



Action on agricultural emissions

A discussion document on proposals to address
greenhouse gas emissions from agriculture



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Minister's foreword



Climate change is already having a wide range of impacts on agriculture and these impacts will continue to increase over time. Scientists expect drought, floods and reductions in winter frost will increase demands on water and fertiliser, change what can be produced and increase the presence of pests. It's also likely that extreme weather events will reduce land quality and disrupt the supply chain, with impacts on profitability.

New Zealanders have an opportunity to help reduce these impacts on our farmers and ensure our children live without the worst effects of climate change. Our best chance to achieve this is to join other countries to reduce greenhouse gas emissions to limit the increase in global average temperature to 1.5°C above pre-industrial levels.

The agriculture sector will have a key role as New Zealand transitions to a low-emissions economy. Biological emissions from agriculture contribute almost half of New Zealand's total greenhouse gas emissions, so we cannot get there without addressing these.

The Government is committed to supporting a just transition to a low-emissions economy for all New Zealanders in a fair and equitable way. Putting a price on agricultural emissions is a central part of incentivising the agriculture sector to reduce its emissions and is in line with how we manage emissions from other sectors. It will take time to implement a price on emissions at farm level, but we need to start now to enable a smooth transition for the agriculture sector.

On-farm environmental management is in a very different place from only a few years ago and I congratulate farmers on the efforts that many are already making, especially around improving water quality in their catchments. Some things that farmers are doing to improve water quality can also reduce agricultural emissions. This is great stuff but more needs to be done.

Stepping up our efforts to reduce agricultural emissions will also ensure New Zealand retains its competitive advantage in a low-emissions global economy and our reputation for having some of the most sustainable agricultural practices in the world. New technologies to reduce agricultural emissions are on the horizon and our competitors will have the opportunity to reduce their emissions too. We need systems and incentives in place so our agriculture sector is poised to continue as a leading low-emissions producer of agricultural products.

We want to ensure New Zealand's agriculture sector has the right tools, information and incentives to transition to a low-emissions production system, in a profitable way. We need to work with you to make this a reality.

A handwritten signature in black ink, which appears to read 'James Shaw'. The signature is fluid and cursive, with a long horizontal stroke at the end.

James Shaw
Minister for Climate Change, New Zealand

Introduction

Last year, the Government established the Interim Climate Change Committee (ICCC) – an independent ministerial advisory group – to look into how best to manage reducing emissions from agriculture (including the option for putting a price on these emissions under the New Zealand Emissions Trading Scheme).

The ICCC engaged broadly – with farmers and growers from around the country, Māori land owners, primary sector organisations, foresters, NGOs and bankers – to develop its recommendations, which it delivered to us in April. For an overview of feedback and questions that the ICCC heard, and how they have been addressed, go to page 11 of [the ICCC report](#).

We have used ICCC's recommendations, as well as conversations with leaders in the agriculture sector, to put together two potential ways forward. This involves options for incentivising emission reductions on farm now, while giving certainty about future policy to motivate and enable farmers to reduce emissions. We now want to hear your views on how we can best take the necessary steps to address agricultural emissions, in a way that is both fair and effective.

This consultation is the first step in the process – over the next few months and in the long term we will need to work together on the details.

We look forward to hearing what you think via your responses to the questions in this discussion document.

Our proposals

We want your views on the Government's proposals to:

From 2025:

1. price livestock emissions at the farm level (see page 10)
2. price fertiliser emissions at the processor level (see page 10).

In the interim:

3. Legislate the following process to implement a price on livestock emissions at farm level (see page 13):
 - a. farmers pay for their emissions and can receive credit for reductions by 2025
 - b. all farmers must report their emissions by 2024
 - c. farmers can voluntarily report their emissions to the Government from 2023
 - d. Government reports in 2022 on further details of farm-level pricing and regulatory changes needed to implement it. If the report shows farm-level pricing by 2025 is unfeasible, emissions would be priced at processor level from 2025.
4. EITHER **Option 1** (see page 14): pricing livestock and fertiliser emissions at processor level via the New Zealand Emissions Trading Scheme (NZ ETS), with:
 - a. 95 per cent free allocation
 - b. an action plan that sets out steps for implementing farm-level pricing
 - c. recycling of funds raised back to the sector to incentivise emissions reduction and support implementation of the action plan (approximately \$47 million per annum).OR **Option 2** (see page 15): a formal sector-government agreement including:
 - a. a programme of action to support reductions in farm emissions and progress for implementing farm-level pricing
 - b. industry resourcing and funding to a level necessary to implement a programme of action (including the reprioritisation of existing levy body funds of \$25 million per annum over the five-year period).
5. Investigate other opportunities and barriers for on-farm greenhouse gas mitigation (see page 19):
 - a. options to recognise and reward carbon removals from on-farm vegetation
 - b. barriers to reducing emissions created by non-climate regulation and options to remove them
 - c. how to facilitate opportunities to create new markets for low-emissions products.

Theme 1: What we're aiming for in the long term

The issue: We need to incentivise farmers to reduce emissions

Our best chance to avoid the worst effects of climate change is joining global action for reducing greenhouse gas emissions, to limit the increase in the average global temperature to 1.5°C above pre-industrial levels.

In 2016, under the Paris Agreement, New Zealand committed to reducing emissions by 30 per cent below 2005 levels by 2030. The Government has now introduced the Zero Carbon Bill to Parliament, which will help achieve this target. The Bill recognises the different impacts of greenhouse gases, with a separate target for biogenic methane emissions – a reduction of 10 per cent compared with 2017 levels by 2030 and a reduction of 24–47 per cent by 2050 – whereas carbon dioxide and nitrous oxide emissions must get to net zero by 2050.¹

Meeting New Zealand's emissions reduction targets will require every sector to make changes. Emissions from all sectors, except methane and nitrous oxide from agriculture, are already priced through the New Zealand Emissions Trading Scheme (NZ ETS). Biological emissions from agriculture make up 48 per cent of New Zealand's reported emissions – 92 per cent of which are methane and nitrous oxide emissions from livestock and approximately 6 per cent from nitrogen fertiliser.²

Voluntary efforts to reduce these emissions have so far not been enough to achieve emissions reduction at the scale and pace that New Zealand needs to meet its climate change targets. Getting started on reducing emissions now will allow a more managed transition, while mitigating the need for abrupt and disruptive changes in the future. The Interim Climate Change Committee (ICCC) identified that the best way to motivate farmers to take action to reduce emissions is to price those emissions. The Government has committed any funds raised through pricing emissions to be recycled back to the sector to support farmers to reduce emissions.

