He Pou a Rangi
Climate Change Commission

Monitoring report: Emissions reduction

Assessing progress towards meeting Aotearoa New Zealand's emissions budgets and the 2050 target

July 2026

2026 ANNUAL MONITORING REPORT

Haere mai – welcome

This advice is required under sections 5J, 5ZJ and 5ZK of the Climate Change Response Act 2002.

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Disclaimer: He Pou a Rangi Climate Change Commission (the Commission) has made every effort to ensure the material and analysis underpinning and contained in our report is accurate and correct. However, the Commission makes no warranty, representation or guarantee that the material is error-free. Potential errors that come to our attention will be assessed by the Commission, and any necessary corrections to our information will be notified via an erratum published on our website. If an error is identified that the Commission considers materially affects any part of our report, the Commission will notify the Minister of Climate Change in writing as soon as possible.

Disclosure statement: As anticipated by the appointment criteria, the Climate Change Commissioners come from varying fields such as adaptation, agriculture, economics, te ao Māori and the Māori–Crown relationship. While a number of board members continue to hold roles within these fields, our advice is independent and evidence-based. The Commission operates under its Interests Policy, which is derived from the Crown Entities Act 2004. You can read more about our board members on the Climate Change Commission website. The Commission regularly updates and publishes on its website a register of relevant board interests.

Contents

About He Pou a Rangi Climate Change Commission

He Pou a Rangi Climate Change Commission (the Commission) is an independent Crown entity established by the Climate Change Response Act 2002 (the Act) to:

a. provide independent, evidence-based advice to successive governments on mitigating climate change (including through reducing emissions of greenhouse gases) and adapting to the effects of climate change
b. monitor and review progress towards emissions reduction and adaptation.

In carrying out these roles, the Act requires the Commission to draw from the best available evidence and analysis, and to consider the impacts of climate change and the implications for Aotearoa New Zealand over time. The Act also directs us to consider the Crown–Māori relationship, te ao Māori, and specific effects on iwi/Māori in our work.

The Commission's independent and impartial advice focuses on the outcomes that can result from government action and policy, and the choices that decision-makers have. The aim is to support the Government to fulfil its role under the Act, including achieving emissions budgets and the 2050 target, and allowing the people of Aotearoa New Zealand to prepare for, and adapt to, the effects of climate change.

The scope and timeframes for the Commission's advice and monitoring reports are set out in the Act. More information about the Commission's work programme can be found on our website, climatecommission.govt.nz

Titiro mai – attention

There are a range of summaries of this report available on our website. These have been developed in response to audience feedback, and also reflect evolution of our approach to translation into te reo Māori.

Summaries cover: energy, industry and buildings; transport; agriculture; waste and fluorinated gases; and removals.

There is also a *Whakahekenga rehukino* summary in te reo Māori and English, covering key points for emissions reduction actions centred on iwi/Māori.

The summaries, full report and other supporting documents are available on our website: climatecommission.govt.nz/ERM-2026

What changes to emissions goals mean for this report

Responding to changed conditions

Since the first three emissions budgets were set in 2022, there have been methodological improvements to New Zealand's Greenhouse Gas Inventory and higher-than-projected rates of forest planting. This means the budgets can be achieved with less effort than was intended when they were set. In other words, the current budgets are now less ambitious than initially planned. Aotearoa New Zealand is therefore making less of a contribution to the global effort to limit warming than was considered feasible when the emissions budgets were set.

The Climate Change Response Act allows the Commission to advise the Government to revise emissions budgets if circumstances have changed since the budgets were originally set. This system of responding to changed conditions helps the country stay on course for achieving its long-term climate goals.

Our 2024 recommendations

In November 2024, the Commission provided advice to the Government on two key parts of the emissions reduction system:[1]

- **The 2050 target.** Here we recommended strengthening the target to require greater levels of biogenic methane reductions and net negative emissions (removing more than are emitted) of all other greenhouse gases.
- **Advice for the fourth emissions budget (2036–2040)**. As part of this advice, we recommended that the first three emissions budgets were revised to re-align them with the original intent. Updating the budgets would encourage the real-world reductions that were deemed feasible at the time they were set.

The Government's response

In December 2025, the Government responded to our advice by amending the Climate Change Response Act to:

- *Lessen* the reductions of biogenic methane required by 2050 and leave the net-zero gas emissions requirements of the 2050 target *unchanged*.
- *Delay* the decision to set and revise emissions budgets until 2027.

These changes mean the Act now allows for higher greenhouse gas emissions while still meeting the 2050 target. The delay to deciding on emissions budgets means the first emissions budget can no longer be revised as it has now ended, which means this budget was easier to achieve than originally intended.

Next steps

In early 2027, the Commission will provide updated advice to the Government on the fourth emissions budget based on the revised 2050 target. This will include our recommendations on updated revisions for earlier emissions budgets. The Government has until the end of 2027 to set the fourth emissions budget and consider revising the second and third budgets.

How we made this assessment

This report measures progress against the *current* budgets and plans, as required by the Act.

Where possible, we compare progress to both the current and the revised budgets we recommended in 2024. This shows how much additional action would be required to achieve the level of emissions reductions that were originally intended.

Executive summary

Our findings at a glance

Climate disruption and economic impacts in Aotearoa New Zealand are growing – greater and more durable emissions reductions are needed to manage these risks.

- Delaying action increases disruption and costs for households and the economy, and narrows the country's options.

Greenhouse gas emissions are gradually falling, but the reductions are unlikely to be enduring, and the pace needs to more than double.

- After declining since 2019, gross emissions reductions stalled in 2024, largely due to a dry year that meant coal was used to generate electricity. Emissions estimates for 2025 suggest this was temporary, but this highlights the need for greater buffers against external factors.
- Recent reductions in industrial emissions are largely due to a drop in production, rather than changes in efficiency, technology or fuel switching.
- Net emissions continued to fall in 2024 due to increased forestry.

The second emissions budget (2026–2030) is at increasing risk.

- Projections show the second emissions budget could still be met by 3.6 $MtCO_2e$, but more than half of the reductions planned, 12.4 $MtCO_2e$, are at significant risk.
- Recent Government actions to reduce emissions are likely to be outweighed by other actions taken that may increase them.
- It is too late to plant additional forests to address any shortfalls in this budget.

Current plans and policies are insufficient to meet the third emissions budget (2031–2035) or the 2050 target, and the window for action is closing.

- Projections show the 2030 biogenic methane target will not be met. Government estimates show a 7.9% reduction in biogenic methane by 2030, compared with the 10% target.
- The gap in the emissions reduction plan for the third budget has not been significantly addressed since our last report and the risks to planned reductions have increased.
- If additional action does not occur in the next one to two years, it will no longer be feasible to meet the 2030 biogenic methane target or the third emissions budget.

Acting earlier to reduce emissions can strengthen resilience, reduce exposure to shocks, and lower costs for households, businesses and the country.

- Recent high oil prices forced many households to change their spending, including on necessities. Greater uptake of low-emissions technologies would reduce exposure to these shocks and help manage cost-of-living pressures.
- Some actions will require upfront investment, but acting sooner will reduce costs overall and make the transition to a low-emissions economy smoother.

Our recommendations for decision-makers

Last year, we recommended that the Government put additional policies in place to reduce the risk of missing the third emissions budget. In its response, the Government indicated it would consider further action. Since then, that risk has increased, and the 2030 biogenic methane target is no longer projected to be met.

The time available to correct course is now short. Many emissions reductions depend on decisions made well before the reductions are realised, and some options for the second emissions budget are no longer available.

This increases the importance of taking action now in the areas where barriers, delays and weak incentives are holding back progress.

It also increases the importance of emissions projections providing a robust indication of likely policy impact. In some areas, the assumptions underlying the projections do not appear to be driven by a realistic assessment of current policy.

Recommendation 1

We recommend that the Government takes action to address market barriers and failures within the next year to ensure it can meet its emissions goals, including:

- start determining how to incentivise further emissions reductions and removals in the 2030s given that the New Zealand Emissions Trading Scheme in its current form will struggle to do this
- for the primary sector:
  - immediately scale up support measures to meet the 2030 biogenic methane target
  - reduce barriers for high-value, low-emissions agricultural products for long-term reductions and resilience
- expand resource recovery facilities, services and planning, and extend landfill gas capture requirements to class 2 landfills
- encourage electric vehicle uptake through strong supply- and demand-side measures, and support greater shifts to public and active transport
- address upfront cost barriers to fuel-switching for households and businesses.

Recommendation 2

We recommend that the Government update its approach to emissions projections to ensure they provide a robust indication of likely future policy impact.

Key findings

Question 1: What progress have we seen in emissions reductions to date?

The numbers

- After declining steadily since 2019 (by around 2.3% per year), gross greenhouse gas emissions reductions stalled in 2024, dropping only 0.12% (or 0.09 $MtCO_2e$) from 2023. While there were some reductions, a dry year for hydro meant that coal was used to generate electricity – demonstrating the impact of not having a significant buffer.
- After removals from forestry are included, Aotearoa New Zealand's projected net emissions (under target accounting rules) declined by 2.0% between 2023 and 2024.
- Provisional estimates indicate that gross emissions fell 2.3% in 2025 compared with 2024.
- Recent reductions in industrial emissions are largely due to a drop in production, rather than changes in efficiency, technology or fuel switching.

The first emissions budget

- Projections show the first emissions budget (290 $MtCO_2e$) is likely to be met with a 7.7 $MtCO_2e$ buffer. The Commission's end-of-budget report in 2027 will give a full assessment using final emissions data.
- Since that emissions budget was set, changes to New Zealand's Greenhouse Gas Inventory mean the budget can now be met with less effort than it originally required.
- If the budget had been re-aligned with its original intent as the Commission recommended in 2024, projections show that it would likely be met by 0.7 $MtCO_2e$.

The technology

- Technology changes are making it easier and more cost-effective for households and businesses to reduce emissions, as well as offering greater benefits.
- Battery costs have fallen 75% globally since 2015. This is improving the availability and cost of electric vehicles (EVs) and rooftop solar panels, and increased finance options are providing greater access.
- Progress on agricultural technologies continues, although there have been some delays to implementation to ensure regulatory approvals are robust. It is not yet clear if markets will take up these technologies without Government policy direction.

The policy

The Government has taken or signalled some actions to reduce emissions in the last year, however these are likely to be outweighed by other actions that may increase emissions.[i]

- Policy actions that could **reduce** emissions include:
  - improved energy regulatory measures
  - extending the road user charges exemption for electric heavy vehicles
  - passing legislation to enable time-of-use charging for transport systems
  - the Gas Transition Loan Guarantee Scheme, which was announced after our assessment period ended.
- Actions that could **increase** emissions include:
  - excluding agriculture from emissions pricing
  - changes to the Clean Vehicle Standard
  - increasing the mandatory climate reporting threshold for listed companies
  - delays implementing a regulated product stewardship scheme for refrigerants
  - committing to a liquefied natural gas (LNG) import facility. The LNG import facility for dry-year firming runs the risk of signalling delay to the transition from fossil fuels, which is likely to affect the pace of emissions reductions.
- Some actions will have an **unclear effect** on emissions, including merging multiple departments into the new Ministry for Cities, Environment, Regions and Transport, and reforming the resource management system.
- The ministry merger, the Māori Climate Platform's funding cycle ending, and the merger of Crown Research Institutes may also have implications for Crown–Treaty responsibilities, iwi/Māori relationships and recognition of mātauranga Māori in decision-making.

