

# Carbon Neutral Pastoral Production in the SA Arid Lands

## Climate Change and Carbon Economy Extension in the SA Arid Lands

### What is Carbon Neutral?

'Carbon Neutral' is the term used when the world, nation, business, or individual activity reaches a point of net zero emissions. Carbon Neutrality is achieved by reducing the greenhouse gasses a business emits as far as possible, then offsetting the remaining emissions with carbon credits or other units to achieve a zero emissions balance.

### Why Carbon Neutral?

To stop the build-up of Greenhouse Gases (GHG) in our atmosphere the nations of the world need to reduce emissions or increase the rate in which GHG's are removed from the atmosphere. 192 countries have signed the Paris Agreement which aims to stop the increases in global temperatures by reducing greenhouse gas emissions.

It is anticipated that in order to meet emission reduction targets and participate in low carbon marketplaces, businesses will increasingly want to source produce from carbon neutral sources. This could provide niche market opportunities for pastoralists.

#### Paris Agreement (on Climate Change)

The Paris agreement is the world's first comprehensive climate agreement.

The aim of the agreement is to:

- Hold the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C, recognizing that this would significantly reduce the risks and impacts of climate change on a world scale;
- Increase the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production;
- Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

The advantages of being Carbon Neutral is similar to other activities such as Organic accreditation. There may be direct benefits such as access to new markets or increased prices paid for production as well as co-benefits resulting from the process undertaken to analyse and adapt your business to achieve carbon neutral status.

Becoming carbon neutral enables businesses to position themselves to be more competitive and efficient as the world moves towards a low emissions future.

The process of becoming carbon neutral can also provide a pastoral business with the opportunity to identify and implement a range of efficiencies which have co-benefits to the overall costs of production. A simple example of this would be if a pastoral business changed their electricity production from diesel generation to wind and solar panels. This would decrease their carbon footprint but would *also* result in a co-benefit from a reduced annual diesel bill.

### Benefits of going carbon neutral

- Creation of brand definition that can create new market opportunities.
- Customer recognition of a business that takes a lead on sustainability and climate change action.
- Market advantage if supplying to organisations who have existing carbon neutral status.
- Cost savings from reduced energy or fuel usage.
- Membership of carbon neutral networks and promotion of your business including through the Australian Government's Carbon Neutral program.
- Enhanced corporate social responsibility and environmental outcomes that can result in better community recognition.

### What's involved?

In order to achieve a carbon neutral status on a pastoral property you will need to be able to accurately measure your emissions, reduce emissions as far as possible and then offset those remaining emissions with carbon credits.

The Australian Government's [National Carbon Offset Standard](#) (NCOS) provides a set of [guidelines](#) to achieving carbon neutral status and the issuance of certification. This certification will then allow you to use the National Carbon Offset Standard logo to market your produce.

## Potential Advantages of being Carbon Neutral for a Pastoral Business



## An Australian Government Initiative

*National Carbon Offset Standard logo*

There are other carbon neutral standards such as the [Gold Standard Foundation](#) and the [Verified Carbon Standard \(VCS\)](#) that can be used to achieve carbon neutral status. These organisations are part of an international network of Non-Government Organisations that run carbon offset projects that have socially responsible co-benefits such as employment creation in disadvantaged communities or conservation works on degraded land.

For a business to become certified under the NCOS standard there are eight steps that must be undertaken:

### 1. Calculating your emissions

All activities that result in emissions with a specified "boundary" are calculated. All emissions are calculated into Carbon Dioxide equivalents (CO<sub>2</sub>e). The total of all your emissions is your "carbon account". At the end of this process you will set a "base year" to compare future emission reductions against. (See examples on page 4)

#### Defining your emissions "boundary"

**Tier 1 emissions:** As a direct result of *your activities*.  
E.g.: Fuel used by your truck or generator and emissions from your stock

**Tier 2 emissions:** Resulting from the *use* of electricity generated off property (e.g.: from the national grid).

**Tier 3 emissions:** Generated in the wider community (e.g.: The emissions from the *production* of the fuel you use or the equipment you purchase

### 2. Reduce your emissions

Change your business activities to improve energy efficiency, reduce fuel use, purchase or make electricity from renewable sources, use certified carbon neutral products or services and reduce travel. For example, use of solar panels will reduce fuel use by generators, while use of telemetry to monitor water points can reduce travel and fuel use on your property.

### 3. Offsetting your remaining emissions

Those emissions that cannot be reduced to zero will need to be offset by undertaking projects that provide recognised carbon credits or by purchasing carbon credits from other organisations that undertake projects. These projects could include activities that reduce or remove emissions from the atmosphere through vegetation management, livestock herd efficiency improvement,

renewable energy generation or energy efficiency activities.

### 4. Neutralise your emissions

Each carbon credit issued is the equivalent of one tonne of CO<sub>2</sub> taken out of or stopped from entering the atmosphere. Once you have produced or bought carbon credits equal to the tonnage of emissions from your business, you need to cancel your offset units via a public registry which ensures the credit cannot be sold more than once.

### 5. Prepare a public report

In order to maintain consumer confidence in your carbon neutral claims you are required to produce a public report on your carbon accounting, emissions reduction and offsets.

### 6. Audit

Elements of your carbon neutral program including your emission reduction plan, base year accounting and public report will require an independent audit. A number of carbon companies in Australia can provide this service.

### 7. Apply for accreditation

The Australian Government can provide Carbon Neutral certification against the NCOS and authorise you to use their logo. This will occur after assessment of your emissions reduction plan, public report and independent audit. You will need to meet the requirements of the [Carbon Neutral Program Guidelines](#). Alternatively, you may seek accreditation from one of the other recognised Standards for international offset programs.

