

Carbon and emissions for livestock producers: Where to start?

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KEY MESSAGES

- Knowing your emissions can help future-proof your livestock business
- All livestock producers have an opportunity to set a goal for their business, calculate emissions and make simple changes to reduce those emissions and manage carbon, which will likely lead to productivity gains and long-term profitability
- This article explains why you should estimate your on-farm emissions, and provides some tools to get you started
- Note that other options such as going 'carbon neutral' or participating in carbon markets are not always relevant and practical for farm businesses and have risks as well as benefits involved, so it is important to do your research and make sure it is in line with your farm business plan.

WHY SHOULD YOU KNOW YOUR ON-FARM EMISSIONS?

In recent years, animal agriculture has come under increasing scrutiny for its contribution to global warming. Social licence for agriculture continues to change, politically and commercially. Food companies are driving a transition towards 'carbon neutral' meat products to anticipate future consumer preferences and potential changes in government reporting and trading partner requirements.

In early 2022, Coles announced its new beef product line which is certified carbon neutral under the Australian Government's Climate Active program. New Zealand's largest red meat processor, Silver Fern Farms, also launched its USDA certified "Net Carbon Zero" Angus Beef for US consumers in March 2022.

The Australian red meat industry has responded to consumer demands by setting a Carbon Neutral 2030 (CN30) target, and a plan to turn this future challenge into an opportunity. Investigating your on-farm emissions sets you up to reduce emissions, cater to consumer demands, and meet potential future reporting obligations about your carbon account.

Carbon account: A measure of emissions (e.g. for a business or product). Emissions are reported in carbon dioxide equivalents (CO₂e). Preparing a carbon account involves establishing a boundary (e.g. a farm business), collecting data and calculating the carbon account.

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GETTING STARTED: FARM PLANNING FOR EMISSIONS ACTION

Estimating emissions and developing plans for carbon management and emissions reduction is relevant for all farm businesses.

Taking action on emissions is like any other business activity and needs to fit into your farm business plan. Figure 1 shows how livestock producers can plan out action to estimate and decide how and where to reduce on-farm emissions.

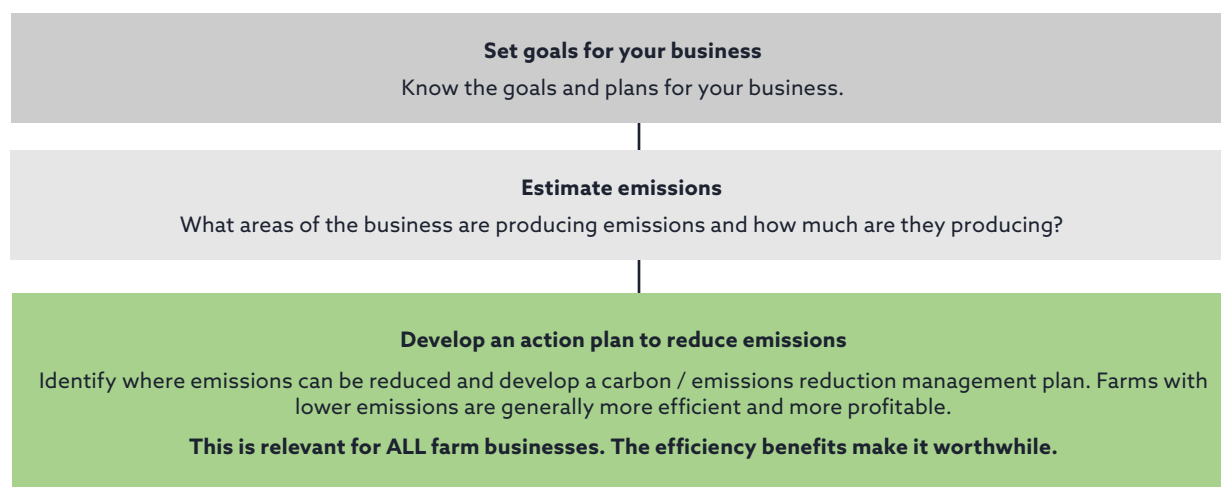


Figure 1: Framework for business planning.

SET GOALS FOR YOUR BUSINESS

The first step is developing a plan for emissions reduction which fits with your farm business plan. Knowing where you're heading helps identify feasible emissions reduction options. This can be a simple one-pager that identifies:

- Who is your market, and what are their requirements?
- What capacity do you have to change practices?
- How much do you have to invest in practice change?

ESTIMATE EMISSIONS TO KNOW WHERE YOU STAND

The next step is to identify where your greenhouse gas emissions are coming from. Use your farm and herd records to calculate an emissions profile for your business. For livestock farms, most emissions tend to be enteric methane, however nitrous oxide from fertiliser and carbon dioxide from energy use and transport also contribute to total emissions.