The issues

- The 2026 National Climate Change Risk Assessment shows that the climate-related risks facing Aotearoa New Zealand are serious and increasing, affecting people, places and way of life.
- Reducing emissions and adapting to climate change in tandem will reduce the country's exposure to climate disruption, at lower cost and with greater benefits, as well as avoiding inadvertent negative effects.
- While there is uncertainty caused by geopolitics, improvements in the cost, efficiency and performance of clean technology are continuing to drive change globally. Aotearoa New Zealand needs to determine how it wants to be positioned within these changing dynamics.
- The increase in oil prices from the 2026 conflict in the Middle East has underlined Aotearoa New Zealand's vulnerability to fossil fuel supply chains, putting financial pressure on households. Increased electrification and greater EV uptake would have supported the country's resilience against these shocks.
- Falling domestic gas supply is putting pressure on gas and electricity prices. The potential for imported LNG would increase the country's exposure to global instability further, and could result in higher costs and emissions compared to alternative options.

i Chapters 3–11 set out policy changes since 2022.

- The Government has chosen a market-led approach to emissions reductions, however evidence suggests the New Zealand Emissions Trading Scheme (NZ ETS) is not efficiently driving emissions reductions now, due to low market confidence, price volatility, and uncertainty about the long-term future of the scheme.
- High levels of forest planting continue, which risks reducing the incentive to lower emissions in other sectors.

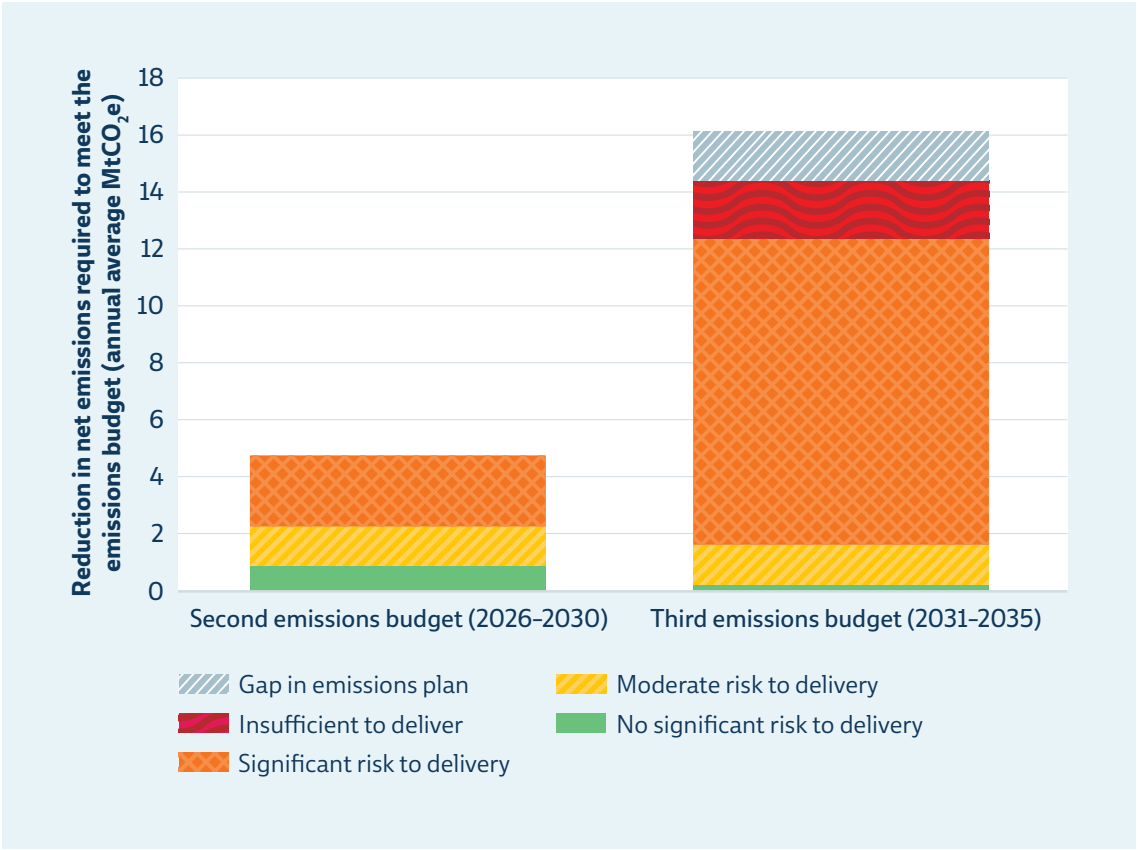
Question 2: How is the country tracking towards meeting the current emissions budget?

The numbers

The second emissions budget (2026–2030) is at significant risk, and that risk has increased in the last year.

- The Government's projections show that the second emissions budget is likely to be met by 3.6 $MtCO_2e$.
- However, our assessment has found that those projections are increasingly at risk: in 2024, most planned reductions in this budget were at moderate risk. This year, more than half are at significant risk.

Figure ES.1: Overall assessment of risk to meeting the emissions budgets under current policies and plans



Source: Commission analysis

The risks

- **Electricity, increased to significant risk**: Due to falling gas supply and continued difficulty securing low-emissions solutions to dry years and demand peaks. Imported LNG would not begin until the middle of the budget period, and could end up increasing emissions.
- **Agriculture, increased to significant risk**: Current market drivers, such as high milk and meat prices, point to increasing emissions from higher production. Market incentives may improve emissions intensity but not deliver absolute emissions reductions.
- **Transport, increased to significant risk**: Largely due to changes to the Clean Vehicle Standard and its potential removal.
- **Fluorinated gases (f-gases), increased to moderate risk**: Due to delays implementing a regulated product stewardship for refrigerants.
- **Industry, decreased to moderate risk**: Due to greater confidence largely from the implementation of Government Investment in Decarbonising Industry (GIDI) partnerships such as the NZ Steel electric arc furnace project.
- **Forests, unable to provide further buffer**: There is no capacity for additional forestry planting within the second emissions budget to address any shortfalls or provide buffers. This is due to the low level of carbon absorbed by trees in the initial years following planting, along with the immediate emissions increases from changing land uses.
- **Crown–Māori relationship**: The Government is also at risk of not meeting its obligations to iwi/Māori under Te Tiriti o Waitangi/The Treaty of Waitangi. The Māori Climate Platform remains underfunded and there is no pathway for Crown–Māori engagement after it ends. Māori-led climate efforts grounded in intergenerational and te ao Māori principles are not matched by Crown partnership or resourcing, and there is a lack of emissions and economic data for Māori entities.

Question 3: How is the country tracking towards meeting future emissions budgets and the 2050 target?

The numbers

Current plans and policies are insufficient to meet the third budget or the 2050 target.

- The gap in the emissions reduction plan for the third budget has not been materially addressed since last year's report.
- Our assessment of risk has increased in the last year, with most areas of emissions reductions now at significant risk.
- Current policies are unlikely to be enough to meet the 2050 target unless further action is taken.

Current Government plans are insufficient to achieve the 2030 biogenic methane target.

- Projections indicate that the 2030 biogenic methane target will not be met.
- Government estimates show a reduction of 7.9%, compared to a target of 10%.

The risks

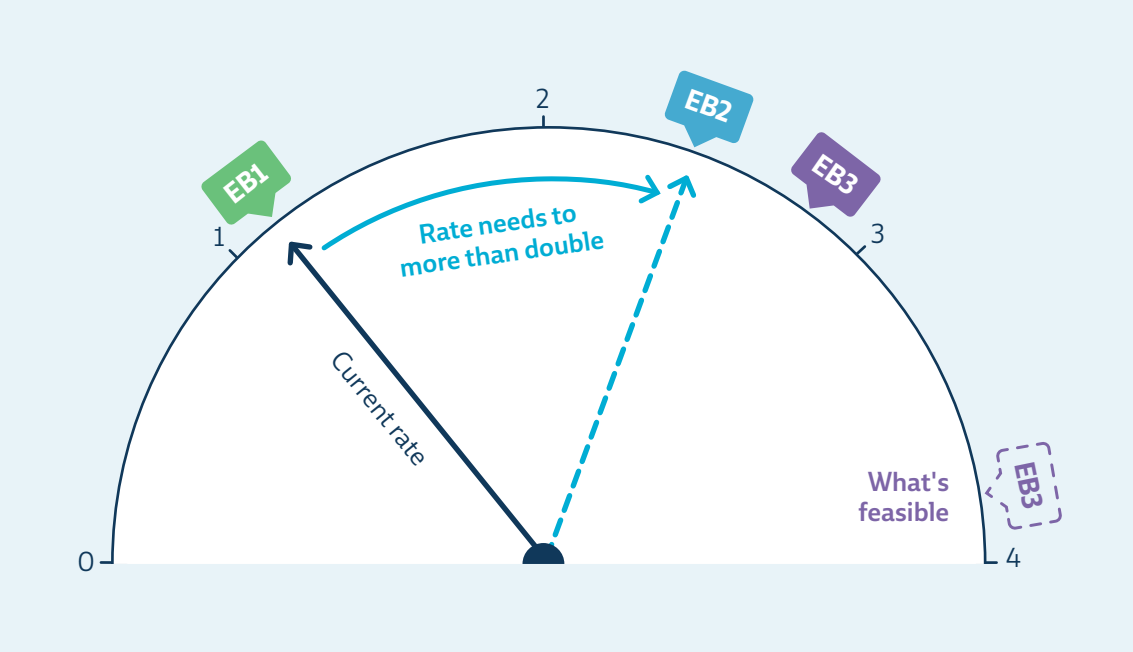
- **Forestry**: Expected to contribute 49.3% of emissions reductions in the third budget period. Reliance on one sector increases the vulnerability of achieving the budget.
- **Agriculture**: Planned policies are now insufficient to deliver the required reductions. Agricultural emissions pricing has been removed from the Government's emissions reduction plan, and current or planned policies or industry schemes would not achieve the reductions modelled in Government projections.
- **Industry**: Significant risk remains as almost all reductions to date are from projects funded by GIDI, which has been disestablished. Beyond the remaining GIDI projects, there is no policy to drive another wave of projects for the third budget. While an important signal, the 2037 coal boiler ban may not drive conversions quickly enough to materially contribute to either the second or third budgets. The Gas Transition Loan Guarantee Scheme, announced after our assessment period, is a step in the right direction toward addressing upfront cost barriers to fuel switching.
- **NZ ETS**: Market confidence is fragile, and in its current form, we expect the NZ ETS will be unable to incentivise further emissions reductions or removals from around 2034 onwards without further interventions. Industrial allocation remains misaligned with the 2050 target; under current forecasts units would continue to be allocated to 2050 and beyond.
- **Workforce**: Workforce availability may already be holding back the pace of industrial decarbonisation, particularly in the energy and engineering workforce. Workforce capacity issues could become more significant if policy ambition and investment accelerate in the future.

Question 4: How can Aotearoa New Zealand ensure it meets future emissions budgets and the 2050 target?