The Government has also committed to initially only pricing emissions at the margin, by providing the sector with a 95 per cent discount on the cost of its emissions.

For more information on: pricing, see ICCC report page 54, and treating methane differently, see ICCC report page 69.

¹ The methane targets set are gross reduction targets and, therefore, cannot be met at the national level through offsetting emissions with forestry. However, this does not remove the opportunity or incentive for farmers and other land users to earn forestry units through the NZ ETS to help manage their financial liability if agricultural emissions are priced.

² 2 per cent are from other sources eg, field burning.

A price incentive could be placed at the farm level or processor level

If a price was placed on agricultural emissions, the scheme would need to define whether the farm or the processor is responsible for reporting and paying for these emissions directly.

Choosing between a farm-level and processor-level scheme involves a trade-off between the scheme's administrative costs (lower for processor level) and its ability to reward behaviour change to reduce on-farm emissions across a wider variety of methods (better for farm level).

This trade-off is different for livestock emissions and for fertiliser emissions.

Livestock emissions could be better calculated at farm level

A farm-level scheme for livestock emissions would be better able to recognise reduction of these emissions. The methods for calculating livestock emissions at processor level do not recognise all the ways in which farmers can reduce their emissions eg, productivity improvements that improve emissions efficiency.

At farm level, the farmer can use more specific calculation methods that recognise a wider range of practices that reduce emissions. However, these calculation methods are more complex, require more data and are therefore more expensive. It is acknowledged that ongoing improvements to the calculation of emissions at the farm level will be needed.

A farm-level scheme would be more expensive than a processor-level scheme, as it would need to cover 20,000 to 30,000 farmers. The ICCC noted estimates suggesting a farm-level scheme could cost between \$15 and \$39 million a year to operate.³ In comparison, a processor-level scheme would cover fewer than 100 participants and cost approximately \$3 million per year to operate. A farm-level scheme would also come with higher participation costs for farmers than a processor-level scheme.

The ICCC recommended pricing livestock emissions at the farm level, but considered this would take until 2025 to develop all the tools and systems needed to implement it. Theme 2 outlines what would be needed to implement a farm-level pricing scheme.

[For more information on pricing livestock emissions, see ICCC report page 58.](#)

Incentives for reducing fertiliser emissions are similar whether priced at processor or farm level

For fertiliser, the only currently recognised way to reduce greenhouse gas emissions is to use less of it. Because fertiliser emissions simply depend on the amount of fertiliser used, the incentive for farmers is the same whether these emissions are priced at the farm level or at the fertiliser manufacturer/importer level, with the cost passed to farmers.

³ We consider costs could be greater than this based on knowledge of other schemes the Government administers. More details are provided in the Impacts section of this document.

There would be no additional benefit in terms of incentivising emissions reduction from pricing emissions at the farm level, but there would be additional cost from including an extra 5000 or so horticulture and arable farmers in the farm-level scheme.

The ICCC recommended pricing fertiliser emissions at the processor level.

For more information on pricing fertiliser emissions, see ICCC report page 59.

Our proposals: Incentivising farmers to reduce emissions

Proposal 1: Price livestock emissions at the farm level from 2025

We propose that livestock emissions are priced at farm level from 2025. This means farmers would report and pay directly for these emissions. Farmers could earn credits if their emissions were negative ie, their sinks (trees) and free allocation were greater than their emissions.

Farmers' emissions would need to be calculated annually using approved methods, including the mitigation actions taken to reduce those emissions.

Doing this would directly incentivise on-farm emissions reduction and would enable farmers to be recognised for a wide range of mitigation actions.

As part of work to develop and implement a farm-level scheme for pricing livestock emissions, we will look at how a price on emissions at farm level can reflect different targets for methane and nitrous oxide.

Proposal 2: Price fertiliser emissions at the processor level from 2025

We propose that fertiliser emissions are priced at processor level. This means fertiliser importers and manufacturers would report and pay for fertiliser emissions.

In the future, if verifiable practices could be used to reduce emissions from fertiliser – other than simply applying less – then we could consider switching to farm-level emissions pricing of fertiliser.

To see what we know about the potential impacts of each of these proposals, see page 20 of this document.

We want your view: Incentivising farmers to reduce emissions

1. What is the best way to incentivise farmers to reduce on-farm emissions?
2. Do the pros of pricing emissions at farm level outweigh the cons, compared with processor level, for (a) livestock and (b) fertiliser? Why or why not?

Theme 2: Getting started now to get to a farm-level emissions price

The issue: Pricing emissions on farm will take time, collaboration and support

There are a number of steps that need to be worked through to get to a price on emissions at farm level.

The ICCC highlighted steps for implementing a price on livestock emissions at farm level (see the box below).

These steps are complex, challenging and will take time. This is why the ICCC estimated it would be at least 2025 before a price on livestock emissions at farm level could be implemented.

The Government, the agriculture sector and iwi/Māori will need to work in collaboration to implement emissions pricing at farm level and enable farmers to reduce agricultural emissions.

The Treaty of Waitangi places responsibilities on the Government that are relevant to how we support this transition to pricing emissions at farm level. A key part of this is partnering with iwi/Māori in good faith.

For more information on implementing a farm-level pricing scheme, see ICCC report page 72.

Figure 1: Steps for implementing farm-level emissions pricing

Amending the Climate Change Response Act to include start dates for farm-level pricing and voluntary and mandatory reporting of farm-level emissions.

Developing an **emissions calculation tool**.

Developing the **method of free allocation** (where the Government gives emissions or emissions units to emitters at no cost).

Building an **administration system** for the scheme and registering farmers in the scheme.

Ensuring farmers have the **tools and advice** to enable them to respond to a farm-level policy. In particular:

- building the **capability** of farmers and farm advisers to calculate, report and reduce emissions
- developing a climate change module in Integrated **Farm Plans**
- **supporting farmers** to take early action to reduce emissions – including specific programmes to meet the needs of **Māori land owners**
- supporting ongoing **research and development** to expand the range of mitigation options available.

There is a need for milestones along the way and interim options to get started now.

Waiting until 2025 to price agricultural emissions could delay the full engagement of the sector in the process of moving towards a low-emissions industry.

An interim measure is needed to:

- incentivise farmers to reduce emissions now
- give certainty that a price will be applied to on-farm emissions
- get started on the steps to implement farm-level pricing.

This certainty will allow farmers and the wider agriculture sector to factor an emissions price into investment decisions now.

The Government has already committed funding to support farmers to transition.

