Our journey towards net zero

New Zealand's second emissions reduction plan 2026–30

Tā Aotearoa mahere whakaheke tukunga tuarua

Te Kāwanatanga o Aotearoa
New Zealand Government

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Message from the Minister of Climate Change

He Karere mai i te Minita mō ngā Take Panoni Āhuarangi

New Zealand remains committed to the global goal of limiting warming to 1.5 degrees. Nine years after the Paris Agreement, commitments by the global community have reduced our trajectory from 4 to 2.7 degrees of warming. But there is more work to do.

As the globe continues to warm and sea levels rise, we expect weather events to become more frequent and severe, damaging what we value most – our communities, businesses, homes and the environment.

The Government is committed to addressing these challenges and meeting New Zealand's climate obligations. This plan reflects our commitment to delivering effective climate policies, allowing our climate and economy to thrive.

Our plan shows we are on track to meet the first two emissions budgets and the 2050 biogenic methane target. Most importantly, this plan shows that New Zealand is on track to meet our net zero 2050 target, with emissions meeting net zero as early as 2044.

This final plan includes changes based on feedback received during the consultation. It now reflects government policies, such as changes to the New Zealand Emissions Trading Scheme auction settings and private sector actions, like the transition of Huntly Power Station from coal to biomass.

New Zealand stands at a critical point in preparing for a net zero future. Achieving our goals will require collaboration across all groups to reduce emissions, unlock renewable energy, foster innovation, and leverage nature-based solutions.

We are confronting climate change head-on, ensuring a cleaner, more resilient, and prosperous future where our people, economy and environment thrive.

Hon Simon Watts
Minister of Climate Change

Executive summary

The Government is committed to delivering on our climate change commitments while growing the New Zealand economy. New Zealand can have prosperous communities, affordable and secure energy, increasing primary production and exports, and a thriving economy while meeting our climate change commitments.

This second emissions reduction plan (ERP2) is the Government's plan to meet the second emissions budget (EB2) for the period 2026–30. This final plan incorporates feedback and insights from New Zealanders, including the Ministry for the Environment's youth, climate business, and local government advisory groups, iwi and Māori groups, sector groups, ENGOs, climate scientists and Aotearoa Circle's Rangatahi Advisory Panel. As a result of that feedback, new sections on technology and innovation, and on building and construction have been added to the plan. We've also provided more information about how we'll monitor our progress and ensure we stay on track.

The first emissions reduction plan ends and ERP2 formally comes into effect on 1 January 2026. However, work on ERP2 initiatives is already underway.

New Zealand is on track to meet the first two emissions budgets

ERP2 confirms that we are on track to meet the first emissions budget (2022–25) and EB2 (2026–30) (figure 0.1).

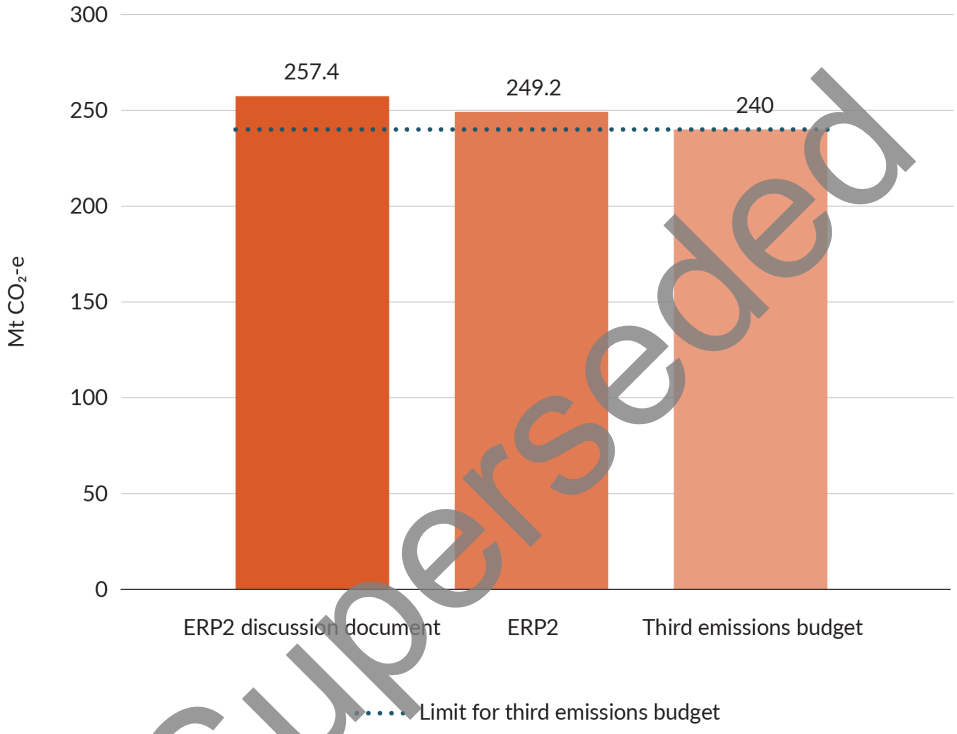
Figure 0.1: Emissions budgets and projections

Progress towards the third emissions budget

The focus of ERP2 is achieving EB2. Achieving the third emissions budget (EB3) is the task of the third emissions reduction plan, due by 2030. The Government has another five years to develop policies and strategies necessary to deliver EB3.

ERP2 delivers significant progress towards EB3 (2031–35). The ERP2 discussion document, published in July 2024, showed projected EB3 emissions as 17 Mt CO_2-e[1] unfavourable to the budget. This final ERP2 projects EB3 emissions will be 9.2 Mt CO_2-e unfavourable to the budget, a significant improvement (figure 0.2).

Figure 0.2: Change in projected net emissions between the ERP2 discussion document and final ERP2 for EB3



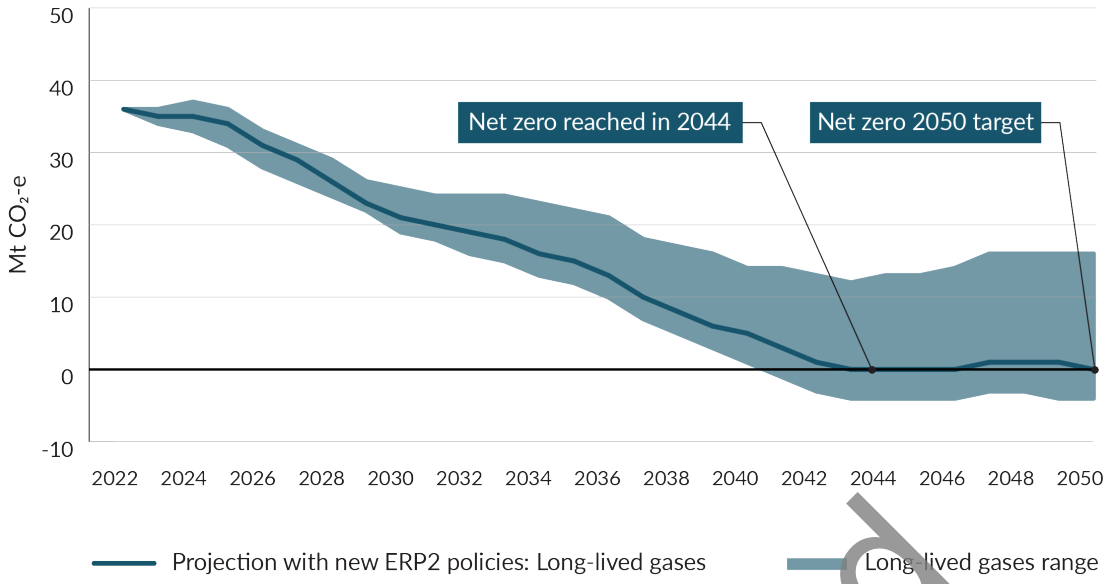
On track for net zero 2050

Emissions budgets are important stepping stones to the long-term target of achieving and sustaining net zero emissions from 2050.

ERP2 projects New Zealand will achieve net zero emissions by 2050 (figure 0.3).

[1] Mt CO_2-e = million tonnes of carbon dioxide equivalent.

Figure 0.3: Net emissions, except biogenic methane, and sensitivity range with ERP2 measures*



* New Zealand is expected to hit net zero as early as 2044 and to stay at net zero from 2050.

Effective action anchored in our Climate Strategy

ERP2 is anchored by the five pillars of our Climate Strategy (figure 0.4). The pillars represent our goals for reducing emissions and managing the impacts of climate change.

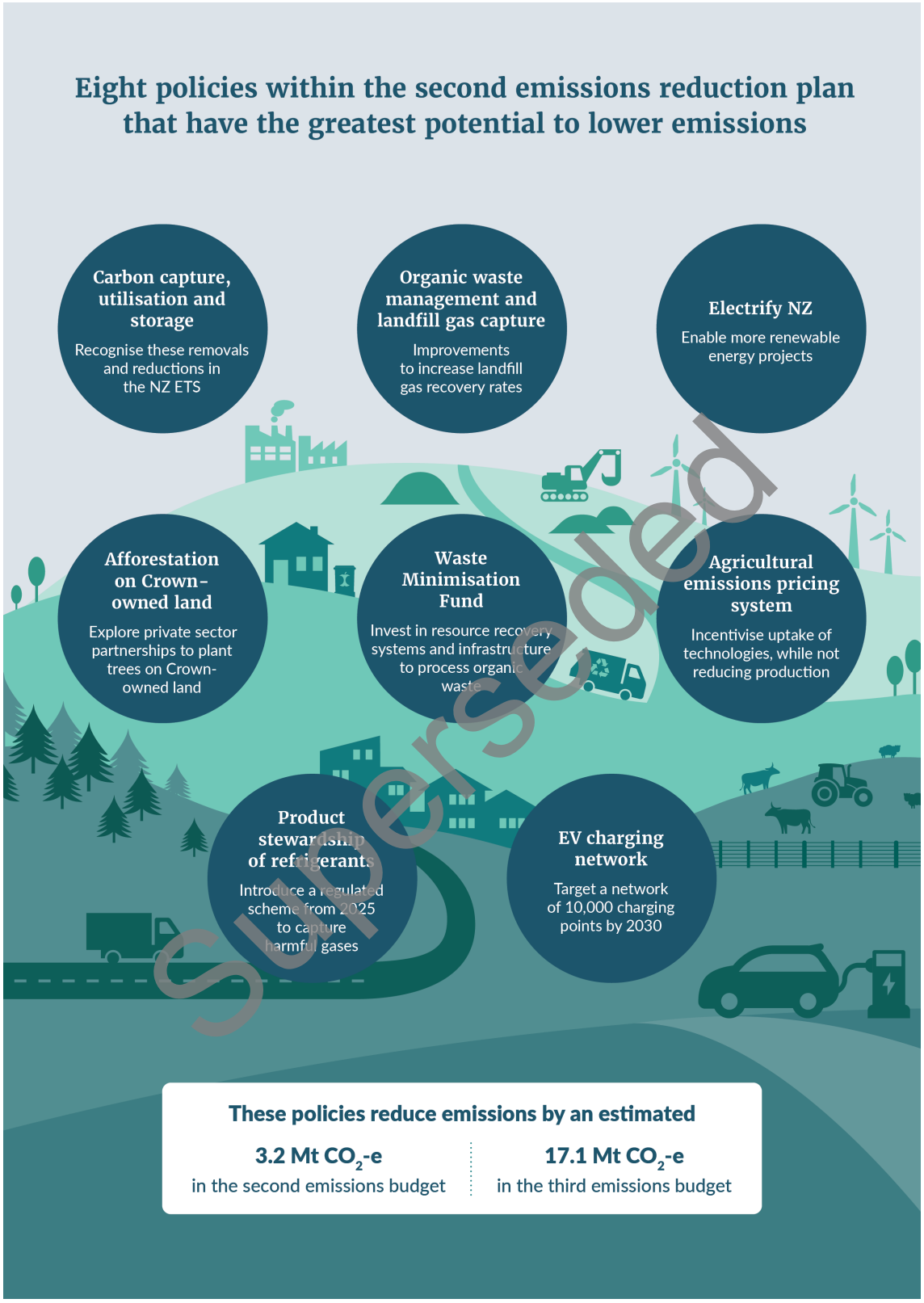
Figure 0.4: The five pillars of New Zealand's Climate Strategy

Delivering comprehensive action on emissions

To achieve our ambitious climate change goals, we need cost-effective action.

ERP2 includes a comprehensive range of policies and initiatives to reduce emissions, accelerate the uptake of new technologies and spur innovation (figure 0.5).

Figure 0.5: ERP2 policies with the greatest potential emissions savings



Taking a technology-led approach

The Government is taking a technology-led approach so the New Zealand economy can grow as net emissions come down. The Government is investing in research and development of new technologies across a range of programmes with the aim of lowering emissions and increasing removals.

Technology can open new pathways to lower emissions. As technologies become commercially available, New Zealand will have more options for achieving emissions budgets and targets.

Promising technologies include:

- agricultural emissions reduction technologies, so that farmers can cost-effectively reduce on-farm emissions while continuing to increase production
- carbon capture, utilisation and storage (CCUS), to support the sequestration of carbon dioxide from our hard-to-abate industries
- biomass, to produce low-emissions fuel substitutes
- sustainable aviation and marine fuels
- non-forestry removals and nature-based solutions, so that we can remove carbon dioxide while promoting wider environmental benefits.

There is more work to do

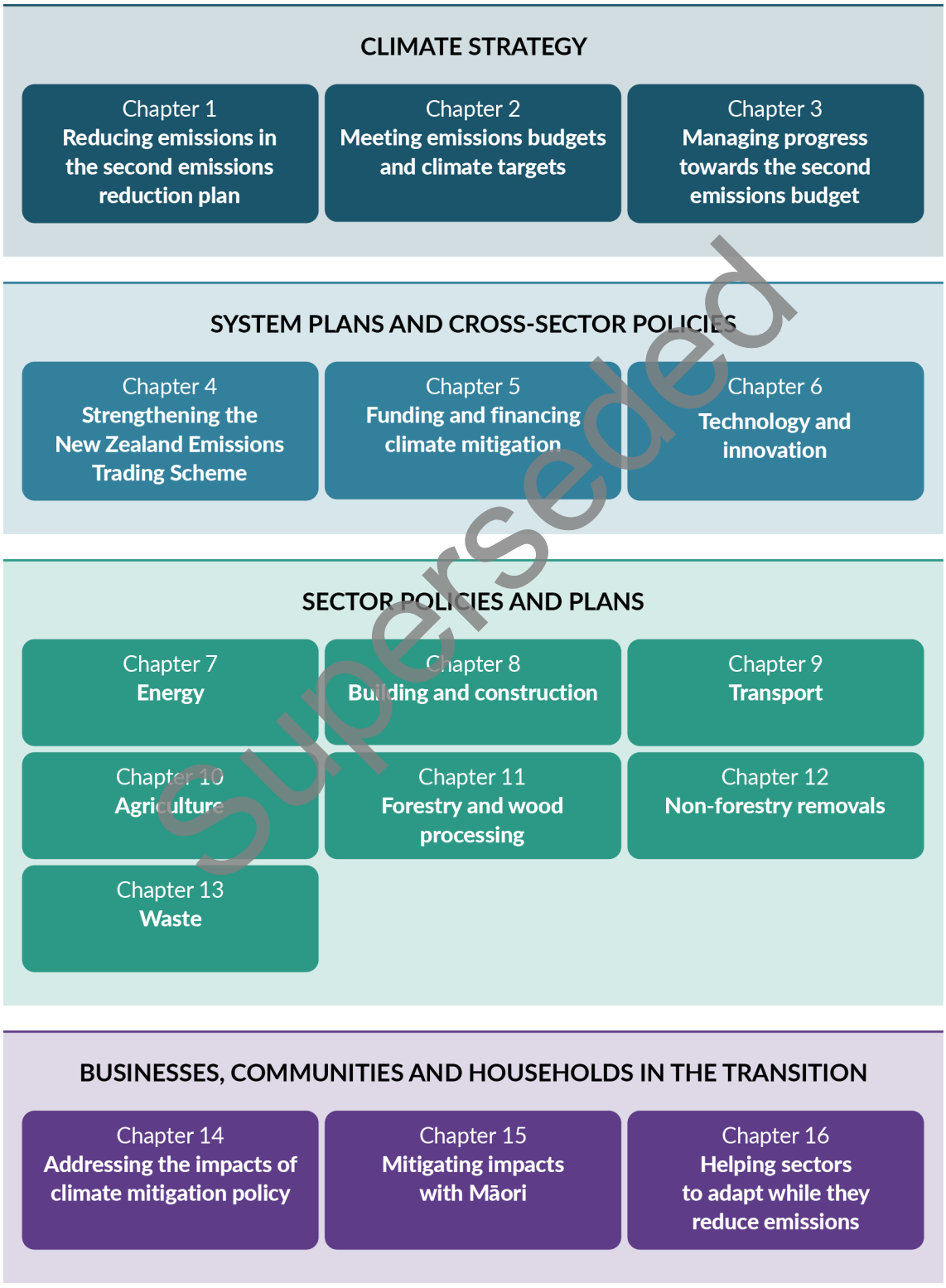
ERP2 will contribute to our short-, medium- and long-term climate change goals. But securing emissions budgets and targets is only the first step. There is still more work to do. We will monitor progress to stay on track throughout the EB2 period.

In 2025, the Government will:

- deliver legislation and policies for biotech, carbon capture and storage, and refrigerant gases to support mitigation and further progress towards our emissions goals
- update the co-investment approach for electric vehicle charging infrastructure
- explore opportunities to partner with the private sector to decarbonise industry and plant trees on Crown-owned land
- update New Zealand Emissions Trading Scheme (NZ ETS) settings for 2026–30
- strengthen NZ ETS market governance and other measures, to support a credible market
- progress work on an adaptation framework that will set out the Government's approach to sharing the costs of preparing New Zealand for the impacts of climate change
- announce our second Nationally Determined Contribution under the Paris Agreement on climate change
- clarify the Government's understanding of the methane component of the 2050 target, based on the independent Methane Science and Target Review and advice from the Climate Change Commission | He Pou a Rangi
- set the fourth emissions budget for the period 2036–40, giving New Zealanders certainty of our long-term direction.

New Zealand's second emissions reduction plan

Tā Aotearoa mahere whakaheke tukunga tuarua



Climate Strategy

Rautaki Āhuarangi

This section outlines how New Zealand's Climate Strategy guides the second emissions reduction plan, and how we are tracking towards our emissions budgets and ultimately the 2050 target. It also outlines an 'adaptive management' approach to implement and monitor the plan.

- Reducing emissions in the second emissions reduction plan *(chapter 1)*
- Meeting emissions budgets and climate change targets *(chapter 2)*
- Managing progress towards the second emissions budget *(chapter 3)*

1. Reducing emissions in the second emissions reduction plan

Te whakaheke tukunga i roto i te mahere whakaheke tukunga tuarua

Committed to our climate change targets

The Government is committed to meeting New Zealand's climate change targets. The Climate Change Response Act 2002 sets out the Zero Carbon Framework, which guides how we meet our **2050 net zero target**.

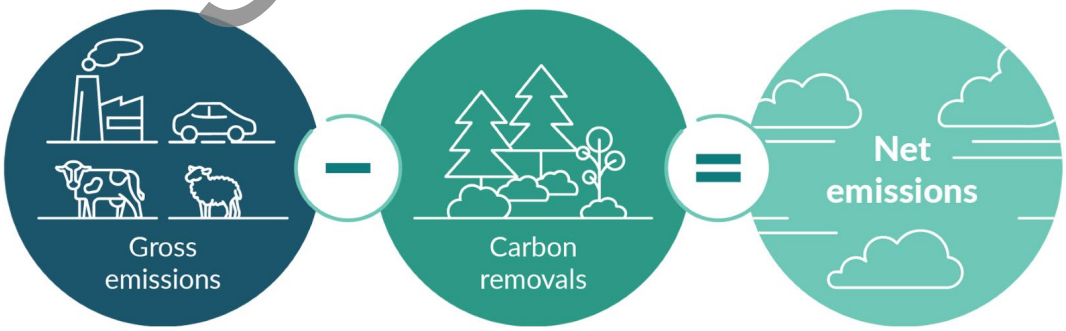
Our 2050 target takes a split-gases[2] approach:

- reduce net emissions of all greenhouse gases (except biogenic methane) to zero by 2050
- reduce emissions of biogenic methane to 24–47 per cent below 2017 levels by 2050, including to 10 per cent below 2017 levels by 2030.

New Zealand uses a system of emissions budgets and emissions reduction plans to navigate towards net zero. **Emissions budgets** place limits on emissions in five-yearly budget periods and serve as stepping stones towards the 2050 target. Each emissions budget has a corresponding emissions reduction plan, which sets out the policies and strategies that enable New Zealand to meet the target for that budget period. This plan covers the second emissions budget period (2026–30).

Our 2050 target is net based. This means it can be achieved by both reducing gross emissions and increasing emissions removals. Net emissions are the difference between gross emissions and carbon removals (figure 1.1).

Figure 1.1: Achieving net targets by reducing emissions and increasing removals



[2] New Zealand has a 'split-gas' target for domestic emissions, which considers biogenic methane separately from all other greenhouse gases. This reflects the different warming impact that methane has compared with other greenhouse gases, such as carbon dioxide.

Cost-effective action

The Government wants to reduce net emissions in cost-effective ways. This means the Government, businesses and households will take actions that have the greatest impact on net emissions for a given investment in reductions or removals.

Cost-effective emissions reduction policies minimise the cost-of-living impacts of climate change policies and increase the likelihood of successful delivery of targets and budgets.

The New Zealand Emissions Trading Scheme is the main tool to reduce net emissions

The New Zealand Emissions Trading Scheme (NZ ETS) raises the cost of emissions and reduces the cost of removals. It encourages businesses to find cost-effective ways to reduce emissions and increase removals across the economy. Chapter 4 provides more information on the NZ ETS and how the Government intends to support a credible carbon market through the second emissions reduction plan (ERP2).