The numbers

- Aotearoa New Zealand needs to **more than double** the current pace of decarbonisation to meet the second and third emissions budgets and the 2050 target (see Figure ES.2). This is feasible with additional action.
- If additional action to address market barriers and failures does not occur in the next **one to two years**, it will no longer be feasible to meet the 2030 methane component of the 2050 target or the third emissions budget.

Figure ES.2: Increases in the rate of decarbonisation required to meet future emissions budgets (annual average $MtCO_2e$)



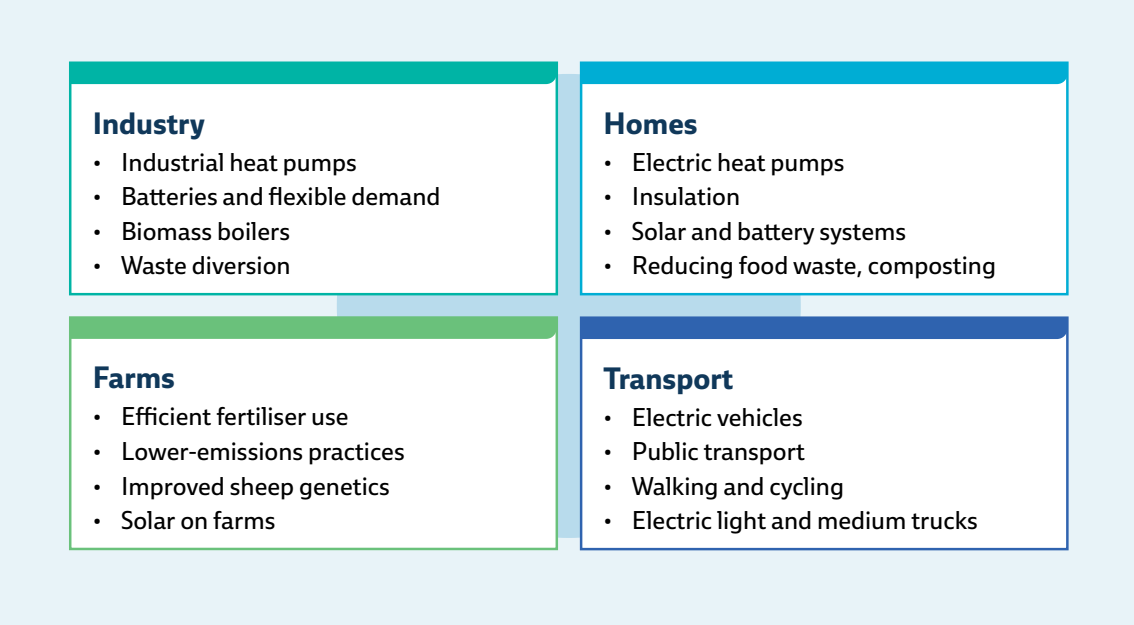
Source: Commission analysis

The opportunities

Acting now to reduce emissions can strengthen resilience, reduce exposure to future shocks, and lower long-term costs for households, businesses and the country.

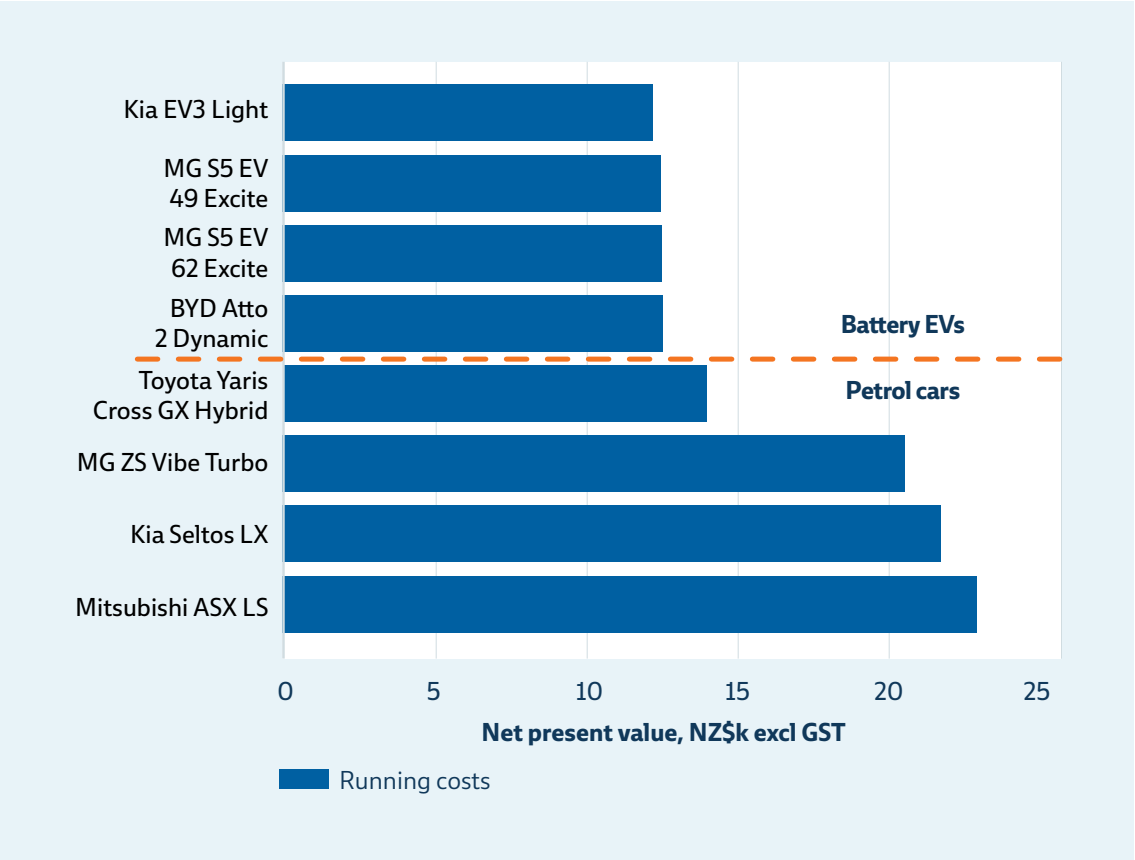
- Greater uptake of technologies like EVs and industrial heat pumps would deliver economic benefits to businesses and individuals as well as significant emissions reductions. These make sense to adopt now, although some barriers to uptake remain (see **Figures ES.3, ES.4 and ES.5**).
- Household cost pressure is already real: 29% of New Zealand households report cutting their spending on necessities in response to recent high oil prices. Some of the most practical near-term actions to reduce emissions would also reduce households' exposure to fuel-price shocks and lower costs over time, as well as reducing air pollution and adding health benefits.

Figure ES.3: Actions with clear benefits for households and business to adopt now



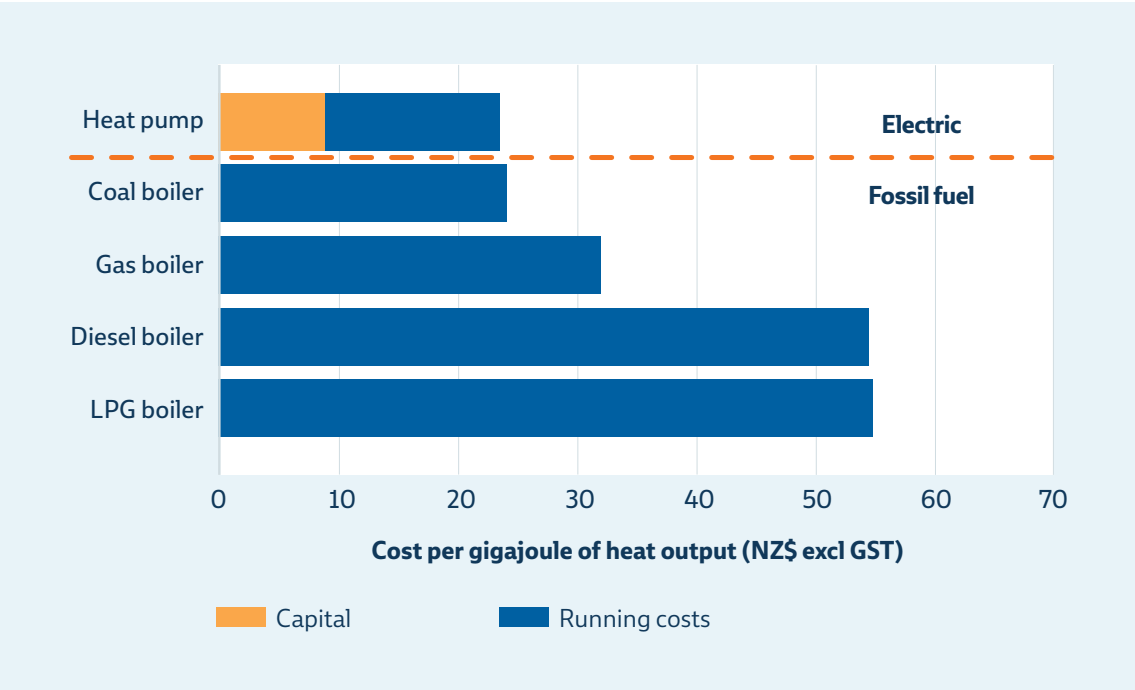
Source: Commission analysis

Figure ES.4: Five-year running costs for comparable compact sports utility vehicles (SUVs)



Source: Commission analysis

Figure ES.5: Cost of installing and running a new heat pump compared with running existing fossil fuel boilers



Source: Commission analysis

A system-wide approach would remove barriers, provide stability for climate investments and address the market failures that mean the NZ ETS is no longer providing a long-term investment signal.

- Some actions can be implemented immediately, others require system-level shifts; some are long-term pieces of work and others require significant investment – a cohesive approach would maximise the benefits from all actions.
- Without this, there is a risk that future emissions reduction will not occur or will be driven by reduced demand and business closures instead of sustainable changes to technology and behaviour.

Some actions will require upfront investment, but provide enduring economic benefits.

- Delaying action will increase costs (including the cost of living) for households and the economy. Greater action is necessary, and managed costs now are preferable to forced shocks later.
- The upfront costs of installing household solar and battery systems can now be paid off through savings in just 7–10 years, and in 5 years for some electric vehicles. Over their lifetime these investments generate significant cost savings for households.
- At the same time, some barriers that prevent households from taking up emissions-reducing technology can be removed through policy at little or no financial cost to the Government. Failing to address them can cost the Government and economy in other ways.
- Rapidly increasing effects of climate change underline the urgency to reduce emissions and avoid the most expensive adaptation and recovery scenarios in the future.

Acting sooner rather than later will reduce costs and make the transition to a low-emissions economy smoother.

- Modelling for the Sustainable Business Council indicates that the country's gross domestic product would be NZ$22 billion higher by 2035 if we take action now to decarbonise our economy instead of continuing to emit at the current level.
- Many actions to reduce emissions have long lead-in times and require work now.
- Investments in industry and forestry often take years before emissions reductions are realised and new technologies can take decades to research and develop.
- Major urban design and infrastructure investments are often cheaper and easier to implement early and much more expensive to shift from in the future.
- Decisions made now can risk locking the country into a higher-emissions and higher-cost future that is disruptive and expensive to course-correct from.

