

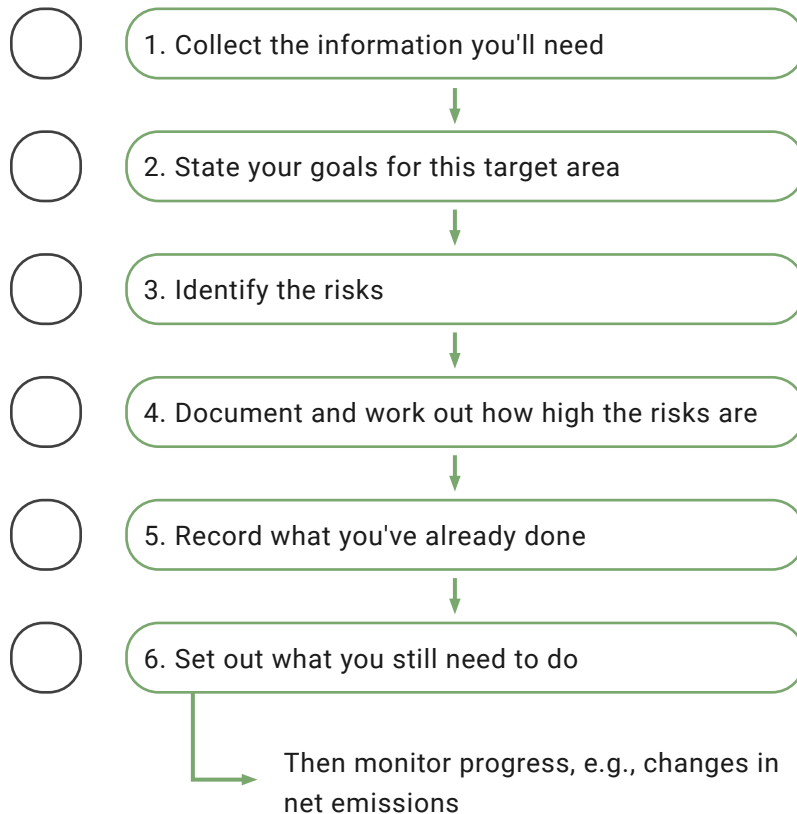
# ACTION PLAN: GREENHOUSE GAS EMISSIONS AND CARBON STORAGE



## 01 What information will I need?

- A tool to help calculate your greenhouse gas (GHG) number (several are recommended here)
- Deer Industry Environmental Management Code of Practice: pg 64 for background on emissions and carbon

Tick these off as you go



There's a place to fill these in at the end of the document



## 02 Goals

Start by setting simple overall goals on GHGs. **Here are some examples:**

My goals for greenhouse gas emissions are:

- 
1. *I want to understand how my farm produces GHGs and how it can store carbon*

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  2. *I want to work out a GHG number for my farm and include GHGs in my farm plan*

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  3. *I want to reduce overall emissions from my livestock*

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Go to the template at the end of this document to fill in your goals and the other parts of your Action Plan.



## DID YOU KNOW

GHG targets  
.....