Role of complementary policies

Complementary policies work alongside the NZ ETS and make it cheaper or easier for businesses and households to reduce net emissions. They do this by:

- expanding the pathways available to New Zealand for emissions reduction – for example, by introducing new technologies or removing barriers to investment in low-emissions technologies like renewable energy
- lowering the cost of some emissions reduction opportunities, such as partnering with the private sector to plant trees on Crown-owned land
- encouraging emissions reductions in areas not covered by the NZ ETS, particularly agriculture, such as supporting investments in technologies to reduce biogenic methane emissions.

Chapters 7–13 set out the package of complementary sector-based policies for ERP2.

The role of the private sector

The private sector plays an important role in reducing New Zealand's emissions, and their feedback on the ERP2 discussion document has provided additional insights into their work and areas for additional focus from the Government.

One of the most significant changes to the modelling for ERP2 since the discussion document is the inclusion of the plan by Genesis Energy to transition the Huntly power station from coal to biomass, which represents a reduction of 1.1 Mt CO_2-e over the second emissions budget period.

The Government will continue to reduce emissions and ensure the regulatory and economic environment can support the efforts of others to reduce emissions alongside and in addition to government action.

Avoiding unwanted outcomes

Taking a cost-effective approach to emissions reduction has the potential for some unwanted outcomes.

For example, forestry is an affordable and scalable form of abatement. The NZ ETS could encourage more farm conversions to plantation forestry than rural communities would find acceptable. The Government will use legislation or regulation to manage unintended consequences and maintain focus on cost-effectiveness within those constraints. A recent example of this 'constrained optimisation' approach is the proposed limits on whole-farm conversions to exotic forestry on high-quality productive land (more information on this policy is in chapter 11).

2. Meeting emissions budgets and climate targets

Te whakatutuki i ngā tahua tukunga me ngā ūnga panoni āhuarangi

New Zealand is on track for the first and second emissions budgets

With this plan, New Zealand is projected to reduce net emissions to 2030 and to meet the first and second emissions budgets (EB1 and EB2).

The first emissions reduction plan has been kept up to date and aligned with the Government's Climate Strategy.

New Zealand is making good progress and is on track to meet EB1. Emissions are projected to be 284.1 Mt CO_2-e for 2022–25, which is below the limit of 290 Mt CO_2-e set by EB1 (table 2.1). We will know whether we have managed to stay within that emissions budget in 2027, when official data for the period becomes available.

Table 2.1: Net emissions projections for the EB1 and EB2 (Mt CO_2-e)

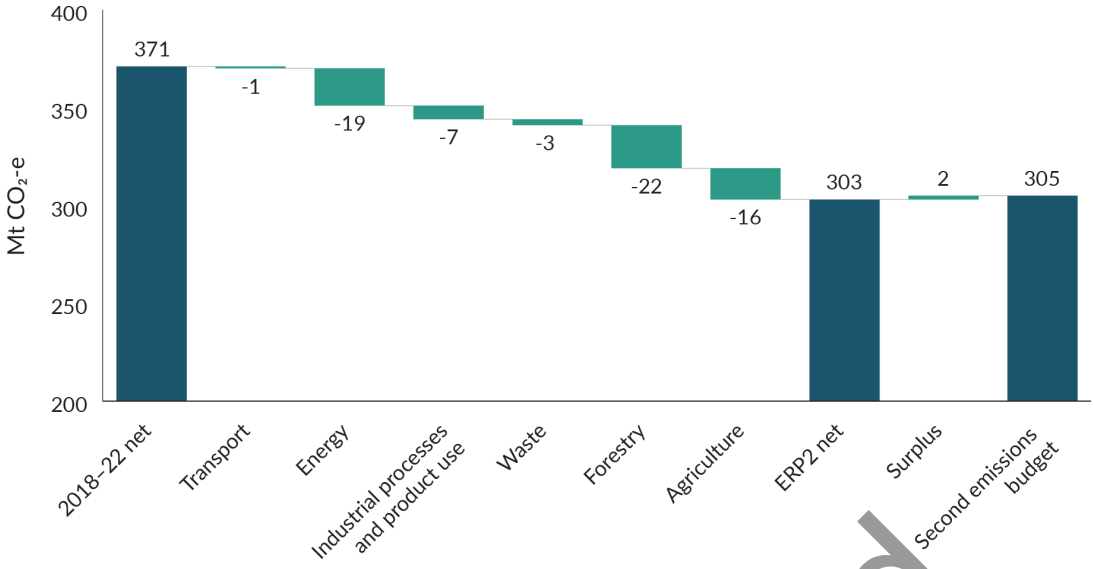
EB	Projection (central estimate*)	Uncertainty range
EB1 290 Mt CO_2-e	284.1	± 2.5 %
EB2 305 Mt CO_2-e	303.1	± 5.5 %

* The further out we look, the more uncertain the projection becomes. We express this as an 'uncertainty range'. This shows a spectrum of emissions scenarios, from the lowest expected result to the highest. In the middle is the 'central estimate', which we think is the scenario most likely to hold true.

Emissions reductions by sector in EB2

Figure 2.1 shows the impact of the second emissions reduction plan (ERP2) on projected emissions to the end of the EB2 period by sector. Emissions reductions in energy, forestry and agriculture make the largest contribution to meeting EB2.

Figure 2.1: Projected reductions in sector emissions through to EB2, including ERP2 policies



Note: These projections have been rounded to the nearest whole number.

Estimated emissions reductions by key policy

Eight key ERP2 policies have the greatest potential to lower emissions in the EB2 and third emissions budget (EB3) periods (table 2.2).

Table 2.2: Expected abatement from ERP2 policies for EB2 and EB3 (Mt CO_2-e)

ERP2 policy	Projected impact	
	EB2 (2026–30)	EB3 (2031–35)
Electrify NZ	–0.1	–1.6
Enable carbon capture, utilisation and storage	–1.0	–0.9
Target 10,000 public electric vehicle charging points by 2030	–0.01	–0.2
Implement an agricultural emissions pricing system and mitigation technologies	–0.2	–10.6
Invest in resource recovery through the Waste Minimisation Fund	–1.0	–1.0
Improve organic waste management and landfill gas capture	–0.8	–1.1
Introduce a regulated product stewardship scheme for refrigerants	–0.4	–0.7
Afforestation on Crown-owned land	0.4***	–1.8
Impacts of updated NZ ETS settings not captured elsewhere*	–0.2	–1.0
Total – summed above	–3.3	–18.9
Total – integrated analysis**	**–3.2**	**–17.1**

* At the time the 2024 New Zealand Emissions Trading Scheme (NZ ETS) settings were decided, the total impact of tightening NZ ETS unit and price control settings was estimated at 0.7 Mt CO_2-e in the EB2 period and 3.1 Mt CO_2-e in the EB3 period. The numbers in this row of the table refer to the impacts of tighter NZ ETS settings that have not been captured in the baseline and elsewhere. See the technical annex for further details.

** The integrated analysis involves modelling the impact of ERP2 policies within the Emissions in New Zealand model to ensure any interactions between policies are modelled, rather than just summing the emissions reduction for individual measures. This allows for the dynamic effects of individual policies to be taken into account. More information on the modelling approaches for ERP2 can be found in the technical annex.

*** Initially emissions rise because there are net emissions from land clearance and soil loss due to conversion to forest.

Updated New Zealand Emissions Trading Scheme settings

The New Zealand Emissions Trading Scheme (NZ ETS) sets an overall limit on emissions units available to emitters in accordance with emissions budgets. The scheme's supply of units declines over time, consistent with meeting the tightening budgets.

The Government has already aligned supply in the NZ ETS with EB2. We have updated unit and price control settings to reduce the number of units available between 2025 and 2029 from 45 million to 21 million. This decision was estimated to lead to additional emissions reductions of 0.7 Mt CO_2-e in the EB2 period and 3.1 Mt CO_2-e in the EB3 period. The observed market price rose immediately after this decision was announced.

The updated settings will help manage a critical risk to meeting EB2: the large stockpile of units. If more banked units are surrendered than expected, emissions from NZ ETS sectors will exceed our current projections. Chapter 4 has more information on the role of the NZ ETS in ERP2, and the impact of the updated settings.

New Zealand can meet its 2050 target

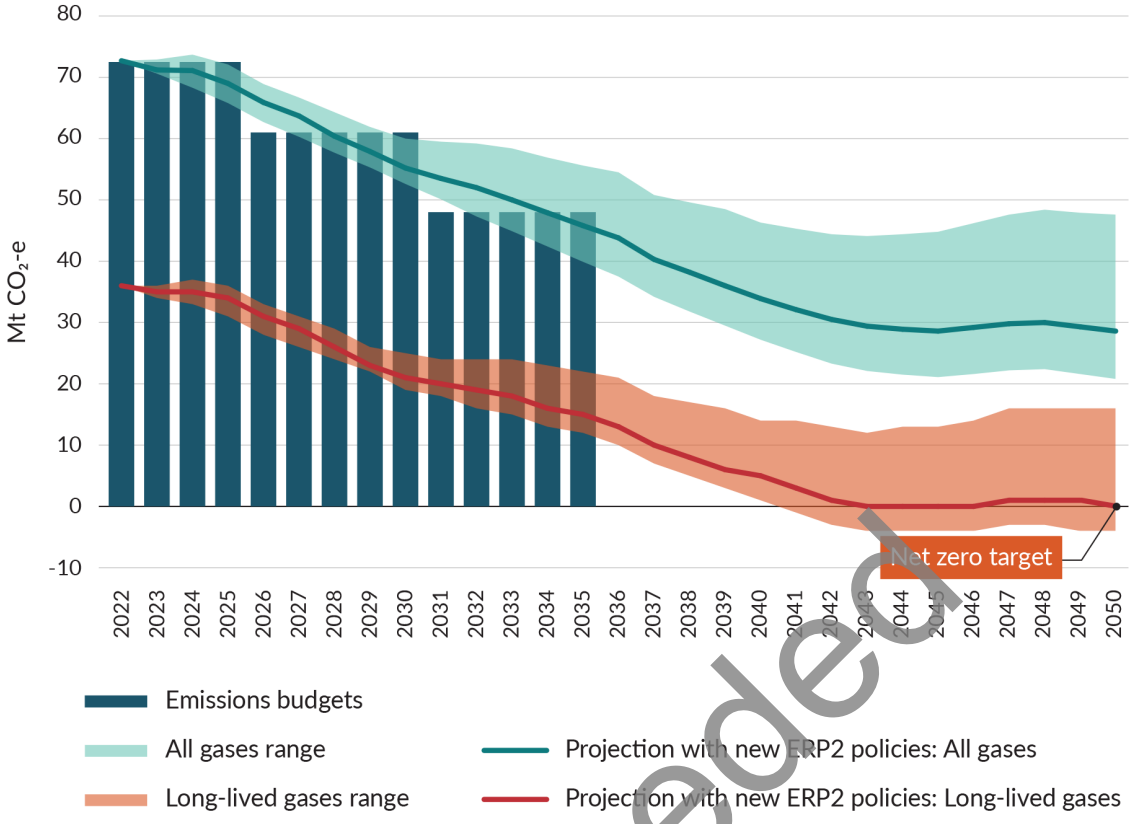
New Zealand is on track to meet our long-term targets.

Figure 2.2 shows that net emissions are now projected to be zero in 2050.

Projections show New Zealand is also on track to achieve the methane target in 2050. Biogenic methane emissions are expected to have reduced by 24.9 per cent in 2050, which is within the legislated target band of a 24 to 47 per cent reduction, and in 2030 biogenic methane emissions are expected to have reduced by 10 per cent, consistent with the target for that year.

Progress has also been made toward EB3 since consultation in July. Current modelling projects net emissions of 249.2 Mt CO_2-e during the EB3 period (2031–35), 9.2 Mt CO_2-e above the 240 Mt CO_2-e EB3 limit. This is a significant improvement on the interim projections of 17.4 Mt CO_2-e above EB3 in the ERP2 discussion document. This improvement is mostly driven by greater than expected abatement from some new ERP2 policies, updated NZ ETS settings and lower than expected emissions from the energy and industrial processes and product use (IPPU) sectors.

Figure 2.2: Emissions projections with new ERP2 policies and sensitivity range (Mt CO_2-e), 2022–50



How we're tracking towards New Zealand's Nationally Determined Contribution

Key policies introduced through ERP2 will contribute to meeting the first Nationally Determined Contribution (NDC). Net emissions are now projected to be 84 Mt CO_2-e above the target.

ERP2 significantly increases the contribution of domestic emissions reductions to future NDCs. The second NDC will be set in 2025 for the period 2031–35, overlapping with EB3. Key ERP2 policies are projected to contribute 17.1 Mt CO_2-e of abatement towards the second NDC.

3. Managing progress towards the second emissions budget

Te whakahaere i te kokenga ki te tahua tukunga tuarua

Under the Climate Change Response Act 2002, the Government is responsible for meeting emissions budgets and climate change targets. New Zealand's reputation is affected by whether we deliver on our commitments.

The Government is confident we can deliver the actions in this second emissions reduction plan (ERP2). However, progress toward emissions budgets and targets is affected by a range of factors. Many of those factors that influence the timing and quantity of net emissions are beyond the Government's control. For example, long periods of dry weather could reduce renewable electricity supply, leading to more gas or coal use to generate electricity.

This is why we need to monitor and respond to meet the second emissions budget (EB2) and support meeting future budgets. This chapter outlines the Government's adaptive management approach to ERP2 to ensure we meet EB2.

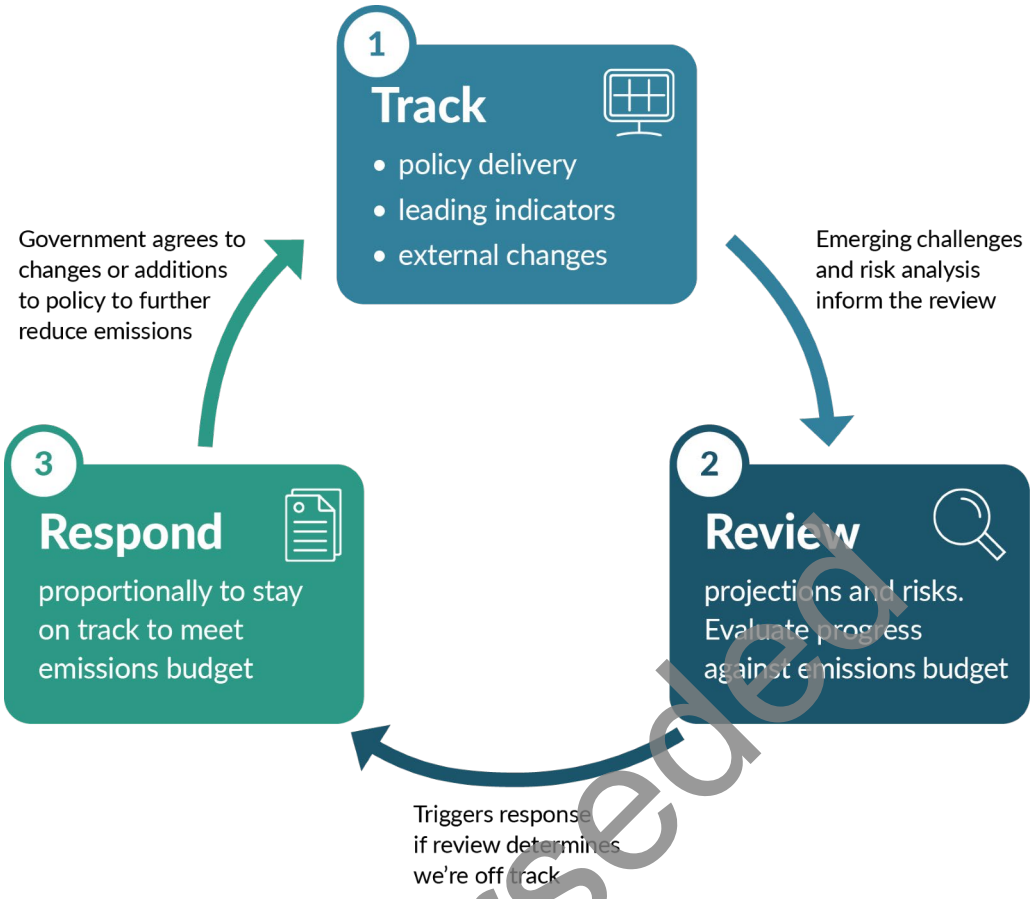
What is adaptive management?

Adaptive management means actively monitoring and responding to policy delivery and changing circumstances that affect how New Zealand is tracking towards EB2.

Every year, the Government will progress through three stages (figure 3.1):

1. **tracking** policy delivery and leading indicators
2. **reviewing** projections and risks, and evaluating progress against the emissions budget
3. **responding** when necessary to stay on track for EB2.

Figure 3.1: Adaptive management process



Tracking progress

The Prime Minister's public sector targets require quarterly tracking and reporting. To reinforce the importance of meeting climate targets, we have included the first emissions budget (EB1) and EB2 in Government Target 9.

The Climate Change Chief Executives Board reports on progress towards Target 9 to the Prime Minister and Cabinet. The reports are released to the public, so New Zealanders can see how we are tracking.

Government Target 9 – Reduced net greenhouse gas emissions

TARGET 9

Reduced net greenhouse gas emissions

What is the target?

On track to meet New Zealand's 2050 net zero climate change targets, with total net emissions of no more than 290 Mt CO_2-e from 2022 to 2025 and 305 Mt CO_2-e from 2026 to 2030.

We will track and report on a comprehensive set of indicators through the Target 9 process. These will allow a faster approach to adaptive management, to complement the official, annual updates to the Greenhouse Gas Inventory. The types of indicators we plan to have in place by 2026 are listed in table 3.1.

Table 3.1: Leading ERP2 indicators

Type	Explanation	Indicators
External factors	Metrics with an important link to emissions levels where the Government has **no** influence or control, eg, natural phenomena/events, international factors.	Global oil prices, global commodity prices, hydro-electric dam lake levels
Progress indicators	Metrics that indicate progress in areas where the Government has some influence, but where the influence is **indirect or limited**. They have an important link to emissions levels and pathways.	Fuel imports, tree planting rates, New Zealand Emissions Trading Scheme stockpile
Action delivery	Metrics showing whether planned Government policies are delivering as expected. Includes actions set under ERP1 policies that will continue to contribute to abatement during the EB2 period.	Number of new electric vehicle charging points
Mitigation availability	Monitoring emissions reduction technologies and practices, including current costs, availability and progress towards commercialisation.	Availability and cost of agricultural greenhouse gas mitigation technologies

The Climate Change Commission | He Pou a Rangi will play an important role in independently reviewing progress towards EB2 through its monitoring and review function for emissions budgets and the 2050 target.

Reviewing progress and risks, and evaluating whether we are on track for EB2

Cabinet will meet annually to evaluate whether New Zealand is on track to meet EB2. This evaluation will be informed by:

- comprehensive indicator tracking in quarterly Target 9 reporting
- the annual emissions reduction monitoring report from the Climate Change Commission | He Pou a Rangi
- the latest official emissions projections.

Responding to stay on track

If a risk to meeting EB2 emerges, Cabinet can decide on a proportionate response. This may include:

- ensuring NZ ETS settings are aligned with emissions budgets, international commitments and our 2050 target, through the annual review of settings
- adjusting existing policies
- bringing in new policies
- continuing to monitor indicators.

The Climate Change Response Act 2002 also allows the banking of some emissions across budget periods, to account for the uncertainty of designing emissions reduction plans. If emissions come down by more than is required to meet EB1, the excess could be carried forward and contribute to EB2. Current projections show New Zealand over-achieving EB1 by 6 Mt CO_2-e. Final emissions for EB1 will be known when the New Zealand Greenhouse Gas Inventory is released in 2027.

System plans and cross-sector policies

Ngā mahere pūnaha me ngā kaupapahere whakawhiti rāngai

This section outlines system-wide settings and cross-sector policies that support emissions reductions across the economy.

- Strengthening the New Zealand Emissions Trading Scheme *(chapter 4)*
- Funding and financing climate mitigation *(chapter 5)*
- Technology and innovation *(chapter 6)*

4. Strengthening the New Zealand Emissions Trading Scheme

Te whakakaha i te Kaupapa Hokohoko Tukunga o Aotearoa

Chapter at a glance

Strengthening the New Zealand Emissions Trading Scheme

Lead Minister	• Hon Simon Watts, Minister of Climate Change
Why the New Zealand Emissions Trading Scheme (NZ ETS) is important	• The NZ ETS is our main tool to reduce emissions and increase removals, supporting cost-effective climate action.
Pillars of New Zealand's Climate Strategy	• Credible markets support the climate transition.
Key actions and policies	• Restoring confidence in the NZ ETS by committing to no vintaging of New Zealand Units (NZUs) (ie, not placing an expiry date on NZUs), committing to no differential treatment of forestry NZUs, strengthening market governance and clarifying market information. • Aligning the scheme with the second emissions budget (ie, aligning NZU supply with the NZ ETS cap through annual updates of the scheme's settings).
Contribution during the second emissions budget period	• The NZ ETS supports emissions reductions across the economy.

Supporting a credible NZ ETS and broader market confidence

The New Zealand Emissions Trading Scheme (NZ ETS) raises the cost of emissions and reduces the cost of removals. To deliver a credible NZ ETS, market participants must trust that governments will remain committed to targets and choose NZ ETS settings and other policy accordingly. This is important to give businesses the confidence to make long-term investment decisions that reduce emissions.

Providing regulatory predictability is a priority for the Government. That is why one of the Government's first actions was to end the review of the NZ ETS. It is also why we are committed to:

- no vintaging of New Zealand Units (NZUs) (ie, not placing an expiry date on NZUs)
- treating forestry NZUs in the same way as other units, recognising that one tonne of carbon dioxide removed from the atmosphere makes the same contribution to our targets as one tonne equivalent (CO_2-e) of emissions reductions.

Strengthening market governance to manage risks of misconduct in the NZ ETS market is another important step to improve NZ ETS market credibility. This work will help to build a robust, efficient and credible NZ ETS, ensuring there is enough transparency of trading activity and enhancing participants' understanding of how the market works.