For more information

Chapters 1–2: Introduction & findings

Chapters 3–6: Evidence from system analysis

Chapters 7–11: Evidence from sector analysis

Technical Annex on our website: detail and method

Chapter 1

Introduction

Our annual monitoring reports on reductions in Aotearoa New Zealand's greenhouse gas emissions form a picture over time, showing how the country is tracking towards its climate change goals.

He Pou a Rangi Climate Change Commission (the Commission) produces this independent monitoring report under the Climate Change Response Act 2002 (the Act).

This chapter provides the context for our assessment: the purpose of annual monitoring, and how this connects to other parts of Aotearoa New Zealand's climate change response, as well as to global climate action. It also gives an overview of our analytical approach; more about our methodology and information base is in the Technical Annex, which can be found on our website.

Purpose of the report

Why we monitor emissions reductions

Aotearoa New Zealand has a system of five-yearly emissions budgets that act as stepping stones towards the long-term 2050 target; the Government's emissions reduction plans set out how they plan to achieve each budget. This system is designed to provide predictability and stability for government, businesses and communities.

Our independent monitoring of progress against those budgets supports governments to keep the country on track with climate action, and to continually improve their plans. Monitoring reports highlight achievements and opportunities and identify challenges and risks. They also provide evidence to inform the decision-making that is required to achieve the budgets and target.

What we track

Our annual monitoring reports assess:

- the adequacy of the Government's emissions reduction plans and their implementation
- how the country is tracking against current and future emissions budgets
- the country's progress towards the 2050 target.

We monitor reductions in *gross emissions* and *removals* of greenhouse gases from the atmosphere (that is, carbon dioxide absorbed by forests as trees grow). Together, these show the country's progress against its *net emissions* target.

The focus of this year's assessment

The second and third emissions budgets and the 2050 target

The second emissions budget period began on 1 January 2026. This budget is designed to be met through policies and actions set out in the Government's second emissions reduction plan.

This 2026 emissions reduction monitoring report tracks progress towards:

- the second emissions budget (2026–2030)
- the third emissions budget (2031–2035)
- the 2050 target.

The country's first emissions budget period ended on 31 December 2025. The Commission's first end-of-budget report, due in 2027, will give a full assessment of emissions reductions during that period, once final emissions data from the next New Zealand's Greenhouse Gas Inventory (GHG Inventory) are available.

The second emissions reduction plan

This report assesses the adequacy and progress of the policies set out in the second emissions reduction plan. The second emissions reduction plan was released in late 2024 and amended in early 2026.

Our review covers government policy and action in the 12 months up to 1 April 2026. Chapters 3–11 set out policy changes since 2022 in more detail.

Several significant developments occurred since 1 April 2026; these did not form a core part of our assessment, but where possible we have noted them in the relevant chapters. These developments include:

- Budget 2026 funding decisions
- announced changes to climate change tort law
- a review into regulations for the installation of solar
- the announcement of the Gas Transition Loan Guarantee Scheme
- the AgriZeroNZ Early Adoption Accelerator
- consultation opening on NZ ETS settings and on changes to support reducing organic waste emissions
- the Government confirming its approach to grow Aotearoa New Zealand's voluntary nature and carbon markets.

We have synthesised the risks and opportunities in the report to recommend specific actions the Government could take to ensure future budgets and the 2050 target can be met.

Overview of our approach

Our 2026 assessment uses the same framework for monitoring emissions reductions that we used in our first two monitoring reports, which was based on international best practice and models.

This section summarises the key elements of that approach, showing how we combine analysis of the available data and relevant emissions reduction plans and policies to create the progress assessment required under the Act (Table 1.1). More detail is in the Technical Annex on our website.

Table 1.1: Emissions reduction monitoring requirements in the Climate Change Response Act 2002

The Act requires annual monitoring reports to include these elements:	The Act requires monitoring and reporting of progress towards meeting emissions budgets and the 2050 target, which must consider, where relevant, these issues and impacts:
• measured emissions and removals for the most recent year where data are available from New Zealand's Greenhouse Gas Inventory (GHG Inventory) • the latest projections for current and future emissions and removals • an assessment of the adequacy of the emissions reduction plan and progress in its implementation, including any new opportunities to reduce emissions.	• current available scientific knowledge • existing technology and anticipated technological developments, including the costs and benefits of early adoption of these in New Zealand • the likely economic effects • social, cultural, environmental, and ecological circumstances, including differences between sectors and regions • the distribution of benefits, costs and risks between generations • the Crown–Māori relationship, te ao Māori (as defined in section 5H(2)), and specific effects on iwi and Māori • responses to climate change taken or planned by parties to the Paris Agreement or United Nations Framework Convention on Climate Change.

How we assess progress, adequacy and opportunities

To assess progress and the adequacy of the Government's plans, we review available data on greenhouse gas reductions and combine it with analysis of the effects of government policy and action. Our assessment, including the part that looks at wider systems and issues, primarily tracks government action. It also draws on our previous work and engagement with iwi/Māori, communities, councils and businesses. This year our engagement with iwi/Māori has included two wānanga on our adaptation and emissions reduction work.

Our methodological approach

These are the building blocks of our monitoring approach:

- Analysis of the available data, including measured and estimated emissions, and projections for future periods.
- Analysis of new opportunities to reduce emissions beyond the actions set out in the Government's second emissions reduction plan.

- Benchmarks for assessing adequacy of plans. An emissions benchmark gives a consistent reference point for comparing plans to reduce emissions. The Government's official projections show a likely emissions pathway under two scenarios – 'with existing measures' (showing only legislated, funded and implemented actions) and 'with additional measures', which shows the impact of policies under the second emissions reduction plan. For this year's emissions reduction monitoring report we revised our benchmark, starting with the Government's 'with existing measures' pathway and removing the effects of key climate policies to create a baseline. This helps ensure that our modelling assumptions align better with the Government's projections. This change has affected the share of emissions reductions in each outcome area; the Technical Annex on our website has more information on this.
- Cross-cutting review of government policy in key areas of the wider system. This includes considering the impacts and benefits that emissions reductions have on businesses and communities.
- Sector-based analysis of emissions reductions and removals. This includes indicators that measure change, and a scorecard assessment of current policy and plans.

Chapter 2: Our findings presents a synthesised assessment of progress and of the adequacy of plans and policies, framed by the four questions used in our report (Box 1.1).

Box 1.1: The questions at the heart of this report

Question 1: What progress have we seen in emissions reductions to date?

Question 2: How is the country tracking towards meeting the current emissions budget?

Question 3: How is the country tracking towards meeting future emissions budgets and the 2050 target?

Question 4: How can Aotearoa New Zealand ensure it meets future emissions budgets and the 2050 target?

The information available for this report

Our analysis is based on the latest available data from the GHG Inventory, combined with the latest projections for current and future emissions and removals.

The most recent GHG Inventory, published in April 2026, provides data to the end of the 2024 calendar year: the third year of the first emissions budget. We complement this with emissions estimates from Stats NZ and Government projections to provide a more up-to-date picture of progress.

Projections have an inherent level of uncertainty associated with them, which results in risks to meeting future budgets that need to be managed. Details of this and any information gaps are explained in the Technical Annex on our website.

Data collated by the Climate Change Chief Executives Board for their quarterly reports informs our scorecard assessment of the adequacy of the Government's plans.

The context of this report

The effects of climate change are being felt across the world – and in Aotearoa New Zealand

In 2025 the global average surface temperature was 1.43°C above the pre-industrial average, making it one of the hottest years on record. Rising temperatures are leading to more frequent and intense weather events, which damage infrastructure, impact food security and increase health risks.[2]

Aotearoa New Zealand is not immune to these effects, experiencing a record-breaking run of severe weather events in the first months of 2026. In February and March 2026 a major storm occurred every eight days – double the typical frequency.[3] Climate projections for Aotearoa New Zealand show extreme weather events will continue to increase in frequency and severity.

The Commission's 2026 National Climate Change Risk Assessment shows that the climate-related risks facing Aotearoa New Zealand are serious, affecting every aspect of the country's communities, places and way of life. The most significant climate risks identified by the report include those to water infrastructure, buildings, ecosystems and biodiversity, and social and community wellbeing.[4]

It is critical the world adapts to the effects of climate change that are already locked in and continues to reduce emissions. Greater action towards the global effort to limit further warming of the planet will prevent the most severe and widespread hazards, and ensure that communities in the future continue to have adaptation choices to make.

In short: reducing emissions and adapting to climate change are both necessary – and tackling them together reduces risks, at lower cost and with greater benefits. Effective change cannot happen without everyone playing their role – individuals, markets and governments. The Government has a role to shape the conditions in which climate action occurs in Aotearoa New Zealand.

Limiting global warming requires a global effort. While Aotearoa New Zealand emits less than 1% of global emissions, countries that individually produce fewer than 1% of global emissions, collectively contribute around a third of global emissions.[5]

Countries continue to submit nationally determined contributions (or NDCs, the international climate commitments under the Paris Agreement).[6] However, the United Nations' latest Emissions Gap Report found that full NDC implementation would only limit warming to 2.3–2.5°C and current policies would limit it to 2.8°C. All countries need to take greater steps to reduce emissions. The Emissions Gap Report notes that "every fraction of a degree avoided means lower losses for people and ecosystems, lower costs, and less reliance on uncertain carbon dioxide removal techniques to return to 1.5°C by 2100."[7]

Businesses remain committed to decarbonisation

Globally, pressure from supply chains and economic benefits are motivating businesses to decarbonise. Aotearoa New Zealand's major export markets are increasingly expecting businesses to report on their emissions and demonstrate reductions.[8]

Trade policy is also supporting climate goals: in January 2026, after a transitional phase, the European Union (EU) fully implemented its Carbon Border Adjustment Mechanism (CBAM), a tool to price carbon emitted during the production of goods imported into the EU and avoid emissions leakage.[9] In February 2026 the United Kingdom published draft regulations for implementing its own CBAM, which will come into effect from January 2027.[10]

The 2025 Business Breakthrough Barometer survey shows that 92% of business leaders believe that achieving a net-zero economy – one that delivers a stable climate – will result in lower burdens on their organisation than the costs of transitioning and 96% say governments should stay the course on net-zero commitments.[11]

Clean technology is growing rapidly and becoming more affordable

Growth in clean technology – and the falling prices that accompany it – continues at pace. The clean energy market is now valued at nearly US$1.2 trillion, after 20% growth per year in the last decade. In particular, battery prices have dropped 75% since 2015, meaning electric vehicles (EVs) are often a comparable price to internal combustion engine equivalents.[12] Greater adoption of technologies like EVs and industrial heat pumps would deliver economic benefits and significant emissions reductions, and make sense to adopt now for businesses, households, and local and central government.

While globally EV sales were around 25% of new car sales in 2025,[13] they made up just 11% of new car sales in Aotearoa New Zealand.[14] Similarly, Aotearoa New Zealand is below many countries (including Australia, the United Kingdom and the United States) when it comes to uptake of residential rooftop solar energy; this could be improved through greater Government support.[15–18]

Geopolitics is causing uncertainty, but may ultimately drive an uptake in clean energy

The 2026 conflict in the Middle East – and the sharp increase in oil prices that it brought about – has underlined Aotearoa New Zealand's vulnerability to fossil fuel supply chains, and this has put pressure on the cost of living for households. Increased electrification – including greater EV uptake – would have supported the country's resilience against such external factors.

