CarbonPlus

GHG & Co-Benefits in Grazing Systems Credit Class

Ecosystem focus: grasslands/ pasturelands/ shrublands

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Table of Contents

Disclaimer

This document has been prepared for informational and procedural purposes only. Its contents are not intended to constitute legal advice. Regen Network Development PBC (RND) maintains the right to amend or depart from any procedure or practice referred to in this guideline as deemed necessary.

This document is intended to be used in combination with:

- Regen Registry Program Guide v1.1
- Methodology for GHG and Co-Benefits in Grazing Systems

Definitions

Approved Methodology

The methodology (or set of methodologies) that has been approved for use within this Credit Class.

Buffer Pool

A tool to mitigate credit class or project-specific risk factors associated with unintentional or intentional reversal events, or overestimation of credits issued. Buffer pools hold credits that cannot be sold to buyers, and reserve credits for potential cancellation from the Registry System to maintain accurate credit accounting.

Credit

A digital asset, representing a quantifiable unit of measurement either tied to ecological or social benefit resulting from the implementation of a Project Activity, or tied to the successful implementation of a Project Activity rather than an explicitly measured benefit. Credits within the Registry System are tracked on Regen Ledger, and can exist in a Tradable, Retired, or Canceled state. Credits on the Regen Registry can also sometimes be referred to as tokens.

Crediting Period

The finite length of time for which a Project Plan is valid, and during which a project can generate credits.

Land Steward

The individual or organization that is implementing a Project Activity. This can be a farmer, rancher, conservationist, forester, fisherman, etc.

Methodology

A specific set of scientifically based criteria and procedures which outline the process for monitoring, reporting, verification of ecological and social benefits and practices for a defined Project Activity or set of Project Activities. This can include setting project boundaries, determining the Baseline Scenario, quantifying net GHG emission reductions or removals, measuring improvements in ecosystem function, and specifying monitoring procedures.

Permanence Reversal Buffer

A dedicated Buffer Pool account that allocates a percentage of credits from each issuance in order to mitigate permanence related reversal risk, i.e. GHG removal reversal that has occurred over the permanence period of the project.

Project Activity

The specific land management practice or conservation activity employed by a project to support ecological or social benefits.

Project Area

The geographic area in which Project Activities are implemented.

Project Boundary

The geography within which the direct and indirect environmental, economic, and social impacts of the project are accounted for. This includes the Project Area as well as areas that may be indirectly affected, including potential offsite changes in GHG emissions or other ecological impacts attributable to the project's implementation.

Project Plan

The document used to apply for Project Registration under a given Credit Class. The Project Plan describes the Project Activity or Activities, demonstrates project eligibility requirements, establishes project boundaries, specifies project stakeholders, justifies application of the Credit Class and Methodology, and more.

Project Proponent

The individual or organization that advocates for a project, identifies its requirements, and drives its initiation. The Project Proponent serves as the main point of contact with the Registry Agent throughout the course of the project and is responsible for initiating project registration, submission of all materials required by the Credit Class, Methodology, and Program Guide, and coordinating project actors. The Project Proponent must ensure correctness and compliance of all submitted documentation with the standards outlined in the Credit Class, Methodology, and Regen Registry Program Guide prior to to ensure credit quality. The Project Proponent receives the credits upon issuance and is responsible for coordinating sale and distribution between project actors.

Project Start Date

The date on which the project commences and begins generating and accounting for GHG emission reduction or removals or other ecological and social benefits. The Project Start Date may be before or after the project registration date as stipulated in the Credit Class. The Project Start Date marks the beginning of the Crediting Period.

Registry Agent

The individual or organization appointed by the Credit Class Admin that operates the Registry System to register projects and/or issue credits under a given Credit Class. The Registry Agent is responsible for maintaining accurate accounting and ensuring compliance of registered

projects, issued credits, and other ecosystem service claims as set forth in the Regen Registry Program Guide, Credit Class, Approved Methodology, and Project Plan. The Registry Agent is also responsible for ensuring updates made to the Registry Program, Credit Class, Approved Methodology and Project Plan are, if applicable, applied to existing projects in a way that is transparent and fair.

