

Understanding Soil Carbon, Markets and On-Farm Projects

A guide for landholders considering entering into soil carbon projects on farm.

What is soil carbon

Soil carbon is the organic material stored below your feet, the decomposed remains of plants, animal matter, and the microbes living in the soil. It is the foundation of soil health and one of the planet's biggest natural carbon stores. More soil carbon means better land, stronger pastures, deeper roots, more drought resilience and a potential income stream through the carbon market.

How it forms

Plants pull CO₂ out of the air and through roots and decomposing leaves carbon enters the soil. From there, it splits in two ways. Some of it gets used within a season by the soil living organisms commonly referred to as labile carbon. The rest gets locked away in humus, the dark, spongy carbon that is bound up with clay and minerals, commonly referred to as the stable carbon. It can remain in the soil for decades. Labile carbon is what builds healthy, drought-resilient soil, and it is the carbon that has the potential to earn credits.

The scale of it

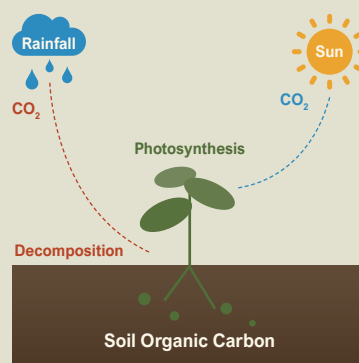
The world's soils store 2–3 times more carbon than the entire atmosphere.

More than just carbon

Every 1% lift in soil organic matter helps the soil hold an extra 90,000–180,000 litres of water per hectare, meaning increased drought resilience on farm.

How carbon moves through your soil

The carbon cycle - simplified



The short story: sun and CO₂ feed the plant, the plant feeds the soil, and the soil hangs onto a portion as long-lasting carbon.

KEY FACTS



253,000

Soil carbon ACCUs issued in Australia in 2023 alone



\$42+

Per-tonne ACCU spot price, late 2024



282,000 ha

New soil carbon project area added in 2025



~51%

Topsoil carbon lost across Australian farmland since clearing

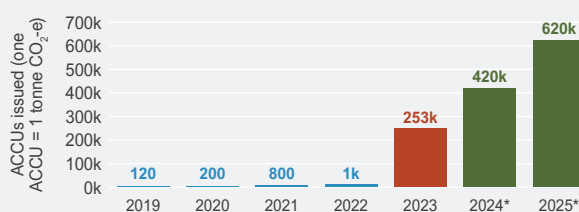


The Australian market

Australia runs one of the most rigorous carbon credit systems in the world and soil carbon is now its standout success story. Under the Australian Carbon Credit Unit (ACCU) Scheme, landholders earn tradeable credits for sequestering carbon in their soil. Each ACCU represents one tonne of CO₂ equivalent. The 2021 Soil Carbon Method is the most up-to-date set of rules which allows measurement and models the method for estimating soil organic carbon.

Soil carbon increased from fewer than 2,000 ACCUs in 2022, to over **253,000 ACCUs in a single year in 2023**. Queensland is now the national hotspot. ACCU spot prices have held in the \$35–\$40 range through 2025–26, with steady demand from the Safeguard Mechanism, voluntary buyers, and the Federal Government's carbon abatement contracts.

Soil carbon ACCUs issued in Australia, 2019–2025



Source: Clean Energy Regulator; S&P Global Commodity Insights; Beef Central. 2024* and 2025* are estimates.

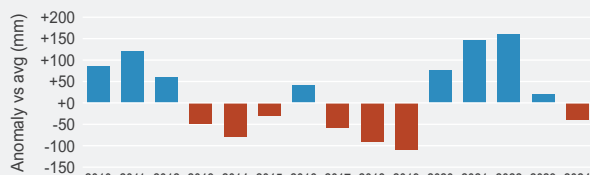
What drove the surge

2020–2022 delivered three La Niña years in a row across eastern Australia. Projects that set their baselines in the dry years of 2016–2018 captured significant measured gains. Observations of established carbon projects show that working with the weather can yield the best results.

The science confirms rainfall is the number-one driver of soil carbon, ahead of soil type, climate zone and even management. (Badgery et al. 2024, Sanderman/CSIRO)

Eastern Australia Rainfall Anomaly

Deviation from long-term average | QLD/NSW agricultural zones



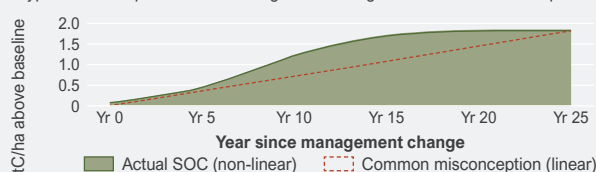
Source: Bureau of Meteorology, La Niña events: 2010–12, 2020–22. Most first soil carbon baselines were set 2016–2018 during a dry period.