The sudden increase in oil prices appears to have motivated countries in many other countries to do just that: Indonesia accelerated their biodiesel programme, Spain reduced taxes for electrification and solar energy installation, and the United Kingdom accelerated a plug-in solar programme.[13] In Aotearoa New Zealand the conflict led to a significant increase in EV sales in March 2026, although this was driven by consumer demand rather than government incentives (see *Chapter 8: Transport* for more detail).

Climate change governance in Aotearoa New Zealand

Robust and effective governance is critical to ensure policies are aligned across central and local government, the private sector and with iwi/Māori. Predictability and stability for government, business and communities means all parties can act to reduce emissions with confidence. As well as supporting the Government to stay on track, effective monitoring and management provides transparent evidence and information for people to hold governments accountable, which builds trust in the system.

Climate change response framework

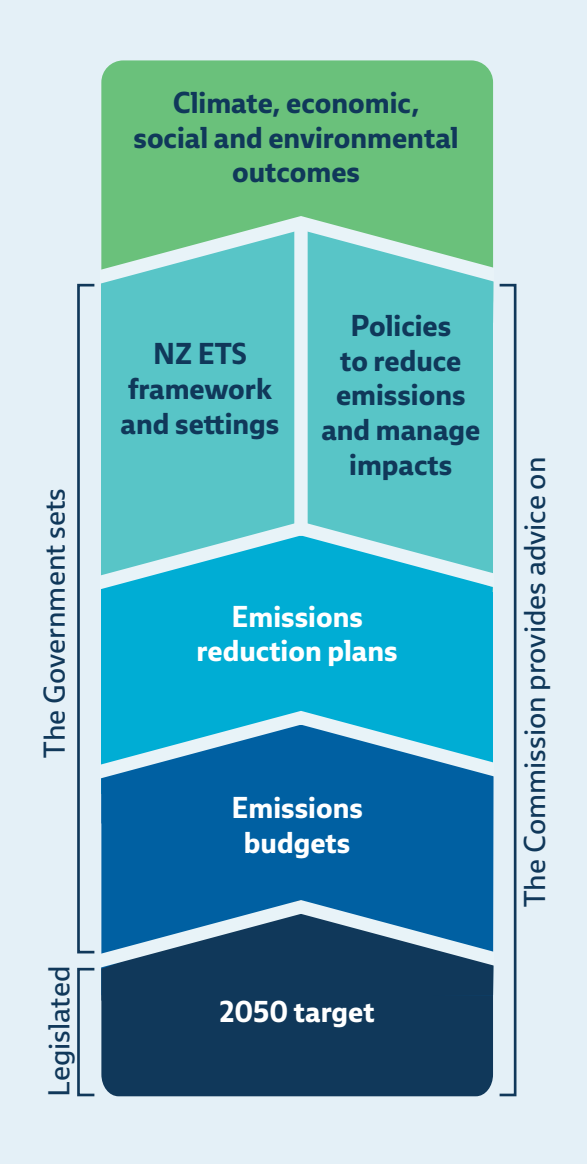
The Act sets out Aotearoa New Zealand's approach to reducing emissions (**Figure 1.1**). At the heart of this is the system of emissions budgets leading to the 2050 target, and the emissions reduction plans that serve them.

The Act also establishes the Commission as an independent body to advise on the target, budgets and plans, and to monitor the country's progress on reducing emissions (see sections s5ZK and s5M). This is done via annual monitoring reports, such as this one, and end-of-emissions-budget reports every five years. The Minister of Climate Change must respond to these reports with an outline of how the Government intends to address our recommendations.

The Commission also monitors climate adaptation through progress reports on the national adaptation plan (next due in August 2026) and six-yearly national climate change risk assessments (last released in May 2026).

The Climate Change Chief Executives Board monitors, advises and reports on Aotearoa New Zealand's strategy and delivery of emission reductions.[19] This board helps align Government decision-making across agencies, however, some alignment issues can still occur.

Figure 1.1: Aotearoa New Zealand's system for reducing emissions



Source: Commission analysis

Governance changes in the last year

Last year's monitoring report outlined the enhanced reporting, tracking and responding process (called 'adaptive management') established in the second emissions reduction plan. The indicator element of this process is expected to increase transparency, and is planned to be in place by 2026. At the time of writing, indicators have not yet been published.

In December 2025 the Government announced the merging of multiple departments into the new Ministry for Cities, Environment, Regions and Transport.[20] The effects of this on climate change governance are not yet known: the merger could improve coordination and efficiency of climate action across departments, but equally could result in these areas not being appropriately prioritised within a much larger agency.[20] The merger may also have implications for Crown–Treaty responsibilities and recognition of mātauranga Māori in decision-making.

In November 2025 the Government announced a range of changes to the Climate Change Response Act. The first package of these was passed in December 2025 and involved changes to the methane target, as well as requiring consideration of food production in setting emissions budgets, changes to the relationship between NZ ETS settings and Aotearoa New Zealand's international climate commitments, and delaying the setting of the fourth emissions budget. A second package is planned to be introduced to Parliament during 2026. This package would change the timing and sequencing of reports, advice, decisions and government responses, and remove some consultation requirements.[21]

Governance gaps, risks and opportunities

It remains to be seen if the adaptive management process will be as robust and effective as intended. The Government's response to last year's emissions reduction monitoring report acknowledged the risks and issues that the report raised. The Parliamentary Commissioner for the Environment, Simon Upton, noted that the Government's response should have been more thorough in its assessment of the risks and how the Government would manage them. He noted that for adaptive management to be effective, there needs to be a suite of policy interventions ready to be rolled out to deliver reductions at short notice, but that their response "does not provide any indication that the Government has such a suite of ready-to-implement climate policies".[22]

To ensure adequate climate governance, the environment component of the Ministry for Cities, Environment, Regions and Transport and the Climate Change Chief Executives Board must be well resourced and have appropriate oversight of climate decisions made by other agencies. It is not yet clear how this will be ensured through the proposed merger.

Local government have previously told us they need more clarity on their role in the transition, accompanied by appropriate funding and legislative tools. The Commission has noted the need for greater alignment of central and local government mandates, functions and funding.

Source documents

These four documents are core resources for our analysis. Other references for source material are provided as endnotes.

Ministry for the Environment publications

New Zealand's Greenhouse Gas Inventory 1990–2024. 2026. https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-19902024/

Our journey towards net zero – New Zealand's second emissions reduction plan 2026–2030: Tā Aotearoa mahere whakaheke tukunga tuarua: Amended January 2026. 2024. environment. govt.nz/publications/new-zealands-second-emissions-reduction-plan

New Zealand's second emissions reduction plan 2026–30: Technical annex: Amended January 2026. 2024. environment.govt.nz/publications/second-emissions-reduction-plan-technical-annex/

Stats NZ

Quarterly greenhouse gas emissions by sector, up to the December 2025 quarter. Customised report and licensed by Stats NZ for re-use under the Creative Commons Attribution 4.0 International licence. 2026. Supplied by the Climate Change Chief Executives Board. **Published on our website**: climatecommission.govt.nz/ERM-2026

Government projections

We use the latest available Government projections[23] to inform our analysis. In most cases this is the 2026 projections (as used in the amended second emissions reduction plan); in some instances an earlier set is used – this will be noted in the text.

Government projections are available publicly via the Ministry for Cities, Environment, Regions and Transport website. More detailed projections were also made available to the Commission via the Government's ENZ model.[24]

Notes for reading this report

- Emissions are expressed in carbon dioxide equivalents (CO_2e) unless otherwise stated, calculated using the 100-year time horizon global warming potentials (GWP100) sourced from the Intergovernmental Panel on Climate Change's fifth assessment report.[25] This is consistent with the approach used in the GHG Inventory.
- Some figures may not appear to add correctly due to rounding.
- Unless otherwise stated, all emissions are from the GHG Inventory, emissions predictions are from Stats NZ and analysis is the Commission's.
- The provisional data from StatsNZ was not used directly due to methodological differences compared to the latest GHG Inventory data. See the Technical Annex for more information.
- For supporting material, including the Technical Annex, summaries of key chapters, and a one-page summary of the report, see the Commission website: climatecommission.govt.nz/ERM-2026

Chapter 2

Our findings

Our review of progress towards emissions budgets and the 2050 target shows that while emissions are gradually falling, the pace needs to more than double.

Under current settings, the second and third emissions budgets and the 2050 target are all at risk, and those risks have increased over the last year.

This chapter summarises our detailed analysis across the economy, covering policy changes in the last year, current risks to meeting budgets, and opportunities to accelerate emissions reductions. There are opportunities to reduce emissions now that will also strengthen resilience to current and future disruptions, and lower costs for households, businesses and the country.

Question 1: What progress have we seen in emissions reductions to date?

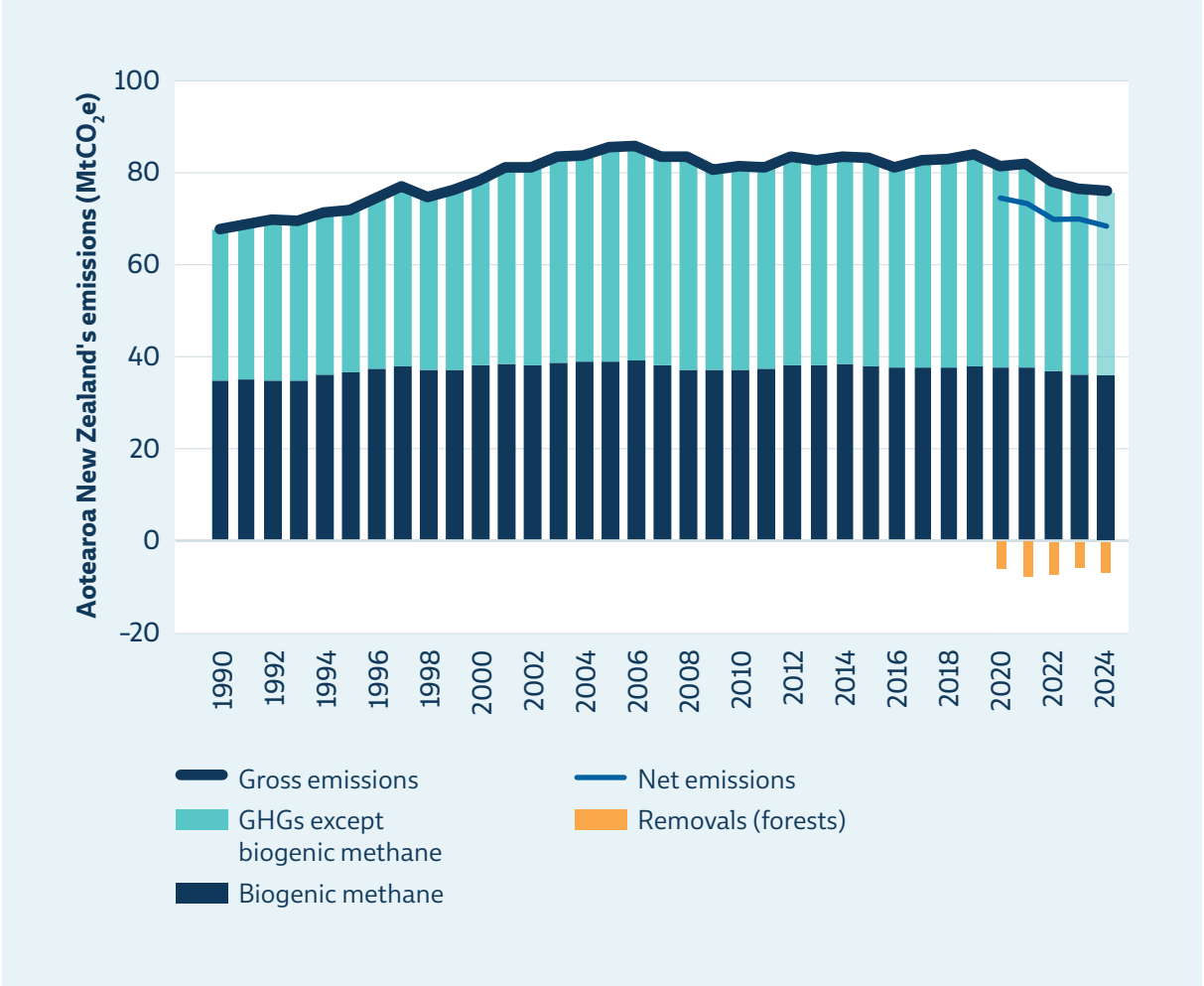
The numbers

Gross emissions reductions stalled in 2024, but forestry meant net emissions decreased