Aligning the scheme with the second emissions budget

Decisions on NZ ETS settings

It is crucial that the role of the NZ ETS in achieving emissions budgets is clear, and that the scheme is managed in line with that role.

We have made decisions on the settings for 2025–29[3] that recognise the NZ ETS market is currently over-supplied. The number of units at auction between 2025 and 2029 has been reduced from 45 million to 21 million, to encourage emitters to use the surplus units currently held in private accounts. These decisions provide medium-term regulatory predictability for participants, and support the credibility of the scheme, by:

- tightly aligning unit limits to budgets, so that the settings support confidence that net emissions from covered sectors will align with the budgets
- preserving existing price control settings to incentivise enough reductions to meet the budgets.

Future settings decisions may also need to consider net emissions reductions arising from any new complementary policies. This includes considering whether the NZ ETS cap (see below) should be tightened to lock in those emissions reductions and prevent those policies from disrupting market dynamics.

The NZ ETS cap for the second emissions budget

One aspect considered in the methodology for determining NZ ETS unit settings each year is apportioning the emissions budgets to sectors covered by the NZ ETS (the NZ ETS cap). Being clear on how the Government intends to distribute the emissions budget between NZ ETS sectors and non-NZ ETS sectors (mostly agriculture) will give the market greater regulatory certainty.

For the second emissions budget (EB2), we propose to align the cap with the projected emissions from NZ ETS sectors under the second emissions reduction plan (see the technical annex for details). We propose allocating 91 Mt CO_2-e of EB2 to NZ ETS sectors. We will consult on this allocation as part of the NZ ETS settings process in 2025.

NZ ETS sectors are responsible for most of the net reductions required to meet EB2. The allocation to other sectors is in line with reaching the 2030 biogenic methane target.

Updating industrial allocation settings

Industrial allocation (IA) is the provision of NZUs to firms in emissions-intensive and trade-exposed industries. Its purpose is to manage the risk of emissions leakage[4] by helping eligible firms meet some of their emissions costs. The Government has agreed to update some IA settings that were last set in 2010, including new baselines which are planned to affect allocations from 2024 onwards.

The Government is investigating the provision in the Climate Change Response Act 2002 that gives the Minister of Climate Change discretion to review IA baselines every 5 to 10 years. Several large firms have indicated this could create uncertainty and discourage investment in decarbonisation. It is important that we balance keeping the allocation up to date, managing leakage risk, providing investment certainty and managing the fiscal cost of IA.

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3 Ministry for the Environment. 2024. *NZ ETS unit limits and price control settings for 2025–2029*.

4 Emissions leakage occurs when manufacturing is relocated to other countries with less stringent climate change policies, causing global emissions to rise.

5. Funding and financing climate mitigation

Te pūtea me te utu i te whakamauru panoni āhuarangi

Chapter at a glance

Funding and financing climate mitigation

Lead Minister	• Hon Simon Watts, Minister of Climate Change
Why funding and finance are important	• Understanding the funding and financing landscape is crucial to increasing and directing investment towards New Zealand's climate change response, and into activities that reduce emissions.
Pillars of New Zealand's Climate Strategy	• Infrastructure is resilient and communities are well prepared. • Credible markets support the climate transition. • Clean energy is abundant and affordable. • World-leading climate innovation boosts the economy. • Nature-based solutions address climate change.
Key actions and policies	• Developing a sustainable finance strategy. • Developing a sustainable finance taxonomy. • Continuing to support credible, efficient and resilient markets • Investigating the potential of a biodiversity credits market. • Cooperating with Australia to align the sustainable finance policy and regulatory landscape.
Contribution during the second emissions budget period	• Funding and finance support emissions reductions across the economy.

Enabling emissions reductions through funding and finance

We need significant domestic investment in low-emissions activities and technologies to achieve our climate goals. Although we expect investment to come mainly from the private sector, the Government has a role in addressing barriers to investment and ensuring settings enable it.

Green investment and transition finance

- Green investment is a way to help reduce emissions. It refers to financial activities that aim to generate benefits for the environment, alongside financial returns. This typically involves funding and financing projects, companies or initiatives focused on activities such as renewable energy or resource efficiency.
- Transition finance refers to investment in activities, technologies and sectors that are not yet green, but moving towards it. Financing the transition to a low-emissions future will be key in ensuring that major sectors continue to grow.

Policies and initiatives

Increasing green investment and removing barriers

Green investment is beginning to pivot from mitigation to broader activities (eg, adaptation and resilience as well as indigenous biodiversity).

Voluntary carbon and biodiversity credits markets are emerging to meet this demand. However, we have heard that market participants, including investors and land owners, need greater certainty to increase investment.

There is an ongoing mismatch between some climate investment opportunities and the risk appetite of many mainstream investors. These constraints also increase the risk of misrepresented or misleading climate credentials – greenwashing – within the market.

As part of the second emissions reduction plan, our work includes:

- **developing a sustainable finance strategy** to provide clarity and certainty across New Zealand's funding and financing landscape. This includes aligning New Zealand with global sustainability trends to increase investment in low-emissions ventures
- **developing a sustainable finance taxonomy** to give stakeholders, including capital market participants, clarity and confidence on which economic activities are green and transitional. The taxonomy:
  - will start with agriculture and forestry to show New Zealand's leadership in sustainable practices and support investment in activities that will drive down emissions in these sectors
  - could expand to cover the sectors identified in this plan and the Climate Strategy, including energy, manufacturing, building and construction, and transport
- **continuing to support credible, efficient and resilient markets.** We will provide information and data to reduce information gaps and enable the integration of climate information into decision-making (eg, climate-related disclosures and open-source climate projections)

- **investigating the potential of a biodiversity credits market** as part of broader Ministry for the Environment work to catalyse private financing for nature
- **cooperating with Australia to align the sustainable finance policy and regulatory landscape,** and position the region as a robust green finance market. We are also engaging on emerging sustainable finance developments, including transition planning and investment product labelling
- **engaging and sharing knowledge with international partners** to reduce investment friction and compliance burdens, while supporting New Zealand firms and investors to access a wider pool of investment
- **working with the finance sector** to identify barriers and find solutions that support investment in green and transition activities. This includes:
  - partnering with Toitū Tahua: Centre for Sustainable Finance, for example, to develop New Zealand's sustainable finance strategy and the taxonomy
  - establishing a sustainable finance reference group to give expert advice to the Minister of Climate Change and the Ministry for the Environment on priority actions for delivery between 2024 and 2026.

Other opportunities identified during consultation include:

- **improving investor confidence in green investments** by reducing real or perceived risks, such as supporting improved data and evidence, further transparency, market integrity via guidance and monitoring, capability building and technical assistance
- **developing sector-based transition pathways** by identifying and addressing barriers facing specific sectors
- **exploring interventions** that can mobilise additional private investment (ie, by reducing perceived investment or legal risk).

We will continue to work with the private sector on actions that will increase green investment and transition finance.

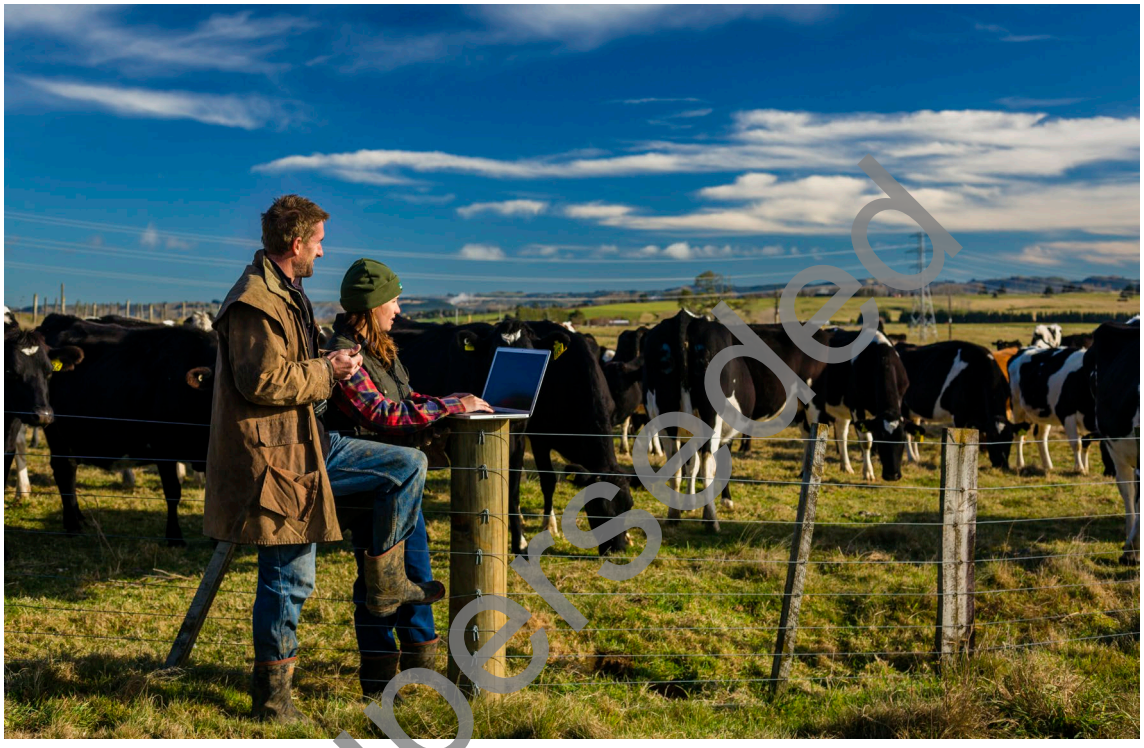
6. Technology and innovation

Te hangarau me te aronga hou

Chapter at a glance Technology and innovation	
Lead Minister	• Hon Simon Watts, Minister of Climate Change
Why technology and innovation are important	• A technology-led approach to reducing emissions will help sectors reduce emissions cost-effectively and speed our transition to net zero. This addresses emissions while increasing productivity, growing exports, opening new markets, and creating jobs and a prosperous economy.
Pillars of New Zealand's Climate Strategy	• World-leading climate innovation boosts the economy.
Key actions and policies	• Encouraging the private sector to commercialise solutions faster by removing regulatory barriers. • Ending the ban on gene technology outside the laboratory. • Increasing renewable energy and encouraging advances in enabling technology, like battery storage. • Removing market barriers to encourage new technology to be trialled in New Zealand.
Contribution during the second emissions budget period	• Supporting and accelerating the uptake of new technologies in agriculture, forestry and energy will reduce emissions and increase removals.

Enabling emissions reductions with technology and innovation

Innovation can fundamentally shift how we do things. Some advances, such as biofuels, can replace emissions-intensive products and create a climate-friendly future. New technologies such as smart chargers or other smart appliances can bring efficiencies and lower operating costs through energy savings. There are emerging technologies that can significantly reduce emissions across the economy. Simpler pathways will allow these tools to reach end users faster. The Government is focused on streamlining regulations and approval processes to enable the private sector to move quickly from prototype to commercialisation.



Providing technology for agriculture

Work underway for the agriculture sector (chapter 10) includes:

- ending the nearly 30-year effective ban on gene technology outside the laboratory (discussed below)
- supporting the development and use of emissions-reducing technologies, including agriculture
- incentivising the private sector to move from prototype to commercialisation.

Ending the ban on gene technology

The Government will establish an independent regulator in the Environmental Protection Authority to oversee applications to use gene technology. The aims are to allow New Zealand to benefit from these technologies and to protect our health, environment and biodiversity.

Gene technology allows scientists to examine and alter the genetic material of plants, animals, viruses or bacteria. This has helped scientists understand how we might edit genes to promote health, productivity and conservation, and even address climate issues.

Ending the effective ban on gene technology outside the laboratory will allow researchers and companies to develop and commercialise innovative products and create commercial opportunities. These technologies can help farmers and growers mitigate their emissions and raise productivity. For example, gene technologies could lead to sterile conifers that meet forestry needs but prevent the spread of wildings.

Enabling use of renewable energy

Advances in energy storage (eg, batteries, grid management, demand flexibility, smart meters, fuel cells and new processes to develop industrial goods) can help balance electricity supply and demand. Such advances help manage intermittent wind- and solar-generated electricity and continue our energy decarbonisation. See chapter 7 for more detail.

Supporting emissions-reducing technology

Sometimes there are challenges to early investment in new technology, such as the cost of trialling it in the New Zealand context.

Initiatives such as the Low Emissions Heavy Vehicle Fund (LEHVF) can encourage early adoption of new technology. This fund aims to increase the number of zero- and low-emissions heavy vehicles, and therefore encourage manufacturers to supply more such vehicles to the market. The LEHVF offsets the capital costs of fleet conversion by funding either:

- up to 25 per cent of the purchase price of a new low- or zero-emissions heavy vehicle, or
- 25 per cent of the cost to convert an internal combustion engine heavy vehicle to approved clean energy.

CASE STUDY
Effluent treatment system shows promise for reducing emissions

Pillar 4: World-leading climate innovation boosts the economy

Image: Measuring methane emissions on an effluent pond

EcoPond is an advanced effluent treatment system that cuts over 90 per cent of methane emissions from effluent ponds. This innovative solution is the result of a four-year collaboration between Ravensdown and Lincoln University. It works by inhibiting methanogens and reducing conditions that foster methanogenesis, which is the process responsible for methane production. EcoPond also reduces *Escherichia coli* (*E. coli*) in treated effluent, reduces odour from ponds and minimises phosphate leaching where treated effluent is applied.

The research and trial results demonstrating EcoPond's effectiveness have led to it being recommended for inclusion in New Zealand's Greenhouse Gas Inventory. EcoPond is included in the latest Overseer™ model update (6.5.5). Strategic funding from the Ministry for Primary Industries' Accelerating New Mitigations Fund and Ravensdown's ongoing support have allowed the system to evolve, reducing the high initial costs of installation. Recent redesigns include a cost-effective shock-dosing method and economical yet effective consumables. These improvements have reduced EcoPond's capital and operational expenses and enhanced its commercial viability.

Ravensdown's commercialisation and venture arm, Agnition, is driving EcoPond's market readiness with continued research support from Lincoln University. This joint effort has lowered the estimated operating cost of EcoPond to around $10,000 per year for a typical New Zealand dairy farm when deployed at scale, making it an effective solution.

EcoPond's effectiveness will be further evaluated through ongoing real-world trials on multiple farms across New Zealand over the coming months. The goal is to deploy working pilots of the system in 2025.

Sector policies and plans

Ngā kaupapahere me ngā mahere o te rāngai

This section sets out policies and actions that will help reduce net emissions across different sectors.

- Energy *(chapter 7)*
- Building and construction *(chapter 8)*
- Transport *(chapter 9)*
- Agriculture *(chapter 10)*
- Forestry and wood processing *(chapter 11)*
- Non-forestry removals *(chapter 12)*
- Waste *(chapter 13)*

7. Energy

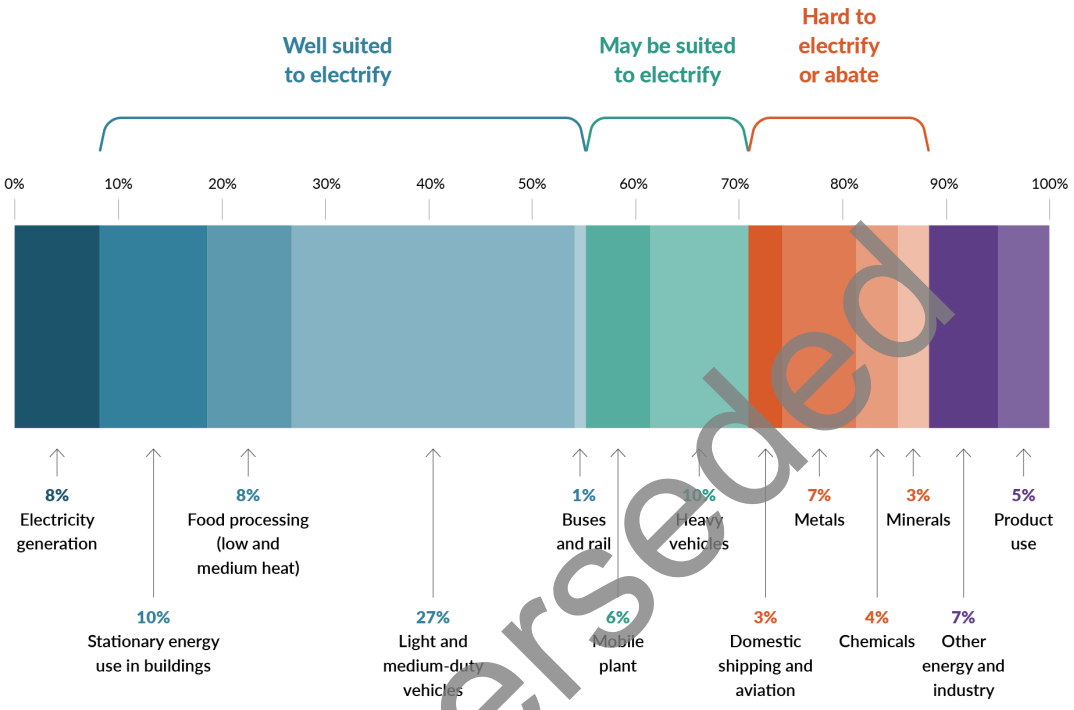
Te pūngao

Chapter at a glance Energy	
Lead Minister	• Hon Simeon Brown, Minister for Energy
Why this sector is important	• New Zealand has abundant renewable energy potential. Harnessing this will help meet our emissions budgets, reduce our dependency on imported fuels, and support the reliability and affordability of the energy system.
Pillars of New Zealand's Climate Strategy	• Infrastructure is resilient and communities are well prepared. • Credible markets support the climate transition. • Clean energy is abundant and affordable.
Key actions and policies	• Delivering Electrify NZ to help achieve our goal of doubling renewable energy (including reducing consenting times). • Enabling energy efficiency and a smarter electricity system. • Enabling carbon capture, utilisation and storage. • Enabling woody bioenergy.
Contribution during the second emissions budget period	• Electrify NZ: –0.1 Mt CO_2-e. • Enable carbon capture, utilisation and storage: –1.0 Mt CO_2-e.
Is the sector covered by the New Zealand Emissions Trading Scheme?	• Yes

Energy emissions

Emissions from energy use make up 37 per cent of New Zealand's gross emissions. This includes 17.5 per cent from energy for transport. Figure 7.1 shows the makeup of emissions from energy, and industrial processes and product use. We expect energy emissions reductions in the second emissions budget (EB2) to come mainly from increased electrification and from energy efficiency gains in light transport and process heat.

Figure 7.1: New Zealand's energy, and industrial processes and product use emissions, 2022



Role of government

It will take significant investment to meet expected demand for energy and achieve our goals. New Zealand needs investment in generation, transmission and local lines.

New Zealand's energy sector is dominated by private companies. It is critical that we maintain investment confidence. Government intervention in the market can have an effect on investment. Therefore, we are taking an appropriate role by delivering policy and regulatory certainty, and a level playing field.

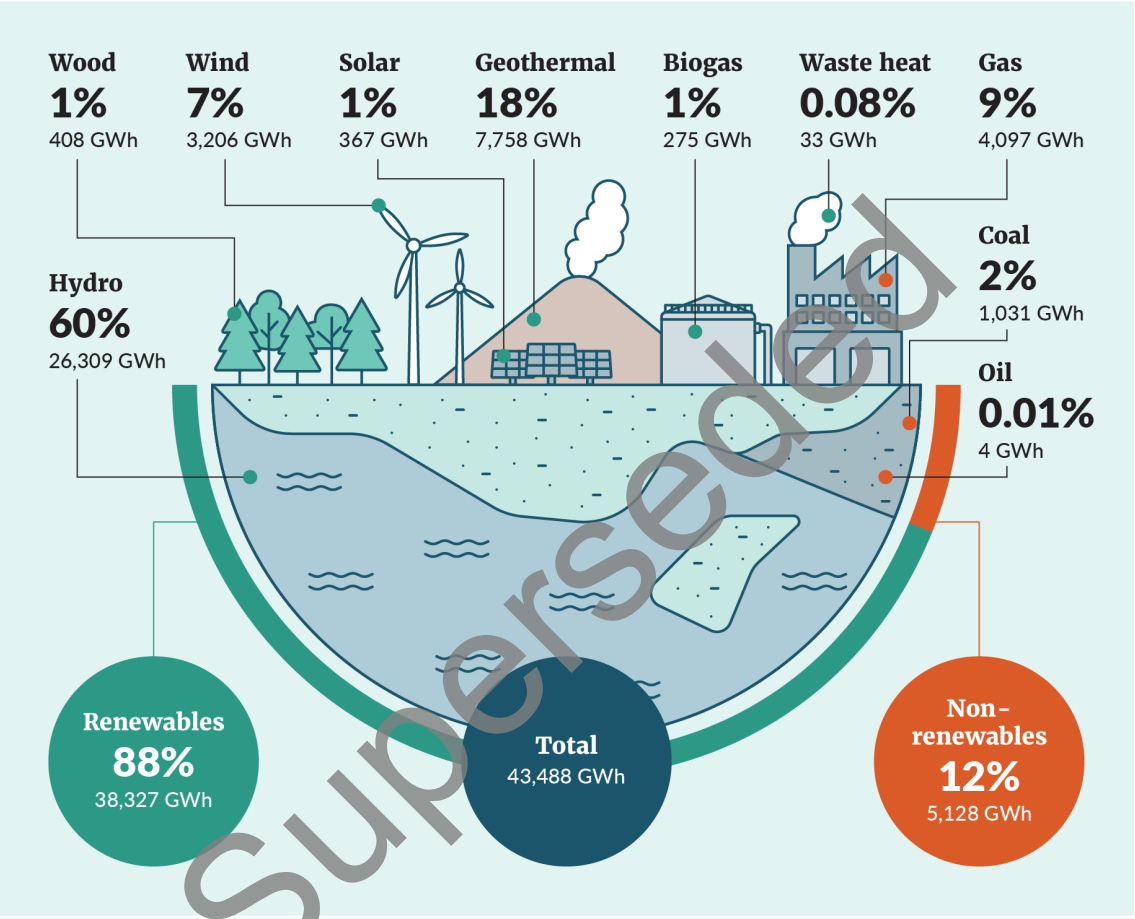
New Zealand does not subsidise renewables. Renewable energy already competes with fossil fuels, in part due to its abundance and because emissions pricing improves its competitiveness. Most of the known investment pipeline is renewable (largely solar and onshore wind, with some geothermal) and decarbonisation of the energy system will be guided by prices and markets. The Government's role is to enable those markets to work effectively. The New Zealand Emissions Trading Scheme (NZ ETS) is central to reducing net emissions in the energy sector (see chapter 4).