Over the past 10 years, MPI Investment Programmes have provided funding support of around \$462 million related to sustainable agricultural initiatives. This total is made up of \$378 million to fund innovation to grow value and improve sustainability – with funding provided through the Primary Growth Partnership (PGP) and Sustainable Farming Funds – and just over \$83 million for climate change research on adaptation, mitigation and extension.

Specific examples of this funding are in the box below.

Figure 2: Government funding to support farmers' transition

The Government's Productive and Sustainable Land Use package includes funding of \$122 million over five years for:

- information, tools and on-the-ground advice to support farmers making change to more environmentally sustainable and higher-value production
- supporting Māori agribusiness
- improving on-farm emissions data.

The Government has also committed to funding research into agricultural solutions for climate change, for example:

- \$8.5 million in the Global Research Alliance on Agricultural Greenhouse Gases (GRA) over 2019/20 with a focus on research, technology and practices that grow more food but produce fewer emissions
- \$48.9 million over four to five years to research agricultural emissions and build on the work of the NZ Agricultural Greenhouse Gas Research Centre and Pastoral Greenhouse Gas Research Consortium
- \$2.8 million per year (\$50 million since 2007) via the annual Sustainable Land Management and Climate Change (SLMACC) fund, which looks at agricultural emissions mitigation, climate change adaptation, forestry, cross-cutting issues and providing advice and education to improve on-farm management.

Our proposal: Setting legislative milestones for farm level

Proposal 3: Legislate the following process to implement a price on livestock emissions at farm level:

- a. farmers pay for their emissions and can receive credit for reductions by 2025
- b. all farmers must report their emissions by 2024
- c. farmers can voluntarily report their emissions to the Government from 2023
- d. Government reports in 2022 on further details of farm-level pricing and regulatory changes needed to implement it.

If the report shows that farm-level pricing by 2025 is unfeasible, emissions would be priced at processor level from 2025.

Our proposals: Interim options to get started now

In addition to setting a date and process for pricing agricultural emissions in legislation, there are two key interim options for getting started now:

- **Option 1:** pricing livestock and fertiliser emissions at the processor level in the NZ ETS. This is in the package of measures proposed by the ICCC.
- **Option 2:** a formal sector-government agreement, as proposed by agricultural leaders.

We are keen to hear what you think is the best option for getting started now and getting to a farm-level scheme by 2025. To learn more about what we know of the potential impacts of each of these options, see page 25 of this document.

Proposal 4, Interim Option 1: pricing livestock and fertiliser emissions at processor level via the NZ ETS, with:

- a. 95 per cent free allocation
- b. an action plan that sets out steps for implementing farm-level pricing
- c. recycling of funds raised back to the sector to incentivise emissions reductions and support implementation of the action plan (approximately \$47 million per annum).

Under this option, processors (dairy processors, meat processors, and fertiliser manufacturers and importers) would pay a price on emissions from 2021. For livestock emissions, that obligation would switch directly to farmers in 2025.

The Government has committed to providing 95 per cent free allocation of emissions units if agricultural emissions were included in the NZ ETS. This means the agriculture sector would only be exposed to 5 per cent of the costs of their emissions.

If agricultural emissions were to be included in the NZ ETS, there are further decisions that would need to be made about free allocation. These further decisions are outlined on page 28 'Additional questions on free allocation'.

This option, as proposed by the ICCC, would also include developing an action plan that lays out the necessary steps and timeframes for implementing a price on emissions at the farm level by 2025. Developing this plan should involve the agriculture sector and iwi/Māori, including owners of Māori land.

Funds that are raised as a result of pricing agricultural emissions could be used to incentivise on-farm emissions mitigation now and to fund elements of the action plan described above. The ICCC estimated that, with 95 per cent free allocation, a minimum of \$47 million would be raised each year to support farmers to make the transition. The ICCC recommended that the investment of funds raised is overseen by a board that includes representatives from the agriculture sector and iwi/Māori, including owners of Māori land.

For livestock emissions, pricing at the processor level treats all farmers who supply processors the same, regardless of their individual emissions footprint. This does not recognise farmers who are reducing their emissions while keeping the same amount of production. A price on emissions at the processor level could be complemented with a farm-level incentive scheme to reward early adopters who do reduce their emissions and maintain production. For example, farmers who reduced their emissions through changing on-farm practices could apply for a grant equivalent to the benefits of reducing those emissions.

The ICCC recommended Option 1 (agriculture processors are included in the NZ ETS as soon as practical) because this would:

- *“send a clear and credible signal to factor an emissions price into investment decisions”*
- *“generate funds that can be used to support farmers to reduce emissions and ensure the sector is ready for a farm-level levy/rebate scheme by 2025”*
- *“provide a gradual transition for the sector to become part of New Zealand’s domestic response to climate change”.*

Agriculture sector stakeholders have raised concerns this option is not the best approach for achieving behaviour change in the short term and the sector engagement needed to address agricultural emissions over the longer term.

For more information on processor-level pricing via the ETS, refer to ICCC report page 76.

Proposal 4, Interim Option 2: a formal sector-government agreement including:

- a. a programme of action to support farm emissions reductions and progress for implementing farm-level pricing
- b. industry resourcing and funding to a level necessary to implement the programme of action (including the reprioritisation of existing levy body funds of \$25 million per annum over the five-year period).

The Government has received a proposal from leaders of the agriculture sector that sets out a draft five-year programme of action before 2025 (see the box on the next page).

The purpose of this draft programme is to establish the foundation to support behaviour change necessary to reduce farm emissions and progress to an emissions price at the farm level by 2025.

The sector’s proposal includes a commitment from agricultural leaders to work with the Government to design a pricing mechanism at the farm level by 2025 – where any price is part

of a broader framework to support on-farm practice change, is set at the margin and only to the extent necessary to incentivise the uptake of economically viable opportunities that bring about lower global emissions.

The Government notes the emissions price that applies to all of New Zealand's other emissions is not linked to the availability of economically viable opportunities. Instead, free allocation (where the Government gives emissions or emissions units to emitters at no cost) is used to mitigate negative impacts on international competitiveness and global emissions.

The proposal acknowledges the important role iwi/ Māori play in partnering with the sector and the Government to develop a programme of action. This includes developing a deeper understanding of the Māori economy (including impacts on Māori landowners and agribusinesses) and iwi/Māori rights and interests.

Figure 3: Agriculture sector leaders' proposed programme of action to 2025

- Delivering a system for estimating and benchmarking farm-level emissions.
- Rolling out integrated Farm Environment Plans covering emissions reductions, offsets and adaptation for all farms by 2025.
- Building climate change knowledge of farm and rural professionals.
- Increasing investment in research and development to expand the tool box and technologies available to farmers to calculate and reduce their emissions.
- Engaging with the One Billion Trees programme to enhance on-farm carbon sinks to offset farm emissions (consistent with a right tree, right place approach).
- Developing strategies for climate change adaptation on farms.
- Working with the Government to develop appropriate pricing mechanisms.
- Demonstrating leadership globally to encourage momentum on agricultural emissions reductions.

