level, the response to a reversal is initiated. TREES requires that all reversals are reported and a volume of credits from the buffer pool equivalent to the reversed volume is retired to permanently remove the ERs from circulation and negate the reversal.
Leakage	TREES establishes three classes of leakage risk for Participants: high, medium, low. Participants must apply specified TREES leakage standardized deductions.
Core benefits	TREES requires Participants to define how their REDD+ activities contribute to sustainable development as part of the Participant's registration and must then monitor desired outcomes (goals) for 16 themes derived from the Cancun Safeguards (e.g. protecting natural forests, biological diversity and ecosystem services, etc.)
Jurisdictional REDD+	It issues carbon credits from emissions that have been verified to have been avoided under the specifications of the jurisdictional REDD+ program that is accepted by the ART TREES standard

NCS-specific methodologies
The REDD+ Environmental Excellence Standard establishes requirements for the quantification, monitoring, and reporting of GHG emission reductions from activities that reduce deforestation and degradation; for the demonstration of implementation of the Cancun Safeguards; and for the verification, registration, and issuance of emission reductions.

(Source: South Pole, 2021, based on ART Secretariat, 2020)

Clean Development Mechanism (CDM)

General information		
 cdm.unfccc.int	**Standard org.**	United Nations Framework Convention on Climate Change
	Unit name	Certified Emission Reduction (CER)
	Description	Largest crediting mechanism. Operated under the Kyoto Protocol and allowed to transfer emissions reductions from registered activities in 'non-Annex I' countries to 'Annex I' countries (for compliance and/or for their voluntary commitments under the Kyoto Protocol). As the CDM is a Kyoto Mechanism, it is meant to cease certifying new credits under the compliance period of the Paris Agreement (starting in 2021). Any carbon projects that was registered under the CDM before 2020 and had crediting period that extended to the Paris Agreement will need to ask permission from the host country and the Article 6.4 Secretariat to transition this project to the Article 6.4 mechanism of the Paris Agreement.

Market acceptance		
ICROA recognized	**CORSIA eligible**	**Other compliance schemes eligible**
Yes	Yes (for vintages up to 2020)	Colombia carbon tax; Mexico carbon tax; Republic of Korea ETS; and South Africa carbon tax

NCS certification			
Geography	Kyoto Protocol 'non-Annex I' countries		
Project types	Afforestation/Reforestation (A/R)		
NCS projects registered	**NCS credits issued**	**NCS credits retired**	**NCS credits surplus**
n/a	n/a	n/a	n/a

Addressing NCS-specific risks	
Additionality	Three-step process: investment analysis, barrier analysis and common practice analysis. Also allows 'first-of-kind' activities.
Permanence	• No AFOLU risk tool or buffer. • For A/R, permanence is addressed through the provision of two types of temporary carbon credits: tCERs and lCERs, which have to be replaced once they expire (or, in the case of lCERs, if reversals are observed during verification).
Leakage	Project leakage is taken into consideration. Provides a number of tools on accounting which are also referred to by other carbon standards. Calculations depend on the methodology and are limited only to 'non-Annex I' countries unless specified by the standardised baseline.
Core benefits	No compulsory reporting requirements. Core benefit reporting usually limited to a paragraph in the project design document or core benefit tool. Can have GS labelled CERs (not applicable to A/R projects).
Jurisdictional REDD+	n/a — Jurisdictional REDD+ projects not included in scope.

NCS-specific methodologies
A/R of degraded mangrove habitats; A/R of lands except wetlands; A/R reforestation project activities implemented on wetlands; and A/R project activities implemented on lands other than wetlands

(Source: South Pole, 2021, based on UNFCCC, n.d.)

Climate Action Reserve (CAR)

General information		
CLIMATE ACTION RESERVE climateactionreserve.org	**Standard org.**	Climate Action Reserve
	Unit name	CRT
	Description	Created by the State of California in 2001 to promote and protect local businesses taking actions to manage and reduce their GHG emissions. CRTs are mainly used for voluntary offsetting purposes and most (~97%) are from activities that reduce emissions from landfills, reduce ozone depleting substances and from forestry activities.

Market acceptance		
ICROA recognized	**CORSIA eligible**	**Other compliance schemes eligible**
Yes	Yes	Washington State CAR

NCS certification			
Geography	U.S., Canada and Mexico		
Project types	Avoided conversion of grassland to cropland; reforestation, improved forest management and avoided conversion; soil enrichment through agricultural practices that enhance carbon storage in soils; and rice cultivation activities that reduce methane		
NCS projects registered	**NCS credits issued**	**NCS credits retired/canceled**	**NCS credits surplus**
255	88 $MtCO_2e$	4/76 $MtCO_2e$	8 $MtCO_2e$

Addressing NCS-specific risks	
Additionality	Standardised additionality criteria for each methodology. Two components: a legal requirement test and a performance standard test.

Permanence	• 100-year permanence requirement.
	• Buffer pool:
	  ◦ same type of carbon credits to be compensated for same type of reversals.
	  ◦ buffer credit retired on 'first in first out' basis.
	• There is also the option of 'ton-year accounting' in some methodologies as an alternative to 100-year permanence requirement.

Leakage	Considers project leakage. Avoidable reversals (harvesting trees) or computational reversals (due to confidence deductions or leakage) must be compensated for.
Core benefits	No requirements to report core benefits/SDGs (unless credits seek to be CORSIA-eligible) but does have a comprehensive SDG Reporting Tool. The CAR has sole discretion to make determinations of appropriateness regarding projects claims.
Jurisdictional REDD+	n/a — Jurisdictional REDD+ projects not included in scope.

