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CARBON INDUSTRY OVERVIEW

A guide to understanding carbon projects, carbon markets and carbon industry players in Western Australia

AUSTRALIA'S CARBON INDUSTRY DEVELOPMENT

Australia's carbon industry began when the Federal government began making commitments to reaching greenhouse gas emissions reduction targets in the early 1990s.

Carbon farming has played an increasing role through the years, particularly since the enactment of the 'Carbon Credits (Carbon Farming Initiative) Act 2011'.

After this legislation passed, a public fund (containing about \$2.4 billion) was created, from which money would be drawn to pay for emissions reduction 'credits'. This was called the Emissions Reduction Fund ... the ERF.

A number of 'methodologies' were approved (ie legislation passed) to allow the generation of carbon units called 'Australian Carbon Credit Units' (ACCUs). ACCUs are, essentially, a unit of currency, which can be purchased in Australia to offset local offsetting requirements (they cannot be used for compliance purposes outside of Australia).

For more information on the Emissions Reduction Fund, visit www.cleanenergyregulator.gov.au/ERF

WHAT IS CARBON FARMING?

The term 'carbon farming' refers to land-based carbon projects.

These include those which either store carbon in vegetation or soil, or reduce emissions from animal production enterprises. Tree planting projects are the most common example of land-based carbon projects in WA.

The registration and development of a carbon project can seem extremely complex to someone not familiar with the carbon industry. Just like many other industries, carbon has its own terminology, and acronyms which can be overwhelming.

Understanding carbon farming is like learning a new game. In the carbon project game, any play is a long-term commitment. Projects run for at least 25 years – a period known as the project's 'permanence period'. Projects with 100-year permanence periods are most common.

Carbon projects involve legal and financial commitments, just like any other business deal does.

WHO ARE THE CARBON INDUSTRY PLAYERS?

A carbon project is often developed by a 'carbon services provider'. These companies usually specialise in a particular type of carbon project. This is similar to services companies in other industries (ie ... in property where an agent might specialise in commercial, residential, rural, etc).

Most of the existing carbon farming projects in WA have been developed by a carbon services provider. These companies sign an agreement with a landholder to run a carbon project on their land for the life of the project (ie 25 or 100 years).

In other cases, carbon companies buy land on which to develop a carbon project (eg the Yarra Yarra Biodiversity Corridor, where a private company bought land and funded biodiverse tree planting across about 13000 hectares over the past decade or so).

The WA Landcare Network is developing a resource which will identify and profile the companies, organisations and consultants now offering carbon industry services in WA. The 'WA Carbon Industry Capacity Matrix' will provide a useful reference for those considering carbon industry participation.

A NEW SOURCE OF FARM INCOME?

Increasingly, freehold landowners are curious about what opportunities the carbon market could offer them. They've heard stories about landowners being paid for carbon sequestration and want to know more.

The most common carbon project delivery model involves carbon companies offering landholders an agreement, in which the carbon company funds the project development (eg tree-planting costs and project admin costs) in return for a share of the carbon credits generated by the project (perhaps an equal share or a 25/75% split). The agreement would apply to the life of the carbon project (which is usually at least 25 years... sometimes 100 years).

Or, landholders can register, fund and manage the carbon project themselves. This involves employing contractors for specialist areas of project development, such as legal services, GIS mapping, soil testing or vegetation growth monitoring, land management plan development, and/or full project management services. This works on a fee-for-service basis, so the landholder retains all carbon credits generated by the project but also pays all costs of the project development.

Thirdly, landholders can agree on a payment, per hectare, from a carbon company, for the use of their land for a carbon project.

Other models of carbon project development are likely to be developed in what is a very fast-moving sector.



LAND IS KING IN CARBON

One of the biggest challenges facing organisations seeking to develop carbon projects is access to land. Not all carbon companies want to buy land, so seek to enter agreements with landholders in order to facilitate carbon projects.

Though the carbon market/industry is complex, it is not unlike any other commodity market. Understanding the drivers of demand and the limitations on supply are as important in carbon as in grain, livestock and fibre markets. High demand and short supply drives prices up. Low demand and oversupply drives prices down.

Competition among carbon service providers is strong, which means landholders have a range of options available for them to consider.

There is also a range of different carbon 'methodologies' to consider. A carbon 'methodology' is a type of project. Just as there are many different sports to play, each with a different rule book, there are different carbon project 'methodologies' (which are also sometimes just called 'methods') with a unique set of rules. Examples of the different carbon project methodologies are the 'plantation forestry method', the 'reforestation method, and the 'soil carbon method'.

ERF CARBON PROJECTS



As at November 28, 2020, there are 35 different carbon project methodologies available under the Emissions Reduction Fund (ERF) program. Of those, about 16 are categorised as 'opportunities for industry'. The remaining 19 are 'opportunities for the land sector'.

