

Manage Emissions on Farm

Action Plan template

This Action Plan should be read in conjunction with the 'Five Steps to Managing Farm Emissions Guide'

STEP 1 Collect data

Using the checklist in the 'Five Steps to Managing Farm Emissions Guide', ensure you have access to the data required to calculate emissions on your farm. Identify gaps in data and actions required to fill these data gaps. The main data requirements for a livestock enterprise are:

Farm inputs:

- ☐ Fertilisers (tonnes)
- ☐ Purchased animal feed (tonnes)
- ☐ Diesel (litres)
- ☐ Petrol (litres)
- ☐ Electricity (kWh) purchased
- ☐ Herbicides (kg active ingredient)
- ☐ Pesticides (kg active ingredient)

Livestock inventory for each stock class (monthly or by seasons):

- ☐ Livestock numbers
- ☐ Live weight
- ☐ Live weight gain

Purchase and sale of inventory across each stock class for the year:

- ☐ Number of animals purchased and sold
- ☐ Average purchase/sale weight of each animal

Other

- ☐ Mineral supplementation
- ☐ Wool cut data for sheep enterprises
- ☐ Percentage cows calving, ewes lambing and seasonal lambing rate

☐ Electricity (kWh) generated

For sequestration by trees:

- ☐ Area (hectares)
- ☐ Species of trees
- ☐ Age of trees



STEP 2 Calculate emissions



Use one of the calculators listed in the 'Five Steps to Managing Farm Emissions Guide' to calculate your emissions. The calculator will provide an overall emissions number for your farm, as well as an emissions intensity number for your product/s. Summarise results in these tables.

Overall emissions on farm

	tCO ₂ -e
A. Total (gross) emissions – not including sequestration	
Scope 1	
Scope 2	
Scope 3	
B. Carbon sequestration in trees	
Net greenhouse gas emissions (A – B)	

Emissions intensity on product/s

Product	Emissions intensity CO ₂ -e (excluding sequestration)

Refer to industry benchmarks, a summary is provided in the Five Steps to Managing Farm Emissions Guide, to see where your product fits on the scale. The emissions intensity may be considered a measure of production efficiency.

Emissions intensity of product

Indicate on scale bar below where your product sits in relation to the benchmark.

Low - assess market advantage opportunities

High - identify opportunities to reduce emissions and improve production efficiency (see next page)



STEP 3

Assess management options

It may be possible to reduce the emission intensity of your produce, by reducing emissions and sequestering carbon. Let's assess some opportunities to reduce emissions and/or sequester carbon in relation to your farm enterprise.

3a Options to reduce emissions

Refer to the 'Five Steps to Managing Farm Emissions Guide' for a more detailed explanation of each opportunity listed in the tables below.

Livestock enterprise

			Assessment for your farm				
	Emission reduction opportunities	Carbon market method available?	Production benefit Y/N	Cost to implement (high, medium, low)	Time to implement (high, medium, low)	Potential scale of impact on emissions (high, medium, low)	Implement (now, next, later, never)
Methane	Productivity gains from improved management	Yes					
	Productivity gains from genetics	Yes					
	Feeding strategies (rotational grazing)	No					
	Feed additive: Bovaer	No, may be able to address with additional calculation					
	Feed additive: Agolin						
	Feed additive: Asparagopsis						
	Feed additive: high concentrate feed						
	Feed additive: fats and oils						
	Feed additive: wheat feeding						
	Feed additive: brassicas						
Nitrous oxide	Fertiliser management	Yes					
	Inhibitor coated fertiliser	No					
Carbon dioxide	Renewable Energy	Yes					
	Other						

3b Options to store carbon in soil and vegetation

It may be possible to reduce the emissions intensity of your product/s, by sequestering/storing carbon on farm, either in soil or in vegetation. Let's assess the potential for each option.

Soil carbon sequestration

Soil carbon - assessing soil tests to help decision making

Gain an insight into the current carbon stored in your soils by completing the following table using information from past soil tests. A higher carbon stock is beneficial for soil health. Factors that influence carbon stocks include management practices, climate, soil type, vegetation and disturbances (eg fire).

Not all soils tests will have bulk density or soil organic carbon included. You will need both measures to calculate your carbon stocks (actual amount of carbon present on farm).

Where you don't have the information, a great resource to reference is the Soil Organic Carbon Benchmarks from the Department for Environment and Water. <https://cdn.environment.sa.gov.au/environment/docs/DEW-Soil-OC-Benchmarks-Central-Hill-FP-KI-Ag-District.pdf>

Summarise your calculated carbon stocks in this table.

Paddock	Soil type	Sample depth (cm)	Bulk Density (gcm3)*	Soil organic carbon (SOC)(%)	Area (ha)	Carbon stock (tonnes per ha) **

* Bulk density (BD) - weight of soil in a given volume.