The S-curve

Soil carbon builds slowly at first, then accelerates as biology kicks in and then saturates. Soil Carbon projects are a long game, the biggest credits arrive usually in years 5–15.

Soil Carbon Accumulation Over Time

Typical s-curve pattern after management change vs common misconception



Based on Sanderman et al. CSIRO field trial data. Rates and timelines are illustrative. Individual property results will vary.

Queensland soil carbon projects in action

Gunthorpe Cattle Co.

Tarramba, Central Qld - 1,495 ha

Aggregation of 15 soil-carbon projects on Brigalow Belt vertosols. Earned 8,600 ACCUs across the first two projects in two years, well ahead of the usual five-year cycle. MLA producer demonstration site.

Warnock Family

Morinish, Fitzroy Basin - 2,109 ha

Eleven-project aggregation. Shifted from set-stocking to high-density rotational grazing, doubled stocking rates, installed 75 km of electric fencing and 56 new watering points. 6,152 ACCUs in two years.

Beddall Family

Roundstone, near Moura, Qld - 1,114 ha

Twelve-project aggregation managed with AgriProve. Rotational grazing plus introduced legumes. This is an example of how a single property can be carved into multiple projects to fit different soil types and time-stagger credit issuance.

Practical ways to build soil carbon

Building soil carbon is not a singular approach, it is a combination of practices that together shift the balance from carbon loss to carbon gain. A practical approach should reduce soil disturbance, keep living roots in the soil, add organic matter and support microbial development.



Rotational grazing

Regular movement of stock allows paddocks to rest. Grasses recover, deep roots regrow, and more carbon goes underground. Research shows lifts in soil organic carbon of 19–28% compared with continuous grazing.



Keep ground cover up

Bare soil bleeds carbon, it crusts, erodes, and oxidises in the sun. Setting conservative stocking rates and monitoring pasture condition is the fastest way to stop ongoing losses before you try to rebuild.



Diverse, deep-rooted pastures

Multi-species pastures with legumes feed a wider range of soil microbes, fix nitrogen, and push roots deeper. Perennial pastures show 16–23% more carbon at 0–30 cm than monoculture annuals.



Reduce tillage, retain stubble

No-till or minimum till, combined with leaving stubble on the surface, protects the carbon you already have and feeds the microbes that build more.



Compost, manure and biochar

Adding well-made compost or aged manure feeds biology and adds carbon directly. Biochar is even more durable, it can persist in soil for hundreds of years and lifts water-holding capacity at the same time.



Trees, shade and corridors

Integrating trees with grazing or cropping (agroforestry) can lift soil carbon up to 4× more than cropping alone. Native vegetation corridors give you carbon, shade, windbreaks, biodiversity and erosion control.



Free self-assessment tools

LOOC-C

CSIRO

Drop a pin on your paddock, answer a few questions about land use and management, and get an ACCU estimate by method (soil, vegetation, etc.) using pre-run FullCAM models. Shows likely co-benefits too.

Landholder Guidance and Checklist

Carbon Market Institute - 2025

A 20-page plain-English checklist covering due diligence on contracts, fees, permanence, and developer questions. Print it and tick it off before any meeting.

Setting your carbon project up for success



Pick country with room to grow

The biggest gains and the best credit returns come from country that has been worked hard and has plenty of upside. A genuine step-change from a degraded starting point is the sweet spot.



Commit for the long haul

Permanence is 25 years. Keep the land management practices going, the carbon stays, and the credits keep flowing. Plan management changes as long-term decisions.



Set a smart baseline

Sample widely, sample deep (down to 30 cm at minimum), and time your baseline so it fairly represents your starting point. A good baseline protects you in dry years and rewards you in good ones.



Budget for establishment costs

Baseline sampling, registration and project setup typically cost \$50,000–\$150,000 before the first credit is issued (depending on the size of the property). Many landholders share these costs with a developer (commission usually 20–30% of revenue).



Understand the buffer

25% of credits are held in a national buffer pool and released progressively as carbon is maintained. It is there to protect you against drought or fire.



Get good advice early

Talk to your agronomist, an independent assessor, and other landholders running projects. The best decisions are made before you sign up.



Where to get help

Sustainable Agriculture Facilitator

Free, independent, locally based.
Helps you weigh up a carbon project before you commit.

Carbon Farming Outreach Program

Federal program (DAFF) with free training and a knowledge hub on carbon farming methods.

References & further reading

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Ready to take the next step?

Get in touch with the Southern Queensland Landscapes' Sustainable Agriculture Facilitator at admin@sqlandscapes.org.au for a free, independent conversation about whether a soil carbon project is the right fit for your property.



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Australian Government