Of particular interest to the WA Landcare sector will be the land-based carbon sequestration projects. To date, only the land-based methodologies which store carbon in vegetation have been utilised in Western Australia. Soil carbon storage, is, however, generating significant interest and there are soil carbon projects in the development stages in WA (and 95 exist in other states).

WA now has 121 active carbon projects registered under a range of ERF methodologies (methods) – about 16% of the 726 projects now running nationally. The vast majority use vegetation methodologies, while 12 use landfill and waste methods, 15 use the savannah burning method and 8 operate under energy efficiency methods.

For more information on the Emissions Reduction Fund, go to <http://www.cleanenergyregulator.gov.au/ERF>

View interactive map at:

<http://www.cleanenergyregulator.gov.au/maps/Pages/erf-projects/index.html>



SUPPLY AND DEMAND...



The **supply** of carbon offsets are from projects which either reduce (cut or capture) emissions of greenhouse gases from industry, or which sequester (store) carbon in land-based methods.

Carbon projects are running all over the world. Some credits sell for as little as US\$1 (from, say, a renewable energy project in Asia), while others are sold for up to, and possibly even above, \$50 (from, perhaps, a biodiverse planting in a location crucial to some endangered plant or animal species). There is, increasingly, demand for credits generated alongside other ecological co-benefits. There are a number of programs which are being developed which will help to quantify the co-benefits, which may one day generate 'biodiversity credits'.

The ERF now recommends project developers aim to achieve what's known as 'co-benefits', to add value to the ERF program.

Demand for carbon credits comes from business, government and individuals.

The top Australian emitters (entities which emit more than 100,000t of CO₂e/year) are required, through the Federal government's 'Safeguard Mechanism', to offset any emissions above an agreed level. These emitters account for about half of Australia's total carbon emissions. This part of demand for carbon credits is known as the 'compliance market'.

Another source of demand is the 'voluntary market', where companies and individuals/families make the choice to offset some or all of the emissions they generate in normal business/life.

VERIFIED VERSUS UNVERIFIED CARBON CREDITS

As if there is not already a lot for landholders to think about in relation to carbon, there is also a choice between running 'verified' or 'unverified' carbon projects.

A 'verified project' (also known as 'accredited' projects) is one which is registered with, and run according to the rules of, an accreditation program.

These programs include:

- * Australian Emissions Reduction Fund (ERF) - issues Australian Carbon Credit Units (ACCUs);
- * Clean Development Mechanism (CDM) - issues Certified Emissions Reductions (CERs);
- * Verified Carbon Standard (VCS) - issues Verified Carbon Units (VCUs); and
- * Gold Standard (GS) - issues Verified Emission Reductions (VERs)

An 'unverified project' is not verified by an independent accreditation program. These are run according to an internal methodology developed by the project developer. Unverified credits are also known as 'unaccredited offsets', and can sell for as much as, or more than, some verified offsets.

Carbon credits generated by an unverified carbon project can only be used in the voluntary carbon market. Companies requiring offsets for compliance purposes can only buy verified offsets (ie those companies who must offset under the Safeguard Mechanism requirements).

There are charity organisations which manage unverified carbon offsetting projects, and they seek land on which to plant trees for these projects.

WHAT DOES CO₂e MEAN?



When people talk about the carbon price, they are referring to the cost of buying one carbon credit. One carbon credit is the equivalent of one tonne of carbon dioxide gas. This is written as tCO₂e - a tonne of carbon dioxide equivalent.

This is where things get confusing, but when it's understood that carbon dioxide (CO₂) is used as the base unit for comparing the 'global warming potential' (GWP) of other gases known to contribute to climate change. The table to the right may help explain this further.

Greenhouse Gas	Formula	100-year Global Warming Potential (AR4)
Carbon dioxide	CO ₂	1
Methane	CH ₄	25
Nitrous oxide	N ₂ O	298
Sulphur hexafluoride	SF ₆	22,800
Hydrofluorocarbon-23	CHF ₃	14,800 ^Δ
Hydrofluorocarbon-32	CH ₂ F ₂	675 ^Δ
Perfluoromethane	CF ₄	7,390

Source: <http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines/Reported-baseline/global-warming-potentials>

^Δ <https://climatechangeconnection.org/emissions/co2-equivalents/>

CONFUSION IN CARBON CONVERSIONS

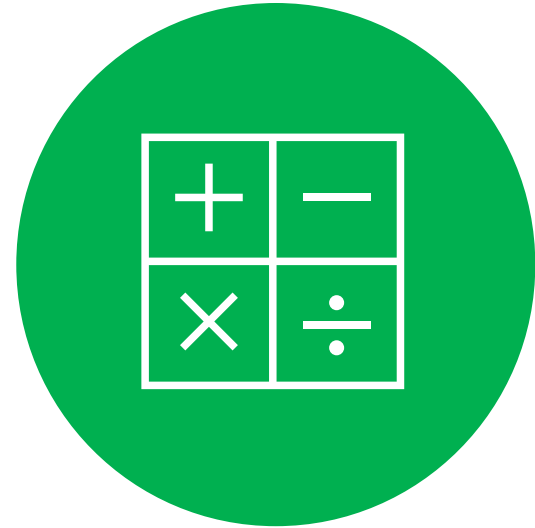
In a carbon farming context, it is important to understand the conversion of a tonne of organic carbon into one tonne of CO₂e (which is one carbon credit).