Option 2 (a formal sector-government agreement) could seek to achieve the same results as Option 1, but through the use of the established farm extension (advice and education) expertise and frameworks of industry bodies.

If it becomes apparent the programme of action could not be fully achieved through existing government funding, farmer levies and commercial funding, then the sector would explore options for raising the additional funds necessary.

The Government considers the formal sector-government agreement could be expanded to:

- include a process for ensuring tikanga Māori, as well as a deeper understanding of the Māori economy, and iwi/Māori rights and interests, is reflected in work undertaken as part of the agreement
- detail funds needed to deliver the programme of action

- include programmes that incentivise or reward farmers who take early action to reduce emissions.

The advantages of Option 2 are that it could:

- provide the sector ownership of the challenge of delivering a price on emissions at the farm level
- use existing mechanisms to raise funding
- minimise administrative costs associated with the recycling of funds.

We want your view: Interim measures to get started now

3. What are the key building blocks for a workable and effective scheme that prices emissions at farm level?
4. What should the Government be taking into consideration when choosing between *Option 1: pricing emissions at the processor level through the NZ ETS* and *Option 2: a formal sector-government agreement*?
5. As an interim measure, which would be best: *Option 1: pricing emissions at the processor level through the NZ ETS with recycling of funds raised back to the sector to incentivise emissions reductions* or *Option 2: a formal sector-government agreement*? Why?
6. What additional steps should we be taking to protect relevant iwi/Māori interests, in line with the Treaty of Waitangi?

Theme 3: Opening up opportunities

The issue: Are there other opportunities to support on-farm emissions action?

In addition to the proposals we laid out in Themes 1 and 2, there may be broader opportunities to support on-farm emissions mitigation, either by reducing emissions or by carbon sequestration (ie, the uptake and long-term storage of carbon dioxide from the atmosphere).

Currently, farmers can be rewarded for on-farm carbon sequestration through forestry under the NZ ETS. On-farm forestry needs to meet several requirements for it to be rewarded in this way.

The IPCC reports that farmers would like to be recognised for carbon sequestration by a broader range of on-farm vegetation, but this is likely to be challenging and further investigation is needed.

For more information on counting carbon in on-farm vegetation, see IPCC report page 101.

Primary production is also impacted by many factors across the supply chain including access to markets, non-climate regulation and innovation. These factors can act as barriers or opportunities for reducing agricultural emissions.

For example, the IPCC notes that New Zealand's rules on gene science could be a barrier to developing lower-emissions technologies.

The Government can play a role by removing barriers and assisting the sector to make the most of opportunities. We are interested in ideas on how to do this.

For more information on opening up opportunities, see IPCC report pages 109–115.

Our proposal: Opening up opportunities

Proposal 5: Investigate other opportunities and barriers for on-farm greenhouse gas mitigation:

- a. options to recognise and reward carbon removals from on-farm vegetation
- b. barriers to reducing emissions created by non-climate regulation and options to remove them
- c. how to facilitate opportunities to create new markets for low-emissions agricultural products.

We propose to investigate barriers and opportunities to reducing agricultural emissions across the broader agricultural system. We will then identify the role the Government could play in helping to address these.

We also propose that work to develop and implement a farm-level scheme for pricing livestock emissions will include:

1. helping farmers understand how their on-farm vegetation can currently be rewarded under the NZ ETS
2. investigating whether carbon removals from on-farm vegetation that is not currently eligible under the NZ ETS can be recognised and rewarded.

We want your view: Opening up opportunities

7. What barriers or opportunities are there across the broader agriculture sector for reducing agricultural emissions? What could the Government investigate further?

How would these options impact New Zealanders?

As Themes 1–3 describe, we propose to put a price on livestock emissions at farm level and fertiliser emissions at the processor level from 2025, and in the interim:

- EITHER: price all emissions at the processor level via the NZ ETS
- OR establish a formal sector-government agreement.

This section lays out what we know about the potential impacts of these proposals.

Theme 1: Impacts of pricing emissions at farm level from 2025

The impacts of pricing emissions at the farm level from 2025 (see page 10 for details of the proposal) will depend on the final design of the scheme, which is yet to be developed. Fully assessing these impacts will not be possible until more detailed analysis of different design options has taken place. We will carry out this analysis, and consult on these options, as part of further legislative changes to the Climate Change Response Act (CCRA) after 2022.

However, we already have some initial analyses of the type and size of impacts that could arise if agricultural emissions are priced at the farm level through the NZ ETS. The following analysis assumes throughout an emissions unit price of \$25/tonne CO₂-equivalent and that participants (either farmers or processors) are allocated 95 per cent of their total emissions for free.

Potential impact on New Zealand's emissions

A price on emissions at the farm level, alongside potential rewards for on-farm sequestration, will create an incentive for farmers to reduce emissions. The actual extent to which that incentive drives behaviour change depends on the future price of emissions, and on the uptake of available emissions reduction practices and technologies (which in turn depends on how fast these technologies are developed and how much they cost). Other factors like global commodity prices and broader changes to the agricultural system, as well as supporting policies such as advice and education to farmers, also play a part.

Modelling suggests pricing agricultural emissions at the farm level could lead to emissions reduction of 120,000 tonnes of CO₂ equivalent per year, which is 0.3 per cent of New Zealand's annual agricultural emissions.^{4,5} Emissions reduction is expected to be significantly greater – at 2,450,000 tonnes of CO₂ equivalent per year (or 6 per cent of

⁴ Manaaki Whenua Landcare Research. *Modelling of agricultural climate change mitigation policy scenarios*.

⁵ These results are based on a proportional allocation method. The level of emissions reductions will depend on the way free allocations are determined. Methods which separate the level of free allocation from production and actual emissions are expected to generate significantly higher incentives to reduce emissions.

agricultural emissions) – if the Government uses a method of free allocation of emissions at farm level that does not interfere with the price incentive to reduce emissions.⁶

Potential impact on global emissions

The ICCC investigated if pricing agricultural emissions in New Zealand could lead to an increase in global emissions due to production shifting off-shore (this risk is known as emissions leakage).⁷ It found the risk of emissions leakage does not appear high in the mid-term. This is because New Zealand’s agricultural competitors have similar emissions footprints and have also adopted economy-wide emissions caps. The ICCC stated the risk of emissions leakage can be further mitigated by protecting the sector from the full cost of its emissions through providing free allocation of emission units, which the Government proposes to do at the rate of 95 per cent.