New Zealand has faced recent challenges on energy security and affordability. The Government is committed to alleviating these problems. Tackling security and affordability concerns is a necessary precursor to giving businesses and households the confidence to electrify and reduce their emissions.

Renewable energy is critical to reaching our targets

New Zealand has a high share of renewable energy (figure 7.2). Electricity demand is expected to rise significantly by 2050 as electric technologies are more widely adopted. This increase will outpace the demand growth of previous decades. Renewable generation capacity must be ready to meet this demand.

Figure 7.2: Net electricity generation by source (GWh), 2023



Note: These electricity generation data are from 2023, which was a record-high year for renewable energy supply. The mix of renewable and non-renewable energy in New Zealand can change year-to-year depending on a range of factors. Individual sources of electricity generation may not add up to the renewable and non-renewable percentages due to rounding.
GWh = Gigawatt hour.

We need to enable new investments in electricity transmission and distribution infrastructure to improve the reliability of our grid. An estimated $100 billion of investment is needed by 2050 to build and maintain this infrastructure.[5]

[5] Boston Consulting Group. 2022. *The Future is Electric*. Auckland: Boston Consulting Group.

Policies and initiatives

Electrify NZ: A key policy of the second emissions reduction plan

The Government has committed to doubling renewable energy by 2050. Electrify NZ is the work programme to support private investment in electricity generation and networks that will enable us to achieve this goal.

Electrify NZ includes the following initiatives.

- **Progressing the Fast-track Approvals Bill.** This will create a one-stop-shop that allows for faster, more efficient consents for nationally or regionally significant renewable energy and transmission projects.
- **Amending the Resource Management Act 1991 (RMA).** This will reduce the consenting and reconsenting time for most renewable energy consents to within one year. It will also extend the default lapse periods for renewable energy, transmission and local electricity lines consents from 5 to 10 years. We will increase the default consent duration to 35 years for most renewable energy consents.
- **RMA national direction for renewable energy and transmission.** We will advance amendments to the National Policy Statements for Renewable Electricity Generation and Electricity Transmission, so they are more directive and enabling.
- **Offshore renewable energy.** We will develop a regime to be in place by mid-2025 to unleash investment.
- **Further RMA national direction to enable a range of energy and infrastructure projects.** This will include a new National Policy Statement for Infrastructure, and subsequent standards for different types of energy generation and infrastructure.
- **A range of work underway by the Commerce Commission and the Electricity Authority.** This will update regulatory settings so that the electricity system can cope with the shift to electrification – including supporting the goal to supercharge electric vehicle (EV) infrastructure.

The role of gas in an affordable, low-emissions energy system

In 2023, gas contributed around 9 per cent of New Zealand's electricity generation. Gas provides energy for industry, commerce and public use, and is a raw material in the production of methanol and urea. Gas-fired generation keeps electricity affordable and secure, which in turn supports electrification. Gas can also reduce our reliance on coal, which has twice the emissions impact.

We expect that as consumers switch to renewable energy, the demand for gas will reduce. However, we expect gas will continue to play a role in generation out to 2050. The electricity system currently relies on gas and a limited amount of coal to meet peak demand in winter and to cover dry years. Gas and coal are substitutes for each other for electricity generation. Insufficient gas supply could therefore result in New Zealand burning more coal to keep the lights on, increasing emissions.

Enabling end users to electrify

Promoting an affordable supply

The Energy Competition Taskforce brings together regulatory experts from the Commerce Commission and the Electricity Authority with observers from the Ministry of Business, Innovation and Employment. It will assess how well the market is delivering efficient investment and affordable electricity. The programme includes:

- enabling new generators and independent retailers to enter and better compete in the market
- providing more options for energy users.

We are also working to minimise the impacts on those least able to pay. This includes continued support for the Warmer Kiwi Homes programme.

Enabling energy efficiency and a smarter electricity system

Work is underway to enable a smarter electricity system. This includes:

- amending the Energy Efficiency and Conservation Act 2000 to enable standards for devices to support demand flexibility, including EV smart chargers; this will support the uptake of EV smart charging and improve consumers' ability to shift demand for home EV charging away from network peaks
- work led by the Energy Competition Taskforce exploring innovation in tariff design (such as feed-in tariffs for rooftop solar and battery systems). This could enhance uptake and encourage businesses and households to change how and when they use electricity. This will include additional work led by the Electricity Authority.

Ensuring security of supply

As we have seen in 2024, our energy security and affordability are under pressure. Work is underway to further improve the security of New Zealand's electricity supply. This includes:

- mitigating the impact of severe weather on energy infrastructure (eg, amending rules about how close trees can grow to power lines)
- enabling the development of new fuels and technologies (eg, better market access for grid-scale batteries and demand-response)
- continued support for the Community Renewable Energy Fund to build energy resilience in communities, and trial innovative ways to store and distribute locally generated electricity.

Responding to broader affordability and security challenges

To address the current and longer-term risks to energy affordability and security, the Government is committed to a range of actions. These include:

- delivering effective electricity market regulation; the Government has initiated a review of the performance of electricity markets

- removing restrictions on electricity lines companies owning generation
- reversing the ban on offshore oil and gas exploration, to enable domestic gas production, increase energy affordability and security, and reduce reliance on imported coal
- improving access to gas for electricity generation by removing barriers to building critical facilities to import liquefied natural gas (LNG).

The Government has also issued a Government Policy Statement to the Electricity Authority to:

- require the Electricity Authority to give sufficient priority to the settings needed to promote competition and security of supply
- clarify the Government's role in electricity. The Government Policy Statement sets clear expectations that the sector must manage its own risk. Generators will not invest if they think the Government may intervene.

Enabling options for supplying energy

In future, we may see more widespread adoption of technologies like hydrogen, sustainable aviation fuel and offshore renewable energy. Getting the enabling settings right now can support future emissions budgets.

Carbon capture, utilisation and storage

The Government has agreed to create an enabling regime for carbon capture, utilisation and storage (CCUS). This will allow New Zealand's industries to access CCUS technology on a level playing field with other reduction and removal tools.

The regime will include a financial incentive for CCUS operators through the NZ ETS. It will draw on international examples, which typically include assessment and monitoring, and a clear liability framework. Through 2025, the Government will progress legislation to establish the CCUS regime.

The most likely opportunity for CCUS is to establish sequestration facilities at existing gas fields during EB2 and third emissions budget periods.[6] The regime will enable a gas operator to sequester carbon dioxide from their own production and from third parties. This will support the possible sequestration of carbon dioxide from our hard-to-abate industries, and from activities like direct air capture if and when they become economically viable.

Renewable gases

We have taken steps to create an enabling environment and remove barriers to the uptake of renewable gases, including:

- **updating the Climate Change (Unique Emissions Factors) Regulations 2009.** This will allow for offsite destruction of landfill gas produced by Class 1 landfills and includes a new destruction factor for upgrading biogas to biomethane. These changes will remove the disincentive under the NZ ETS for landfill operators to provide biogas for offsite uses, including biomethane upgrading

[6] This is additional to use of CCUS for geothermal generation, which is already happening.

- **revising the NZS 5442:2008 Specification for reticulated natural gas** to be fit for purpose with blends of biomethane and natural gas. Further revisions are underway to consider blending hydrogen with reticulated natural gas and biomethane.

We are continuing to explore additional measures to increase the uptake of renewable gases. We will also review existing gas and related regulations, so they are fit for purpose and compatible with renewable gases in the reticulated system.

Diversifying fuels by replacing natural gas with low-emissions alternatives such as biomethane and hydrogen is a way to improve the security of our energy supply and reduce emissions.

There is an opportunity to use organic waste streams to capture biogas and upgrade it to biomethane. Biomethane is chemically identical to natural gas. It can be injected into gas transmission and distribution networks and used in existing appliances.

An estimated 4.9 petajoules of biogas (equivalent to about half of residential and commercial gas demand) is produced by landfills, wastewater treatment plants and industrial facilities every year. Much of this biogas is currently flared to reduce its global warming potential. Some of it is used on-site to generate electricity and process heat. There is also considerable potential for generation from agricultural waste sources.

Some biomethane supply is expected to come online for injection into gas distribution networks during the EB2 period. How much this will reduce New Zealand's emissions depends on the wider energy system.

Enabling woody bioenergy

New Zealand has abundant bioenergy potential, stemming from its strong plantation forestry base. Bioenergy includes products such as woody biomass (chips, pellets) for use in boilers in industry and power generation, and liquid and gaseous forms such as renewable gases and sustainable aviation fuel. Enabling greater use of bioenergy increases the diversity of our low-emissions fuel, which in turn improves security of the supply.

Factors hindering uptake include price volatility, concerns about the security of supply over the life of an industrial plant (20-plus years), poor information on regional feedstock availability, and a lack of secondary processing at scale of bioenergy products (eg, into pellets).

We are supporting markets by providing information. The Energy Efficiency and Conservation Authority (EECA) is publishing insights to promote private sector investment in fuel-switching in the regions.

The Government will establish a domestic ministerial woody bioenergy taskforce to identify strategic opportunities for bioenergy. There is significant potential to make greater use of woody biomass for energy purposes to complement forestry resources for high-value economic activities. The taskforce will focus on investigating regulatory barriers to woody biomass uptake for bioenergy. More details on the taskforce will be released in 2025. See chapter 11 for more on the forestry sector's role in the production of biomass.

CASE STUDY
Biomass to displace coal generation at Huntly

Pillar 3: Clean energy is abundant and affordable

Image: Huntly Power Station

Huntly Power Station, run by Genesis Energy, is New Zealand's largest power station.

One of its roles is to provide back-up power when the country does not have enough renewable energy – for example, when the wind doesn't blow, the sun doesn't shine, or the rain doesn't fall.

Three of the five generating units at Huntly can run on coal or natural gas. Coal generation from these units produced 1.35 Mt CO_2-e of emissions from July 2023 to June 2024. Genesis Energy has a public goal of delivering 300,000 tonnes of biomass to Huntly Power Station by the end of fiscal year 2028. This fuel is intended to displace coal generation.

Initial government estimates suggest this could deliver reductions of 1.1 Mt CO_2-e in the EB2 period and 1.6 Mt CO_2-e in the EB3 period.

CASE STUDY
Mercury progresses sustainable geothermal generation

Pillar 3: Clean energy is abundant and affordable
Pillar 4: World-leading climate innovation boosts the economy

Image: Pipes at Ngā Tamariki geothermal station

Geothermal generation makes up around 18 per cent of New Zealand's total electricity generation and plays a vital role in decarbonising the electricity system and providing baseload generation.

Mercury is adding a fifth generating unit at Ngā Tamariki geothermal station, which will boost generation output by 46 megawatts at a cost of approximately $220 million. The station normally produces about 730 gigawatt hours of electricity each year, which is enough to power approximately 103,000 households. The expansion will increase this to 1,120 gigawatt hours per year or approximately 158,000 households once it is complete in 2025.

Mercury is also continuing to invest in technologies and processes designed to reinject non-condensable gases into the geothermal reservoirs. Releasing these gases is an inherent part of the geothermal generation process. Currently, around 98 per cent of Mercury's Scope 1 emissions are attributed to fugitive emissions arising from geothermal generation.

Ngā Tamariki geothermal station has been successfully developing reinjection technology since 2022. The current reinjection rate is around 40 per cent of the station's emissions. This translates to about 14,000 t CO_2-e per year, equivalent to the emissions of about 1,800 households.[7]

Mercury is carrying out ongoing research and development to evaluate the effects of the current reinjection of non-condensable gases on the reservoir. It has begun trials to assess how to ensure continued sustainable management of the geothermal system. Over the next five years, it plans to expand reinjection to more geothermal sites.

[7] Gen Less. *Calculate your carbon footprint.* Retrieved 23 November 2024. This calculation assumes 7.5 tonnes per household.

Exploring deeper geothermal energy

New Zealand is a rich source of geothermal energy, which is used for electricity generation. Currently most geothermal wells are drilled to a maximum depth of around 3.5 kilometres, but it may be possible to access more energy if wells are drilled deeper.

Through the Regional Infrastructure Fund, the Government will invest in exploring the potential of supercritical geothermal technology (SCGT). SCGT could unlock more geothermal energy for New Zealand and further reduce reliance on fossil fuels in later budget periods.

Hydrogen

Hydrogen is being trialled and demonstrated as a low-emissions alternative in heavy industry, heavy and specialty transport, production of green fuels (see below) and power generation.

Although hydrogen is not expected to play a significant role in EB2, it could in later budgets.

We aim to support private investment in hydrogen. The Hydrogen Action Plan focuses on:

- creating an enabling regulatory environment
- reducing consenting barriers for hydrogen projects
- promoting a cost-effective and market-led transition to a low-emissions economy
- supporting access to international investment and markets.

Sustainable aviation fuels

Sustainable aviation fuels (SAF) support decarbonisation of air travel and the transportation of cargo.

The Government has funded feasibility studies with Air New Zealand to explore domestic supply chains of alternative jet fuel, including the use of woody biomass (forestry slash) and municipal waste. We intend to release the findings in 2025.

EECA and New Zealand Trade and Enterprise have also contributed funding for a feasibility study of producing SAF from green hydrogen at Marsden Point, by Fortescue Future Industries and Channel Infrastructure.

8. Building and construction

Te hanganui me te hanga whare

Chapter at a glance Building and construction	
Lead Minister	• Hon Chris Penk, Minister for Building and Construction
Why this sector is important	• The building and construction sector is a critical part of New Zealand's economy. It supports economic growth and employment, and provides housing, commercial and industrial buildings. • Buildings contribute around 12 per cent of domestic greenhouse gas emissions. Reducing building-related emissions can help us achieve our targets.
Pillars of New Zealand's Climate Strategy	• Credible markets support the climate transition.
Key actions and policies	• Expanding voluntary energy performance ratings for non-residential buildings. • Making it easier for people to retrofit their buildings to improve energy efficiency. • Improving emissions data for building products, materials and buildings.
Contribution during the second emissions budget period	• More work is needed to understand the role of building and construction in achieving New Zealand's domestic and international targets.
Is the sector covered by the New Zealand Emissions Trading Scheme?	• Yes

Building emissions

Buildings contribute around 12 per cent of gross domestic greenhouse gas emissions. Building-related emissions come from the energy used to operate buildings (**operational emissions**, 9 per cent or 6.7 Mt CO_2-e) and the emissions associated with the materials used to construct them (**embodied emissions**, just under 4 per cent or 2.8 Mt CO_2-e).

About half (54 per cent) of operational emissions are from electricity, with the remaining 46 per cent from fossil fuels, mainly coal and gas.

Reducing emissions in the building and construction sector can support wider decarbonisation of the economy.

Energy-efficient buildings require less energy to run, creating fewer operational emissions and reducing the cost of running buildings, which encourages people to improve the energy efficiency of their buildings.

Our approach is to remove barriers and make information more accessible. This approach aims to enable households and businesses to make quicker, cheaper and easier decisions on lower-emissions materials and on the design and use of buildings. It can also help the market to function more effectively.

Policies and initiatives

Expanding voluntary energy performance ratings for non-residential buildings

Currently, limited information on the energy performance of buildings is available for owners, buyers and renters.

Energy performance ratings provide verified and credible sustainability data to building owners and users. By enabling comparisons with other buildings, ratings can facilitate sustainable investments by revealing opportunities for building owners to improve energy efficiency at low cost.

Ratings also allow tenants to make informed choices when renting buildings. This can encourage landlords and developers to invest in energy efficiency.

New Zealand has a voluntary energy performance rating scheme called NABERSNZ. This scheme provides performance information about commercial office buildings and public hospitals. Some government agencies must obtain a NABERSNZ rating for office buildings they own or lease.

The Government intends to increase the availability of voluntary ratings by expanding the NABERSNZ scheme to other non-residential buildings such as shopping malls and hotels.

In Australia, NABERS ratings are available for 11 building types. Commercial office buildings over 1,000 square metres are required to have a NABERS rating. Rated buildings have reduced their energy use by over 40 per cent on average since 2010.[8]

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[8] NABERS. 2022. *Energy efficiency in commercial buildings*. Retrieved 3 December 2024.

Making it easier to retrofit buildings

Around 70 per cent of the buildings that will exist in New Zealand in 2050 have already been built. Retrofitting buildings is therefore critical to reducing operational emissions.

We will investigate options to streamline compliance with building regulations to make it easier for people to voluntarily retrofit a building.

Reducing embodied emissions

Embodied emissions can be reduced by:

- **maximising new build efficiency:** ensuring the size and quantity of new buildings is proportional to the need, and increasing their longevity to reduce the number of avoidable new builds in future
- **increasing building material efficiency:** using fewer materials in new buildings, reducing waste and minimising replacement over the life of the building
- **opting for low-carbon materials** or **innovating supply chains** to reduce emissions from construction materials.

The Government is already working on actions to support lower embodied emissions by:

- making it easier to build small buildings, by removing the need for a building consent for small secondary dwellings such as granny flats
- improving access to innovative and sustainable materials by enabling the use of overseas building products and standards
- developing a methodology for the building sector to measure embodied emissions in a consistent and credible way.

Other Government actions include boosting domestic wood processing (chapter 11) and investing in resource recovery through the Waste Minimisation Fund (chapter 13).

Improving emissions data for products, materials and buildings

New Zealand's understanding of the embodied emissions of building materials has improved in recent years from a low base. However, limited availability of credible data and information can make understanding, comparing and reducing embodied emissions challenging.

Better and more accessible data can make it easier for consumers and building designers to understand and measure embodied emissions. This enables people to consider the emissions impact of design and construction choices.

The Government will work alongside the sector to encourage lower embodied emissions by:

- supporting the Building Research Association of New Zealand (BRANZ) and Masterspec to develop and maintain a national online resource of embodied carbon data for building materials and products
- improving the consistency and accessibility of tools currently used to measure embodied emissions
- supporting an industry-led pilot of an online platform for sharing embodied carbon assessments of different buildings. This is aimed at improving industry understanding of what low-embodied carbon buildings look like. It will also help industry identify opportunities to improve reporting of embodied emissions.

These initiatives will help build strong evidence and improve the sector's ability to make well-informed decisions.

CASE STUDY
Coming together to reduce emissions in AUT's Tukutuku building

Pillar 4: World-leading climate innovation boosts the economy

Image: Tukutuku building at Auckland University of Technology

Auckland University of Technology's (AUT's) Tukutuku building accommodates around 2,200 students and staff within the Faculty of Health and Environmental Sciences. Tukutuku sets a new benchmark for sustainable tertiary education buildings in New Zealand while creating a vibrant, inclusive space for learning and collaboration.

Tukutuku's careful design and orientation optimise natural light and indoor temperature and balance solar heat gains and losses. These design features have minimised the building's energy use and operational emissions. Tukutuku also has extra insulation, a rainwater harvesting system and a displacement ventilation system. Together, these measures mean it is expected to be one of the most energy-efficient tertiary-education buildings.

Tukutuku is designed to use 60 kilowatt hours per square metre of energy annually. Operational emissions from running the building over 50 years are anticipated to be around 490 kilograms of CO_2-e per square metre.

To minimise the embodied emissions associated with the construction materials, Tukutuku was built using an innovative, lightweight timber structure and repurposes parts of an existing building. The lightweight structure allowed the building to go up to four storeys whereas a heavier, more traditional system would have limited the height to three storeys because of the poor ground conditions. This construction approach resulted in Tukutuku creating only half the embodied emissions – around 448 kilograms CO_2-e per square metre – compared with an equivalent industry standard building.

Further environmental and economic benefits were achieved by diverting over 90 per cent of the construction and demolition waste from landfill. This saved 40 per cent on disposal costs.

9. Transport

Te tūnuku

Chapter at a glance Transport	
Lead Minister	• Hon Simeon Brown, Minister of Transport
Why this sector is important	• The transport system is critical to economic growth and productivity. New Zealand is in a strong position to decarbonise transport through electrification. • Making clean energy accessible and enabling electric vehicle (EV) uptake via improved charging infrastructure will remove some non-market barriers to uptake.
Pillars of New Zealand's Climate Strategy	• Credible markets support the climate transition. • Clean energy is abundant and affordable.
Key actions and policies	• Aiming for a network of 10,000 public EV charging points by 2030 and facilitating private investment in EV charging infrastructure. • Reviewing regulatory barriers to decarbonising heavy vehicles (eg, EVs and hydrogen). • Promoting innovation through the Low Emissions Heavy Vehicle Fund. • Continuing to support the aviation sector to decarbonise, and working with other countries on low- and zero-carbon shipping on key trade routes by 2035. • Supporting public transport in our main cities.
Contribution during the second emissions budget period	• Target 10,000 public EV charging points by 2030: –0.01 Mt CO_2-e.
Is the sector covered by the New Zealand Emissions Trading Scheme?	• Yes

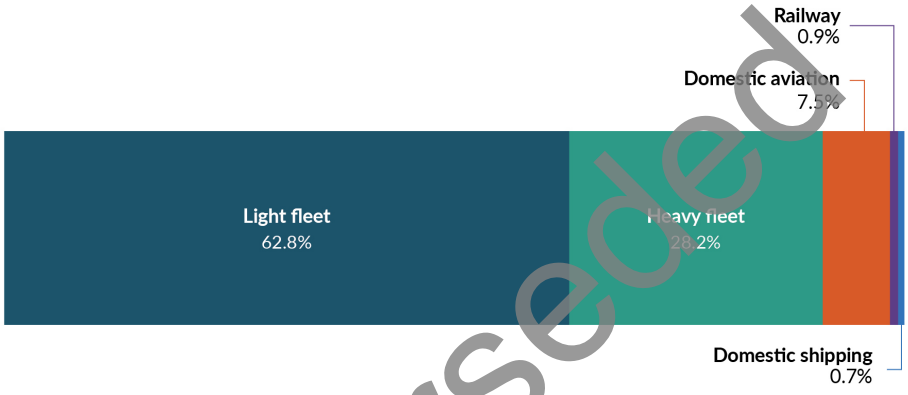
Transport emissions

Transport was responsible for 17.5 per cent of New Zealand's gross greenhouse gas emissions in 2022. More than 90 per cent of transport emissions are from road transport. New Zealand has the fifth highest per-capita transport emissions among developed countries. Transport emissions increased by 68 per cent from 1990 to 2022. This was mostly driven by population growth and economic activity.