Selection of the Registry Agent is a crucial part of establishing checks-and-balances for credit issuance. As such, acceptance of Credit Classes to be registered under Regen Registry is contingent upon having a Registry Agent that has been approved or appointed by RND PBC as the stewards of Regen Registry.

Registry System

The technical infrastructure responsible for tracking information and claims related to ecological state. This system encompasses specific business logic, computer code, and programs that facilitate certain functions associated with the Regen Registry. While the Regen Registry sets the standards and frameworks, the Registry System provides the technical means to implement these functions. Built atop Regen Ledger, the Registry System's capabilities include, but are not limited to, registering projects, monitoring the issuance, ownership, transfer, and retirement (or cancellation) of ecological credits, anchoring and signing data, and transparently tracking decision-making practices.

Regen Ledger serves as the foundational blockchain layer upon which the Registry System operates to ensure transparency, security, and decentralization verification of all transactions and activities. The Regen Ledger is open-source and is publicly accessible.

Reporting Period

A period of time following the methodology guidelines in which Monitoring and Verification activities are completed.

Reversal

A situation where project outcomes, such as carbon removals, improvements in biodiversity, or successful implementation of a practice are unexpectedly reversed. Reversal events can happen due to a variety of reasons, including natural disasters, changes in land use, poor project management, or failure to comply with project protocols.

Site

The location where a project implements the Project Activity or Activities. A Project Area does not need to be continuous and can have multiple sites.

Verification

The systematic, independent, and documented assessment by a qualified and impartial third party of the Monitor's assertions for a specific Reporting Period.

Verifier

An individual or organization that is contracted to execute the verification requirements stipulated in a given Credit Class.

1. Introduction

Project Drawdown[1] defines managed grazing as a set of practices that sequester carbon in grassland soils by adjusting stocking rates, timing, and intensity of grazing. Livestock grazing covers over 3.3 billion hectares, or 25 percent of the world's land area, making it humanity's largest land use (Asner et al, 2004). Unfortunately, poor grazing practices have contributed to land degradation and loss of soil organic carbon. However, there are managed grazing practices that can reverse this negative trend, enhance net carbon sequestration, and improve soil and vegetation quality. These are practices such as controlled intensity and timing of grazing, enclosure of grassland to encourage resting, and/or other kinds of planned and adaptive grazing.

Under managed grazing, emissions of the greenhouse gasses methane and nitrous oxide continue, but are more than offset by soil organic carbon sequestration (at least until soil carbon saturation is achieved). The estimated global benefit from managed grazing is between 16.4 and 26 Gt CO_2e sequestered in the period between 2020-2050.

This Credit Class provides an incentive structure to increase the amount of hectares/acres under managed grazing worldwide by providing land stewards with the necessary income streams to make this important work possible.

This Credit Class follows the requirements in the Regen Registry Program Guide v1.1. Each section below includes specific adaptations for this Credit Class.

2. Credit Class Overview

The Carbon*Plus* credit focuses on carbon removal from soil carbon sequestration in grassland ecosystems. The *Plus* indicates that co-benefits (or secondary ecological benefits) allow for a credit that accounts for more than just measuring and monitoring carbon sequestration. In the case of this credit, the primary benefit that is monitored, quantified and used to determine the quantity of credits issued is Carbon Sequestration. The additional benefits, or co-benefits, may be measured on a project by project basis. More information on co-benefits are outlined in Section 6. Co-Benefits.

2.1. Primary Indicator

The primary indicator in this Credit Class is soil organic carbon. The units of this credit are: one crediting unit equals 1 metric ton of CO_2e sequestered.

[1] https://drawdown.org/solutions/managed-grazing/technical-summary

The primary benefit of atmospheric regulation through carbon sequestration is driven by carbon removals through the use of regenerative grazing sequestering CO_2 into the soil as soil organic carbon. To ensure a net positive effect, aside from CO_2 removals from the atmosphere, it is also important to take into account significant GHG emissions directly resulting from the *Project Activity*. Emission sources attributable to the *Project Activity*, such as emissions from livestock or increased fertilizer use, should be accounted for each year to accurately calculate the creditable carbon change.