For more information on emissions leakage, see ICCC report page 82.

Potential impacts on farmers

Pricing emissions at the farm level could create costs for farmers driven by:

1. costs associated with reducing emissions
2. costs associated with a price on emissions
3. administrative costs associated with complying with the scheme.

1. Costs associated with reducing emissions

Evidence suggests that some farmers and growers could take actions now to reduce their emissions.⁸ While some of these actions could increase profitability, achieving this will depend on a range of factors. These include the mitigation option used, skill levels, farm systems, milk and meat pay-outs and labour costs. A wider range of on-farm mitigation practices is expected to be recognised and incentivised within a policy for pricing emissions at farm level.

For more information on what farmers can do to reduce emissions, see ICCC report page 32.

⁶ The level of emissions reductions will depend on the way free allocations distributed to participants. Methods which separate the level of free allocation from current production or emissions are expected to generate significantly higher incentives to reduce emissions than those methods which link the amount of allocation to current production or emissions.

⁷ Interim Climate Change Committee. (2019). *ICCC Technical Appendix 7: International Context and the Risk of Emissions Leakage*. Available www.iccc.mfe.govt.nz (search by title).

⁸ Reports include: Owl farm (2019). Farm Focus Day, Wednesday, 27 March 2019; Van Reenen (2019). *GHG costs and benefits on different land classes*, report prepared by AgFirst for the Interim Climate Change Committee. Available www.iccc.mfe.govt.nz (search by title). Biological Emissions Reference Group (BERG). (2018). *Report of the Biological Emissions Reference Group (BERG)*. Available www.mpi.govt.nz (search ‘biological emissions reference group’).

2. Costs associated with a price on emissions

Table 1 presents analysis by the ICCC on the likely average costs of emissions pricing at farm level, compared with the current farm gate, five-year average product price.^{9,10} These estimates, and those in table 2, assume a price of \$25 per tonne of emissions with 95 per cent free allocation.

Table 1: Estimated average costs of a price on emissions at farm level

Product (unit)	Emissions cost ⁹	Product price ¹⁰
Milk solids (kg)	\$0.01	\$5.73
Beef (kg)	\$0.01	\$5.31 (prime) \$3.85 (manufacturing)
Sheep meat (kg)	\$0.03	\$6.11 (lamb) \$3.28 (mutton)
Venison (kg)	\$0.04	\$8.20
Urea (tonne)	\$2.92	\$555 (ex works)

Table 2 lays out potential costs per hectare, with no emissions reductions. This is based on an analysis of 29 farms of different types and sizes, with average operating profit per hectare provided for comparison.¹¹

These numbers are highly sensitive to assumptions on type of farm, farm input costs and costs of specific mitigation activities. Farmers could reduce this cost by reducing emissions.

Any funds raised through pricing emissions will be recycled directly back to the sector to support activities that assist farmers to reduce emissions.

Table 2: Estimated average costs to farms, compared with farm operating profits, of a farm-level emissions price

Farm type	Cost/year/hectare	Profit/ year/ hectare ¹²
Dairy farm	\$14	\$1,937
Sheep and beef (North Island intensive finishing farms)	\$6	\$391
Sheep and beef (North Island hard hill country farms)	\$6	\$242

⁹ Interim Climate Change Committee (2019). *ICCC Technical Appendix 5: Free Allocation*. Available www.iccc.mfe.govt.nz (search by title).

¹⁰ Data from MPI, Beef + Lamb NZ, AgriHQ and Ravensdown.

¹¹ NZAGRC (2018). *Mitigating Greenhouse Gas Emissions on Māori farms*. Available www.nzagrc.org.nz (search by title).

¹² Data are from DairyNZ and Beef+Lamb NZ.

The decision on how free allocation of emission units would be provided at the farm level would not increase the overall impacts, but could significantly alter how the above costs are distributed across individual farm businesses.

Under some free allocation methods, farmers who are more emissions efficient than the national average (either in terms of product or by hectare) could receive an emissions credit rather than face emissions costs. On the other hand, farmers who are less emissions efficient than the national average would face greater emissions costs.¹³

For more information on emissions costs with different free allocation methods, see ICCC report page 84.

3. Administrative costs

Farmers would be expected to face administrative costs associated with calculating and reporting their emissions annually. More accurate calculation methods, which can recognise a wider range of emissions reduction actions, require more data and therefore lead to greater administrative costs than simpler methods.

Table 3 shows estimates of the potential costs per farm for calculating emissions, using either a simple or more complex method.

Table 3: Administration costs of farm-level emissions calculation¹⁴

Calculation method	Annual cost per farm
Simple (same across dairy, sheep and beef)	\$80
Dairy OVERSEER GHG report	\$500
Sheep and beef OVERSEER GHG report	\$900 (reducing to \$400 over time)

ICCC noted some stakeholders have indicated the costs estimated above are likely to be an underestimate for some farm systems. These costs could reduce if data are already collected for other purposes or if calculation tools are already being used. For example, OVERSEER is already used by a significant number of farmers in some parts of New Zealand for nutrient budgeting and farm environment planning.

However, there could be costs arising from the time it takes farmers to register and submit annual emissions calculations. There could also be costs associated with trading units (estimated at up to \$500 per transaction).¹⁴

¹³ The method of free allocation at the farm level will be the subject of further work, consultation and subsequent legislative changes after 2022.

¹⁴ BECA Limited (2018). *Assessment of the administration costs and barriers of scenarios to mitigate biological emissions from agriculture*. Prepared for the Ministry for Primary Industries (Biological Emissions Reference Group). The Beca report is available on www.mpi.govt.nz (search 'biological emissions reference group').

Potential total costs for the agriculture sector

The analysis above suggests the total costs to the agriculture sector are estimated at \$52 million per annum, excluding administrative costs. As described in Theme 2, it is proposed that funds raised through emissions pricing are recycled back to the sector to support activities that help farmers reduce emissions.

Potential costs for the Government

The Government will also incur administration costs associated with applying a price on emissions at farm level. The actual costs will ultimately depend on the design and complexity of the final scheme, the number of participants and farmers' level of non-compliance (both accidental and intentional).

The annual administration costs of a farm-level emissions pricing scheme with high compliance rates could be as low as \$9.3–\$20 million. However, these costs could be greater with a more complex scheme with potentially lower compliance.¹⁵

There would also be some set-up costs relating to building the administration systems. The estimated costs for this range from \$7–\$12 million, depending on the design of the scheme.