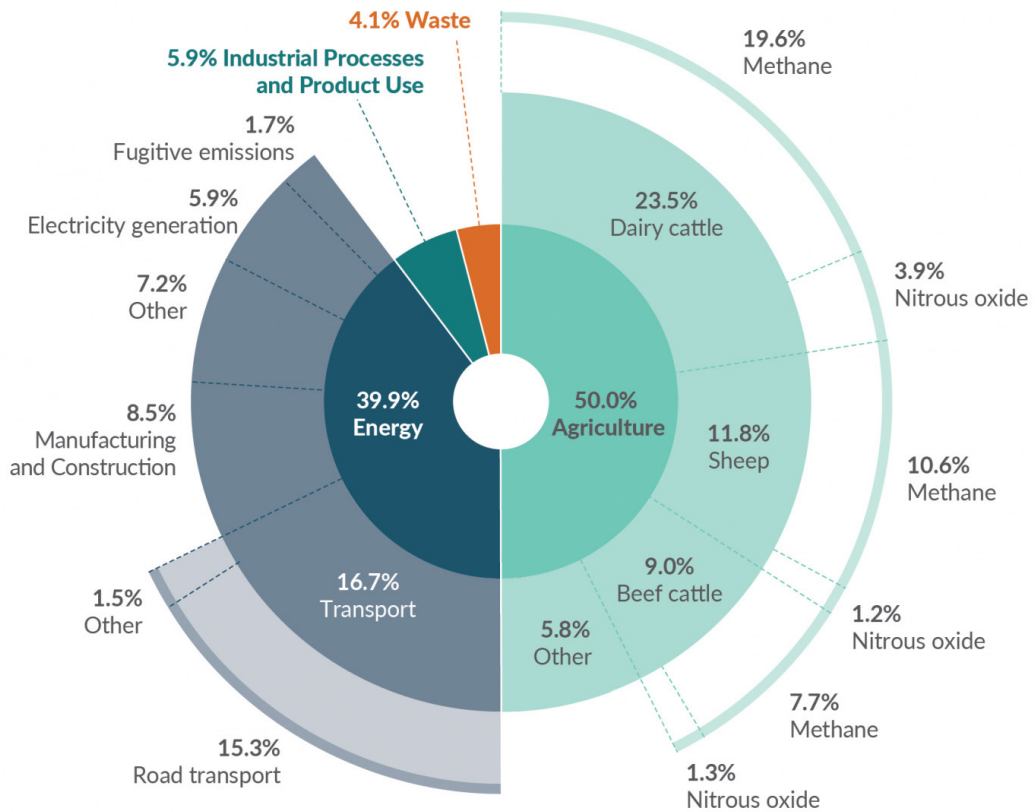
The Climate Change Commission has set targets for agriculture to reduce greenhouse gas (GHG) emissions. The commission recommends doing this through changes in existing farming practices, adopting new technologies and converting to other land uses.

Deadlines for action  
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- He Waka Eke Noa, the Primary Sector Climate Action Partnership has set important milestones:
- **May 2022:** Pricing system recommendations presented to Ministers.
  - **31 December 2022:** All farms know their annual on-farm GHG emissions
  - **31 December 2023:** Pilot project testing system for farm-level accounting and reporting of emissions completed.
  - **31 December 2025:** All farms have a written plan in place to measure and manage their greenhouse gas emissions. The on-farm pricing system, including sequestration, is up and running.

NZFAP+ and greenhouse gas emissions  
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Are you aiming for New Zealand Farm Assurance Plan Plus (NZFAP+) accreditation? Check their standards here. The work you're doing for the Deer Farmers' Environmental Manual on greenhouse gas emissions will get you well on the way to accreditation.



NZ agriculture emits 48% of NZ's GHG emissions. The industry is exploring how to measure, manage and reduce emissions to meet Climate Change Commissions targets. The deer industry's share of total emissions is estimated at 1.4% (2020) and is within the "Other" segment of this diagram. Of the 1.4%, 1.3% is methane and 0.1% is nitrous oxide from urine and dung.

Source: Ministry for the Environment.



## HANDY HINTS

George and Sharon's experience .....

Not sure where to start and what it all means? Check out the experience of farmers George & Sharon Moss: [www.agmatters.nz/case-studies/george-moss](http://www.agmatters.nz/case-studies/george-moss) (This is a dairy industry example, but the same principles apply to drystock as well.)



Photo: New Zealand Dairy Exporter



### 03 What GHG risks come from farming?

- Methane (CH4) from the stomachs of ruminant animals and manure, is the main GHG from farming. [There is more on methane emissions here.](#)
- Nitrous oxide (N2O) comes from soils when nitrogen from urine and manure or in synthetic fertilisers is broken down by soil bacteria.
- Carbon dioxide (CO2) is emitted through land clearance, loss of soil carbon, feed crop production and energy use. This is a minor emissions component in New Zealand pastoral farming systems.