After declining steadily since 2019, reductions of gross greenhouse gas emissions stalled in 2024.[ii] **Figure 2.1** shows gross emissions declining by around 2.3% per year but the 2024 level (75.8 $MtCO_2e$) was only 0.12%, or 0.09 $MtCO_2e$ lower than 2023.

ii This is before we account for removals of carbon dioxide through forests.

Figure 2.1: Gross and net emissions, 1990–2024[iii]



Source: Commission analysis of GHG Inventory 1990–2024

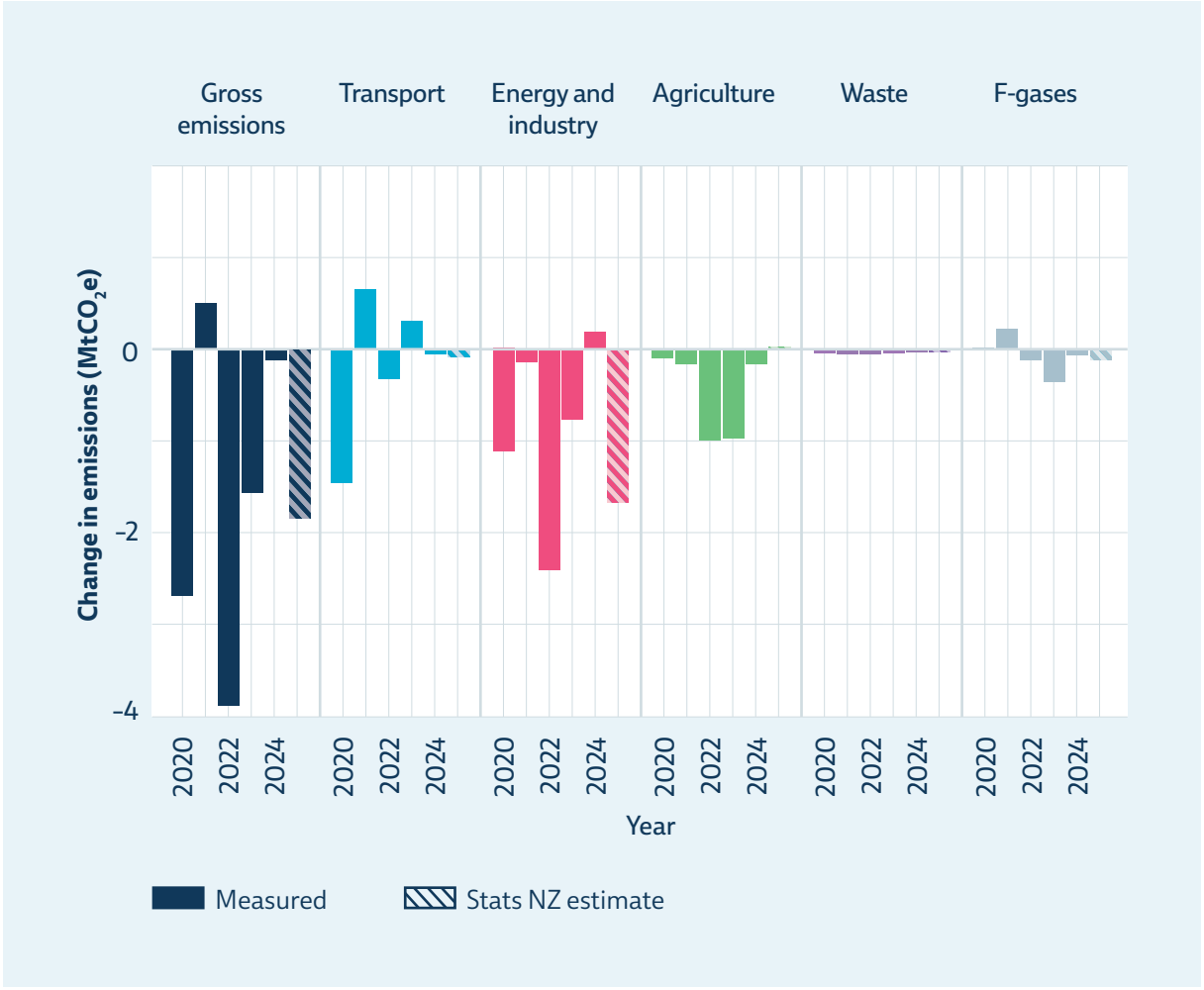
Electricity generation emissions rose in 2024 due to a dry year affecting hydroelectricity generation, which required increased fossil fuel use to meet electricity demand and offset modest emissions reductions in other areas. Estimates for 2025 suggest this was temporary but demonstrates the impact of not having a significant buffer against external factors (see **Figure 2.2**). Developing low-emissions ways of maintaining a reliable power supply when demand or supply varies (firming options) and accelerating renewable generation would reduce the country's dependence on fossil fuels for electricity generation.

Indications are that recent falls in industrial emissions are largely due to a drop in production from declining gas availability and energy prices, rather than improvements in efficiency, technology or fuel switching.

Estimates for 2025 show annual gross emissions falling 2.3% compared with 2024 – the lowest annual total since data collection began in 2010. This is mainly because improved water availability for hydroelectricity generation meant fewer emissions from electricity generation. Fossil fuel use also declined in manufacturing industries and construction, largely driven by further falls in production.

iii Note for reading Figure 2.1: Aotearoa New Zealand's 'split gas' target considers biogenic methane separately from other greenhouse gases. This reflects the different impact that methane has compared with other greenhouse gases, such as carbon dioxide.

Figure 2.2: Annual changes in gross emissions by sector since 2020

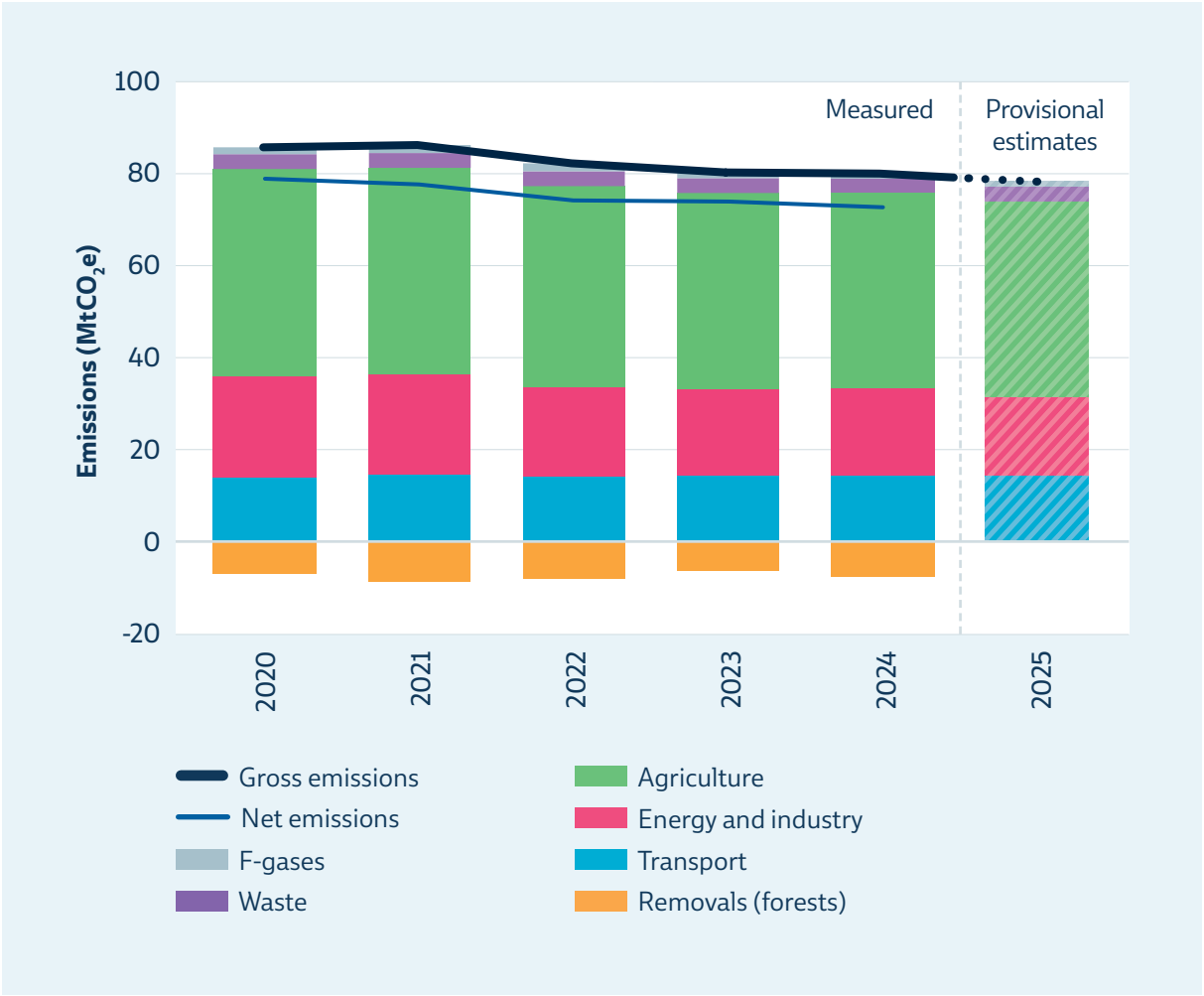


Source: Commission analysis of GHG Inventory 1990–2024 and Stats NZ 2025 provisional emissions estimates[iv]

Aotearoa New Zealand's net emissions (under target accounting rules) have been declining since the start of the first emissions budget in January 2022 (**Figure 2.3**). This trend has continued, with net emissions from forestry removals declining by 2% in 2024.

iv The 2025 provisional estimate data from Stats NZ uses a different methodology from the GHG Inventory to estimate emissions.