Knowing your emissions profile and completing an emissions baseline can help you demonstrate your sustainability credentials to suppliers and customers or potentially position your enterprise as 'carbon reduced' or 'low carbon'. It can also help producers who are already working towards long-term sustainability and productivity – and close to 'carbon neutral' status – to identify opportunities to further reduce emissions.

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If you are ready to estimate emissions try:

- The [MLA Carbon 101](#) course for a basic overview of carbon in an agricultural context
- The [Sheep & Beef Greenhouse Gas Accounting](#) Framework which shows how emissions can be quantified
- The online [MLA Carbon Calculator](#) for 'property level' or 'per unit of product' carbon estimates.



DEVELOP AN ACTION PLAN TO REDUCE EMISSIONS

By identifying where emissions are generated, you can pinpoint where changes can reduce emissions. Reducing farm emissions can generate immediate efficiencies in input use, as well as contribute to longer-term profitability. An immediate option would be changes to animal management (e.g. running a younger, heavier, healthier herd; using high fecundity ewes; or using higher quality feed).

Emissions can be offset or reduced by increasing carbon sequestration through changed soil management practices like reduced tillage; or planting trees for shade/shelter.

Most of these practices are not new but can improve farm efficiency and profits, and simultaneously reduce net emissions. So, they may be a win-win.

For more information on practices to reduce emissions see the [CN30 catalogue of products and services](#).

Carbon sequestration is the removal of CO₂ from the atmosphere (e.g. through photosynthesis in plants and trees).



Figure 2: Emissions minus sequestration equals net emissions

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CARBON NEUTRALITY AND CARBON MARKETS - IS IT PRACTICAL FOR YOUR BUSINESS?

Marketing your business or products as 'carbon neutral' may be relevant for some farm businesses. Likewise, undertaking a carbon project and selling carbon credits may be relevant for some and not others.

The decision will depend on your situation, business goals and markets. However, it is good practice to be aware of the risks involved.

CONSIDER IF IT IS PRACTICAL TO MARKET YOUR BUSINESS OR PRODUCT AS CARBON NEUTRAL, OR TO PARTICIPATE IN CARBON MARKETS

Marketing your business or products as carbon neutral
(and potentially certification)

Relevant for some farm businesses, dependent on markets and supply chains.

Undertaking a carbon project

Relevant for some farm businesses, depending on project scale.
(Consider the risks and your farm goals - insetting may be a better option)

Figure 3: Considerations for carbon neutral marketing and participating in carbon markets

GOING 'CARBON NEUTRAL'

Existing farms have a stock of carbon in the form of trees/vegetation and soil. The carbon stock of a farm varies over time, through seasonal and one-off gains and losses. To be carbon neutral, the annual amount of carbon being sequestered and stored in plants and soil must be at least as much as the annual operating emissions, for example from diesel use, enteric methane from livestock and application of nitrogen fertilisers.

To be carbon neutral, you will need to estimate net emissions from your farm using reputable accounting tools, and demonstrate that net emissions are being reduced and offset to zero. For a product to be carbon neutral you need to account for emissions through the full supply chain. Seek professional advice before making any claims of carbon neutrality.

Carbon neutral means that the net emissions associated with an activity are equal to zero because they are either zero after accounting for sequestration or have been offset through purchasing and retiring carbon offset units (carbon credits).

In some cases, carbon neutrality is achieved by a business purchasing offsets (carbon credits). If you want to make claims of your farm or products being carbon neutral, it is advisable to reduce emissions as much as possible, otherwise your claim may be seen as misleading and be dubbed "greenwashing".

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Becoming certified as carbon neutral is one way to ensure that your claim is accurate, as the certification process involves standards and usually a third-party verification process. The Australian Government's Climate Active Standard is one of these standards.

Greenwashing refers to environmental and sustainability claims made by businesses which may be false, misleading, or have no reasonable basis.

Climate Active is developing guidelines for accounting of carbon sequestration from tree plantings. This means that farm businesses may be able to "inset" rather than "offset" their emissions.

Insetting refers to activities that takes place on land within the operational control of an entity, or within the supply chain of a product, that reduce net emissions by sequestering greenhouse gases, such as carbon dioxide¹.

Offsetting is a term often used for purchasing offsets (or credits) from another entity, to reduce net emissions. Sometimes the definition of offsetting also includes sequestration within your farm boundary.