### 04 How high are the emissions risks?

Record the risks of high GHG emissions. **We've started with some examples below.** Tailor this to your situation using the template at the end. See the "Risk Assessment" module for how to assess level of risk:

Activity/location examples	Risk assessment	Comment (make a note of anything specific to your place)
<i>Emissions from GHG calculation are not net zero – I don't currently have enough trees to balance out the stock missions</i>	○ ○ ●	<i>Offset options such as tree planting are limited on my farm. Need to understand what my action options are so I can be prepared once the details of the emissions scheme we will be under in 2025 are clear.</i>
<i>Forestry block to be harvested; will increase net emissions</i>	○ ○ ●	<i>Steeper harvested areas to be replanted in natives.</i>
<i>Have intensified stock numbers and increased overall numbers in the last few years.</i>	○ ○ ●	<i>Stock methane emissions are my biggest contributor to my GHG number</i>
<i>I don't yet know my GHG number for a separate property I have just bought.</i>	○ ● ○	<i>Need to run the calculation before December 2022</i>
<i>My energy company still burns coal</i>	● ○ ○	<i>While energy isn't in the on-farm GHG scheme I could still look into which electricity companys are reducing their GHG emissions more effectively.</i>
<i>Run diesel for all my farm vehicles</i>	● ○ ○	<i>Diesel already in ETS (pay for it at the pump) and high prices have made us more efficient with diesel use! Need to keep an eye on alternatives as technology improves</i>



## HANDY HINTS

Facilitators  
can assist  
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Passion2Profit Advance Party and Deer Industry Environment Groups have been working out their GHG numbers together using the Beef + Lamb NZ Greenhouse Gas Calculator. Being a member of groups like these can make it easier to work out your farm GHG number.



Choosing a  
calculator  
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OverseerFM and Farmax have a cost to use and you are likely to need a farm adviser to run these. If you already use those programs, you'll already have a GHG number – ask your adviser to show you. Otherwise, start with the free Beef + Lamb NZ GHG Calculator which is fairly simple to use and includes deer.

Tools are being continually developed and improved. The information you will need to use them varies. Choose one and use the same tool each year to track emissions.

Basic information needed to estimate on-farm emissions can include:

- farm size
- stock types and numbers
- production information
- nitrogen fertiliser kg applied

See more at: [beeflambnz.com/knowledge-hub/PDF/-ghg-calculator-user-guide.pdf](https://beeflambnz.com/knowledge-hub/PDF/-ghg-calculator-user-guide.pdf)



**Fertiliser summaries**  
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Ballance and Ravensdown provide fertiliser use summaries to help farms complete their Agriculture Production Surveys. These contain some of the information you need to work out your GHG emissions: specifically what nitrogen fertiliser, lime and dolomite you've used over a year.





## 05 Actions to reduce, mitigate or offset emissions

Write down (a) what you've already done to reduce, mitigate or offset emissions and then (b) what you have got planned. Link these back to your goals and risk assessment (above). Include timing and who's responsible. **Here are some examples.** Record your own completed actions and planned actions in the template at the end.

Goal	Risk identified	Risk level	Action	Measure and monitor	Date initiated	Who
Work out my GHG number	GHG emissions	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	Use GHG calculator to work out farm emissions	Regular review using the same calculator	2022	Me, farm environment consultant
Reduce emissions from livestock	GHG emissions	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	<p>Making sure my animals are efficient by increasing fawning percentages, getting weaners away to the works sooner and good pasture management to get good weights/velvet.</p> <p>Keep up to date with the research so I can apply the right mix of ideas to reduce my emissions and maintain my economic returns once it's clear how the GHG scheme will work.</p> <p>Currently learning more about genetics to reduce GHG in progeny, types of crops</p>	<p>Monitor areas and types of crop</p> <p>Stock records</p>	2022	Me, farm environment consultant, seed rep, adviser, contractor
Efficient diesel use and explore alternatives	GHG emissions – CO2	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	Reducing number of trips to town, look to invest in a electric car runabout for the house	<p>Diesel bills</p> <p>Aim for some electric vehicles by 2025</p>	2022	Me



## DID YOU KNOW

Options are limited  
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Research into GHG measurement tools and the best options for reducing or offsetting agricultural emissions is still underway. In the meantime, look at the known options below. Once you know your farm's GHG number, consider:

- how much you need to reduce your GHG emissions
- what might be the best candidates for your property.