Figure 9.1 shows the light vehicle fleet – typically cars and other vehicles for personal use – is responsible for 63 per cent of transport emissions. The heavy vehicle fleet – typically medium and heavy trucks – is responsible for 28 per cent.

The remaining 9 per cent comes from domestic aviation, rail, and domestic shipping and pipeline.

Figure 9.1: Transport emissions by transport type, as at December 2022



Policies and initiatives

To give New Zealanders the confidence to move to electric vehicles, the Government is planning a network of 10,000 public charging points by 2030

In general, the market for electric vehicles (EVs) is expected to make a big impact to transport emissions in the 2030s and 2040s. This will happen gradually as people and businesses replace their vehicles. By the end of November 2024, there were approximately 117,000 EVs in New Zealand, including plug-in hybrids, which is up 9.3 per cent from 1 January 2024.

'Range anxiety' and concerns about the availability of public charging points continue to hamper EV uptake. Accelerating the rollout of public charging points can address these concerns.

New Zealand currently has about 1,250 public charging points. Over 500 more are in development as of September 2024. This creates a good base network, including fast chargers every 75 kilometres along most of the state highway network.

However, New Zealand's EV charging infrastructure is behind that of other countries. At the end of 2023, New Zealand had one public charging point for every 88 EVs. Most comparable countries have ratios of one charging point to fewer than 40 EVs.[9]

[9] The International Energy Agency's annual Global EV Outlook for 2024 finds Australia has about one charging point to every 68 EVs, while the United Kingdom has one to every 31 and Germany has one to every 25. However, countries record charging-point numbers differently.

The Government has a target of a network of 10,000 public EV charging points by 2030. This is expected to meet all public charging needs. Some possibilities include:

- ultra-rapid charging on the highway network
- fast charging at destinations such as shopping malls, gyms and marae
- slower AC (alternating current) charging where an EV will be parked for longer, such as at workplaces, hotels, motels and holiday parks.

Facilitating private investment

The Supercharging EV Infrastructure work programme sets out actions to facilitate private investment and review Government co-investment.

These actions include:

- making the installation of public EV charging points a permitted activity under the Resource Management Act 1991
- enabling standards to help consumers shift home EV charging demand away from network 'peaks'
- with the Electricity Authority, addressing barriers such as high connection costs, and ensuring efficient application processes for EV charging connections across all 29 electricity distributors.

Reviewing co-investment

Although EV numbers are growing, the private sector may not provide charging infrastructure without demand. At the same time, demand for EVs may be restricted if there are not enough charging points.

The Government can solve this problem by co-investing in public charging points with the private sector.

Co-investment can also support specific sites that would not attract private investment but are important for an effective nationwide network. For example, tourism hotspots can see high peak demand but low demand for most of the year.

As the network scales up and regulatory barriers are removed, the private sector will likely be able to invest with more confidence.

It is timely to review the Government's co-investment approach, so that it can reach its national network goal and maximise value. Until now, most public EV charging points have been set up with government co-funding from the Energy Efficiency and Conservation Authority.

The review will consider the scale of co-investment, how it is prioritised across charging point types and locations, the processes to apply for and receive co-investment, and how it could change as the market develops. Cost–benefit analysis will inform the design of an updated co-investment model.

The Government is engaging with the EV charging market on this review. We expect decisions to be made in early 2025. This will support final decisions on changes to the approach, which will be implemented later in 2025.

CASE STUDY
Hauraki transport hub gets fast EV charging

Pillar 1: Infrastructure is resilient and communities are well prepared
Pillar 3: Clean energy is abundant and affordable

Image: The Kwetta charging point at Z Energy in Ngātea

Ngātea, a town in the Hauraki Plains, is an ideal location for an EV charging point as it sits at the heart of the 'Golden Triangle', a busy transport route between Auckland, Tauranga and Hamilton. However, the town's existing electricity network does not have enough spare capacity to install high-speed EV charging points. Increasing the network's capacity would have required difficult, time-intensive and expensive grid upgrades.

To solve this problem, Z Energy worked with PowerCo, the local electricity distribution business, and Kwetta, a New Zealand EV-charging solutions supplier. Its 'Prime' charging unit allows fast charging points to be installed without major upgrades to the grid. The Energy Efficiency and Conservation Authority saw the demonstration opportunity for the project and provided support through its Low Emissions Transport Fund.

Connecting directly to the high-voltage network, the Kwetta Prime unit combines multiple elements necessary for fast charging into a single module. This includes the high-voltage switch and transformer (usually installed by the local lines company) and the metering, distribution and conversion (usually installed by the customer). Charging is then provided by Kwetta's Skyhook fast DC charging point.

This solution also uses static synchronous compensator technology, which helps manage voltage during charging to ensure the stability of the electricity supply. This greater stability, in turn, allows more power to be transferred and improves stability on the wider network.

The Kwetta charging point was commissioned in December 2023 at the Ngātea Z Energy station, after a short, three-month deployment phase. The Ngātea site can now support up to 500 kilowatts of fast charging, even during constrained periods.

This solution will enable charging point operators to install high-capacity EV charging in locations with constrained electricity networks.

Supporting actions

Ensuring the Clean Vehicle Standard is effective

The Clean Vehicle Standard (the Standard) came into effect on 1 January 2023. It aims to progressively reduce the average carbon dioxide emissions of light vehicles entering the fleet. It does this by setting annual carbon dioxide targets that vehicle suppliers must meet on average across the vehicles they import.

Signalling achievable targets well in advance helps compliance and minimises supply and price impacts for consumers. In 2024 the Government reviewed the Standard. The review concluded that the 2025–27 targets (apart from the 2025 target for passenger vehicles) were too stringent and, if unchanged, were unlikely to be achieved. The annual targets out to 2027 were subsequently eased to ensure that the Standard is effective, targets are achievable, and the Standard supports vehicle availability, affordability and choice for consumers. Additionally, targets were added for 2028 and 2029.

Pricing for more efficient use of transport infrastructure

From January 2027, the Government plans to return to the practice of regular fuel excise duty (FED) and road user charges (RUC) increases. The Government Policy Statement on Land Transport 2024–2034 signalled an increase of 12 cents per litre to FED in January 2027 and a further 6 cents per litre in January 2028, followed by a 4 cents per litre annual increase starting in January 2029. The purpose of these changes is to support further investment in transport infrastructure.

Light EVs started paying RUCs in 2024, and currently may pay more than equivalent petrol vehicles (such as efficient hybrids) in FEDs. The Government will transition the entire light vehicle fleet to RUCs, and away from fuel tax, by 2027. This will ensure that all road users contribute to the upkeep of our roads, whatever vehicle they drive.

We will also introduce legislation to set up time-of-use schemes in New Zealand. This will improve traffic flows and shorten journey times by charging road users at certain times or locations, depending on how busy the roads are. The charge encourages some users to change their travel habits, so there are fewer people on the roads at the busiest times.

Time-of-use schemes will help lower emissions, increase productivity and enable New Zealanders and freight to get where they need to go quickly and safely.

Heavy vehicle decarbonisation

Our freight is mainly carried on road by heavy trucks. Other heavy vehicles have key roles in other sectors such as waste removal and construction. Heavy vehicle emissions are currently about a quarter of our transport emissions.

Decarbonisation of heavy vehicles is at an earlier stage than light vehicles both globally and in New Zealand. Zero-emissions heavy vehicles (ZEHVs) make up less than 0.13 per cent of the national heavy truck fleet.

The freight sector and other commercial sectors using heavy vehicles are market-led and highly competitive. They are best placed to lead decarbonisation. The Government can support the sector to reduce heavy vehicle emissions by removing barriers. It will also protect access to overseas markets as other countries set increasingly stringent expectations about supply chain emissions.

Over the second emissions budget (EB2) period, we expect significant global improvements in heavy vehicles. This is likely to include better fuel efficiency in internal combustion engine (ICE) trucks, and the supply of more makes and models of ZEHVs. We expect the capital cost difference between ZEHVs and ICE trucks to keep reducing, and the range of ZEHVs to keep increasing as technology improves.

Reviewing barriers to low- and zero-emissions heavy vehicles

The current vehicle dimension and mass rules tend to favour trucks that are relatively heavy (for greater efficiency) but with relatively low axle weights (to reduce damage to roads and highways) compared with other markets. These rules affect a range of heavy vehicles, including some ZEHVs. For example, some battery electric trucks sacrifice payload for battery weight to meet the current rules, making them less competitive than ICE trucks. Hydrogen tanks on heavy vehicles can cause them to exceed volume constraints.

The additional weight of electric batteries may put these trucks in a higher driver licence category than the equivalent ICE model. This adds costs to businesses using these zero-emissions vehicles.

We will review the regulatory system for barriers to uptake of ZEHVs, including the impact of axle weights and licence categories. Any change must be balanced against the increased wear and tear on roads and bridges from heavier vehicles, as well as their higher maintenance costs.

Grants supporting uptake of low- and zero-emissions heavy vehicles

We have launched the Low Emissions Heavy Vehicle Fund (LEHVF) to promote innovation and offset the cost of hundreds of heavy vehicles powered by clean technologies. Budget 2024 provided $27.75 million for the fund, which is administered by the EECA. This aims to help early adopters to overcome upfront cost barriers and accelerate the uptake of these vehicles – whether they are battery electric, hydrogen fuel cell or hybrid.

The EECA's early high-level modelling estimates up to 500 diesel vehicles would be replaced by low- or zero-emissions vehicles by 2028 through the LEHVF. This scenario could reduce transport gross emissions by around 367 kt CO_2-e over the EB2 and third emissions budget periods.[10] There is uncertainty about which vehicles the market will choose, in terms of both size and technology type, which will affect actual reductions.

The Government will also consider the merits of extending the exemption of heavy electric vehicles from RUC, which is currently due to expire at the end of 2025.

Public charging for heavy vehicles

For the short term, we expect electric charging of heavy vehicles to occur mainly at private depots. Some of the barriers to charging will be addressed by actions on electricity network infrastructure and supply (chapter 7). We will continue to monitor the uptake of heavy electric vehicles, and whether there is any role for the Government to facilitate charging infrastructure for heavy vehicles.

[10] The grant scheme estimates were modelled separately from other policies of the second emissions reduction plan, which used the Emissions in New Zealand model.

Aviation and shipping decarbonisation

Domestic aviation and coastal shipping emissions make up a small proportion of transport emissions (about 8 per cent). Sea freight and supply chains are key drivers of New Zealand's economy. Playing our part in decarbonising these sectors helps us manage supply chain emissions to maintain access to international markets.

The Government's role is to facilitate industry discussions through existing forums, consider regulatory barriers and ensure New Zealand's interests are represented on the international stage. International cooperation will also prepare us to use new technologies as they become available.

The Government has established Sustainable Aviation Aotearoa, a group of private sector and government agencies supporting the decarbonisation of the aviation sector. The group is exploring ways to work with counterparts in other countries, such as Australia, on settings that would support sustainable aviation fuel supply and uptake.

Creating the conditions for green shipping routes by 2035

During the 2+2 Climate and Finance Dialogue with Australia in July 2024,[11] the Government committed to convening roundtables with the maritime sector. These will identify the conditions required for green routes between countries.

Bringing together diverse industry stakeholders, a pre-feasibility study was completed in 2023 for an Australia–New Zealand green shipping corridor.[12] This could allow commercially operating ships to use alternative fuels.

Separately, Zespri[13] partnered with the CMA CGM Group on a feasibility study for a green route from New Zealand to Europe.

Low- or zero-carbon shipping corridors could allow New Zealand to:

- maintain the marketing advantage of low- or zero-carbon credentials, avoiding extra costs such as carbon tariffs on ships or goods, based on voyage emissions
- support an equitable transition by enabling low- or zero-carbon Pacific supply chains
- maintain common regulations with regional partners, so that operators can easily move the same craft around all ports in the region.

Reviewing domestic use of international carbon intensity requirements

Domestic coastal shipping is exposed to the NZ ETS price through fuel purchases. International shipping, including any international carrier of domestic cargo that is incidental to its international cargo, is excluded from the NZ ETS.

Annex VI of the International Convention for the Prevention of Pollution from Ships requires member countries to adopt measures to ensure that domestic voyaging ships operate

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11 The dialogue is an annual meeting between the respective Ministers of Finance and Climate Change from New Zealand and Australia.

12 The study was completed by the Maersk Mc-Kinney Moller Centre for Zero Carbon Shipping.

13 Zespri International Limited is the largest marketer of kiwifruit globally. Its international headquarters are in Mount Maunganui.

consistently with the international requirements. New Zealand chose to apply the Annex VI international ship carbon-intensity requirements to coastal shipping. Other countries, such as Australia, use alternative measures.

The NZ ETS and the carbon intensity requirements are not direct duplicates. However, applying both regimes could disadvantage domestic coastal shipping against competing international operators that move freight around New Zealand and are not subject to the NZ ETS.

It is unclear whether engaging with the Annex VI requirements would support lower emissions from domestic coastal ships. We will review whether applying the Annex VI requirements is effective and should continue.

Public transport in the main cities

Reliable and accessible public transport enables more efficient use of New Zealand's existing transport infrastructure – especially in the largest cities. It also supports our emissions goals.

We have proposed investments in several major projects in Auckland and the lower North Island, to be completed over the next decade. These include:

- Auckland City Rail Link
- Eastern Busway
- Northwest Rapid Transit
- Auckland airport to Botany busway
- rail upgrades in the lower North Island.

The Government is investing $802.9 million in the Wairarapa and Manawatū rail lines as part of a funding agreement with the NZ Transport Agency, KiwiRail, and the Greater Wellington and Horizons Regional Councils. This will deliver more reliable services for commuters in the lower North Island.

Realising the benefits of reliable and accessible public transport will require continued planning, delivery and maintenance to support growing populations and meet demand. Improvements will need to occur progressively through investments in and enhancements to infrastructure and services. This work includes:

- making better use of existing infrastructure
- introducing new technologies to optimise networks and services
- integrating transport investment with housing and land-use planning.

Supporting the transition to zero-emissions buses

Most public transport authorities have begun using zero-emissions buses in their public transport fleets, because of the economic, health and emissions benefits.

From 1 July 2025, authorities are required to procure only zero-emissions buses.

To support this transition, the Government has reconfirmed $44.721 million through Budget 2024 over four years. Co-funding will be available to authorities to:

- speed up the deployment of the buses
- encourage innovative approaches for the rollout of buses and infrastructure.

10. Agriculture

Te ahuwhenua

Chapter at a glance

Agriculture

Lead Minister	• Hon Todd McClay, Minister of Agriculture
Why this sector is important	• Agriculture makes up about half of New Zealand's total emissions. Efforts to reduce emissions must support farmers to produce emissions-efficient products, and not cause production to shift to other parts of the world where it is more emissions intensive.
Pillars of New Zealand's Climate Strategy	• World-leading climate innovation boosts the economy.
Key actions and policies	• Reviewing methane science and targets. • Accelerating the development of mitigation tools and technologies to reduce on-farm emissions. • Developing measurement of on-farm emissions for use by 2025. • Implementing a fair and sustainable pricing system for on-farm emissions by 2030.
Contribution during the second emissions budget period	• Implement an agricultural emissions pricing system and mitigation technologies: –0.2 Mt CO_2-e.
Is the sector covered by the New Zealand Emissions Trading Scheme?	• No

New Zealand agriculture is world leading

New Zealand is an agricultural nation. Agriculture is a critical contributor to our economy and way of life, making up 81 per cent of merchandise exports and nearly 13 per cent of overall employment.

Agriculture also makes up over 50 per cent of New Zealand's gross emissions. Importantly, New Zealand farmers are among the most climate-efficient producers in the world.[14]

We need to reduce agricultural emissions in a way that does not compromise exports or lead to emissions leakage. Climate change policies cannot lower global emissions by shifting agricultural production to less efficient producers overseas. It is critical for the economy and for global emissions that New Zealand's trade-exposed agricultural production remains competitive.

This is why the Government is taking a technology-led approach to managing agricultural emissions, which we are making good progress in implementing.

Customers are increasingly demanding low-emissions products, with knock-on effects through the supply chain. We are seeing increasing international and market-led action, and it is critical that the New Zealand agricultural sector keeps up. Taking action will help to maintain and enhance New Zealand farmers' and growers' competitiveness in markets demanding sustainably produced food, and their contributions to New Zealand's economic prosperity.

Efficiency gains have been driven by farmer-led improvements in productivity, technology development and genetics improvements over time. These gains are expected to continue (see figure 10.1).

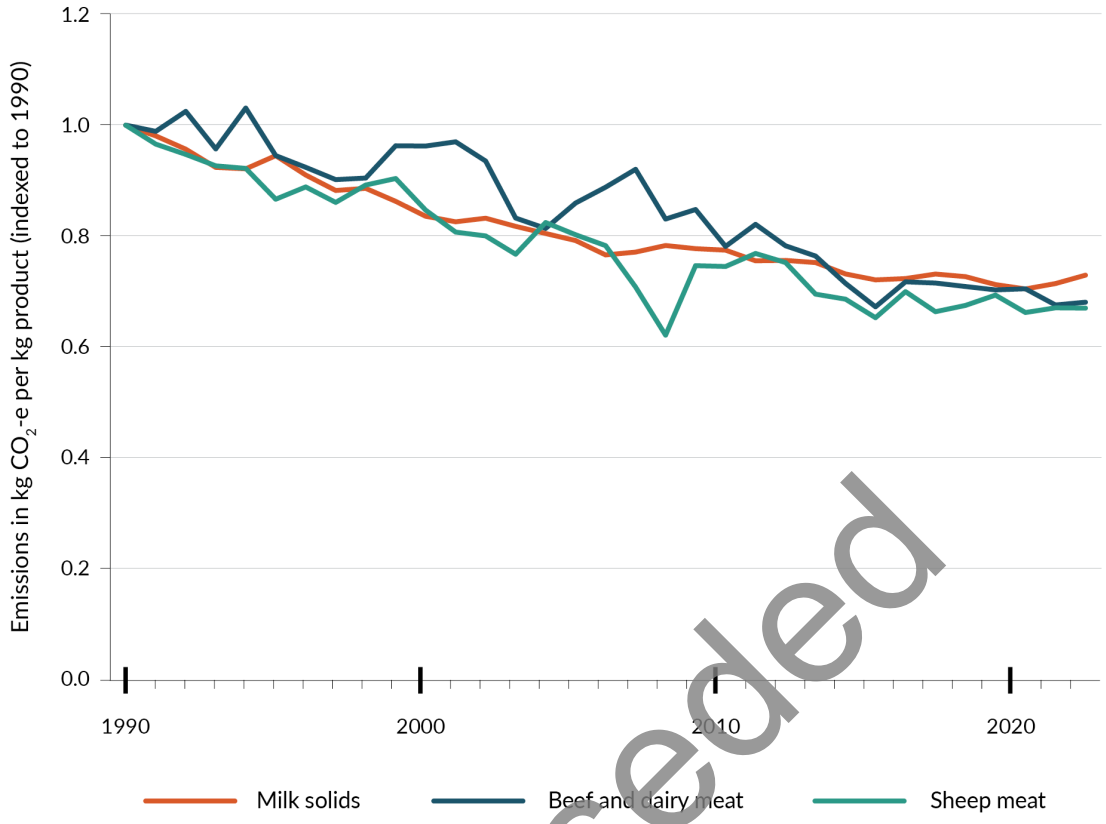
We are seeing New Zealand agribusinesses setting ambitious, science-based targets to reduce emissions throughout their supply chains. We are also seeing increased demand from multinational companies looking to source their products from lower-emissions farms.[15]

[14] For example, see: Mazzetto AM, Falconer S, Ledgard S 2022. Mapping the carbon footprint of milk production from cattle: a systematic review. *Journal of Dairy Science* 105(12): 9713–9725; Mazzetto AM, Falconer S, Ledgard S. 2023. Carbon footprint of New Zealand beef and sheep meat exported to different markets. *Environmental Impact Assessment Review* 98: 106946.

[15] New Zealand food and fibre producers face a range of initiatives, including:

1. Fonterra's Scope 3 targets, which target a 30 per cent intensity reduction in land-based emissions by 2030 (from a 2018 baseline)
2. Synlait's targets of a 30 per cent reduction in on-farm emissions per kilogram of milk solids and a 45 per cent reduction in absolute Scope 1 and 2 emissions by 2028 (from a 2020 base year)
3. Nestle's reporting across Scope 1, 2 and 3 emissions, and its target of a 50 per cent reduction of its annual net emissions by 2030 compared with its 2018 baseline
4. Countdown's aim to reduce Scope 3 emissions by 19 per cent by 2030 compared with a 2015 baseline.