2.2. Secondary Indicators

The list below outlines the approved co-benefits for this Credit Class. Each of the co-benefits is monitored by a specific set of indicators which are defined within the methodology for each co-benefit. See Section 6 for more information on the co-benefit assessments.

1. Animal Welfare
2. Ecosystem Health
3. Soil Fertility

3. Project Eligibility

3.1. Ecosystem Type Classification

This Credit Class applies to grasslands, pastureland, and shrubland as defined in the Regen Network Taxonomy[2], summarized in Table 1.

Table 1. Ecosystem types eligible for managed grazing

Ecosystem Type	Definition
Grassland	Areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.
Pastureland	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.

2 Regen Network Taxonomy

Shrubland	Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.

3.2. Project Activity

The project activity approved by this Credit Class is managed grazing. Managed grazing, often referred to as rotational or controlled grazing, is a livestock management system where animals are strategically moved to fresh paddocks or portions of pasture to allow vegetation in previously grazed pastures to regenerate.

The managed grazing practices approved by this Credit Class are defined in Table 2.

Table 2. Approved list of managed grazing practices as defined in the Regen Network Taxonomy[3]

Grazing Management Practice	Definition
Rotational Grazing	A management plan for grazed land to improve forage quality, livestock health and water quality. In a managed grazing system, livestock are moved frequently among pasture divisions or paddocks based on forage quality and livestock nutrition needs. Portable fencing allows each paddock to rest and regrow until the next grazing rotation.
High Density Grazing	In this form of rotational grazing, grazing animals, at a very high stocking density, graze a management unit for a very short period of time. The goal is to utilize grazing livestock hoof action from ultra high-density livestock stocking to mix plant residues and manure with soil to improve the nutrient cycling process and microbial activity.
Residue Grazing	The practice of letting livestock graze crop residue after a crop has been harvested

[3] Regen Network Taxonomy

3.3. Land Ownership Type

This Credit Class accepts projects under the following ownership types: public, private, tribal. Projects seeking registration under this Credit Class must demonstrate land ownership or landowner approval as specified in Section 8.2 of the Regen Registry Program Guide[4].

3.4. Project Start Date

Projects within this Credit Class allow for a Project Start Date up to 5 years before the actual project registration. To claim such a historical Project Start Date, the Project Proponent is required to provide comprehensive historical records that demonstrate that the Project Activity was already in operation and that sufficient data was gathered to adhere to the prescribed methodology in its entirety. This includes:

- Historical soil samples which:
    - Were collected at the depth required in the approved methodology
    - Have been analyzed for SOC & bulk density
    - Achieve the minimum number of samples as specified in the methodology
- Historical stocking rates to account for livestock emissions
- Historical records from fertilizers input or from any other relevant source of GHG emissions
- Documentation of land ownership during the historical period
- Evidence of engaging in prescribed grazing

Project Proponents must submit evidence as part of their Project Plan and justify how the historical Project Start Date meets the conservativeness standards of the Approved Methodology. Registry Agents will permit such requests as long as they do not negatively affect the conservativeness of an Approved Methodology's approach to the quantification of GHG emissions reductions and removal enhancements.

3.5. Crediting Period

The Crediting Period for this Credit Class is 10 years with an option to renew. Each renewal period will be 10 years and there is no limit to the number of renewals.

The Crediting Period does not include the permanence obligation defined in Section 5.3.

3.6. Regulatory Compliance

The Project Proponent will certify that Project Activities are conducted in compliance

[4] Regen Registry Program Guide, Section 8.2 - Land Tenure

with applicable laws, regulations, permits, and other legally binding requirements, including mandatory provisions of the Approved Methodology. Attestations of regulatory compliance must follow the rules outlined in Section 8.8 of the Regen Registry Program Guide[5].

