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# Methodology AR010901

# Sustainable Agriculture and Soil Health

# November 2025

## Executive Summary

### 1. Project Details

#### 1.1. Project Background and Summary Description

Give a detailed description of the origin of the project, outlining the participants, area of the project and location or locations if several farms.

Include maps and coordinates of the farm/s included in the project

#### 1.2. Sectoral Scope and Project Type

The Project is categorized under the sectoral scope of Agriculture, Forestry, and Other Land Use (AFOLU), specifically the following activities:

1) Type of farming
    a. Livestock
    b. Arable
    c. Combinations
2) List any other specific scopes that may apply

**1.3. Project Design**

List the key components whose implementation creates a wholistic approach to sustainable soil health and regenerative farming techniques.

Detail all areas of the project that will be analysed and monitored the following are given as a guide and are not exhaustive. Project developers should add any other relevant information they may deem to be included.

1.3.1. Have the farmers or farmer groups been engaged and do they have they signed the relevant documentation?

1.3.2. Ensure that the land is generally crop or grassland for grazing and is not a wetland.

1.3.3. Ensure that the farmland has not been cleared native forest within the last 10 years

1.3.4. The area of land under cultivation is constant or increasing.

1.3.5. The land will continue to be farmed using regenerative techniques for the foreseeable future.

1.3.6. The area does not have peat

**1.4. Project Proponent**

| | |
|---|---|
| Organization | |
| Contact Person | |
| Title | |
| Contact Details | |

| | |
|---|---|
| Ownership | Owned or leased? |
| Address | |

### 1.5. Ownership

Detail all the beneficial owners of the project, listing their corporate structure, domicile and any regulations that need to be adhered to.

### 1.6. Project Start Date

When was the project officially started (Month and Year) to plan and calculate the baseline

### 1.7. Project Crediting Period

Detail the number of years the project will be credited for and any details on extensions that may be applied for.

### 1.8. Project Scale

What is the anticipated number of credits to be issued annually?

Estimate the number of farms to be included and grouped within this methodology.

### 1.9. Description of Project Activity

### 1.10. Project Locations

List all the farms and supply provide exact co-ordinates and size of each area and provide maps and any satellite imagery already obtained.

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### 1.11. Conditions Prior to Project Initiation

Confirm that boundaries do not overlap with the boundaries of any other listed or registered projects that qualify for any form of carbon or diversity credits.

### 1.12. Compliance with Laws, Statues, and Other Regulatory Frameworks

List and detail all the compliance obligations with respect to required laws, statutes, and other regulatory frameworks that govern the Project.

| Reference Law, Statue, and Other Regulatory Framework | Demonstration of Compliance |
|---|---|
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### 1.13. Participation Under Other GHG Programs

Confirm that the Project does not currently and will not in the future pursue accreditation for reductions or removals from any project activity under any another GHG program.

### 1.14. Permanence and Leakage

Carbon sequestration in soils is reversible. If a farm reverts to less beneficial management practices, the stored carbon can be released. This means permanence must be ensured for carbon credits. There is also a risk of "leakage," where emissions are simply moved elsewhere, for example, by offsetting the loss of on-farm production with imported goods. Project developers. Project developers should introduce a buffer pool that will allow any losses incurred in years of extreme drought or excessive rain can be balanced against normalised conditions. Buffer pool percentages should be reviewed annually after the audit results are received.

- To account for project-specific risks, such as natural disasters or project reversals, and provide a safeguard for unexpected carbon credit invalidation.
- Credit number held in pool, vary with perceived project risks
- To ensure that issued carbon credits are based on conservative estimates between verification events, and remain credible and reflect genuine emissions reductions or removals.
- Released upon successful measured verification of project outcomes at five-year verification cycles.

### 1.15. Registration with Other Registries

Confirm that the Project is not currently and will not in the future pursue registration under more than one registry.

### 1.16. Rejection from Other Registries

Confirm that the Project has not been rejected from another GHG program.

## 2. Additionality

Detail all the reasons the project achieves additionality. Confirm that without the revenue from the sale of carbon credits the project would not be viable. A project activity is additional if it results in emission reductions or removals that are above and beyond what would have happened under the most plausible baseline scenario without the revenue or incentive provided by carbon credits.

While grasslands are naturally significant carbon stores, the key to demonstrating additional carbon storage lies in the adoption of improved techniques, particularly on what is currently considered "improved" or intensively managed pasture.