Potential impacts on rural communities

The ICCC commissioned research on how changes in land use as a result of agricultural emissions policy could impact rural communities. This research found that:

- a price on emissions at current prices, with 95 per cent free allocation, seemed unlikely to have significant impacts on land-use change or on rural communities
- the main driver of change, especially change from sheep/beef or scrub land into forestry, was the reward for carbon removal from forests not the price on agricultural emissions
- impacts on direct employment from land-use change could be small at the national level but could have more significant implications in some areas
- in regions where relatively low-value sheep and beef land is converted to forestry, impacts on employment may not be large but areas with lower-than-average employment rates could be more affected
- some land-use change from dairy to horticulture could occur – this would generate more jobs, although some of those jobs would be seasonal.

¹⁵ In a report for the Biological Emissions Reference Group (BERG), Beca estimated the total annual administration costs to government of administering a farm-level ETS to be \$9.3 million per annum. We have considered the report and provided updated estimates based on knowledge of other schemes the Government administers. It is estimated a more complex method of estimating emissions and determining free allocation could cost up to \$120 million per annum to administer. The [Beca report](#) is available on www.mpi.govt.nz (search 'biological emissions reference group').

For more information on impacts on rural communities, see ICCC report page 81.

Potential economic impacts for Māori

The ICCC commissioned research into potential impacts of agricultural emissions policy on iwi/Māori.¹⁶ This research highlighted the unique characteristics of Māori land (including ownership structures, governance and physical land characteristics). These characteristics affect the ability of many iwi/Māori land owners to respond to policy in a timely way to minimise risk and maximise opportunities. The research found any additional costs arising from agricultural emissions policy could result in more barriers for the continued development of iwi/Māori landholdings.

Nevertheless, many Māori and iwi-run organisations and businesses already practise kaitiakitanga and are actively thinking about how to be more sustainable. Being ahead of the curve in reducing emissions will see new business opportunities emerge for Māori and pave the way for others to follow.

Potential wider environmental impacts

There will be wider benefits from a reduction in agricultural emissions. For example, a review of existing research has highlighted that reducing these emissions could have co-benefits for water quality.¹⁷ Diversification of land use, particularly into native planting, could have biodiversity and soil erosion co-benefits.

Potential impacts of interim Option 1: processor-level emissions pricing via the NZ ETS

Potential impact on emissions

Initial modelling suggests that pricing emissions at the processor level is likely to lead to similar emissions reduction to a price at farm level in the short term. This is estimated as a reduction of around 100,000 tonnes of CO₂ equivalent per year ie, 0.26 per cent of New Zealand's annual agricultural emissions.¹⁸ Initiatives to enable farmers to get credit for on-farm emissions reduction could deliver further emissions mitigation.

¹⁶ Whetu Consultancy Group (2019). *Integrating Māori perspectives: An analysis of the impacts and opportunities for Māori of options proposed by the Interim Climate Change Committee*. Available on www.iccc.mfe.govt.nz (search by title).

¹⁷ Ministry for the Environment (2018). *The co-benefits of emissions reduction: An analysis*. Available www.mfe.govt.nz (search by title).

¹⁸ From Manaaki Whenua Landcare Research. *Modelling of agricultural climate change mitigation policy scenarios*.

Potential impact on processors

1. Costs associated with a price on emissions

The approximate emissions price per unit of product that processors would face is the same as for a farm-level price on emissions (see the table on page 22). Processors are likely to pass most of the costs of an emissions price on to farmers through lower pay-outs for milk or meat and increased prices for nitrogenous fertiliser. Since the majority of New Zealand's agricultural production competes with producers without similar emissions pricing schemes, agricultural producers are unlikely to be able to pass costs on to international markets.

The impacts of a price on emissions at the processor level, on farmers and the agriculture sector as a whole, is therefore likely to be similar to those impacts described in the section above for a farm-level emissions pricing scheme (see page 20).

2. Administration costs

Processors would face administrative costs associated with calculating and reporting their emissions annually. These costs have been estimated at around \$2 million per year for processors.¹⁹ Some stakeholders have indicated these costs are likely to be an underestimate. However, the Government notes that processors are already required to calculate and report their emissions under the NZ ETS.

Potential impacts of Interim Option 2: a formal sector-government agreement

The impacts of a formal sector-government agreement – including emissions reductions, costs to the agriculture sector and the Government, and impacts on iwi/Māori and rural communities – will depend on the details of that agreement.

If the agreement includes a commitment for funding that is the equivalent to funds raised through pricing emissions at the processor level, the impacts could be similar for the sector as a whole.

If the agreement includes no funding, or less funding than would be collected under Option 1 (interim pricing emissions at processor level), the costs of emissions and emissions reduction would continue to fall on taxpayers and other businesses.

Administrative costs could be minimal if the agreement relies on using existing levy funds and/or procuring any additional funds through current mechanisms in the agriculture sector eg, the Commodities Levy Act.

If a formal sector-government agreement does not provide regulatory and investment certainty, there could be some increased costs for farmers as a result of that uncertainty in the medium term. For example, without policy predictability, farmers and growers may not factor emissions pricing into their management and investment decisions. This could result in

¹⁹ BECA Limited. (2018). *Assessment of the administration costs and barriers of scenarios to mitigate biological emissions from agriculture*. Prepared for the Ministry for Primary Industries (Biological Emissions Reference Group).

these investments being less profitable in the future than expected, if/when emissions charges are introduced.

A just and fair transition

A planned transition over time gives us the best chance of minimising any negative social and economic impacts of change so it is just and fair for people, communities and regions. The longer we wait to start to change our practices, the more abrupt and difficult change will be. We want to avoid that risk.

The Government is committed to this. Incorporating te ao Māori (the Māori world view) and kaitiakitanga (the concept of guardianship) in our approach, as well as working with industry across the agriculture, forestry, energy, transport and waste sectors, will help get the transition right.

Supporting the transition will include training and upskilling people into new low-emissions jobs and managing the timing of policies taking effect. The Government is already looking into what else we need to do to support vulnerable regions, workers and communities, given the potential changes in the economy. Preparing for change, and investing in our progress, will make the transition less disruptive.

We want your view: Impacts

8. What impacts do you foresee as a result of the Government's proposals in the short and the long term?

Further details for interim Option 1: processor-level emissions pricing via ETS

The issue: If agricultural emissions are included in the NZ ETS, there are further decisions about free allocation.

Interim Option 1 (see page 14) would include agricultural emissions in the NZ ETS at processor level as soon as practical, with 95 per cent ‘free allocation’. This means the Government would allocate each processor a quantity of emissions units.