### 8. Reporting

You will be required to report, normally in year one, then bi-annually, to the body issuing your carbon neutral certification. Essential reading is the [National Carbon Offset Standard](#) and the [Carbon Neutral Program Guidelines](#). See also the resource list at the bottom of this document. There are carbon companies that can undertake the calculation of your emissions and recommend ways to reduce them. These companies can assist you set up and manage your carbon neutral status.

## Costs

Cost will depend on the scale of your business and the emissions reduction program.

You will incur costs for:

#### Carbon Accounting

Carbon accounting will cost for external carbon accounting/audit experts or for the time you spend yourself doing the accounting using online tools supplied by the accrediting agency.

#### Purchase of Offsets

Each offset unit or carbon credit will represent one tonne of CO<sub>2</sub>e. Carbon units or carbon credits vary in price depending on their source. Australian Carbon Credit Units (ACCUs) were valued at between \$10 and \$15 each in late 2016.

### Auditing

Your emission reduction plan, base year accounting and public report will require an independent audit. Audit cost vary depending on the size of your project and the time the audits take.

### Certification and licence fees

Annual licence fees of \$3,600 to \$25,500 are required by NCOS. Other Non-Government international agencies charge a range of fees from nil to \$2,500/yr. for certification and use of their logo while others charge a few cents per carbon unit issued.

### Where to from here?

Read the Australian Government's "[Guide to going Carbon Neutral](#)"

Do some initial carbon calculations to establish your property and businesses "carbon account" or "carbon footprint" before you make changes. Tools are [available on line](#) which may give you an initial idea of your emissions. A Google search for carbon calculators will also provide you with an initial idea of size of the task of becoming carbon neutral.

[Full Carbon Accounting Model \(FullCAM\)](#) is available as a download from the Australian Government. FullCAM accounts for changes in major greenhouse gases in agricultural production. By modifying inputs, a landholder can model changes in emissions resulting from use of different plant species or soil types, soil cultivation, fire management and changes in climate.

A critical issue impacting the ability of pastoral land managers to implement their own vegetation carbon projects is that there is no method for accurate calculation of carbon uptake and emissions reduction in the arid rangelands. It is unknown when methods will be available for this activity. While the tools above can assist in the calculations of emissions from production of electricity and transport etc., but are not yet accurate for arid vegetation and soil carbon calculations.

### Resources

The Australian Government's [Carbon Neutral web page](#) is a good starting place for more information.

More detailed information can be found at:

- [National Offset Standard](#)
- [Carbon Neutral Program Guidelines](#)

The [Guide to Going Carbon Neutral](#) is a succinct document from the Australian Government of about 20 pages that gives readers a good overview of the Carbon Neutral Certification process.

A Google search of Carbon Neutral Companies will provide a range of companies and web sites which provide links to non-government accreditation certification as well as to carbon auditors and accounting expertise.



### Examples of carbon "footprints" or accounting for pastoral properties in SA Arid Lands

**Note:** These are very general calculations intended to give an indication of the emissions reduction task required to achieve carbon neutral status. These figures do not include the Carbon Neutral certification process audit and administration costs.



#### Merino Wool Property:

Average stock #: 6500 sheep

Emissions calculated: 1,100 to 1,400 tonnes of CO<sub>2</sub>e/year

Likely reductions achievable from herd improvement: 50t to 100t CO<sub>2</sub>e/year.

This figure does not include emissions reductions achieved from other sources such as electricity generation, increased fuel efficiency or changed vegetation management.

Offsetting required will be: 1,000 to 1,350 tonnes CO<sub>2</sub>e/year.

Offset Cost @ \$10/tonne for carbon credits to achieve Carbon Neutral: \$10,000 to \$13,500.

#### **Meat Sheep:**

Average stock #: 2500 sheep

Emissions calculated: 1000 to 1200t CO<sub>2</sub>e/yr

Likely reductions achievable from herd improvement: 120t to 130t CO<sub>2</sub>e/yr.

This figure does not include emissions reductions achieved from other sources such as electricity generation, increased fuel efficiency or changed vegetation management.

Offsetting required: 870 to 1,080 tonne CO<sub>2</sub>e/yr.

Cost @ \$10/tonne for carbon credits to achieve Carbon Neutrality: \$8,700 to \$10,800.



#### **Beef Cattle:**

Average stock #: 1200 cattle

Emissions calculated: 1600t to 1700t CO<sub>2</sub>e/year

Likely reductions achievable from herd improvement: 50 to 100 tonne CO<sub>2</sub>e.

This figure does not include emissions reductions achieved from other sources such as electricity generation, increased fuel efficiency or changed vegetation management.

Offsetting required: 1,500 to 1,650.

Cost @ \$10/tonne for carbon credits to achieve Carbon Neutral: \$15,000 to \$16,500.

## Glossary

### **Carbon Account:**

There are two ways to develop a carbon account for carbon neutral status:

1. Greenhouse gas inventory which the Carbon Neutral Standard recommends for organisations seeking certification.
2. Life Cycle Assessment, recommended for product and services.

**GHG** – Green House Gasses. Those emissions from human activity that contribute to warming of the atmosphere by trapping infra-red radiation.

**CO<sub>2</sub>e** – Carbon dioxide equivalent. The amount of damage that greenhouse gasses do to the atmosphere varies and is expressed in CO<sub>2</sub>e. For example, methane is 25 times more potent as a GHG than CO<sub>2</sub> therefore stopping one tonne of Methane getting into the atmosphere has the same effect as stopping 25 tons of CO<sub>2</sub>

**ACCUs** – Australian Carbon Credit Units. A tradable commodity representing 1 tonne of CO<sub>2</sub>e either removed

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**Government of South Australia**

South Australian Arid Lands Natural Resources Management Board