Figure 10.1: Changes in emissions intensity of meat and dairy products (kg CO_2-e per kg product), 1990–2022



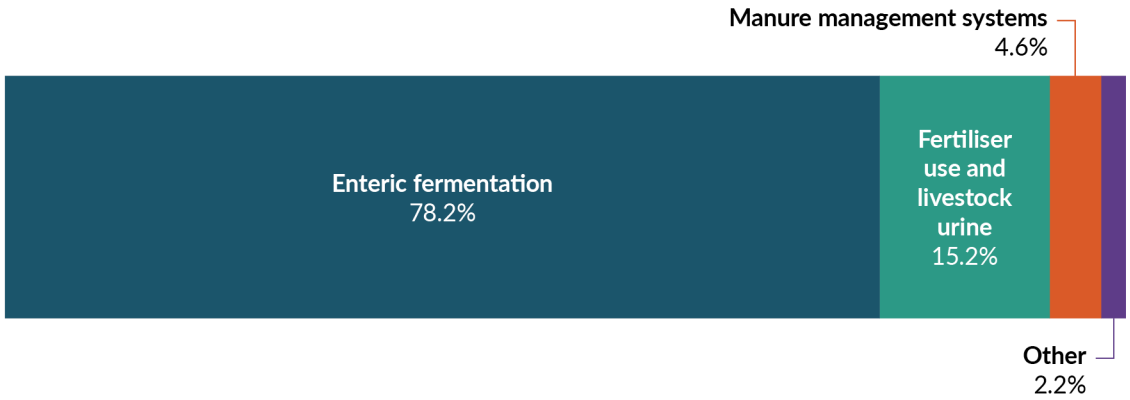
Agriculture emissions

Compared with other developed countries, agriculture contributes a relatively high proportion of New Zealand's emissions. It also makes up a more significant portion of gross domestic product.

Agricultural emissions by activity are shown in figure 10.2. They include:

- 78.2 per cent from methane emissions produced by enteric fermentation – the digestive process of ruminant animals such as cattle, sheep and goats creating methane emissions
- 15.2 per cent from agricultural soils – mostly nitrous oxide generated by micro-organisms acting on nitrogen introduced via livestock urine, dung or synthetic fertilisers
- 4.6 per cent from manure management systems
- 2.2 per cent as carbon dioxide from other sources (including 2.1 per cent from urea application and liming, and 0.1 per cent from field burning of agricultural residues).

Figure 10.2: Agriculture emissions by activity, 2022



Of the 2022 agriculture emissions, the most significant come from dairy cattle (48.3 per cent), sheep (23.3 per cent) and beef cattle (19.8 per cent). Most emissions from agriculture are methane. Methane is a short-lived gas compared with other greenhouse gases, but it has a much greater warming effect.

Approach to reducing agriculture emissions

We are taking a multi-pronged approach to reducing emissions without undermining profitability, which involves:

- getting tools to farmers and growers faster, by investing in research, development and commercialisation
- ensuring we have effective regulatory frameworks for new tools – here and internationally
- better estimating on-farm emissions consistently across the country
- supporting changes in practice on-farm
- reviewing our methane science and target
- bringing in an on-farm emissions pricing system by 2030.

Getting tools to food and fibre producers

Accelerating development and commercialisation

The Government has invested over $400 million to accelerate the development and commercialisation of tools and technologies to reduce emissions. This investment is:

- getting technologies to market faster
- unblocking capability, infrastructure and regulatory constraints in research and development (R&D) and commercialisation
- leveraging capability and investment in New Zealand and around the world to get tools in the hands of farmers faster.

This investment programme has three main components, which benefit New Zealand and the world. The investment programme is critical to growing the technology pipeline.

Global Research Alliance on Agricultural Greenhouse Gases (GRA)

Through the GRA the Government is partnering with other countries in research on New Zealand's interests (eg, the Ireland–New Zealand Joint Research). It enhances New Zealand's domestic research capacity and connects with key partners.

Over 140 New Zealand scientists have collaborated on more than 70 large multinational research programmes. Global collaboration has generated new insights into areas such as the biology of the rumen, which led to the current research on methane inhibitors and vaccines, the impact of feeds and genetics, and management practices.

The GRA also supports developing countries to build capability to reduce global agricultural emissions. It promotes understanding of the challenges of addressing greenhouse gases while maintaining and increasing food production. We have partnered with 15 developing countries to support their understanding of emissions through improving greenhouse gas inventories. These countries are improving their emissions accounting to meet the same standards as New Zealand works to.

New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC)

Established in 2009, the NZAGRC funds pre-commercialisation research into ruminant methane, nitrous oxide and farm systems to reduce emissions. The funding portfolio includes:

- co-investing with industry to determine indicators for breeding low-methane sheep and cattle
- identifying novel methane and nitrous oxide inhibitors, and developing the promising ones to proof of concept
- understanding how to combine new mitigations
- advancing research on methane vaccines.

NZAGRC also supports outreach and provides credible, science-based support to broader primary-sector initiatives that are mainstreaming climate change thinking into farm planning. This includes training rural professionals to increase understanding of agricultural emissions in New Zealand and what can be done at the farm level.

AgriZero^{NZ}

Established in February 2023, AgriZero^{NZ} is a public–private joint venture to drive development and commercialisation of promising emissions-reduction products for New Zealand farms.

Industry and the Government have so far committed $191 million over four years.

AgriZero^{NZ} aims to:

- make at least two new mitigation tools available by 2028
- enable development and adoption of solutions to drive towards near-zero methane and nitrous oxide by 2040.

Since it began, AgriZero^{NZ} has spent $34.7 million across 10 investments. Investments to date include a slow-release, biodegradable, methane-inhibiting bolus, probiotics and natural enzymes, a methane vaccine and methane inhibitors.

Targeted investment

The Government is exploring opportunities to target investments with industry. These will address barriers to getting tools into the hands of farmers fast – such as in measurement equipment and capability – and will also support scale-up.

Mitigation pipeline

The R&D pipeline has a growing number of very promising mitigation tools with high abatement potential.[16]

New Zealand's farming and growing systems are diverse, and not all mitigation tools will work for all systems. This is why the R&D programme focuses on delivering enough adoptable solutions, across different system types. We expect that these tools can be exported and used internationally – bringing further benefit.

We expect to see the uptake of mitigation solutions increase over time, including to support meeting market-driven supply-chain targets and our climate change targets.

Table 10.1 shows a range of tools[17] that have been invested in across key sectors. It also lists estimates of efficacy and commercial availability. These are a snapshot in time, subject to varying uncertainty, and estimates will change as technology develops and progress is made through the regulatory system.

[16] As more mitigation tools emerge, we will also need to understand their 'stackability' – that is, what happens when multiple tools are used at the same time. In our modelling, we assume no additionality between tools that target the same source of emissions. This assumption is conservative in that some interventions might 'stack', but we cannot count on this at this stage as it needs to be demonstrated through research.

[17] Many other mitigation tools are in development. Examples include Fonterra's Kowbucha and DSM'S Bovaer.

CASE STUDY
New long-acting bolus to cut emissions from livestock

Pillar 4: World-leading climate innovation boosts the economy

Image: Methane inhibitor technology for dairy cattle

New Zealand-based Ruminant BioTech has developed world-leading methane inhibitor technology, with its long-duration bolus platform capable of reducing daily methane emissions in cattle by over 70 per cent for up to 100 days. The bolus platform will be the first commercially viable product for beef and dairy producers in New Zealand, providing a simple, practical and highly effective methane-reduction solution specifically designed for grass-fed pastoral farming operations.

Over recent years, the company's research and development programme has focused on fine-tuning this technology, including through extensive testing to ensure it is safe for animals and has no adverse impact on the quality or safety of the food produced.

Boluses have been used safely by New Zealand farmers for over 50 years, most commonly to deliver medicines and trace elements or minerals. Administered to the animal by mouth with an applicator specially designed for the purpose, the bolus moves through the digestive tract to locate in the animal's rumen. Once in place, the bolus releases an optimal dose of active ingredient over a prolonged period.

To date, the company has concentrated on delivering a bolus for beef cattle weighing over 350 kilograms, with plans to expand this solution to all beef and dairy cattle. Broad adoption of the bolus platform will ensure New Zealand has a significant impact on reducing greenhouse gas emissions from the agriculture sector to meet its 2030 emissions reduction targets.

Table 10.1: Technology for reducing agricultural greenhouse gas emissions

Name and/or mechanism	Description	Target source of emissions	Estimated/targeted efficacy on target source of emissions[1]	Earliest date available to New Zealand farmers[2]
EcoPond – treatment for anaerobic lagoons	EcoPond reduces the methane (CH_4) emissions from anaerobic lagoons by adding polyferric sulphate and concentrated sulphuric acid to the stored effluent. These additives inhibit the CH_4-producing organisms.	Manure management – CH_4 from anaerobic lagoons on dairy farms	92%	2025
Low-emissions breeding	Sheep and cattle can be genetically selected to emit less CH_4. Within a species, animals vary naturally in the amount of CH_4 they produce with the same intake of the same diet, and this trait has been shown to be heritable.	Enteric CH_4 emissions	Sheep: 1% per annum (max 20%) Dairy: 1% per annum (max 20%) Beef: 1% per annum (max 20%)	Sheep: 2024 Dairy: 2029 Beef: 2035
New Zealand methane inhibitor	Identifying compounds suitable for slow-release delivery systems.	Enteric CH_4 emissions from livestock	At least 20% target	2032
Ruminant BioTech – methane-inhibiting bromoform bolus	An Auckland start-up is developing a CH_4-inhibiting bolus for livestock. The biodegradable bolus sits in the rumen for up to six months while the active ingredient is slowly released in a controlled manner.	Enteric CH_4 emissions from livestock	45–70%	Beef: 2026/27 Dairy: 2028
Agroceutical Products Limited – haemanthamine (alkaloid produced by daffodils)	A Welsh company is developing a methane inhibitor for cattle using haemanthamine, a naturally occurring alkaloid produced by daffodils.	Enteric CH_4 emissions from dairy cattle	Up to 30%	TBC
Lucidome Biotech – methane vaccine	Methane vaccine for ruminant animals – new venture to accelerate the development, building on New Zealand research previously funded via PGgRc and the Crown (via NZAGRC).	Enteric CH_4 emissions from livestock	Up to 30%	TBC
ArkeaBio – methane vaccine	A Boston, US start-up is developing a CH_4 vaccine for ruminant animals, with an initial focus on cattle.	Enteric CH_4 emissions from livestock	13–15%[4]	TBC

Name and/or mechanism	Description	Target source of emissions	Estimated/targeted efficacy on target source of emissions[1]	Earliest date available to New Zealand farmers[2]
BioLumic – high-lipid pasture	An agricultural biotech company founded in New Zealand is using UV light to develop a low-emissions farm pasture with higher productivity.	Enteric CH_4 emissions	Up to 15%	2026/27
Plantain	A modern plantain (*Plantago lanceolata* L.) cultivar is showing promise for reducing nitrous oxide (N_2O) emissions when included in pasture swards.	N_2O emissions from urine and dung deposited on pastures	TBC 4–30%	2025
AgResearch high metabolic energy (HME) ryegrass	A genetically modified ryegrass with elevated leaf lipids increases energy content.	Enteric CH_4 emissions	10%	2030
Hoofprint Biome – probiotics and natural enzymes	Hoofprint Biome, a US start-up, is developing probiotics and natural enzymes to reduce CH_4.	Enteric CH_4 emissions from dairy cattle	30–80%	TBC
Nitrification inhibitor	A potential novel inhibitor to target urine patches or be applied with fertiliser.	N_2O emissions from urine and dung deposited on pastures[5]	30%	2030

[1] Based on developer estimates. Level of confidence in efficacy varies depending on where the technology is in the R&D pipeline, from proof of concept to commercialisation. The efficacy percentage relates to where the technology is applied and could vary significantly.

[2] Based on developer estimates. This will be affected by R&D progress and regulatory approval processes.

[3] Wide-scale commercial availability is likely from 2026.

[4] As advised by ArkeaBio.

[5] Maximum of 70% of all dairy pastures, considering slope and access, during winter only.

NZAGRC = New Zealand Agricultural Greenhouse Gas Research Centre; PGgRc = Pastoral Greenhouse Gas Consortium; TBC = to be confirmed.

Supporting effective regulatory pathways

Users and markets must be assured that products are safe and effective. The Government wants regulation that is fit for purpose.

The Government is progressing work on the Agricultural Compounds and Veterinary Medicines Act 1997 (ACVM Act) and Hazardous Substances and New Organisms Act 1996 (HSNO Act) to:

- exempt some inhibitors under the ACVM Act
- use group standards for inhibitors under the HSNO Act
- use inhibitor approvals overseas to streamline ACVM Act registrations
- streamline requirements for demonstrating efficacy in ACVM Act registrations.

The Ministry for Regulation is also reviewing the ACVM Act and HSNO Act to improve access to new agricultural and horticultural products. The Ministry for Regulation will provide its recommendations to Cabinet in early 2025.

The Government has committed to open access to gene technologies. It will establish a dedicated gene technology regulator by the end of 2025.

International acceptance

As New Zealand's food and fibre sector makes up 80.9 per cent of our merchandise exports, it is critical that markets accept our produce when a new mitigation technology has been used to reduce emissions in animals or crops. This is why the Government has a programme to proactively support market acceptance.

An example is New Zealand's work to support:

- the pathway and progress of maximum residue levels for inhibitors in animal products to be approved through Codex[18]
- their acceptance and uptake in the production of animal products for trade.

The Government is also working to support recognition of the use of emissions-reduction tools in the New Zealand Greenhouse Gas Inventory, so that efforts on-farm contribute to our targets.

Standardising the estimation of on-farm emissions

To support measurement of on-farm emissions by 2025, we are developing a standardised calculation method, so measures are transparent, up to date and scientifically robust. We will make this method available for use in existing farm calculator tools. New mitigation technologies will be incorporated in the calculations as they emerge.

Currently, farmers have a range of ways to estimate emissions, but many of these measures differ in the results they give. For farmers, standardisation will provide a consistent foundation to inform their investment in new technology. For processors, it will increase confidence in their greenhouse gas reporting.

[18] International food safety standards are coordinated through the Codex Alimentarius Commission, in which New Zealand is an active participant.

Providing extension to help producers adapt

To reduce emissions, producers may need advice on adopting approaches that best fit their farming system.

Our support builds on the existing public and private advisory services sector. An example is the Ministry for Primary Industries' **On Farm Support** programme, which has 56 regionally based staff who provide on-the-ground assistance to farmers and growers. On Farm Support helps them build on sustainability practices and navigate climate, water and environmental requirements, supported by integrated farm planning. It can connect farmers and growers to resources, advice, funding opportunities and extension services − offered by the public and private sectors, and industry organisations.

We expect extension services to support other policies across the second and third emissions budgets. The effect on emissions is included in the reductions projected for emissions pricing and uptake of technology.

Independent review of methane science and target

Currently, there is a wide range in New Zealand's legislated 2050 methane target. This is causing uncertainty about what the sector should be aiming for.

The Government has appointed an independent panel of experts to review New Zealand's biogenic methane science and target. The independent panel has reviewed the latest science and provided an up-to-date evidence base about methane's warming impact. It also advised on a biogenic methane target consistent with the principle of no additional warming for New Zealand. The Government is now considering the report.

Implementing a fair and sustainable pricing system for on-farm emissions by 2030

The Government has committed to keeping agriculture out of the New Zealand Emissions Trading Scheme and to introducing a fair and sustainable pricing system of on-farm emissions no later than 2030, which reduces emissions without causing emissions leakage by sending production overseas. The Government's technology-led approach will be key to achieving this.

A system to price agricultural emissions is assumed to drive the uptake of mitigation technologies.

11. Forestry and wood processing

Te ahumahi ngāherehere me te tukatuka rākau

Chapter at a glance Forestry and wood processing	
Lead Minister	• Hon Todd McClay, Minister of Forestry
Why this sector is important	• Forestry and wood processing remove carbon from the atmosphere, to reduce our net emissions and produce high-value products that can replace emissions-intensive ones.
Pillars of New Zealand's Climate Strategy	• Credible markets support the climate transition. • Nature-based solutions address climate change.
Key actions and policies	• Restoring price stability and confidence in the New Zealand Emissions Trading Scheme (NZ ETS) to give certainty to forestry (see chapter 4). • Limiting whole-farm conversions to NZ ETS forestry to protect highly productive farmland. • Exploring partnering with the private sector to plant trees on Crown-owned land. • Improving the consenting framework for wood processing. • Ensuring the Wood Processing Growth Fund continues to support commercial investment.
Contribution during the second emissions budget period	In response to the NZ ETS and other market factors, forestry removals are projected to total 60 million tonnes in EB2.
Is the sector covered by the New Zealand Emissions Trading Scheme?	• Yes

Emissions profile

Forestry is the only form of carbon removal currently recognised as contributing to New Zealand's domestic and international climate targets. Forests can be either a carbon sink (while growing and when turned into long-lived wood products such as building materials) or a source of emissions (eg, through deforestation).

The Ministry for Primary Industries' September 2024 baseline projections indicate the land use, land-use change and forestry sector is projected to remove between 52.7 and 62.6 Mt CO_2-e from the atmosphere in the second emissions budget (EB2) period (table 11.1). The projections have been updated since consultation to align with the accounting methodology for reporting on emissions reduction.

The lower scenario has been revised in response to consultation feedback.[19] This is based on the 2023 afforestation intentions survey findings, but limits exotic afforestation to the lower range of estimates.

Table 11.1: 2024 baseline projections of forestry's contribution to emissions targets using target accounting*[20] (Mt CO_2-e)

Scenario	EB1 (2022–25)	EB2 (2026–30)	EB3 (2031–35)	2050
Lower	–21.0	–52.7	–66.3	–15.1
Central	–25.2	–60.7	–82.0	–21.8
Upper	–26.6	–62.6	–86.7	–27.9

1. A negative number represents a removal of carbon dioxide from the atmosphere.
2. The lower and upper scenarios reflect varying levels of afforestation and deforestation as included in the 2024 projections.
3. The 2050 figures show the estimated removals from forestry during 2050 (net zero target).
4. The table shows only net emissions and removals from afforestation/reforestation and deforestation.

Projected exotic afforestation will be an important contributor to the budgets. However, newly planted forests take time to start sequestering carbon. They also create emissions from clearing land and soil. As a result, new exotic afforestation in the EB2 period will start contributing carbon removals in later budgets.

Carbon removals from many exotic production forests that were planted in the early 1990s are slowing as the forests reach maturity and harvest. However, these existing forests will contribute more to the first emissions budget (EB1) and EB2 than any new planting that occurs (or has already occurred) in these periods.

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19 The lower scenario results are revised from the ERP2 discussion document. They result in about 29,000 fewer hectares of exotic afforestation over 2024–26, and removals reduced by about 0.3 and 1.9 Mt CO_2-e for the lower scenario during the EB2 and EB3 respectively.

20 Target accounting emissions include gross emissions, along with a subset of forestry and land-use emissions and removals. Target accounting is designed to be compatible with net emissions targets, under which business-as-usual removals from pre-1990 forests are not counted. Only emissions and removals due to additional human activities are counted. This means emissions from deforestation are counted for all forests, but to address permanence, removals from afforestation are only counted for post-1989 forests up until their long-term average is reached.

Forestry and wood-processing policies that support the displacement of emissions from other sectors contribute to reducing emissions (eg, wood products replacing higher-emissions products). However, these impacts can be hard to model because of differences in underlying assumptions, high uncertainty and the potential for double counting.

Removals and reductions from forestry and wood processing

Forestry removes carbon dioxide from the atmosphere, reducing net emissions. Wood processing can reduce gross emissions by producing high-value products to replace emissions-intensive ones such as steel and concrete.

The Government's strategy is to restore confidence and certainty in the forestry and wood-processing sector. This will unlock its full potential to help rebuild the economy, expand exports and meet our climate targets, while balancing productive land uses between forestry and agriculture.

The policies and initiatives included in this plan are part of a wider government programme and will further build confidence by getting the incentives right for forestry and improving the investment environment for high-value wood processing.

Policies and initiatives

Encouraging afforestation through appropriate incentives

Over the last few years, we have seen greater investment in forestry, particularly exotic forestry, due to the significant increase in the New Zealand Emissions Trading Scheme (NZ ETS) price. The increased planting will help us meet emissions budgets cost-effectively through the carbon stored as the forests grow. It supports other forestry objectives – for example, for sustainable land management and increased fibre supply.

It is important to balance productive land use between forestry and agriculture. If left unchecked, increases in farm conversions to forestry on high-quality land can affect those with interests in these sectors, local communities and food production. Appropriate incentives, including restoring price stability and confidence in the NZ ETS (chapter 4), will balance encouraging afforestation for increased carbon sequestration with other land uses. The following policies aim to achieve this.

Limiting whole-farm conversions to NZ ETS forestry to protect highly productive farmland

The Government is taking action to protect productive farmland and support sustainable forestry growth. At current (and higher) NZ ETS prices, exotic forests are cost-competitive with pastoral land uses, driving whole-farm conversions to forests. While these forests can help us meet our climate targets, they can also have undesirable impacts on rural communities, agricultural supply chains, local employment, economic activity and land-use flexibility.

We are fixing this by limiting the number of NZ ETS registrations for whole-farm conversions to exotic forestry on high-quality productive land. This policy aims to balance productive land uses to ensure the best use of land for New Zealand in the long term and retain farmers' flexibility.

Although the proposals will involve some change to current NZ ETS settings, the aim is to provide greater certainty in the NZ ETS in the medium term through clear rules to support forestry investment and emissions reductions.

Partnering with the private sector to plant trees on Crown-owned land

The Government is exploring opportunities to partner with the private sector to plant trees on Crown-owned land (excluding national parks) that is of low conservation value and low farming value. These public-private partnerships could help New Zealand meet climate change targets and create more jobs in the forestry and wood processing sector.

There are opportunities to plant both exotic and native trees on Crown-owned land. Exotic forestry sequesters carbon more quickly and offers a way to use land more productively where suitable for plantation forestry. Native forests grow more slowly, but can provide longer-term carbon sinks and co-benefits, including biodiversity and adaptation.

The Government will release a request for information in late December which will help clarify the circumstances and conditions under which potential partners are interested in taking forward opportunities to plant on Crown-owned land. This will help the Government understand what land may be suitable to offer for partnership. Proposed afforestation on Crown-owned land will not contribute to achievement of EB2, but can contribute to reaching net zero for all greenhouse gas emissions, except biogenic methane, by 2050. The technical annex provides further details of the impact of this policy on sufficiency.