If this option was implemented, more details on providing free allocation to processors would need to be decided. This section outlines those decisions and the Government’s proposals.

Further implementation details for free allocation of emissions units, for example setting allocation factors in regulations, will be the subject of further work. There will be an opportunity for affected stakeholders to give feedback on those details at a later date.

Decision A: Free allocation can be made based on either an output-based or a proportional method

The ICC identified that the only practical options for free allocation at a processor level are either using:

1. An **output-based allocation** (where the number of units allocated is based on the level of production as an average across the sector).
2. OR a **proportional allocation** method (a simple 95 per cent discount on each processor’s estimated emissions – based on the kilograms of milk/meat/fertiliser they process – in a given year).

Output-based allocation method

Allocation for processors would be calculated annually using the formula:

$$\text{Annual allocation} = \frac{\text{total product for year}}{\text{total product for year}} \times \text{allocation factor} \times \text{allocation rate (95\%)}$$

The allocation factor represents the national average emissions per tonne of the relevant product (weight of slaughtered animal, milk solids or nitrogenous fertiliser sold)

Proportional allocation method

Allocation for processors would be calculated annually using the formula:

$$\text{Annual allocation} = \frac{\text{emissions (total product for year)}}{\text{x emissions factor}} \times \text{allocation rate (95\%)}$$

The emissions factor represents the national average emissions per tonne of the relevant product (weight of slaughtered animal, milk solids or nitrogenous fertiliser). Note that if a processor claimed a unique emissions factor, allocation would decrease.

For more information on the methods of free allocation, see ICCC report page 95.

The differences between these methods are summarised in Table 4. The proportional and output-based allocation methods result in broadly similar incentives and cost impacts for processors. This is because in both cases, the processor's total emissions and their level of free allocation are calculated based on production levels (emissions per kilograms of milk solids or meat or nitrogenous fertiliser sold).

One significant difference is that under an output-based free allocation method, some processors may be able to gain credit for the improvements in emissions intensity their farm suppliers make, relative to the national average. This would not affect the level of free allocation the processor would receive, but would reduce their emissions obligations.

Under output-based free allocation, processors could use unique emissions factors. This would mean that instead of calculating their emissions based on national average emissions factors (ie, emissions per kilogram of produce), processors could work with suppliers to undertake more specific emissions calculations that recognise their actions to reduce their emissions intensity. Processors could choose whether to pass that reward through to farmers, either based on individual farms or averaged across farmers.

Table 4: Comparison of allocation methods for processors

	Proportional	Output-based
Method of allocation	Percentage discount on emissions	Production averaged across sector
Emissions based on...	Units of product	Units of product
Reduced emissions intensity can be credited?	No	Yes

Proposal A: Provide 95 per cent free allocation of emissions units to processors using an output-based method.

We want your view

- A. Do you agree that the method for free allocation of emissions units at processor level should be output-based? Why or why not?

Decision B: Emissions units can be allocated either before, or with, emissions payment obligations

There are choices about the timing for when free allocation units are provided to participants. For example, free allocation units could be given to processors either in advance of their obligations for each year's emissions (so they could trade them before they are required to account for their emissions obligations) or at the same time as those obligations are due.

Proposal B: Provide and subtract free allocation from the total emissions obligation when those obligations are due.

The Government proposes that processors calculate their free allocation at the same time as their emissions obligations are due, and that the free allocation is subtracted off the total emissions obligations (see box below).

This is to prevent large volumes of units entering and exiting the market during the interim pricing at processor-level stage, which could create volatility in the unit price.

Timing of free allocation

Processors' total emissions obligation would be calculated annually using the formula:

$$\begin{array}{l} \text{Emissions obligation for} \\ \text{the year} \\ \text{(total units owed)} \end{array} = \begin{array}{l} \text{Emissions for} \\ \text{the year} \end{array} - \text{Annual free allocation (95\%)}$$

The allocation factor represents the national average emissions per tonne of the relevant product (weight of slaughtered animal, milk solids or nitrogenous fertiliser sold)

We want your view

- B. Do you agree that free emissions units should be provided at the same time emissions obligations are due? Why/why not?

Decision C: Any phase down of free allocation requires careful consideration

When considering whether, when and how to change the rate of free allocation, it is necessary to balance:

- the need to stay within emissions budgets that align with emission targets
- costs to the taxpayer in giving free allocation
- the changing needs for free allocation as the sector transitions and other countries implement agricultural emissions policies.

Any change to the level of free allocation should be informed by robust, objective analysis. The ICCC concluded any changes to the level of free allocation should be informed by independent advice from the proposed Climate Change Commission, which will be established when the Zero Carbon Bill is passed.

For more information on phasing down free allocation, see ICCC report page 98.

In addition, the ICCC recommended the process for the Government to make decisions on the phasing down of free allocation be set in legislation. This is also being considered for free allocation of emissions units to emitters who are already part of the NZ ETS (ie, industrial, not livestock or fertiliser emitters), as part of proposed changes to the NZ ETS consulted on recently. The Government agrees with the ICCC recommendations.

Proposal C: Set in legislation the process for the Government to decide the rate of any phase down of free allocation of emissions units.

We want your view

- C. Do you agree with the ICCC that allocation factors should be updated in line with business-as-usual improvements in emissions intensity? Why or why not?

Decision D: Emissions and allocation factors need regular adjustment

Emissions per unit of production in New Zealand have decreased at a rate of about 1 per cent per year over the last 25 years (emissions per kilogram of meat or milk solids produced) and further improvements are expected in the near future.

However, the national emissions factors for calculating an agricultural processor's emissions in the NZ ETS were last updated in 2010 and, as a result, do not reflect improvements in productivity made by farmers over the last decade.

The ICCC report also recommended the allocation factors be set to decline in line with anticipated business-as-usual improvements in emissions intensity. If agricultural allocation factors did not take this into account, in a few years the amount of allocation provided to agriculture would equal 100 per cent of actual agricultural emissions. This would result in over-allocation.

For more information on adjusting allocation factors, see ICCC report page 97.

Proposal D: Enable allocation factors to be set to decline in line with anticipated business-as-usual improvements in emissions intensity

The Government agrees with the ICCC recommendations on updating allocation factors.

In addition, the Government proposes to regularly update emissions factors in regulations that are used to calculate processors' emissions. This is to ensure the sector is recognised for the productivity gains that New Zealand farmers continue to make. For example, if national emissions intensity decreased by 10 per cent with no change in production, processors would pay 10 per cent less for their emissions through the NZ ETS.

We want your view

- D. Do you agree the process for making decisions on any phase down of free emissions units should be set in legislation and informed by the Climate Change Commission? Why/why not?