Figure 2.3: Emissions by sector applying net emissions under target accounting, 2020–2025



Source: Commission analysis of GHG Inventory 1990–2024 and Stats NZ 2025 provisional emissions estimates

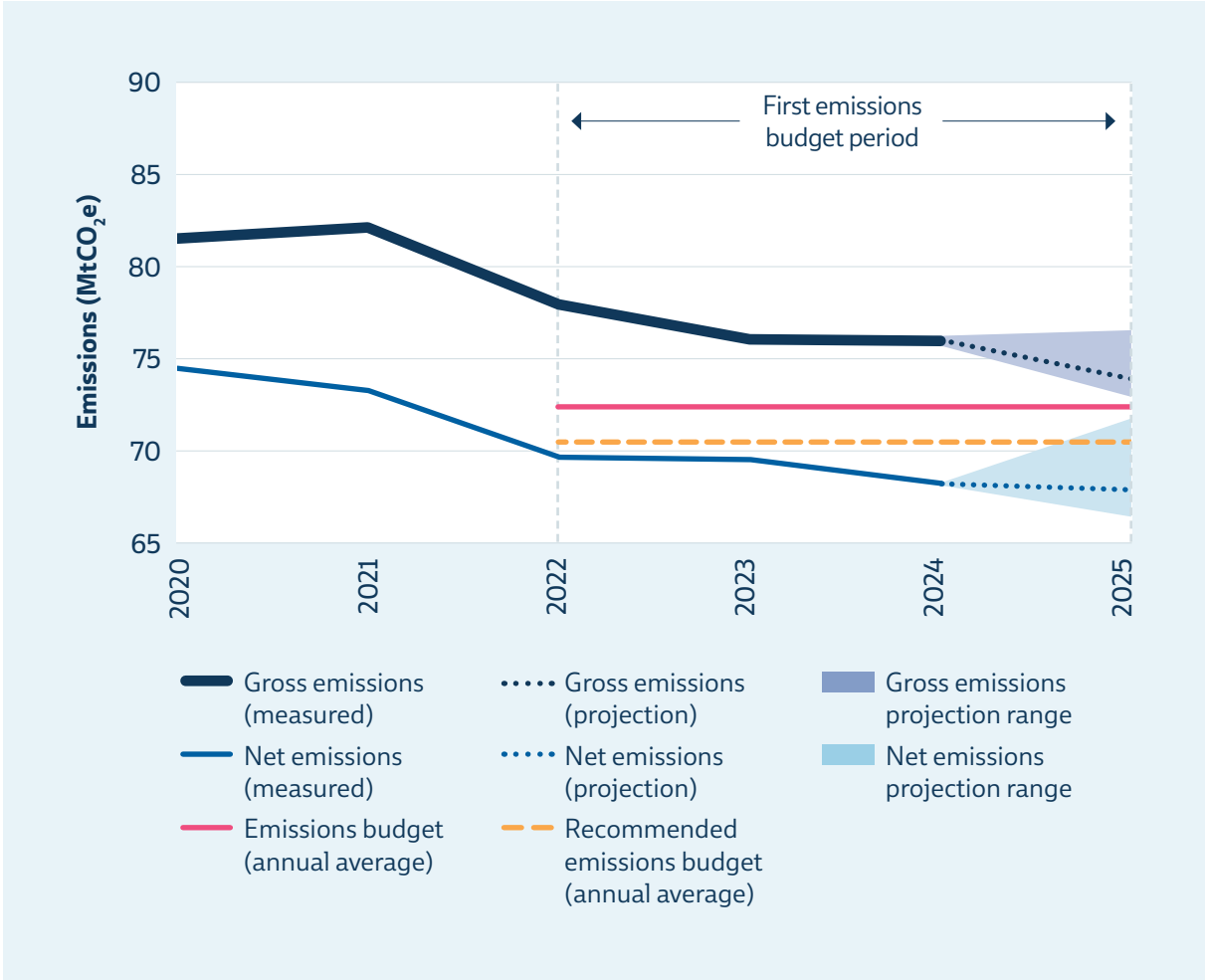
The first emissions budget is likely to be met

Projections show net emissions in the first emissions budget period are expected to be 282.3 $MtCO_2e$ against the budget of 290 $MtCO_2e$, an overachievement of 7.7 $MtCO_2e$ (see **Figure 2.4**). This will be formally assessed in the end of budget report in 2027.

Since that budget was set, there have been improvements to the way emissions are measured and accounted for in New Zealand's Greenhouse Gas Inventory. One effect of these technical changes is that this budget is easier to achieve than intended. In 2024, as part of our advice on the fourth emissions budget, the Commission recommended revising earlier emissions budgets to bring them back into line with the original intent.[1] The Government delayed a decision on this advice until 2027, which means the first emissions budget can no longer be revised as it has now ended.

Government projections indicate that the recommended budget would likely have been narrowly met by 0.7 $MtCO_2e$. This comparison is shown in **Table 2.1**. Final emission counts for the first emissions budget could change if the Government includes forest management emissions, potentially increasing reported emissions by 3 $MtCO_2e$ or more. See *Chapter 11: Forestry* for more information.

Figure 2.4: Historic and projected gross and net emissions in the first emissions budget period, 2022–2025



Source: Commission analysis of New Zealand's second emissions reduction plan 2026–30 and Commission advice on the fourth emissions budget. Refer to the Technical Annex

Table 2.1: Estimates of total net emissions in the first emissions budget, 2022–2025

First emissions budget	($MtCO_2e$)		
Budget as set	290		
Revised budget as recommended by the Commission	283		
Projected net emissions 2022–2025 ($MtCO_2e$)	Central estimate	High estimate	Low estimate
	282.3	287.7	280.1

Source: Commission analysis of New Zealand's second emissions reduction plan 2026–30 and Commission advice on the fourth emissions budget

The technology

Low-emissions technologies are becoming more available and affordable, and financing options are expanding, but availability alone will not deliver emissions reductions at the pace required.

Manufacturing costs and purchase prices for solar panels and batteries continue to fall,[26,27] supporting low-emissions electricity generation and cheaper electric vehicles (EVs). Battery costs have fallen 75% globally since 2015.

The range of EV models available is also expanding, with options from small cars to sports utility vehicles (SUVs) and utility vehicles (utes). Vehicle-to-grid charging is close to commercialisation and could offer significant benefits to the energy system.

Agricultural technologies are progressing, including the Ruminant Biotech bolus and EcoPond, although there have been some delays to commercialisation of the bolus to ensure regulatory approvals are robust.[28] It is not yet clear if markets will take up these technologies without Government policy direction.

The policy

Government actions to reduce emissions in the last year are likely to be outweighed by other actions that may increase them.

Policy actions taken or signalled in the 12 months to 1 April 2026 that could reduce emissions include:

- updated energy regulations
- extending the road user charges (RUC) exemption for electric heavy vehicles
- proposed measures to boost competition in the energy sector
- passing the Land Transport Management (Time of Use Charging) Amendment Bill.

Emissions reductions from these measures are expected to be relatively small compared to other actions that may increase emissions.

In May 2026, after our assessment period ended, the Government announced the Gas Transition Loan Guarantee Scheme.[29] This is a positive step toward addressing upfront cost barriers to fuel switching. However, it will not address all cost barriers, and its effect will depend on uptake.

In June 2026, the Government announced the AgriZeroNZ Early Adoption Accelerator. This is a promising step to encourage adoption of and build confidence in agricultural mitigation technology. Its effect will depend on industry contributions and the technologies available.

We will evaluate these two policies further in next year's report.

Several Government actions in the last 12 months may increase emissions, including:

- committing to a liquefied natural gas (LNG) facility
- changes to the Clean Vehicle Standard and its potential removal
- excluding agriculture from emissions pricing
- increasing the mandatory climate reporting threshold for listed companies
- widening the use of the waste disposal levy for measures that don't reduce emissions
- delays implementing a regulated product stewardship scheme for refrigerants
- delays delivering public EV chargers.

Some actions have an unknown impact on emissions reductions, including merging multiple central government agencies into the new Ministry for Cities, Environment, Regions and Transport, and reforming the resource management system.

The government agency merger, the Māori Climate Platform's funding cycle ending, and the merging of the Crown Research Institutes may also have significant implications for Crown–Treaty responsibilities, iwi/Māori relationships and integration of mātauranga Māori in decision-making.

The issues

Three broader issues shape the outlook for emissions reductions: rising climate risk, continued exposure to fossil fuel volatility, and weak confidence that current market settings will drive the transition at the pace required.

The Commission's 2026 National Climate Change Risk Assessment[4] shows that the climate-related risks facing Aotearoa New Zealand are serious and increasing. Reducing emissions and adapting to climate change at the same time will help avoid maladaptation and reduce the country's exposure to climate disruption, at lower cost and with greater benefits.

While there is uncertainty caused by geopolitics, improvements in efficiency, cost and performance of renewable energy are continuing to drive clean technology uptake globally. These changing global dynamics will affect the risks and opportunities facing Aotearoa New Zealand.

Conflict in the Middle East has shown the vulnerability of Aotearoa New Zealand's current fossil fuel supply chains, putting financial pressure on households. Prices for petrol and diesel rose 18.6% and 42.6% respectively from February to March 2026.[4] This put additional financial pressure on households, while EV uptake and public transport use also increased over the same period. Plug-in vehicles accounted for a third of all new passenger vehicle registrations in March[30] and the largest cities saw record rises in public transport use.[31–33] It is unclear if this trend will continue.

Without sufficient low-emissions alternatives, reduced domestic gas supply is affecting gas and electricity prices.[34,35] The potential for imported liquefied natural gas (LNG) would increase the country's exposure to global volatility, and runs the risk of signalling delay to the transition from fossil fuels. This could result in higher costs and emissions compared to alternative options.