Additionality refers to the carbon benefits that would not have occurred without a specific intervention. In the context of farming and carbon markets, it means that any increase in soil organic carbon (SOC) stocks must be the result of a deliberate, new management practice—not a change that would have happened anyway.

To qualify as "additional," carbon sequestration from perennial pasture must be measured and proven to exceed the baseline levels for that land area.

### 2.1.1. **SDG**

List all the United Nations Sustainable Development Goals that apply to the Project.


### 2.1.2. **Investment Analysis**

Outline the annual operating and start up costs to be incurred to implement the project.

Provide a detailed 3-year budget.

## 3. Stakeholder Consultation

### 3.1. Demonstration of Stakeholder Engagement

Detail the process that:

3.1.1. Identifies the project stakeholders.

3.1.2. Lists the meeting with stakeholders including the minutes, attendance, time and place.

3.1.3. Ensures ongoing communication with identified stakeholders. Outline the frequency of intended farm visits

### 3.2. Identification of Risks to Stakeholders

Provide an overview of the way in which risks were presented to stakeholders (written or verbal, etc.) and provide an outline of what risks were identified and the mitigation action assigned to the risks.

### 3.3. Identification of Benefit Sharing with Stakeholders

Provide an overview of the way in which benefit sharing was presented to stakeholders and provide documentation of either the benefit sharing percentage or the calculation formula that was agreed to and signed off by the stakeholders.

### 3.4. Stakeholder Impact Monitoring Plan

Describe the proposed ongoing communication and monitoring plan to ensure risks are continuously being mitigated and the identified stakeholders are receiving their benefits as agreed. Also, outline how new stakeholders will benefit if and as changes occur.

## 4. Application of Methodology

4.1. Reference Methodologies

List any other methodologies (excluding AR040101) that apply to the project and insert the methodologies into the table below:

| Methodology/ Module/Tool | Applicability Condition | Project's Satisfaction of Applicability Condition |
|---|---|---|

### 4.2. Project Boundary

Requirements:

- Map of area (digital format)
- Geographic coordinates of each polygon vertex.

### 4.3. Baseline Scenario

4.3.1. Baseline soil carbon measurements are derived from taking rigorous soil samples on the entirety of the land included in the project. All calculations in the emission reduction and removal calculation must be detailed and in a format that can be included within the data section of the Registry listing. The sampling procedure below is recommended but other methodologies may be accepted by accredited VBB's.

- Conduct initial soil carbon measurements on participating farms.
- All sampling points should be GPS tracked and marked, making them accurately repeatable in future. This has huge importance in the assessment of yearly carbon sequestration and therefore has independent validity for any future Government or carbon required assessments.
- Once the samples have been collected, they are bagged, tagged and sent off to approved laboratory partners for testing and analysis. Perform twin depth soil analysis (0-15cm and 15-30cm) with macro nutrients in the sample point and organic matter only in the second depth.

**Sample 1**

Shallow 0-15cm

- **Basic Nutrient Analysis** – P, K, Mg & PH – this data helps farmers shift to a more sustainable agricultural system by understanding their farm and targeting inputs.

- **Organic Matter (DUMAS) –** generally considered to be the most accurate means by which to measure Soil Organic Matter.

  https://cawood.co.uk/blog/soil-organic-matter-3-analysis-options/

  https://farmcarbontoolkit.org.uk/toolkit-page/measuring-soil-health/

- **Bulk density analysis –** via a choice of either:

  Particle density bulk density analysis - https://bsssjournals.onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2389.2011.01412.x

  Bulk density by undisturbed core & wet chemistry - https://www.sciencedirect.com/topics/agricultural- and-biological-sciences/bulk-density

**Sample 2**

Deeper Sample 15-30cm

- **Organic Matter (DUMAS)**
- **Bulk density analysis**
- **Soil Organic Carbon (Optional)**

**Laboratories must be ISO accredited for outsourced soil analysis.**

### 4.4. Implementation of Regenerative Farming Practices

A detailed report should be prepared for the farmer by the Project Developer outlining the methods of increasing soil health and should include at least the following:

- Tillage Reduction
- Residue retention (Leaving crop residues on the fields)
- Planting cover crops
- Planting catch crops

- Reduction in synthetic fertilisers
- Adoption by farmers of organic fertilizers such as composite and animal manure
- Prior to the project, poor farming practices the over grassing of grasslands led to rapid soil nutrient depletion.
- Greenhouse gases (GHG) emission reductions will be generated through improved carbon storage on farms, and avoidance of mosaic deforestation from unplanned agricultural land conversion. The project activities will be supported by methodologies approved under a VCS approved GHG program to account for the project's emissions reductions and validate under a Climate, Community and Biodiversity Standard.