If you sell (e.g., meat) to a retailer, there may be marketing benefits from being carbon neutral or having a 'low carbon footprint'. Claims such as these need to be genuine and backed up by robust data. They may require certification if they are to be used in promotional material and product packaging.

If you sell to a processor, there may be benefits from having a low carbon footprint, as the processor may be interested in this for calculating emissions from its meat products.

If you sell directly to consumers who are familiar with your brand, you may be able to tell your sustainability story without the need to be certified carbon neutral unless, again, you are using these claims for marketing and product packaging.

SELLING CARBON CREDITS

In Australia, there are several approved methods for registered carbon projects, such as vegetation planting and avoided deforestation.

This involves undertaking a carbon project, monitoring and verifying carbon sequestered and then selling carbon credits to a buyer, including those who may want to offset their own emissions.

Carbon markets in Australia are still maturing. Participating in carbon markets is more likely to be viable for farms with large scale capacity to increase carbon storage. This may mean significant investment upfront to create transformational change.

It is therefore important to consider the costs and risks – as well as the benefits – involved to undertake a 'carbon project'.

¹ <https://www.climateactive.org.au/sites/default/files/2022-09/Draft%20Guideline%20-%20Accounting%20for%20Carbon%20Sequestration%20from%20Tree%20Planting....pdf>

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Carbon credits are offset units such as Australian Carbon Credit units (ACCUs) from Emissions Reduction Fund (ERF) projects. One ACCU represents one tonne of CO₂e sequestered or not released. ACCUs can only be generated via an eligible registered project. Note that there are other schemes and types of credits.

For carbon projects, you need to register the project and complete a carbon baseline assessment before you start any works. During the project, you will monitor and verify carbon sequestered, and then negotiate to sell carbon credits to a buyer, including those who want to offset their own emissions.

It is important to have a thorough understanding of carbon project guidelines before you start, as well as consider establishment, administration and maintenance costs, and the scale required to make the project viable.

Variable factors including climate, soil type and previous management practices will influence the amount of additional carbon that can be sequestered and project return on investment. There are also variable opportunities and risks associated with supply and demand for carbon credits, and thus the price you might receive.

UNDERTAKING A CARBON PROJECT	
PROS	CONS
<ul style="list-style-type: none"> Productivity gains – improved soil health, water holding capacity, cation exchange capacity, soil biological function Biodiversity and ecosystem services Improved land value New market opportunities Diversified income stream Potential to utilise areas, less suitable for pasture 	<ul style="list-style-type: none"> Compliance costs Permanency obligations (e.g. 25–100 years) and climatic risks (e.g. droughts, bushfires) Limitations to the amount of carbon that can be stored in soil and vegetation Immature market and volatile prices for carbon credits Credits usually can't be double counted (i.e. they can't be used in your farm carbon account, if you sell them)

The carbon you have sequestered (relating to credits earned) must be maintained, over a long period of time (usually either 25 or 100 years), which is referred to as 'permanency'. There may be challenges due to interruptions to carbon stocks from bushfires, droughts, and seasonal variability. If carbon stocks are not maintained, you may need to purchase credits to make up the shortfall of delivery.

In addition, it can take several years before a carbon project has generated credits that can be sold on the carbon market, so you need to consider timing.

The demand for offsets in other sectors of the Australian economy is high and there may be attractive opportunities for some producers generating consistent carbon credits to sell them to third parties. However, once carbon credits are sold to a third party, they cannot be claimed towards your own emissions calculations or carbon balance. To avoid trading carbon credits that may be valuable in your own business, consider selling only the credits that are surplus to offset or 'neutralise' your own emissions.

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TAKE HOME MESSAGES FOR LIVESTOCK PRODUCERS

- **Reducing emissions is important for all livestock businesses and the co-benefits to on-farm productivity make it worthwhile. The first steps are to set your business goals, estimate your farm emission sources, and identify where to act.**
- There are drivers for reducing emissions in livestock production and supply chains are already responding to these consumer demands (e.g., carbon neutral products).
- There are limitations on how much carbon can be sequestered in soils, and carbon sequestration by trees is also finite (usually up to 25-30 years).
- Going carbon neutral may be relevant depending on your market and distribution chain. To make credible claims of being carbon neutral, you may need certification and will need to reduce emissions as much as possible to avoid 'greenwashing'.
- Participating in carbon markets may be an option for some livestock businesses and is more likely to be viable if you have large scale capacity to increase carbon storage.
- It's important to understand the costs and risks – as well as the benefits – involved in carbon markets as they continue to mature in Australia. If you sell carbon credits, then you cannot count these towards your own carbon account.
- Lowering emissions through practice change and insetting may be a better option for your farm, rather than seeking to generate offsets through registered carbon farming projects.



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