Boosting wood processing

Boosting wood processing will result in more long-lived wood products, which store carbon during their lifetime. It will also grow the economy, provide regional jobs and create export potential. There are significant opportunities for growth in these products. For example, modern engineered timber in construction could replace emissions-intensive materials such as steel and concrete, while also storing carbon. We expect that wood solutions will become more mainstream, and their costs will continue to fall.

The low-grade logs we currently export could be used to produce high-value wood products, including:

- engineered wood products such as GluLam, laminated veneer lumber and remanufactured timber
- reconstituted panels such as oriented strand board, medium-density fibreboard, particle board, chipboard and plywood
- bioproducts and materials, such as adhesives, paints, polymers, advanced packaging, refined carbon, textiles and plastics
- bioenergy, such as white and black pellets, marine fuel, biodiesel and aviation fuel.

We are also investigating providing NZ ETS credits for wood processors based on the embedded carbon captured in longer-life timber products.

Chapter 8 includes actions to improve access to information for choosing sustainable building products.

Increasing the supply of woody biomass

Woody biomass can comprise any woody material from a forest, including material left after harvest, residues from wood processing (ie, sawdust and woodchips) and logs from plantings of fast-growing trees (ie, pulp forest or biomass crops). Woody biomass can be used as a feedstock to produce low-emissions fuel substitutes such as wood pellets. These produce high-temperature heat for industry and sustainable aviation fuel.

We are progressing a biomass planting programme (5,000 hectares of plantation forest is planned) to increase the supply of biomass in targeted regions and to give insights for private investment in supply-side infrastructure. Research underway will also improve guidance on growing and harvesting woody biomass. In the future, we can expect more industrial process heat to be fuelled by woody biomass.

Improving the consenting framework for wood processing

The Government is improving the resource consenting framework for wood processing to make it easier to establish new facilities and to re-consent existing ones. This will give wood processors longer-term certainty to invest in production and innovation. We have begun to improve consenting for infrastructure and other activities that will support forestry and other primary production, including through the fast-track regime discussed in chapter 7.

For wood-processing facilities, we are proposing to mandate a maximum processing time of one year for consents of both new and existing wood-processing facilities. We are also considering options to streamline re-consenting of existing facilities. This work will be progressed as part of the Resource Management Act 1991 reform.

Ensuring the Wood Processing Growth Fund continues to support commercial investment

Set up in 2003, the Wood Processing Growth Fund (WPGF) helps wood processors increase New Zealand's onshore capacity. By boosting domestic wood processing, the WPGF will support the sector to store more carbon in long-lived wood products.

The fund seeks to unlock private capital through investment support to overcome the barriers facing the industry. In its first year, the WPGF has made investments that are:

- supporting a shift to higher-value wood manufacturing, enabling the manufacture of high-value products (eg, engineered timber) from the industrial-grade logs that are currently exported unprocessed
- supporting new manufacturing developments for Radiata pine clearwood, creating appearance timbers that compete with hardwoods in premium export markets

- showing that there is unmet demand for alternative species timbers that command premium prices, and that small-scale assistance is effective for them to scale up significantly.

Balancing forestry and the environment

Forestry has several environmental co-benefits, including erosion control (eg, intercepting rain, reducing run-off and sedimentation, and anchoring erosion-prone soils). These will become increasingly important for adaptation as severe weather events rise in frequency. More information on adaptation is in chapter 16.

Forestry can also have negative impacts if not managed well. These impacts include risks to water quality and biodiversity, and a greater risk of wildfires and wilding conifers. Increasingly severe weather events can mobilise slash and other woody debris from forests to damage downstream infrastructure, property and low-lying areas.

We understand the need for environmental policies and regulations to help manage the risk of negative impacts.

The National Environmental Standards for Commercial Forestry (NES-CF) are the main regulatory instrument for managing the environmental impacts of commercial forestry. They provide nationally consistent standards for managing eight of the main activities carried out by commercial forests, including afforestation, harvesting and replanting.

The NES-CF is part of the broader resource management framework, which is currently being reformed. The reform includes a **review of slash management regulations** in the NES-CF to ensure they are evidence-based and fit for purpose. Amendments will enable foresters and councils to focus on the most at-risk areas in order to prevent mobilisation that harms freshwater environments and downstream communities.

As part of changes to the Resource Management Act 1991, we are **strengthening the penalties regime**, with the guiding principle that low-risk activity should be permitted. However, penalties exist for people who break the rules. This includes any offences in forest harvesting, such as failure to comply with slash management regulations.

The Government is also **developing national direction for natural hazards**. This could cover other environmental risks linked to forests, such as landslips, erosion and wildfire. This work is expected to cover commercial forests and to direct councils on how to identify natural hazards, assess the risks and respond through their planning and consenting.

12. Non-forestry removals

Ngā tangohanga ngāherehere-kore

Chapter at a glance

Non-forestry removals

Lead Minister	• Hon Simon Watts, Minister of Climate Change
Why this sector is important	• Recognising non-forestry removals could provide additional options for reducing net emissions and achieving climate targets. It could also create incentives to change land use or management practices that lower net emissions and deliver other co-benefits, such as improved water quality, biodiversity and climate resilience.
Pillars of New Zealand's Climate Strategy	• Nature-based solutions address climate change.
Key actions and policies	• Developing a framework to recognise non-forest removals, assess which categories are ready to be recognised and identify any gaps.
Contribution during the second emissions budget period	• More work is needed to understand the role of non-forestry removals in achieving New Zealand's domestic and international targets.
Is the sector covered by the New Zealand Emissions Trading Scheme?	• No, but its inclusion may be investigated as an option for some removals.

What are non-forestry removals?

Emissions removals are human-induced activities that draw carbon dioxide from the air or ocean and store it in rocks, on land, in ocean reservoirs or in products such as construction materials.

The following are examples of non-forestry removals.

- **On-farm vegetation.** Some on-farm vegetation, such as riparian plantings (next to rivers and streams) and shelterbelts, sequesters carbon and improves water quality and biodiversity. Currently, the scientific data on how much carbon these types of vegetation removes are uncertain. Improving the science specific to New Zealand will require further investigation.
- **Wetlands and peatlands.** Managing and restoring wetlands and peatlands can protect existing carbon stores, enhance carbon uptake, increase biodiversity, improve water quality, and protect against flooding and drought. Estimates show a significant potential for reducing emissions if drained peatlands are rewet.
- **Coastal vegetation management (blue carbon).** Better management of coastal land such as wetlands, mangroves and sea grasses can protect existing carbon sinks and establish new ones. Restoration can also benefit coastal and marine ecosystems and social outcomes.

Many activities act as both a sink and a source of emissions. For example, a carbon sink can become a source of emissions if vegetation is removed or if ecosystems are disturbed or degraded.

Other categories

Some other types of removal include carbon capture and storage (CCS), enhanced rock weathering and biochar.[21] These can remove atmospheric carbon and store it on a permanent basis. Chapter 7 has more detail. Other examples are marine ecosystems, carbon mineralisation and ocean fertilisation, and technology-based activities.

Approach to increasing non-forestry removals

Carbon sequestration can occur through biological, geological, oceanic, chemical and technological processes. Alongside forestry, we will assess other forms of removing emissions that may become viable.

In practice, we will prioritise the most promising technologies, based on affordability, scalability, scientific validation and overseas acceptance.

Factors for recognising these removals include:

- robust scientific validation of sequestration at a standard consistent with the Greenhouse Gas Inventory
- additionality (where the reductions or removals are due to a specific intervention and would not otherwise have occurred)
- recognition (or ability to achieve recognition) under New Zealand's international agreements.

[21] Biochar is stable, carbon-rich material produced by heating biomass in an oxygen-limited environment. It may be added to soils to improve soil functions, to reduce greenhouse gas emissions from biomass and soils, and for carbon sequestration.

Why it helps to recognise non-forestry removals

Recognising and rewarding non-forestry removals draws a lot of interest – for example, from people restoring local habitats and from farmers improving the sustainability of their land.

The Government is exploring recognition of non-forestry removals in the New Zealand Emissions Trading Scheme (NZ ETS) or another mechanism, which would require changes to the Climate Change Response Act 2002.

Recognising non-forestry removals could be an incentive that rewards businesses or land owners for their efforts. To ensure any scheme remains balanced, the incentive may also need to be paid back if the removals are later lost (eg, when vegetation is cleared). This is the approach that the NZ ETS takes for forestry.

Recognition could also offer more options for land owners and businesses, create incentives to shift to land use or management that reduces net emissions, and offer other co-benefits, such as better water quality, biodiversity and climate resilience from wetlands. Non-forestry removals can also ensure New Zealand is not reliant solely on forestry offsets.

How non-forest removals could be recognised

Different removal activities are at different stages of scientific readiness for recognition in New Zealand. Activities such as peatland restoration could be viable now. However, some activities, such as coastal vegetation management, require further international and New Zealand-specific data and evidence before they can be recognised. The Government will prioritise activities that are viable and have maximum impact.

Exploring whether non-forestry removals can contribute to our targets

More work is needed to understand the role of non-forestry removals in reaching New Zealand's domestic and international targets. Compared with forestry, the potential carbon sequestration is likely to be small in the short to medium term. Changes to our national accounting would also be needed so that New Zealand could count any non-forestry removals towards the targets. This would also mean that emissions from these categories would count against the targets, potentially making these harder to meet in the short to medium term.

Setting a framework to recognise non-forest removals

There is a range of mechanisms that could recognise non-forest removals. We will develop an assessment framework to identify whether removals are ready to be recognised, and to identify any gaps. Work on the assessment criteria is progressing.

Purpose

The framework will help us assess a category's readiness for recognition in the NZ ETS or another mechanism. It will provide the private sector with a recognition pathway that will encourage investment, expanding the portfolio of removals. The categories with larger carbon sequestration potential will be prioritised for assessment when they are ready.

Assessment criteria

There are two criteria for recognising a non-forest removal:

- it counts towards our Nationally Determined Contribution (NDC)
- it is recognised in the NZ ETS or another mechanism.

Assessing inclusion in the NDC

Currently, forestry is the only land-use category that New Zealand counts towards its NDC. Including non-forest land use is likely to represent an increase in ambition, as New Zealand will have to account for both emissions and removals occurring on that land. It will expand opportunities to use removals other than forestry to meet our international targets, in line with other developed countries.

We will evaluate the best approach to expanding the NDC to include non-forest categories before inclusion in a market system, protecting the integrity of the system. We will use criteria such as: the category meets the Paris Agreement principles; it is supported by strong science; and it meets the minimum Intergovernmental Panel on Climate Change data requirements.

Assessing the recognition mechanism

A process for recognising and assessing non-forest removals is set out in figure 12.1.

To assess which mechanisms could recognise a removal category, an impact analysis will determine the costs and benefits. This will include the volume of removals that could be generated, the cost to participants and the Government, and the impact on market credibility and on iwi and Māori.

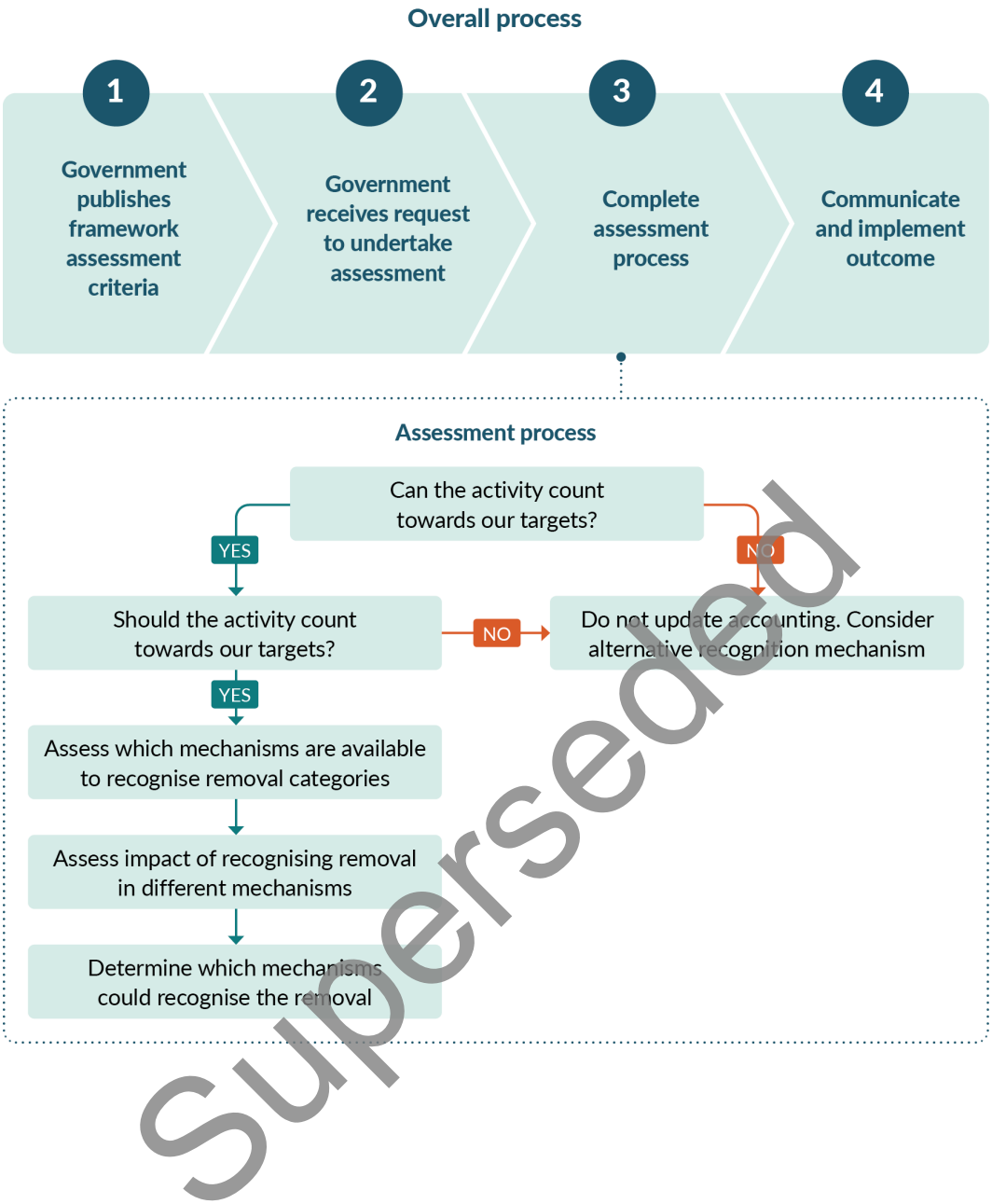
This will include assessing which mechanisms, other than the NZ ETS, are available to recognise removal categories. Some potential mechanisms need further policy work.

The Government will then decide whether to recognise the removal category:

- in the NZ ETS, under current policy settings and in line with cost-effective, market-led climate action, and/or
- through an alternative mechanism to add to net reductions.

Officials will then work towards implementing the recognition in the appropriate mechanisms.

Figure 12.1: Process for recognising and assessing non-forest removals



13. Waste

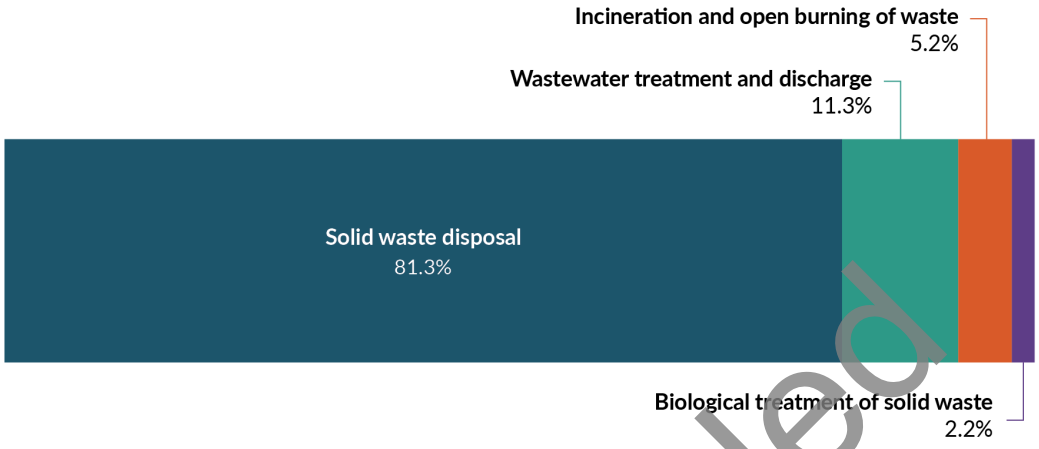
Te para

Chapter at a glance Waste	
Lead Minister	• Hon Penny Simmonds, Minister for the Environment
Why this sector is important	• Waste is an important issue for New Zealanders. Although emissions from waste are not the largest contributor, reduction and efficiency improvements can play a key role in reducing domestic emissions, including of biogenic methane. • Enabling investment in resource recovery systems and infrastructure will help households and businesses reduce their waste and its emissions.
Pillars of New Zealand's Climate Strategy	• Infrastructure is resilient and communities are well prepared. • Credible markets support the climate transition.
Key actions and policies	• Making further targeted investment in resource recovery infrastructure and systems (including for construction and demolition waste). • Investigating ways of improving organic waste disposal and landfill gas capture. • Implementing a regulated product stewardship scheme for refrigerants.
Contribution during the second emissions budget period	• Waste Minimisation Fund: –1 Mt CO_2-e. • Organic waste management and landfill gas capture: –0.8 Mt CO_2-e. • Regulated product stewardship scheme for refrigerants: –0.4 Mt CO_2-e.
Is the sector covered by the New Zealand Emissions Trading Scheme?	• Yes

Emissions profile

In 2022, the waste sector produced an estimated 3.5 Mt CO_2-e (about 4.5 per cent) of New Zealand's gross greenhouse gas emissions. Waste emissions were comprised of methane (93.3 per cent), nitrous oxide (4.3 per cent) and carbon dioxide (2.4 per cent). Figure 13.1 shows the proportion of emissions by activity.

Figure 13.1: Waste emissions by activity, as at December 2022



Investing in resource recovery

Waste is an important issue to New Zealanders. By reducing waste, we can also reduce its emissions. Initiatives for the second emissions reduction plan focus on biogenic methane, because it is the main greenhouse gas produced by waste disposal.

Policies and initiatives

Supporting investment through the Waste Minimisation Fund

New Zealand has a waste disposal levy that is paid on each tonne of waste sent to most landfills in the country.[22] The revenue is reinvested through the Waste Minimisation Fund (WMF) and through an allocation to territorial authorities (councils) to invest in local and regional waste minimisation solutions. Since 2022, the WMF has supported infrastructure projects that divert organic materials from landfill, process organic waste or otherwise improve resource recovery, particularly for organics.

New Zealand has a deficit in resource recovery infrastructure[23] relative to comparable countries like Australia. Although local government and the waste sector continue to improve waste services, households and businesses still face challenges in recycling unwanted resources that would also help them to reduce emissions.[24]

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22 Excluding class 5 landfills, industrial monofills and farm fills.

23 In 2020, New Zealand had a waste management infrastructure deficit of an estimated $2.1–$2.6 billion. Additional service funding needs amounted to about $0.9 billion. More recent (2024) industry estimates suggest a $4 billion deficit.

24 Waste-related emissions include both disposal emissions (biogenic methane from biodegradable wastes) and the embodied emissions in wasted products and resources. Metals, concrete and plastics have relatively high embodied emissions, but are relatively inert in landfills.

The Government has committed to waste minimisation investment priorities (for the WMF) that will also help reduce emissions, including during the second emissions budget (EB2) period. It is assumed a proportion of the WMF will target infrastructure projects and systems that reduce organic waste and emissions (and other waste streams), including those that:

- divert and process organic waste, including from construction and demolition
- develop and implement schemes for businesses, manufacturers and consumers to take responsibility for the products they produce and buy (product stewardship schemes)
- expand and upgrade resource recovery facilities (including transfer stations)
- investigate and develop infrastructure and regulations for renewable energy recovery from hard-to-recycle materials (eg, treated wood waste).

Waste minimisation investments are cost-effective.[25] They also offer co-benefits, such as encouraging co-investment from the private sector (commercial projects can contest for WMF funding and require at least 60 per cent as co-funding), and reducing pressure and cost on local government to develop infrastructure, alongside industry and community partners, to meet business and consumer expectations for affordable alternatives to landfill.

Investigating improvements to organic waste disposal and landfill gas capture

In 2004, regulations were introduced requiring landfills that accept municipal waste with a capacity of over 1 million tonnes of waste to capture their emissions.[26] Large municipal landfills that meet this threshold have landfill gas (LFG) capture systems. Despite New Zealand's historically high level of waste per capita, waste emissions have reduced – indicating better management. There may be opportunities to further reduce emissions, including through LFG capture.

Landfill gas capture

Landfill gas (LFG) capture is technology that captures the biogenic methane emissions from organic waste in landfills. A network of gas wells and pipes is installed into waste in a landfill. This captures a portion of the gas that the waste produces as biodegradable materials break down. Methane and other gases are captured and then flared (ie, converted to carbon dioxide, which has less potent warming effects) and sometimes used to generate energy.

Actions to reduce landfill emissions

The waste sector broadly supports policy to progress reducing emissions from organic waste. We will work with the sector to further investigate how we dispose of and manage organic waste streams in order to:

- encourage diversion of organic materials from landfill
- determine which landfill types accept which types of organic waste, and the impact on the waste disposal levy

[25] Recent waste minimisation investments targeting emissions reductions are forecast to achieve an average abatement of about $30 per tonne of CO_2-e across the life of the assets.

[26] Resource Management (National Environmental Standards for Air Quality) Regulations 2004. See Ministry for the Environment. *National environmental standards for air quality*. Retrieved 1 July 2024.

- review the scope of landfills that require LFG capture systems
- improve settings to raise the average LFG capture efficiency
- extend the New Zealand Emissions Trading Scheme (NZ ETS) to a wider range of landfills
- improve data and evidence to support LFG capture efficiency calculations and reporting, and accurate NZ ETS accounting.

We will consider the emissions reduction potential and costs of any regulatory changes.