NCS-specific methodologies
Rice cultivation; soil enrichment; urban forest; and Mexico forest

(Source: South Pole, 2021, based on CAR 2021)

Gold Standard (GS)

General information		
Gold Standard goldstandard.org	**Standard org.**	The Gold Standard Foundation
	Unit name	Verified Emission Reduction (VER) and PER
	Description	Certification entity established by the WWF and a consortium of NGOs that aims to ensure the good quality and sustainable development contribution of carbon projects.

Market acceptance		
ICROA recognized	**CORSIA eligible**	**Other compliance schemes eligible**
Yes	Yes	Colombia carbon tax and South Africa carbon tax

NCS certification			
Geography	Global		
Project types	Tree planting; ecosystem restoration; forest restoration; and afforestation/reforestation (A/R)		
NCS projects registered	**NCS credits issued**	**NCS credits retired**	**NCS credits surplus**
25	8 $MtCO_2e$ (VERs and PERs)	2.1 $MtCO_2e$ (VERs)	5.9 $MtCO_2e$

Addressing NCS-specific risks	
Additionality	Projects must demonstrate additionality as compared to their baseline scenario and shall demonstrate financial additionality and an ongoing financial need to issue carbon credits. Projects should use UNFCCC or GS approved tools and the CDM tool for some small-scale projects.
Permanence	• 100-year permanence requirement. • AFOLU risk tool for determining GHG reversal risk. • Buffer pool, requiring projects to reserve 20% of its emission reduction issuance in the event of early non-sequestration. • Usage of robust requirements on values and processes assessing the design of the activity and a process of frequent monitoring, reporting and verification (MRV).
Leakage	Considers project leakage; calculations depend on the methodology. GS doesn't issue carbon credits to REDD+ projects due to concerns about environmental impact, including the ability to control leakage.
Core benefits	Projects must assess their potential environmental and social impacts (including on communities) and implement mitigation measures where necessary. Mandatory to have quantified and verified contribution to a minimum of three SDGs, one of them being Goal 13: Climate Action. GS is also certifying projects' contribution to the SDGs.
Jurisdictional REDD+	n/a — GS does not issue carbon credits from REDD+ projects.

NCS-specific methodologies
A/R GHG emissions reduction and sequestration

(Source: South Pole, 2021, based on several sources)

Verified Carbon Standard (VCS)

General information		
 verra.org	**Standard org.**	Verra
	Unit name	Verified Carbon Units (VCUs)
	Description	Founded by several key carbon market actors (including WBCSD) with the purpose of certifying and crediting voluntary and compliance carbon projects. Largest independent crediting mechanism and the largest issuer of REDD+ and forestry credits overall.

Market acceptance		
ICROA recognized	**CORSIA eligible**	**Other compliance schemes eligible**
Yes	Yes	Colombia carbon tax and South Africa carbon tax

NCS certification			
Geography	Global		
Project types	Afforestation, reforestation and revegetation; agricultural land management; improved forest management; reduced emissions from deforestation and degradation; avoided conversion of grasslands and shrublands; and wetlands restoration and conservation		
NCS projects registered	**NCS credits issued**	**NCS credits retired**	**NCS credits surplus**
172	268 $MtCO_2e$	127 $MtCO_2e$	141 $MtCO_2e$

Addressing NCS-specific risks	
Additionality	• Project methodology: regulatory surplus, implementation barriers and common practice • Standardised methodology: performance method or activity method
Permanence	• 100-year permanence requirement. • AFOLU risk tool. • Buffer pool account: level to be determined by Verra's calculation tool; buffer pool to be canceled in the event of GHG reversal and at the end of the crediting period to conform with the permanence requirement
Leakage	Considers project leakage; calculations depend on the methodology. 'Positive leakage' is not taken into account for the purpose of conservativeness. AFOLU projects require leakage management zones as a part of its project design.
Core benefits	No requirements to report core benefits/SDGs (unless credits seek to be CORSIA -eligible) but does provide several options for reporting nonetheless: sustainable development (SD) contribution report, SD VISta and CCBS complimentary standards
Jurisdictional REDD+	Allows Jurisdictional REDD+ projects.

NCS-specific methodologies
See https://verra.org/methodologies/ for current list

(Source: South Pole, 2021, based on several sources)

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ABOUT THE WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT (WBCSD)

WBCSD is the premier global, CEO-led community of over 200 of the world's leading sustainable businesses working collectively to accelerate the system transformations needed for a net zero, nature positive, and more equitable future.

We do this by engaging executives and sustainability leaders from business and elsewhere to share practical insights on the obstacles and opportunities we currently face in tackling the integrated climate, nature and inequality sustainability challenge; by co-developing "how-to" CEO-guides from these insights; by providing science-based target guidance including standards and protocols; and by developing tools and platforms to help leading businesses in sustainability drive integrated actions to tackle climate, nature and inequality challenges across sectors and geographical regions.

Our member companies come from all business sectors and all major economies, representing a combined revenue of more than USD $8.5 trillion and 19 million employees. Our global network of almost 70 national business councils gives our members unparalleled reach across the globe. Since 1995, WBCSD has been uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues.

Together, we are the leading voice of business for sustainability, united by our vision of a world in which 9+ billion people are living well, within planetary boundaries, by mid-century.

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