## 4.5. Quantification of Emission Reductions

GHG emission reductions occur when:

1) Carbon stocks decrease from year t to year t + 1 in the baseline scenario and, to a lesser extent, in the project scenario.47 The cumulative carbon stock change in the project scenario is negative or zero (i.e., the project carbon stock at the end of the verification period is less than or equal to the carbon stock at the project start date).

2) Carbon stocks decrease from year t to year t + 1 in the baseline scenario and, carbon stocks increase in the project scenario. Note that this variation may also generate carbon removals as described in paragraph (2) in introduction of equation 40, below.

3) CO2 emissions from fossil fuel combustion and liming are lower in the project than in the baseline scenario.

4) CH4 emissions from the SOC pool (i.e., through soil methanogenesis), livestock enteric fermentation, manure deposition, and biomass burning are lower in the project than in the baseline scenario.

5) N2O emissions from nitrogen fertilizers and nitrogen-fixing species, manure deposition, and biomass burning are lower in the project than in the baseline scenario.

Latest research suggests an increase in soil organic matter (SOM) of just 0.1% can remove around 8.9 t $CO_2$e per hectare.

Project Developers can also access the formulas and calculations out lined in Verra Methodology VM0042 v2.2.

### 4.6. Baseline Design

For a project to be considered "additional," a reliable baseline measurement is necessary to determine carbon levels before a new practice is implemented. This process includes:

- Accurately measuring existing SOC stocks at different depths using methods like bulk density and Dumas analysis.
- Accounting for natural factors, as soil carbon levels vary considerably based on soil type (clay content, for instance), climate, and depth.

## 5. Additional Project Net Positive Impacts

Itemise the implemented or proposed initiatives that have or will yield significant positive impacts on both the environment and local communities.

### 5.1. Monitoring Plan

Each five-year verification cycle starts with baselines (or baseline updates). Before the first-year anniversary of each cycle, and in the four intervening years, an annual verification and monitoring visit must take place by a representative of the project developer and a UKCCC approved Validation and Verification Body (VVB).

Project Developers should design a plan that encompasses either regular annual soil sampling or a combination using satellite or LIDAR programmes with algorithmic calculations.


#### 5.1.3 Monitoring Frequency

All farms will need an annual audit from a VVB to ensure adherence to this methodology and the report shall be submitted to the registry for entry into the public domain section.

## 6. Conclusion

This methodology forms the basis of your PDD (Project Design Document). Project developers should also include as much other information to ensure that PDD is accepted by a third-party VVB.

Project Developers should also ensure that they observe the framework of the Assidium Registry's Programme and Protocols. (Link here).

This document is open for public consultation from 25/11/2025 to 24/12/2025 comments can be submitted to info@assidium.com.

## 7. Acronyms

**AD** Activity data GHG Greenhouse gas

**SOP** Standard operating procedure(s)

**GIS** Geographic Information Systems

**LIDAR** Combination of Radar and Laser Technology

**MRV** Monitoring, Reporting and Verification

**PDD** Project Design Document

**SBD** Soil Bulk Density Carbon

**SCS** Soil Organic Carbon Stock

**SIC/TIC** Soil/Total Inorganic

**SOC** Soil Organic Carbon

**SOM** Soil Organic Matter

**TC** Total Soil Carbon

**UKCCC** UK Carbon Code of Conduct

**VCU** Verified Carbon Unit

## 8. References


8.1. **ICVCM Core Carbon Principles**

8.2. **VERRA VM0042 V1.0**

8.3. **UKCCC**

8.4. **IPCC (2003). Good Practice Guidance for Land Use, Land Use Change and Forestry. Institute for Global Environmental Strategies (IGES).**

8.5. **IPCC (2006). 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Institute for Global Environmental Strategies (IGES).**

8.6. **IPCC (2019). 2019 Refinement to the 2006 IPCC Guidelines on National Greenhouse Gas Inventories. Institute for Global Environmental Strategies (IGES).**

8.7. **Baccini, A, Goetz, S.J., Walker, W.S, N. T. Laporte, N.T, Sun,M, Sulla-Menashe, D, Hackler, J, Beck, P.S.A. Dubayah, R, Friedl, M.A, Samanta, S, and Houghton,R. A. (2012). Estimated carbon dioxide emissions from tropical deforestation improved by carbon-density maps. Nature Climate Change, doi:10.1038/NCLIMATE1354**



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