**Calculate carbon stock using this formula: $10,000 \text{ m}^2 \times \text{soil sampling depth} \times \text{bulk density} \times \text{SOC\%} \times \text{hectares} = \text{tonnes of carbon}$

Soil carbon – assess available methods and their potential using LOOC-C

There is an online tool called, LOOC-C (Landscape Options and Opportunities for Carbon Abatement Calculator), that can be used to estimate carbon sequestration potential from soil.

<https://looc-c.farm/farmDetails>

Estimated 0-30cm SOC (%) from LOOC-C	Actual 0-30 SOC (%), if known	Target 0-30 SOC (%)***	Area modelled (ha)	Estimated SOC sequestration (tCO ₂ -e /ha/yr) from LOOC-C

***refer to Soil Organic Carbon Benchmarks from the Department for Environment and Water. <https://cdn.environment.sa.gov.au/environment/docs/DEW-Soil-OC-Benchmarks-Central-Hill-FP-KI-Ag-District.pdf>

Where your actual SOC % is already near the estimated SOC %, there is likely limited potential for a viable soil carbon project under the Australian Carbon Credit Unit market. Soil carbon is influenced by soil type, climate (particularly rainfall) and management activities.

There will always be production benefits to actively manage soil carbon, irrespective of a carbon market project.

Vegetation carbon sequestration

In Step 1, when calculating the net greenhouse gas emissions, areas of existing vegetation were considered. Let's summarise the information here and consider if there are other areas that could be planted to sequester carbon.

Summary of existing vegetation sequestration

Paddock	Vegetation type	Area (ha)	Age	Estimated sequestration (tCO ₂ -e) from GAF calculator

Vegetation – assess available methods and their potential using LOOC-C

Using the LOOC-C (Landscape Options and Opportunities for Carbon Abatement Calculator), estimate carbon sequestration potential from vegetation. <https://looc-c.farm/farmDetails>

List potential future areas that could be vegetated to help reduce emissions and find the sequestration potential using calculations from LOOC-C.

Project area reference	Estimated sequestration (tCO ₂ -e) over project term	Estimated sequestration (tCO ₂ -e) /ha /yr

3c Understand the carbon market opportunity

If you have identified areas where you are considering a change in management practice, it may be worth considering the carbon market opportunity. Refer to the 'Five Steps to Managing Farm Emissions Guide' to gain more insight, as there is much to consider.

Assess carbon market opportunities and identify those that you want to investigate further:

	ACCU method	Find out more Y/N	Notes
Agriculture methods: reduce farming and land emissions	Estimating sequestration of carbon in soil using default value method		
	Estimating soil organic carbon sequestration using measurement and models method		
	Animal effluent management method		
	Integrated farm management method		
Vegetation methods: remove carbon dioxide from the atmosphere and store it as carbon in plants	Reforestation by environmental or mallee plantings FullCAM method 2024		
	Plantation forestry method		

STEP 4

Take action



Identify management actions that you are already doing, would like to do better, or would like to introduce in the management of your property to manage emissions. Refer to the previous steps and the 'Five Steps to Managing Farm Emissions Guide' for inspiration.

4a Actions to reduce emissions

Action	Already doing	Would like to do better	Would like to start	Priority (high, medium, low)	Timeframe	Who

4b Actions to sequester carbon

Soil carbon

Action	Already doing	Would like to do better	Would like to start	Priority (high, medium, low)	Timeframe	Who

Vegetation

Action	Paddock	Area (ha)	Already doing	Would like to do better	Would like to start	Estimated sequestration (tCO ₂ -e)

Summary – Possible future on farm sequestration

	Unit of measure	Total
Total sequestration – soil	tCO2-e	
Total sequestration - vegetation	tCO2-e	
TOTAL	tCO2-e	

4c Carbon market decision

Having assessed and reviewed options (refer to 'Five Steps to Managing Farm Emissions Guide'), do you want to register a carbon project? If yes, complete the following table.

Project reference	Method under ACCU scheme	Carbon Service Provider required? Y/N, include name of provider	Risk assessment completed Y/N	Cost : benefit analysis

4d Scheduling actions

Having assessed and reviewed options (refer to 'Five Steps to Managing Farm Emissions Guide'), do you want to register a carbon project? If yes, complete the following table.

	URGENT	NOT URGENT
IMPORTANT	NOW - important and urgent	NEXT - important but not urgent
NOT IMPORTANT	LATER - not important but urgent	NEVER - not important and not urgent

STEP 5

Know if it's working



What is the desired outcome in managing emissions on your property? The answer to this question will help to determine what you should measure and monitor. Refer to the 'Five Steps to Managing Farm Emissions Guide' for ideas.

What to measure	Where	How to measure	Frequency	Timing	By whom
What do you need to measure to assess success?	<i>It may not be possible to monitor all areas, select areas that are the highest priority</i>				

Following monitoring and evaluation, review priorities and decide how you need to update your plan and schedule for the following year.