The sections below will be updated as more is learnt, but currently the options for reducing or offsetting emissions without large scale stock reductions or forestry planting are limited.



## HANDY HINTS

Possible actions to reduce GHG emissions  
.....

**Run smaller or fewer stock and/or get animals to the works quicker (to reduce time on farm). Improve productivity per animal.** Methane emissions are directly related to the number of stock and the amount of feed consumed. If you can get more production from fewer animals then you maintain your economic return and emit less methane.

Target **nitrogen application** to plant growth stages and soil moisture levels. Avoiding conditions where soil is too cold or dry for the plants to use it will reduce the amount of nitrogen lost.

### Fodder cropping:

- reduce area
- direct drill rather than cultivating
- use species that keep growing after grazing (less bare soil)

Conventional cultivation speeds the release of nitrogen; direct drilling reduces this. Reducing area cropped, cultivation and bare soil can reduce nitrous oxide and carbon dioxide emissions.





*Possible actions to reduce GHG emissions cont.*

Use **feeds that reduce nitrogen consumption** by animals (e.g. plantain, fodder beet). The less nitrogen your animals consume, the less is available to be lost in urine and become nitrous oxide emissions.



Seek out breeding stock **genetics** for low nitrogen and methane loss (not yet available for deer but progress is being made with sheep and cattle).





Options to *mitigate*  
or *offset* GHG  
emissions  
.....

The options for offsetting or mitigating emissions – through actions like planting woody vegetation or increasing net sequestration in soils or wetlands – are limited and still difficult to verify.

For now, keep an eye on the latest science and any new recommendations. Consider what actions might be possible on your place but focus on knowing your GHG number.



Document it!  
.....

Think about how you will document or record actions on GHGs, e.g., fertiliser records, before/after photos, farm maps, Farmax etc.

## FOR FURTHER INFORMATION

- **Ag Matters:** [www.agmatters.co.nz](http://www.agmatters.co.nz)
- **He Waka Eke Noa:** [GHG - Farm planning guidance](#)
- **Beef + Lamb NZ:** [Farm planning](#)
- **Beef + Lamb NZ:** [Fact sheet - Greenhouse gas management and mitigation for sheep and beef farmers](#)
- **He Waka Eke Noa:** [Media release - Our world-leading farmers can know their greenhouse gas numbers](#)

# TEMPLATE: GHG EMISSIONS

Fill out your Action Plan for reducing, mitigating or offsetting emissions here.



## 02 Goals

My goals for for greenhouse gas emissions are:



## 03 How high are the greenhouse gas emissions risks?

See the "Risk Assessment" module for how to assess level of risk:

Activity/location	Risk assessment (low/medium/high)	Comment (make a note of anything specific to your place)
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	
	○ ○ ○	



## **Actions:** What I've already done to reduce, mitigate or offset emissions

Write down what you've already done to reduce, mitigate or offset emissions. Link it back to your goals and risk assessment (above). Include timing and who's responsible.

Goal	Risk identified	Risk level	Action	Measure and monitor	Date initiated	Who
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				



## **Actions:** How I will reduce, mitigate or offset emissions

Write down what you've still got planned to reduce, mitigate or offset emissions. Link it back to your goals and risk assessment (above). Include timing and who's responsible.

Goal	Risk identified	Risk level	Action	Measure and monitor	Date initiated	Who
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				
		○ ○ ○				

When you've completed this template, save this document onto your computer. You can amend it later if you need to.

● Low

● Medium

● High