Fact Sheet

Profitable Carbon Farming

Soil Carbon

Rangelands NRM
Western Australia

How it Works

The Climate Solutions Funds builds on the Emissions Reduction Fund (ERF) to offer opportunity in Australia to reduce or remove greenhouse gas emissions from the atmosphere.

Under the **Measurement of Soil Carbon Sequestration in Agricultural Systems** *(Methodology Determination 2018)* a soil carbon project is designed to improve soil carbon levels by undertaking new, eligible land management practices.

Soil carbon can be stored in agricultural systems by increasing the amount of organic matter in the soil. This occurs when management practices either increase the amount of biomass (such as plant material) that is incorporated into the soil and/or reduce the amount of organic matter that is released from soils (for example, by reducing soil disturbance).

Site specific factors such as soil type, climate and management history all influence the potential for soil carbon sequestration (the increase in soil carbon stocks over time).

Examples of land management activities include improving fertiliser application, re-establishing pasture or modifying grazing practices. There is no guarantee that any one or more of the eligible activities chosen by landholders will build soil carbon at any project site. Project proponents should seek expert advice on the management actions that will best suit their project area.

Farmers and land managers can earn carbon credits by reducing CO2e emissions on the land and through sequestering carbon. Carbon dioxide equivalent or CO2e means the number of metric tons (tCO2) emissions with the same global warming potential as one metric ton of another greenhouse gas.

Crediting of Australian Carbon Credit Units (ACCU) is based on measuring the change of soil carbon compared to a baseline to calculate net abatement.

Within broad parameters, landholders have a choice of which land management activities to implement to build soil carbon but must carry out one or more of the listed eligible management activities. The eligible management activities should be new or materially different from the land management activity conducted during the 10-year baseline period, and must reasonably be expected to sequester carbon in the soil. Some activities, such as permanent destocking and addition of coal or coal-based products, are specifically excluded.

A land management strategy (LMS) documents and outlines the land management activities conducted in the baseline period and also for the proposed crediting and permanence period. The method requires LMS to be prepared by an independent person, with appropriate knowledge of agronomy, plant nutrition and soil carbon; and experience in providing agricultural production advice.

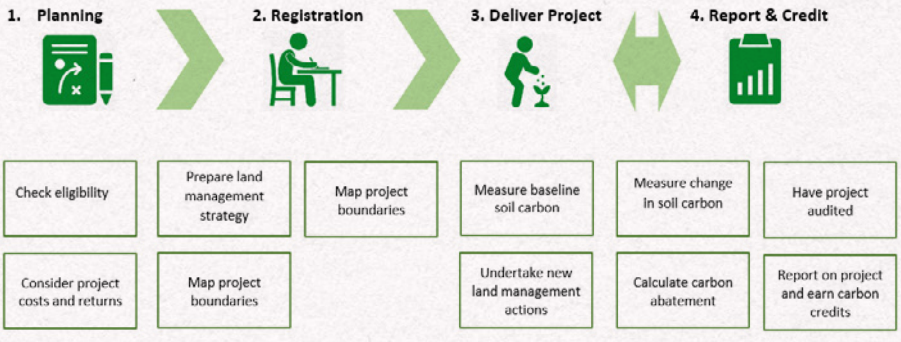

Figure 1: Soil carbon project lifecycle and actions Source: Clean Energy regulator

Definitions

Baseline Period

The baseline period covers the 10 years prior to applying to register a soil carbon project. The baseline soil carbon estimates the carbon content of the soil before undertaking land management activities to increase it. Carbon credits are earned by increasing the soil carbon above the baseline level.

Crediting Period

The crediting period is the period during which a landowner can earn credits by reporting on the project. The crediting period for soil carbon projects is 25 years.

Permanence Period

When registering a project a 25 or 100 year permanence period can be chosen during which carbon stored by the project must be maintained. Carbon must be stored for a 100 years to be considered 'permanent', projects electing a 25 year period receive a 25% reduction in carbon credits.

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Eligibility

A property is eligible for a soil carbon project if:

- You hold legal right to run the project and claim carbon credits.
- The Crown Lands Minister has provided consent for leased Western Australian Crown land.
- The land was used for pasture, cropping (which may include perennial woody horticulture), or bare fallow during the baseline period.
- It is reasonably expected soil carbon levels can be increased through land management activities.
- It is possible to sample the soil — e.g. the area can be accessed, the area does not have large obstacles (e.g. rocky outcrops) that would prevent sampling to at least 30 cm depth.

Areas of land are not eligible and will need to be excluded from the project if:

- They are forested, or were forest at any time during the baseline period.
- They were previously a wetland that was drained during the baseline period.
- They have buildings.

The boundaries of the project area (the area in which the soil carbon project is undertaken) may be a portion of the overall property. Land which is not eligible must be excluded (e.g. land with buildings or forest). A map identifying the boundary of the area is to be provided when registering the project.

Under the permanence obligations You may have to return some or all of your earned carbon credits if, before your permanence period ends, you terminate your project, stop land management activities or carbon stores are reversed.

Measurement

The Supplement to the Carbon Credits sets out the steps and necessary activities required under the Carbon Farming Initiative to measure soil carbon sequestration.

Firstly, the project must have a geospatial map produced of the Carbon Estimation Area (CEA). The CEA boundaries need to be mapped at high resolution and not exceed +- four meters. A soil sampling plan based on established protocols is to be developed, including details of the CEA, exclusion zones, emission accounting areas, strata and the sample locations.

The stratified sampling design must divide the CEA into three or more strata. Strata can be equal or unequal in size but samples cannot be composited if unequal.

Within each stratum, sampling locations are assigned using a pseudo-random number generator and there are comprised of at least three sample locations within each stratum.

It is recommended, if strata are equal in size, that composites are formed from soil cores from across all the strata, rather than analysing individual cores.

The procedures for sample preparation, analysis to obtain total soil organic carbon content are very detailed. This includes the use of dry combustion analysis, spectroscopic modelling, software platforms and final calculations. These should be undertaken by suitably skilled people which may require the engagement of external consultants.

FAQs

Are soil carbon projects profitable?

The current ERF methodology is complex, and profitability is determined by the scale, amount of carbon sequestered, the carbon price, soil sampling and other business input costs.

Can costs be lowered by undertaking fewer soil samples?

There needs to be a balance between sampling density as lower rates can have higher variability and potentially impact on lower estimates for saleable carbon, where higher rates might provide higher confidence but render the project uneconomic.

What data sources can be used to delineate a CEA?

Project proponents can use a Differential Global Positioning System (GPS), Field surveys and sampling, Orthorectified aerial photographs, Orthorectified satellite imagery and Cadastral databases. Spatial data have a horizontal accuracy of at least 10 meters at 95 per cent threshold in accordance with the Intergovernmental Committee on Surveying and Mapping (ICSM) - Australian Map and Spatial Data Horizontal Accuracy Standard 2009.

What is Additionality?

Additionality is a core principle underlying the Carbon Farming Initiative and the ERF. It ensures that any emissions reduction or sequestration under a particular project is additional to what would have taken place in the absence of the project. Under the ERF, a key additionality concept is that projects must be new.

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natural resource management program

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