Consultation process: how to give your view

For more information

For more information on this consultation, please refer to [the consultation page](#) on the Ministry for the Environment's website. This webpage has details on our public information sessions around the country which will talk people through what we are consulting on and how to make a submission. It also has a link to the ICCC report and answers to frequently asked questions.

For further questions, please email: agriculture.emissions@mfe.govt.nz

Publishing and releasing submissions

All or part of any written submission (including names of submitters) may be published on the Ministry for the Environment's website, www.mfe.govt.nz. Unless you clearly specify otherwise in your submission, we will consider that you have agreed to have your submission and your name posted on our website.

Contents of submissions may be released to the public under the Official Information Act 1982, if requested. Please let us know if you do not want some or all of your submission released, stating which part(s) you consider should be withheld and the reason(s) for withholding the information.

Under the Privacy Act 1993, people have access to information held by agencies about them. Any personal information you send to the Ministry with your submission will only be used in relation to matters covered by this document. In your submission, please indicate if you prefer we do not include your name in the published summary of submissions.

How to make a submission

The Government welcomes your feedback on this discussion document. The questions in this document are a guide only. You do not have to answer all the questions and all comments are welcome.

To ensure others clearly understand your point of view, you should explain the reasons for your views and give supporting evidence if needed.

You can make a submission in two ways.

1. Use our online submission tool, available at:
<https://submissions.mfe.govt.nz/consultations/action-on-agricultural-emissions/make-a-submission>

This is our preferred way to receive submissions.

2. Answer the questions in this discussion document (see page 35) and email your response to agriculture.emissions@mfe.govt.nz

Make sure you put SUBMISSION – [*your name or organisation*] in the subject field of your email. Your submission should include your:

- name or organisation
- postal address
- telephone number
- email address.

Submissions close at 5pm on 13 August. When the consultation period has ended, we will incorporate the main findings from submissions into our final advice on the Government's proposals.

Consultation questions

Basic questions

1. What is the best way to incentivise farmers to reduce on-farm emissions?
2. Do the pros of pricing emissions at farm level outweigh the cons, compared with processor level, for (a) livestock and (b) fertiliser? Why or why not?
3. What are the key building blocks for a workable and effective scheme that prices emissions at farm level?
4. What should the Government be taking into consideration when choosing between *Option 1: pricing emissions at the processor level through the NZ ETS* and *Option 2: a formal sector-government agreement*?
5. As an interim measure, which would be best: *Option 1: pricing emissions at the processor level through the NZ ETS with recycling of funds raised back to the sector to incentivise emissions reduction* or *Option 2: a formal sector-government agreement*? Why?
6. What additional steps should we be taking to protect relevant iwi/Māori interests, in line with the Treaty of Waitangi?
7. What barriers or opportunities are there across the broader agriculture sector for reducing agricultural emissions? What could the Government investigate further?
8. What impacts do you foresee as a result of the Government's proposals in the short and the long term?
9. Do you have any other comments on the Government's proposals for addressing agricultural emissions?

Additional questions on free allocation of emissions units: We want your view

- A. Do you agree that the method for free allocation of emissions units at processor level should be output-based? Why or why not?
- B. Do you agree that free allocation of emissions units should be provided at the same time emissions obligation are due? Why or why not?
- C. Do you agree with the ICCC that allocation factors should be updated in line with business-as-usual improvements in emissions intensity? Why or why not?
- D. Do you agree the process for making decisions on any phase down of free allocation of emissions units should be set in legislation and informed by the Climate Change Commission? Why or why not?

Glossary

Term	What it means...
allocation factor	A measure of the emissions intensity of an activity – such as the production of milk solids or fertilisers – that is used to determine the amount of free allocation of emissions units that a participant in an emissions pricing scheme receives.
allocation rate	The level of assistance provided through free allocation of emissions units to an activity that generates emissions. The current Government has committed to an allocation rate of 95 per cent for agriculture (ie, a discount of 95 per cent on NZ ETS costs).
carbon sequestration	The uptake and long-term storage of carbon dioxide from the atmosphere eg, in vegetation.
Climate Change Response Act 2002 (CCRA)	The Act that provides a legal framework to enable New Zealand to meet its international obligations under the United Nations Framework Convention on Climate Change and the Kyoto Protocol. The Act also provides for the implementation of the NZ Emissions Trading Scheme and the Synthetic Greenhouse Gas Levy.
emissions	Greenhouse gases released into the atmosphere from human activity.
emissions factor	A value used to convert data on activities that cause greenhouse gas emissions into estimates of actual emissions.
emissions intensity	The relative amount of emissions (eg, methane) that are released by an activity (eg, beef production). This is generally measured as emissions per unit of product produced.
emissions leakage	The risk of production moving to another country with less strict climate change policy, and as a result global greenhouse gas emissions don't decrease overall (ie, the problem is just moved to another country).
emissions pricing scheme	A scheme that is used to reduce emissions by putting a price on them.
extension	Providing advice and education to farmers to improve on-farm management.
free allocation	The Government giving emissions or emissions units to an emitter at no cost.
greenhouse gas	A gas that absorbs and emits radiant energy, contributing to the greenhouse effect around the Earth.
NZ Emissions Trading Scheme (NZ ETS)	The NZ Emissions Trading Scheme is an emissions pricing scheme. It is the main tool New Zealand uses for reducing emissions. Under this scheme, emitters must report and pay for their emissions.
obligation	Emissions that an NZ ETS participant (eg, a factory) is responsible for reporting and paying for under an emissions pricing scheme.
output-based free allocation	A method of free allocation of emissions units where the amount of allocation is based on an emitter's production output.
outputs	The activity that generated the emissions (eg, dairy production), measured by the amount of product that this activity produced (eg, milk solids).
Paris Agreement	An agreement within the framework of the United Nations Framework Convention on Climate Change (UNFCCC) to address climate change after 2020.
phase-down rate	The rate at which the amount of free allocation of emissions units is reduced. A phase down may need to happen over time to ensure there is a sufficient price incentive to meet New Zealand's emissions reduction targets.

Term	What it means...
point of obligation	The person (or entity) with the responsibility for reporting and paying for emissions under an emissions pricing scheme like the NZ Emissions Trading Scheme.
processor	A processor of the agricultural products (eg, meat and milk) associated with the production of biogenic methane and nitrous oxide. This includes dairy processors, meat processors, and fertiliser manufacturers and importers.
proportional free allocation	A method of providing free allocation of emissions units where the amount of free allocation is a proportion of an emitter's annual emissions.
unique emissions factors	A special emissions factor that recognises the actions taken by an emitter to reduce their emissions intensity.