4. Project Rules and Regulations

4.1. Approved Methodology

The Approved Methodology for this Credit Class is:

a. Methodology for GHG and Co-Benefits in Grazing Systems[6]

4.2. Aggregate Projects

An aggregate project, as defined within this Credit Class, refers to the strategic consolidation of multiple Project Areas into a single entity. This approach enhances cost efficiencies by allowing land stewards to pool resources, thereby reducing the financial and data-related burdens associated with individual project registration, monitoring, reporting, and verification.

This credit class allows for multiple projects locations, or sites, to register together as an aggregate project if the following applicability conditions are met:

- Sites are geographically located in the same geographical bioregion and share the same climatic conditions (rainfall, temperature, etc…)
- Sites share similar topography
- Sites have the same soil type
- Sites have the same vegetation species composition
- Sites are all managed using the same management practice

Project Proponents seeking to register an aggregate project must submit a report proving that the above applicability conditions have been met as part of the Project Plan.

4.3. Project Renewal

Any project registered under this Credit Class is eligible for renewal upon satisfying the following conditions:

a. The project has complied with applicable monitoring, reporting, and verification requirements during the prior Crediting Term.

[5] Regen Registry Program Guide, Section 8.8 - Regulatory Compliance
[6] Methodology for GHG & Co-Benefits in Grazing Systems

b. The Project Proponent has submitted a document containing information concerning any changes from the prior crediting term, in particular if there are significant changes in spatial boundaries, management (i.e. stocking rates) or measurements taking place (i.e. changes in the permanent plots geolocations, depth of sampling, Laboratory for analysis or analysis tests, etc).
c. The Project Renewal duration must be compliant with the temporal boundaries as set in the Approved Methodology.

5. GHG Removal and Emission Reduction Requirements

5.1. Additionality

Additionality claims are required by this Credit Class. To register a project under this credit class, Project Proponents must fulfill the following additionality criteria:

1. **Regulatory Surplus:** the proposed Project Activity is not compelled by any existing law, policy, statute, or regulatory framework.
2. **Common Practice Analysis:** the proposed Project Activity is not a prevalent practice within the broader region where the project is situated.
3. **Financial Additionality (Optional)**: the proposed Project Activity is not financially viable without the income generated from the project's carbon credit sales.

Regulatory Surplus

Determination of regulatory additionality is required by this Credit Class. Project Proponents must demonstrate the project is not directly mandated by any existing law, policy, statute, or regulatory framework.

Common Practice Analysis

This Credit Class defines a Project Activity as a regional common practice when more than 20% of the land stewards in that ecoregion have adopted the eligible management activity.[7] Project Proponents must demonstrate that the Project Activity, in this case managed grazing, is not considered a common practice as part of the Project Plan. Submitted evidence may include:

a. Agricultural census or other government (e.g., survey) data
b. Peer-reviewed scientific literature
c. Independent research data

[7] CDM Tool24 - Common Practice, Section 18

d. Reports or assessments compiled by industry associations using tools such as the CDM Tool24 for Common Practice[8].

Financial Additionality

This Credit Class does not require proof of financial additionality. However, Project Proponents may include proof of financial additionality to enhance a project's appeal to potential investors.

5.2. Leakage

Leakage refers to the unintended or indirect consequences of a carbon offset project that lead to an increase in greenhouse gas (GHG) emissions outside of the project boundary. Leakage occurs when the implementation of a carbon offset project causes a reduction in emissions within the Project Area, but leads to an increase in emissions in another location, either within or outside the project boundary.

In the scenario of managed grazing, leakage might manifest when the introduction of improved grazing techniques leads to a decline in cattle production within the project's domain. This could inadvertently prompt a surge in cattle grazing on lands not managed regeneratively, thereby offsetting the intended benefits.

To account for these unintended consequences, this projects registered under this Credit Class must strive to ensure:

- Project Activities implemented on land that intended for agricultural production remains in agricultural production throughout the project Crediting Period.
- The Project Activity does not result in a sustained reduction in productivity or sustained displacement of any pre-existing productive activity during the Crediting Period.