In soil, for example, one tonne of soil organic carbon (SOC) = 3.67t of CO₂e.

This really can be confusing, so it might help to express it in terms of money...

If one carbon credit (which is 1tCO₂e) is worth \$16, then one tonne of soil organic carbon would equate to 3.67tCO₂e and, therefore, be worth \$58.72 (ie \$16 x 3.67).

It also may be helpful to think of CO₂-e as one currency, and OC as another ... where the exchange rate between the two is 3.67.



POTENTIAL CARBON YIELDS

“How much could I make from carbon?” is a question often asked by landholders, but one which is not easy to answer due to the many different factors at play.

However, a ‘guesstimate’ on carbon yields in WA is that yields could range from less than 1tCO₂e/Ha/yr to more than 8t CO₂e/Ha/yr. Carbon project type, soil type, landscape condition, rainfall and weather conditions are just some of the factors affecting the potential carbon yield of a land-based carbon project. It is generally expected that the highest gains would come from medium to high rainfall areas, and the lowest gains would be likely from soil carbon projects in lower rainfall zones.



If assuming a 4tCO₂e/Ha/year yield, and a carbon price in line with the current ERF carbon auction average price of around \$16, the carbon project income would be \$64/Ha/year. Project expenses can vary considerably between different project methodologies and site complexities.

A useful tool in assessing carbon yield is a program known as FullCAM. Find details at <https://www.industry.gov.au/data-and-publications/full-carbon-accounting-model-fullcam>

THE PRICE OF CARBON

The 'carbon price' can also be difficult to fathom.

This is due to the many different types of carbon credits (verified or unverified, and others with co-benefits valued by some buyers), and the wide range of different mechanisms by which carbon credits are generated and the differences in prices achieved in different parts of the world.

In Australia, the government's Emissions Reduction Fund (ERF) program provides one easily accessible answer to "How much is a carbon credit worth?". The ERF has two annual 'reverse auctions' in which buyers bid to buy the ACCUs offered at that auction. The ERF publishes the average price of the carbon credits sold in each auction. There is no obligation for Australian Carbon Credit Units (ACCUs) to be sold through the government auctions. They can also be sold on the voluntary market.

The last auction in September 2020, resulted in an average price of \$15.74 , down from a high of \$16.14 in the February 2020 auction.

<http://www.cleanenergyregulator.gov.au/ERF/Pages/Auctions%20results/September%202020/Auction-September-2020.aspx>

There is also a website managed by Jardin Australia www.accus.com.au which lists a daily spot price guide on ACCUs and there's also many other sites which help players keep up to date.

FREQUENTLY ASKED QUESTIONS

What if there's a fire?

Carbon project methodologies make provision for what happens in the event of an accidental fire. If the project area is burnt, no further carbon credits would be issued until the vegetation or soil carbon has returned to pre-fire levels. A 'risk of reversal' buffer, which is built into the project methodologies, means carbon credits issued do not have to be paid back if the fire was not intentionally lit by the project owner or the result of non-compliance with fire risk management requirements.

Can a project be shared between landholders?

Yes. This practice is known as 'aggregation' of land areas to form one project. Carbon projects are usually more viable as the land area increases.

Click here for more information on the Clean Energy Regulator's website.

DISCLAIMER: The answers given for these 'FAQs' are general in nature and not intended to serve as advice on which to base a decision relating to carbon project participation. Methodology-specific information on each of these questions should be sought.

What are the upfront costs?

The cost of establishing a carbon project varies considerably between methodologies and accreditation programs. Often, a carbon services provider will meet the cost of the project establishment in return for a share of the carbon credits generated by that project. If the landholder wishes to establish the project themselves, the full cost of establish the project is their responsibility but they also keep all the carbon credits issued.

Can I cancel a project?

Yes, a project can be revoked, but if carbon credits have been issued they must be relinquished.

All parties with interests in the project would need to agree to that project being revoked.

If a project fails do I have to pay money back?

Only if carbon credits have been issued and the carbon sequestered is lost (ie returns to, or below, baseline levels) do project owners need to pay money back.

Example: *Six years after registering a soil carbon project, John was issued 10,000 ACCUs for increasing soil carbon levels above baseline levels. After that, he failed to continue with management practices which maintained those levels of carbon in the soil and the carbon stocks fell back to the amount he had at the start of the project. Unless John returns the soil carbon levels back to the year 6 levels before the end of the project, John would be liable to repay the 10,000 carbon credits.*

The Carbon Industry Overview project team acknowledges its supporters...



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