

PACKHORSE WHITE PAPER



Australian Carbon Credit Units

Introduction

Soil carbon is a promising way to reduce emissions globally, but methods to assess gains in soil carbon must be accurate. There are many soil carbon crediting protocols, including Gold Standard, Verra, Regen Network, FAO, Plan Vivo, and BCarbon. However, these protocols are not all the same, and they vary across key dimensions like scientific rigour, the additionality of project climate claims, and the permanence of carbon storage requirements¹.

To reduce the opacity among protocols, CarbonPlan (funded by Microsoft) conducted a review of 17 crediting systems², with Australian Carbon Credits (ACCUs) coming out at the top with the highest rating (Figure 1) [Soil carbon protocols – CarbonPlan](#). The Australian Government-regulated system ensures only genuine (measured, not modelled) removals of atmospheric carbon are rewarded and includes mechanisms to account for potential carbon losses (risk buffer of 25% of credits).

ACCUs as a robust crediting system

Government-supported & regulated:

The Australian Government's Emission Reduction Fund (ERF) ensures only genuine removals of atmospheric carbon are rewarded in the form of Australian Carbon Credit Units.

The design and implementation of the soil carbon protocol are overseen by the Emissions Reduction Assurance Committee, an independent statutory body whose members are appointed according to their expertise. The method is assessed against the Offset Integrity Standards that include:

1. **Additionality:** a method should result in carbon abatement that is unlikely to occur in the ordinary course of events.
2. **Measurement and verifiable:** a method involving the removal of greenhouse gas emissions should be measurable and capable of being verified.
3. **Evidence-based:** a method should be supported by clear and convincing evidence.
4. **Project emissions:** material greenhouse gas emissions emitted as a direct result of the project should be deducted.
5. **Conservative:** where a method involves an estimate, projection or assumption, it should be conservative.

¹ *Scientific rigour = approach to quantifying or estimating soil carbon using physical soil sampling, modelling tools, or a combination of approaches. Additionality = approach to analysing the causal relationship between the funds a project seeks via generating credits and the climate benefits it claims to produce. Represent a carbon removal that would otherwise not occur. Permanence = duration of carbon removal permanence promised and consideration of strategies to manage reversal risks.*

² [Soil carbon protocols – CarbonPlan](#)

The Clean Energy Regulator issues ACCUs into the National Registry of Emission Units. The issuance of ACCUs is governed by the CFI Act 2011 and Carbon Credits (Carbon Farming Initiative) Regulations 2011. The Clean Energy Regulator is an independent statutory authority. Numerous laws underpin their compliance and enforcement approach and provide a range of monitoring and enforcement powers.

Scientific rigour: Measurement, not modelling

The ACCU methodology is based on the measurement of soil samples, not modelling, ensuring only genuine removals of atmospheric carbon are rewarded.

Of the 17 protocols reviewed by CarbonPlan, only 3 require direct measurement of soil as the basis for issuing soil carbon credits. The remaining protocols require measurement of soil to calibrate or parameterise models at the project outset but not for the subsequent issuance of carbon credits. Several of the protocols reviewed required no direct soil measurement and rely exclusively on models to estimate soil carbon changes and issue credits.

A reliance on modelling is concerning as it is an imperfect representation of soil organic carbon changes over time. For example, models make assumptions about the persistence and accrual of soil carbon over time, including that it increases linearly. However, soil carbon does not have unlimited potential and is constrained by factors such as climate. In addition, many modelling approaches (e.g. Regen Network) use remote sensing approaches to assess vegetation cover via satellite imagery, from which soil carbon levels are estimated. However, vegetation cover obscures soil, and research has found predictions of soil carbon using this method are highly uncertain³.

Independent audit

Soil carbon projects under Australia's Emission Reduction Fund are subject to an initial independent third-party audit for baseline accounting, followed by three independent audits over 25 years.

Additionality

Australia's Emission Reduction Fund applies stringent additionality requirements to ensure that farmers are only awarded for new activities. An "additionality test" prevents farmers from claiming credits for practices they adopted in the past.

Permanence

Carbon stored in soils can be released back into the atmosphere through natural (e.g. drought) or man-made events (e.g. reversal of land management plans). For this reason, the Emissions Reduction Fund deducts a risk buffer of 25% from the number of ACCUs issued. If stored carbon is lost, farmers must relinquish credits from this buffer.

³ Zhang, Y., et al., (2019) Prediction of Soil Organic Carbon based on Landsat 8 Monthly NDVI Data for the Jiangnan Plain in Hubei Province, China. Remote Sensing.

Accredited laboratory for analysis: Only accredited laboratories can be used for soil carbon analysis using standardised methods.

	Practices	Rigor	Additionality	Durability	Safeguards	Rating
Australia Measurement	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
BCarbon	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
CAR Soil	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
FAO	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
Gold Standard	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
Nori	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
Plan Vivo	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
Regen Network	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars
Verra Fire + Grazing	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	Progress bar (4/5)	5 stars

Figure 1: A snapshot of the CarbonPlan review of 17 soil carbon protocols, of which ACCUs (Australia



PACKHORSE™

PO Box 255, Paddington QLD 4064
t. 07 3858 0502 | packhorse.net.au