During each reporting cycle, Project Proponents are required to demonstrate that the project did not experience a substantial decrease in cattle production. Should a considerable reduction be observed, it must be promptly communicated to the Registry Agent who will work with the Project Proponent to determine the extent of leakage due to the displacement of livestock. If the leakage is found to be substantial, appropriate adjustments will be made in the project's GHG accounting to account for these losses, either from pulling on credit in the Buffer Pool or discounting the amount of credits issued from future vintages.

[8] CDM Tool24 - Common Practice

5.3. Permanence

To address the risk of non-permanence, this Credit Class requires a 25-year permanence period, during which a percentage of the credits issued to the project will be withheld in a Permanence Reversal Buffer designed to insure the project against potential reversal events.

The Permanence Reversal Buffer is shared by all projects under this credit class, meaning that all projects registered contribute to and pull from the same Permanence Pool to cover reversal events. Projects registered under this Credit Class must allocate 5% of each credit issuance to Credit Class Permanence Reversal Buffer.

At the end of the permanence period (25-years from the end of the Crediting Period), Project Proponents must follow the End of Permanence Period requirements outlined in Section 10.6.3 of the Regen Registry Program Guide to reconcile their final carbon stock level.[9]

5.4. Buffer Pool

Projects registered under this Credit Class are obligated to allocate 20% of each credit issuance to the Credit Class Buffer Pool. This communal pool, shared among all projects within the credit class, acts as a safeguard against potential reversal events during the Crediting Term.

Should a project experience an unforeseen reversal, Project Proponents must follow the Buffer Pool Requirements outlined in Section 10.5 of the Regen Registry Program Guide[10]

5.5. Verification

This Credit Class requires all projects follow the Verification Requirements outlined in Section 12 of the Regen Registry Program Guide[11]. Project Proponents must work with the Registry Agent to identify a suitable verifier which meets the requirements below. Verifiers must submit a verification report to the Registry Agent.

Verifier Requirements

Suitable verifiers can be independent experts, consultants, university personnel, or representatives from non-governmental organizations, provided they possess the following qualifications:

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[9] Regen Registry Program Guide, Section 10.6.3 - End of Permanence Period
[10] Regen Registry Program Guide, Section 10.5 - Buffer Pools
[11] Regen Registry Program Guide, Section 12 - Verification Requirements

a. Expertise in soil organic carbon and agricultural GHG emissions
b. Proficiency in quantification methodologies
c. Familiarity with the region in question
d. A reputable professional standing and recognition among peers
e. No conflicts of interest concerning the project and the entire monitoring, reporting, and verification process

Verifier Responsibilities

Verifiers must conduct a desk verification of all monitoring data for the reporting period and compile a report which assesses:

1. Scope of calculations.
2. Input data sets, any missing data, estimations, and assumptions.
3. Calculation methodology and conversion factors used.
4. Quality control procedures.
5. Results & interpretation.

6. Co-Benefits

Three co-benefits are included in this Credit Class. The following are approved co-benefits, but alternative co-benefits can be accepted and appended. Each of these co-benefits is monitored by a specific set of indicators which are defined for each co-benefit within the methodology. The list of co-benefits will be continuously reviewed and updated, in order to account for the most relevant indicators assessing the changes in the ecological state within the Project Area. The process to upgrade the co-benefits list shall be consistent with the rules stated in the Program Guide, section 7.2. "Modifications to an Approved Credit Class or Methodology".

6.1. Animal Welfare

The American Veterinary Medical Association defines Animal Welfare as the means by which "an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well-nourished, safe, able to express innate behavior, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling, and humane slaughter."

6.2. Ecosystem Health

Improve and/or maintain the health of the grasslands ecosystem. Ensure that the project activity is supporting the health of the grasslands in comparison to the surrounding region under business as usual, or by using local best use case scenarios as benchmarks.

6.3. Soil Fertility

Improve and/or maintain the soil fertility as a result of good land management practices. Healthy, productive soils can positively support a variety of ecosystem services, some of which include improving water infiltration, improving soil structure, reducing potential for soil erosion, and increasing availability of nutrients for plant growth.