A regulated product stewardship scheme for refrigerants

Refrigerants are essential for heating, ventilation, air-conditioning and refrigeration (HVACR). They enable the 'cold chain' for transporting and storing perishable food and medicines, and are critical to the domestic and export economy.

Fluorinated gases (F-gases) are just under 2 per cent of New Zealand's gross greenhouse gas emissions. F-gases are mainly used as refrigerants in heating and cooling appliances. Hydrofluorocarbons (HFCs) are a subset of F-gases, and they contribute significantly to global warming despite being emitted in relatively low quantities.[27] This is due to their global warming potential, which can be thousands of times greater than carbon dioxide.

Most refrigerant emissions are from leaks in improperly installed or maintained equipment, and from disposal of end-of-life equipment. Refrigerant emissions are not necessary for effective HVACR services in New Zealand, and can be prevented with existing technology and practices.

A regulated scheme from 2025

The first emissions reduction plan included an investigation proposal for a refrigerant regulated product stewardship scheme. In 2022 we consulted on a proposal, and subsequent work progressed this. A regulated scheme is coming into effect from 2025. It will reduce emissions through improved industry training standards and ensuring the purchase and disposal of synthetic refrigerants is done in accordance with the scheme. An additional 0.4 Mt CO_2-e of abatement can be achieved in the EB2 period and 0.7 Mt CO_2-e in the third emissions budget period, with impact on emissions budgets from 2027 onwards. This will help bring New Zealand up to widely adopted international best practice.

[27] HFCs are used across various sectors and reported in the New Zealand Greenhouse Gas Inventory as a source subcategory under the industrial processes and product use (IPPU) sector. IPPU emissions are distinct from waste emissions from disposal.

Businesses, communities and households in the transition

Ngā pakihi, ngā hapori me ngā wharenoho i te whakaumutanga

This section outlines the expected impacts of the second emissions reduction plan on different groups of New Zealanders and sets out government support to mitigate these.

- Addressing the impacts of climate mitigation policy *(chapter 14)*
- Mitigating impacts with Māori *(chapter 15)*
- Helping sectors to adapt while they reduce emissions *(chapter 16)*

14. Addressing the impacts of climate mitigation policy

Te whakatutuki i ngā pāpānga o te kaupapahere whakamauru panoni āhuarangi

Chapter at a glance

Addressing the impacts of climate mitigation policy

Lead Minister	• Hon Simon Watts, Minister of Climate Change
Why addressing the impacts of climate mitigation policy is important	• Addressing the impacts of climate mitigation policy supports New Zealanders to manage challenges from reducing emissions and seize low-emissions opportunities.
Key actions and policies	• Taking a cost-effective mitigation approach to minimise impacts. • Returning proceeds of New Zealand Unit auctions to low- and-middle-income households through income tax bracket adjustments. • Continuing existing Government financial and retraining support. Providing targeted support for Māori through the Māori Climate Platform. • Monitoring impacts and responding with further support when necessary.

Impacts across the economy and society

Meeting New Zealand's climate targets will involve businesses, communities and households in making different choices about how they trade, work and live. These choices will create benefits for New Zealanders, including new, low-emissions jobs and business opportunities.

In addition, meeting targets is expected to have additional benefits from the avoided loss of international reputation that could result in trade impacts in key export markets. The benefits are difficult to quantify but are likely to be widely distributed. In this chapter we focus just on the distribution of the costs.

We have analysed the expected impacts of the second emissions reduction plan (ERP2) for different groups of New Zealanders. This was informed by modelling, qualitative analysis by government agencies, and public feedback during consultation. It shows that:

- the policies in ERP2 are consistent with meeting the second emissions budget, without adding significant costs to households
- the impacts will likely be similar to what is projected without ERP2 policies; they are also expected to be similar to the initial analysis included in the ERP2 discussion document
- ERP2 will have very limited impact on inflation or the cost of living. The impacts mainly come from emissions pricing.

Table 14.1 shows the expected impact on the cost of living for households with different income levels, before and under ERP2.

Table 14.1: Household expenditure resulting from New Zealand Emissions Trading Scheme prices before and under ERP2

Household income type	Annual expenditure in 2030*			
	Before ERP2**		Under ERP2***	
	Expenditure (in 2024 dollar terms)	As % of annual household income	Expenditure (in 2024 dollar terms)	As % of annual household income
Average	$585	0.6%	$705	0.7%
Lowest (deciles 1 and 2)	$310–335	0.9–1.2%	$370–400	1.0–1.4%
Highest (deciles 9 and 10)	$840–975	0.4%	$1,010–1,175	0.5%

* This estimates the amount of annual household expenditure on New Zealand Emissions Trading Scheme prices that are included in the cost of other goods and services, mostly fuel and electricity.

** Based on the impact of emissions reduction policies in place before the introduction of ERP2.

*** Based on the impact of emissions reduction policies introduced through ERP2.

The modelling:

- suggests that the economy will grow between now and 2050, increasing New Zealand's prosperity
- extends the current economic structure out to 2050
- does not predict what the future economy will look like, with new goods, services and exports.

Table 14.2 summarises the impacts that emerged from our analysis. For full analysis, see the technical annex.

Table 14.2: Key impacts of ERP2 policies

Group affected	Impact
Households	• New Zealand households are, on average, expected to have only marginally lower consumption in 2050 than they would have without efforts to reduce emissions. • Lower-income households are expected to be the most affected by higher household and transition costs. This includes a disproportionate number of disabled people, and people from Māori and Pasifika communities.
Employees and employers	• Agriculture is expected to be the most affected sector. Agricultural output (in GDP terms) is expected to be higher in 2050 than today, but lower than it would be without any mitigation actions, mainly because of land-use changes to forestry. Agricultural manufacturing is similarly affected. • Farm owners may benefit from changes in land use to forestry. However, workers on farms and in agricultural manufacturing may face disruption, reduced opportunities, and the need to re-skill and change careers. • Other sectors are less affected. Further details are in the technical annex.
Regions	• Regional impacts are mainly driven by the mix of industry in each region and how they are affected by the changes in land use. The impact on specific areas varies significantly, depending on forest and farm type, and region. • More affected areas, such as Southland and the West Coast, have a risk of disruption through lower local employment, the need to retrain local workers, reduced population for small communities and greater exposure to climate risks.

Group affected	Impact
Iwi and Māori	• Māori households are expected to be marginally more affected than non-Māori households. Māori are more likely to be affected by economic transitions, as they start from a position of greater socio-economic disadvantage. Māori are disproportionately affected by expected land-use changes from agriculture to forestry, because they have high involvement in agriculture and forestry, and disproportionate ownership of lower-quality land.
Youth	• A strong focus on forestry to meet the budgets and targets leaves future generations with high gross emissions that must be either reduced or offset through further removals. Both come with costs and economic trade-offs, but these may be reduced somewhat by future technological advances. • Large areas of forestry must be maintained to prevent the release of stored carbon. This limits land-use flexibility for future generations.

Note: GDP = general domestic product.

Strategy to mitigate impacts

Our efforts to minimise the costs of climate action to New Zealanders mean that existing, funded support measures are able to reduce impacts on those who are affected. Listed below, they give people options to manage the disruptions and changes stemming from Government policies to reduce emissions.

We are focused on reducing the impacts on the cost of living and have already taken several actions to ease this. Through Budget 2024, proceeds of the auction of New Zealand Units have been returned to low- and middle-income households as part of the adjustment to income tax brackets. We are also supporting families with young children through the FamilyBoost tax rebate.

The commitment to cost-effective climate policy will ensure every dollar spent has the maximum possible impact. However, we know that impacts are uncertain and may emerge over time. We will continue to monitor them and respond with further support when necessary.

Financial support

Financial support will benefit all groups. Existing government financial assistance and the income support system (including the Winter Energy Payment) will help New Zealanders who are facing higher costs or employment challenges related to emissions reduction efforts.

Many of these supports are indexed to the consumer price index. As the cost of goods and services increases, some benefits will increase as well. This will further offset financial impacts for lower-income households.

The Government's 'climate dividend' tax relief began in 2024. It is returning money from New Zealand Emissions Trading Scheme (NZ ETS) revenue to New Zealanders to meet rising costs, including from mitigation. While all taxpayers benefit from this, it will bring extra relief to those who are likely to face the greatest additional costs.

Support for retraining

Several supports are available for employers or employees looking to re-skill or up-skill to respond to mitigation efforts. These include a range of government employment services available through the Ministry for Social Development and Apprenticeship Boost, which provides financial aid for employers to take on and retain apprentices.

Employees will have pathways to retrain if changes lead to fewer jobs in their line of work. Employers will have greater access to needed skills and be supported to provide training for potential workers. Retraining support will be particularly important for people in the regions and Māori, as they may be more at risk of disruptions to employment.

Providing information

The Government's Climate Data Initiative, currently under development, will equip New Zealanders with data and tools related to climate mitigation. This will give people and businesses the information they need to decide on a way to manage the economic and social effects of climate policies.

Targeted support for Māori

The Māori Climate Platform will focus on investing in Māori-led climate action to ensure whānau, hapū and iwi are at the forefront of the Government's climate response. Chapter 15 has more information on how the impacts on Māori will be lessened.

The Government also supports Māori through programmes such as the Māori Agribusiness Extension Programme and Māori-led approaches to reducing biological emissions. These programmes support Māori agribusinesses to:

- identify, develop and implement innovative, scalable and culturally appropriate ways to reduce emissions
- enhance resilience in food and fibre production
- improve overall sustainability.

Sector-specific support

Some of the largest distributional risks we can see are caused by conversions from farmland to forestry. These will impact regional communities, Māori and agricultural manufacturing. We have taken steps to reduce these impacts by:

- committing to limit on-farm conversions registering in the NZ ETS, to restrict shifts on productive land from agriculture to forestry
- delaying the pricing of agricultural emissions
- providing substantial support for research and development on mitigation tools for farming in order to offer alternatives to land-use change.[28]

See chapter 10 and chapter 11 for more detail.

[28] Including investing in the Centre for Climate Action on Agricultural Emissions, support for the Global Research Alliance on Agricultural Greenhouse Gases and funding through the Sustainable Food and Fibre Futures Fund.

15. Mitigating impacts with Māori

Te whakamauru i ngā pāpānga ki te Māori

Chapter at a glance

Mitigating impacts with Māori

Lead Minister	• Hon Simon Watts, Minister of Climate Change
Why mitigating impacts with Māori is important	• Recognising the Treaty of Waitangi, this section underscores a partnership approach in climate action. It stresses the importance of including Māori in the development and execution of climate policies, ensuring these actions are fair and that Māori perspectives and Treaty rights are acknowledged and respected.
Key actions and policies	• **Fostering partnership in climate action.** Engage with Māori on a partnership basis to integrate their insights and priorities in shaping responsive and inclusive climate policies. • **Supporting Māori-led solutions.** Empower Māori communities through targeted support and funding, via the Māori Climate Platform, to develop and lead their own climate solutions. • **Building resilient communities.** Enhance the adaptive capacity of Māori communities to respond to the impacts of climate change, promoting sustainability and resilience through tailored capacity-building and resource allocation.

Approach

As New Zealand reduces emissions, the Government and Māori will need to work together to address risks and realise opportunities for the Māori economy. Chapter 14 describes the specific impacts of climate policies on Māori.

This chapter outlines the Government's plan to:

- give effect to the principles of the Treaty of Waitangi
- lessen the impacts of climate policies on iwi and Māori.

Four principles guide the implementation of the plan.

- **Existing universal support.** As outlined in chapter 14, government financial assistance and the income support system will help New Zealanders, including Māori, who are facing higher costs or employment challenges related to actions to reduce emissions.
- **Sector-led initiatives.** We aim to support sector-specific initiatives with Māori, such as the Ministry for Primary Industries' Māori-led Approaches to Reducing Biological Emissions, subject to ongoing evaluations and available resources. These programmes prioritise Māori participation and leadership in sectors with a disproportionate impact on Māori communities, particularly in rural and land-based economies.
- **Māori-led climate priorities.** The Māori Climate Platform enables action by Māori communities to adapt, lead local resilience efforts and build on opportunities to reduce emissions.
- **Recognising mātauranga Māori as a guide to local action.** The Government recognises the importance and opportunity of mātauranga Māori to iwi, hapū and whānau as a guide to reducing emissions and adapting at place.

Māori Climate Platform

The Government is continuing the Māori Climate Platform as a place to foster partnership and support Māori-led climate action. It focuses on enabling outcomes in key areas such as resilience, renewable energy, sustainable land use and nature-based solutions. These projects can be designed to mitigate climate impacts on Māori communities, while aligning with the Climate Strategy.

Fostering partnership in climate action

The second emissions reduction plan supports Māori-led initiatives through the Māori Climate Platform, which drives:

- funding and resources for Māori-led projects to reduce emissions at place
- community-based adaptation initiatives tailored to local Māori needs
- greater Māori involvement in the design and implementation of climate policies across key sectors.

Partnering with the National Iwi Chairs Forum

Mitigation of adverse climate impacts is a key aspect of the Ministry for the Environment and Pou Take Āhuarangi[29] joint work programme. Pou Take Āhuarangi have conducted a comprehensive adaptation risk stocktake, assessing vulnerabilities across 1,062 marae and identifying high-risk sites affected by climate impacts such as flooding and coastal erosion.

The joint work programme has also piloted focused climate risk assessments for marae. This work has highlighted immediate action pathways, including infrastructure upgrades like flood defences and water storage.

These efforts build our understanding of the spectrum of needs within Māori communities and support targeted mitigation work and resilience planning for marae under climate pressure.

[29] Te Pou Take Āhuarangi is the climate group (pou) within the National Iwi Chairs Forum.

16. Helping sectors to adapt while they reduce emissions

Te āwhina i ngā rāngai kia urutau haere i a rātou e whakaheke tukunga ana

Chapter at a glance

Helping sectors to adapt while they reduce emissions

Lead Minister	• Hon Simon Watts, Minister of Climate Change
Why this is important for sectors	• Climate change will affect different sectors in different ways. If sectors do not consider the risks and manage the impacts, they will become less efficient over time, which will affect their ability to reduce their emissions.
Key actions and policies	• Implementing the three adaptation goals for the second emissions reduction plan. – Goal 1: Sectors understand climate risks and opportunities as they reduce emissions. – Goal 2: Actions to reduce emissions deliver adaptation co-benefits and avoid maladaptation. – Goal 3: Efforts to reduce emissions build future resilience.

Improving how New Zealand adapts to climate change

New Zealand must take action to adapt to the impacts of climate change. If sectors do not consider the risks and manage the impacts, they will become less efficient over time, and this will affect their ability to reduce their emissions.

The Government has several existing initiatives to support sectors to adapt, including those described below.

The first national adaptation plan (NAP1) aims to help New Zealand prepare for the impacts of climate change. It has four priority areas for adapting by 2028, and addresses the priority risks identified in the first National Climate Change Risk Assessment.[30]

Work is underway on the adaptation framework, which is expected to:

- minimise expected long-term costs
- ensure responses and funding support to property owners, if any, are predictable, principled and rules-based wherever possible
- improve information flows on climate risk and response
- address market failures and support market efficiency
- ensure people have the incentive and ability to manage risks.

Sectors also have a responsibility to ensure they are resilient and can adapt. There are initiatives across the private sector to raise understanding of climate risks, impacts and ways to manage them. For example, The Aotearoa Circle has worked with many sectors on sector-level analysis to develop climate change scenarios as part of its climate-related disclosures. For some sectors, the scenarios have informed adaptation pathways.

Some businesses are already assessing risks and opportunities for their own operations, and managing them, but others will need more support.

[30] Under the Climate Change Response Act 2002, the Government must publish a national adaptation plan (NAP) to set out how it will address the most significant risks identified in the National Climate Change Risk Assessment (NCCRA). NAP1 was published in 2022, and each NAP must be published within two years of the latest NCCRA. The next NCCRA is due in 2026.

CASE STUDY

Energy fund builds resilience of community buildings

Pillar 1: Infrastructure is resilient and communities are well prepared
Pillar 3: Clean energy is abundant and affordable

Image: Cook Islands Community Hall in Flaxmere

The Community Renewable Energy Fund, administered by the Ministry of Business, Innovation and Employment, is funding the installation of solar photovoltaic (PV) and battery systems on community buildings to reduce emissions and enhance resilience.

This fund aims to improve the capacity of community halls, marae, church buildings and schools to operate during and after civil emergencies. For example, many community halls and marae in areas affected by Cyclone Gabrielle played a critical role in the civil defence response. They opened their doors to the people in their community, providing them with temporary shelter and allowing evacuation to be done safely.

One of the sites that has benefited from the fund is the Cook Islands Community (CIC) Hall in Flaxmere. It received funding to install a 30.25-kilowatt solar PV array on the roof, to improve the electrical switchboard and to integrate a 32.8 kilowatt-hour battery system. This will help keep the lights on and the kitchen operating if electricity from the network is interrupted.

The solar PV system is expected to generate about 36,000 kilowatt hours of electricity each year. This will reduce the amount of electricity the CIC Hall will need to buy from the grid.

The CIC Hall is at the centre of the Hawkes Bay's Cook Islands community and hosts visitors and supports cultural events, wedding celebrations, birthdays and wakes. Through its kitchen and umu, it caters for hundreds of people. For example, during Cyclone Gabrielle, it hosted and fed (with help from the local community) about 150 seasonal workers rescued from the flood waters until alternative accommodation could be found.

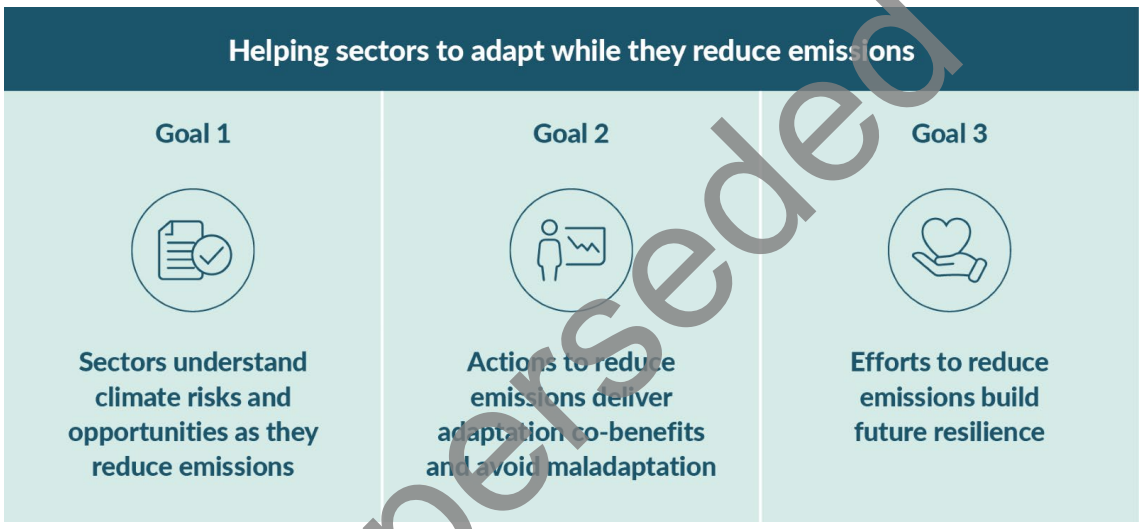
Adaptation goals for the second emissions reduction plan

While both Government and private sector initiatives are supporting sectors to adapt, sectors need to do additional work when reducing emissions. This includes:

- considering climate risks
- maximising co-benefits
- avoiding maladaptation
- building future resilience through emissions-lowering initiatives.

To support sectors to adapt while they reduce emissions, the second emissions reduction plan (ERP2) has three adaptation goals (figure 16.1).[31]

Figure 16.1: Adaptation goals for ERP2



Goal 1: Sectors understand climate risks and opportunities as they reduce emissions

Lack of awareness, education, tools and methods to manage climate impacts is affecting the ability of sectors to make risk-informed decisions. In some cases, sectors are continuing development in high-risk areas, without plans to manage that risk. Limited access to resources and expertise is limiting sectors' ability to take action.[32]

We are supporting sectors to understand climate risks and opportunities by developing data, information and guidance. This will be addressed in part by NAP1. The adaptation framework is also considering the availability of and access to risk information to improve the information flow, which will have benefits for wider economic sectors.

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[31] Under the Climate Change Response Act 2002, emissions reduction plans must outline how the Government will improve the ability of sectors to adapt **while they reduce their emissions**.

[32] Ministry for the Environment. 2024. *Adaptation preparedness: 2024 update – A summary of responses to the second information request from reporting organisations under the Climate Change Response (Zero Carbon) Amendment Act 2019*. Wellington: Ministry for the Environment.

New national direction instruments under the Resource Management 1991 may also play a role in supporting consistent risk management across the country.

Sectors will be able to make risk-informed decisions about where to locate infrastructure, assets and services, and how to manage exposure and vulnerability to climate impacts. This can help to improve the resilience of infrastructure and communities (pillar 1) and support energy security (pillar 3). Sectors will also have a better understanding of the many benefits from nature-based solutions (pillar 5).

Goal 2: Actions to reduce emissions deliver adaptation co-benefits and avoid maladaptation

How sectors reduce emissions can create positive effects (co-benefits) or negative effects (maladaptation) on their ability to adapt. For example, nature-based solutions, such as wetland restoration and mangrove protection, can help manage the impacts from sea-level rise. On the other hand, exotic forest plantations, if not well managed, could pose an increased wildfire risk.

Existing reporting on adaptation preparedness and mandatory climate-related disclosures can help sectors to better align their emissions-reduction initiatives to support adaptation and resilience.

Goal 3: Efforts to reduce emissions build future resilience

Emissions reduction initiatives must be resilient to future climate impacts. However, the cost of upgrading infrastructure, adaptation planning and recovery work can make this challenging.

We are seeking to clarify cost-sharing, investment, and roles and responsibilities through the NAP1 and adaptation framework. New national direction on managing natural hazards and changes to land-use planning also seeks to support sectors' growth and development, while ensuring their resilience to future challenges.

Ministry for the Environment
Manatū Mō Te Taiao

Te Kāwanatanga o Aotearoa
New Zealand Government