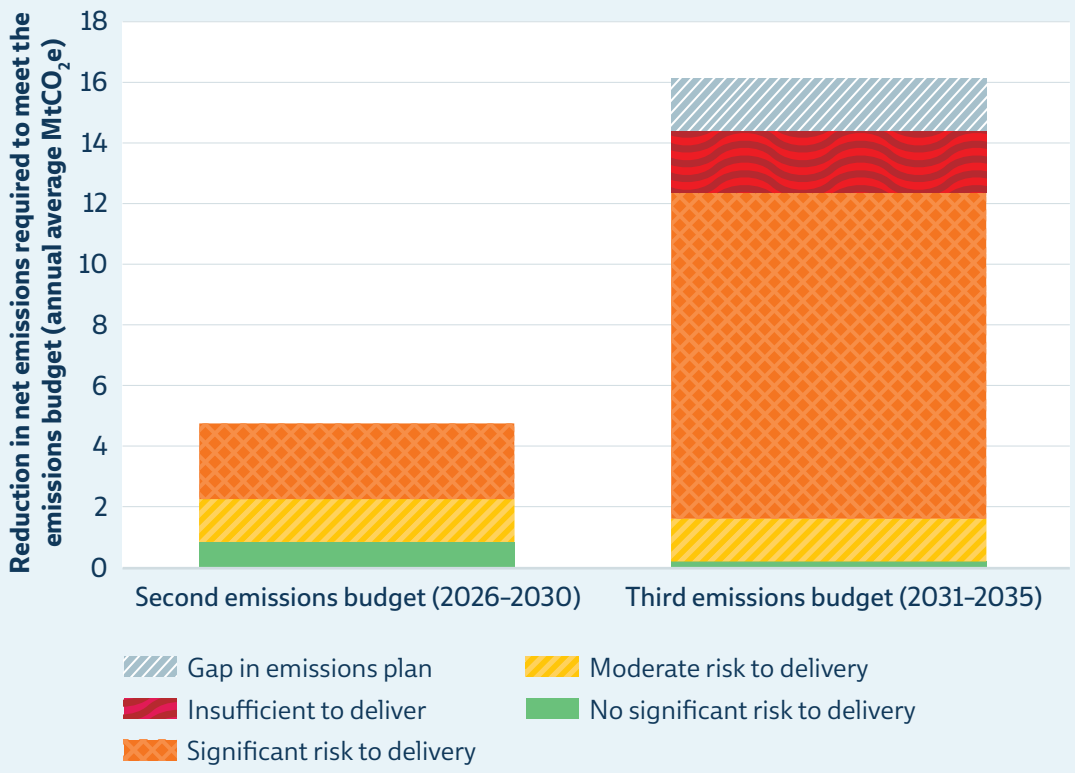
The Government has chosen a market-led approach to emissions reductions. Several factors mean that the New Zealand Emissions Trading Scheme (NZ ETS) is unlikely to be efficiently driving emissions reductions. These include low market confidence following reforms announced last year, price volatility over several years, and uncertainty about the long-term future of the scheme.

Land-use change restrictions are now in place on forestry planting, although high levels of exotic forest planting remain. While forests are important to limiting climate change and provide benefits, they can have impacts including slash from extreme weather events, and reduced incentive to lower gross emissions outside of the land sectors.

Question 2: How is the country tracking towards meeting the current emissions budget?

The second emissions budget is at significant risk and that risk has increased in the last year (Figures 2.5 and 2.6). Our 2025 report largely showed moderate risks. This is mostly from increased risks around electricity generation, agriculture and passenger transport.

Figure 2.5: Overall assessment of risk to meeting the emissions budgets under current policies and plans



Source: Commission analysis

Risk assessments for sectors of the economy

Electricity: Risks have increased from moderate to significant. This reflects a falling supply of gas,[34] continued difficulty securing low-emissions firming options and increased reliance on the Huntly coal reserve. Any LNG imports would begin in the middle of the second budget period at the earliest, with uncertain price and emissions impacts, and the risk of locking the country in to continued dependence on fossil fuels. Pursuing LNG may also add investment uncertainty, which could cause developers to reassess project pipelines for low-emissions generation.

Agriculture: Risks have increased from moderate to significant. Current market drivers, such as high milk and meat prices, point to animal numbers being higher than projected and emissions increasing, while current market incentives are not designed to deliver absolute emissions reductions.

Passenger transport: Risks have increased from moderate to significant, due to changes to the Clean Vehicle Standard and its potential removal. It is under review with recommendations (including an option to remove it) due to Cabinet in June 2026.[36,37]

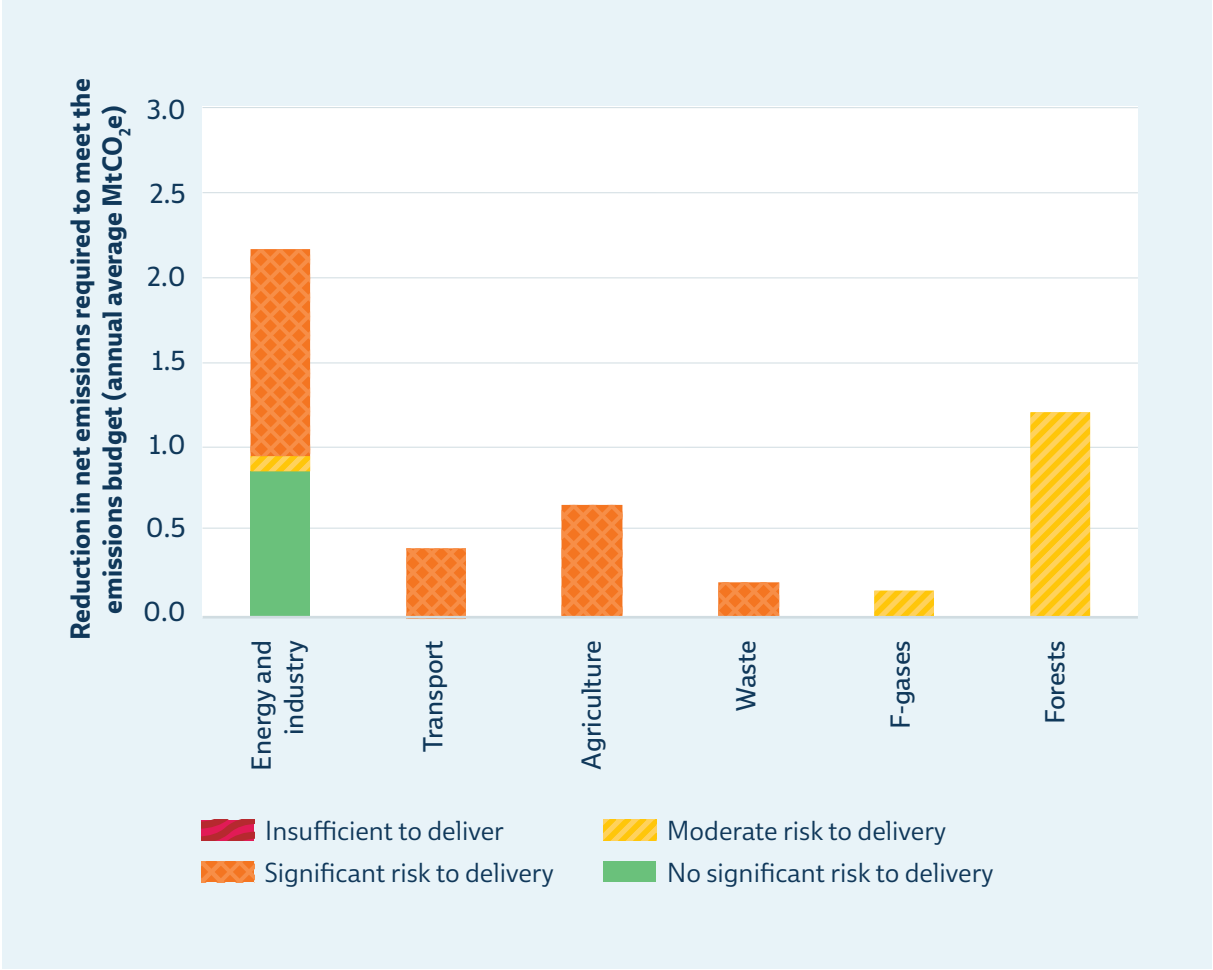
Forestry: We have quantified the possible impact of additional forestry planting within the second emissions budget as an option to address any shortfall in reductions. We found that no level of additional planting would result in emissions reductions within this period. This is due to the low level of carbon absorbed by trees in the initial years following planting, along with the immediate emissions increases resulting from planting processes. This means that, should the Government need to mitigate the underperformance of any sector, alternative reductions would be required.

Industry: Risks have reduced due to greater confidence that projected decarbonisation will be delivered, largely from previously committed Government Investment in Decarbonising Industry Fund (GIDI) partnerships. The NZ Steel electric arc furnace project is set to be commissioned ahead of schedule and achieve larger emissions reductions than originally anticipated.[38] The Government announced the Gas Transition Loan Guarantee Scheme in May 2026, which may further address risks.

Fluorinated gases (f-gases): Risks have increased from no significant risk to moderate due to delays implementing a regulated product stewardship for refrigerants.

Crown–Māori relationship: The Government is at risk of not meeting its obligations to iwi/Māori under Te Tiriti o Waitangi/The Treaty of Waitangi. There is high dependence on the Māori Climate Platform, which remains underfunded relative to the scale of Crown obligations and expected iwi/Māori climate action roles. There is a risk that iwi/Māori are expected to lead climate action without sufficient support after the Platform ends. Māori-led climate efforts grounded in intergenerational and te ao Māori principles are not matched by Crown partnership or resourcing, and there is a lack of emissions and economic data for Māori entities.

Figure 2.6: Assessment of risk to sectors' contributions under current policies and plans – for the second emissions budget period (2026–2030)



Source: Commission analysis

Table 2.2: Results of our policy scorecard assessment for the second and third emissions budgets, based on projected contributions in the Government's second emissions reduction plan

Outcome area	% of net reductions		Rationale for scores	
	EB2	EB3	EB2	EB3
Gas supply-chain emissions	1.5%	0.6%	Policies signal continued role for gas, fragile NZ ETS confidence, no system phase-down plan, risk of consumer costs escalating	
Building emissions	0.4%	0.5%	Fragmented policy, no emissions reduction focus, upfront cost barriers	
Industry emissions	17.9%	10.3%	Abatement locked in from previously committed GIDI projects	Cost barriers, NZ ETS industrial allocation issues, 2037 coal boiler ban uncertainty, electricity affordability, roadmap lacking
Electricity generation	25.4%	8.8%	Gas decline, firming shortage, LNG adding uncertainty	Uncertain investment, lack of firming pathways
Electricity networks	0.0%	0.0%	No net-zero focus, greater investment affecting affordability, flexibility not at scale	
Passenger transport emissions intensity	6.1%	2.5%	Clean Vehicle Standard changes, no EV price support, public charging behind schedule	
Passenger transport demand	0.0%	0.0%	Constrained walking and cycling funding, limited timelines	Poorly integrated planning systems, prioritising roads
Freight emissions intensity	2.6%	1.8%	Low Emissions Heavy Vehicle Fund, RUC exemption ending	No evidence of future policy, long lead times
Freight demand	0.0%	0.0%	Lacking detailed actions and timelines, delayed work programme	
Aviation	0.0%	1.4%	Sustainable aviation fuel mandate delay, slow aircraft efficiency improvements, demand rising	
Farming emissions	6.3%	14.1%	Market drivers not reducing absolute emissions	Pricing removed, no concrete policy, timelines or signals
Low-emissions land uses	7.4%	5.3%	NZ ETS restrictions on conversions to low-emissions uses, barriers to high-value, low-emissions land uses, risk of increased dairying area	
Organic waste	0.8%	1.2%	Reliance on Waste Minimisation Fund, waste levy purpose broadened, infrastructure deficit, NZ ETS pricing insufficient	
Landfill gas	3.4%	2.7%	Lack of policy pathway to improve efficiency and expand LFG capture	
F-gases	3.1%	1.6%	Delay in product stewardship, no training timelines	Broader policy support could enhance scheme
Forestry removals	25.1%	49.3%	High reliance, cannot support additional removals to offset increased risks	Nearly 50% of plans, NZ ETS may not drive sufficient afforestation

Insufficient to deliver Significant risks Moderate risks No significant risks

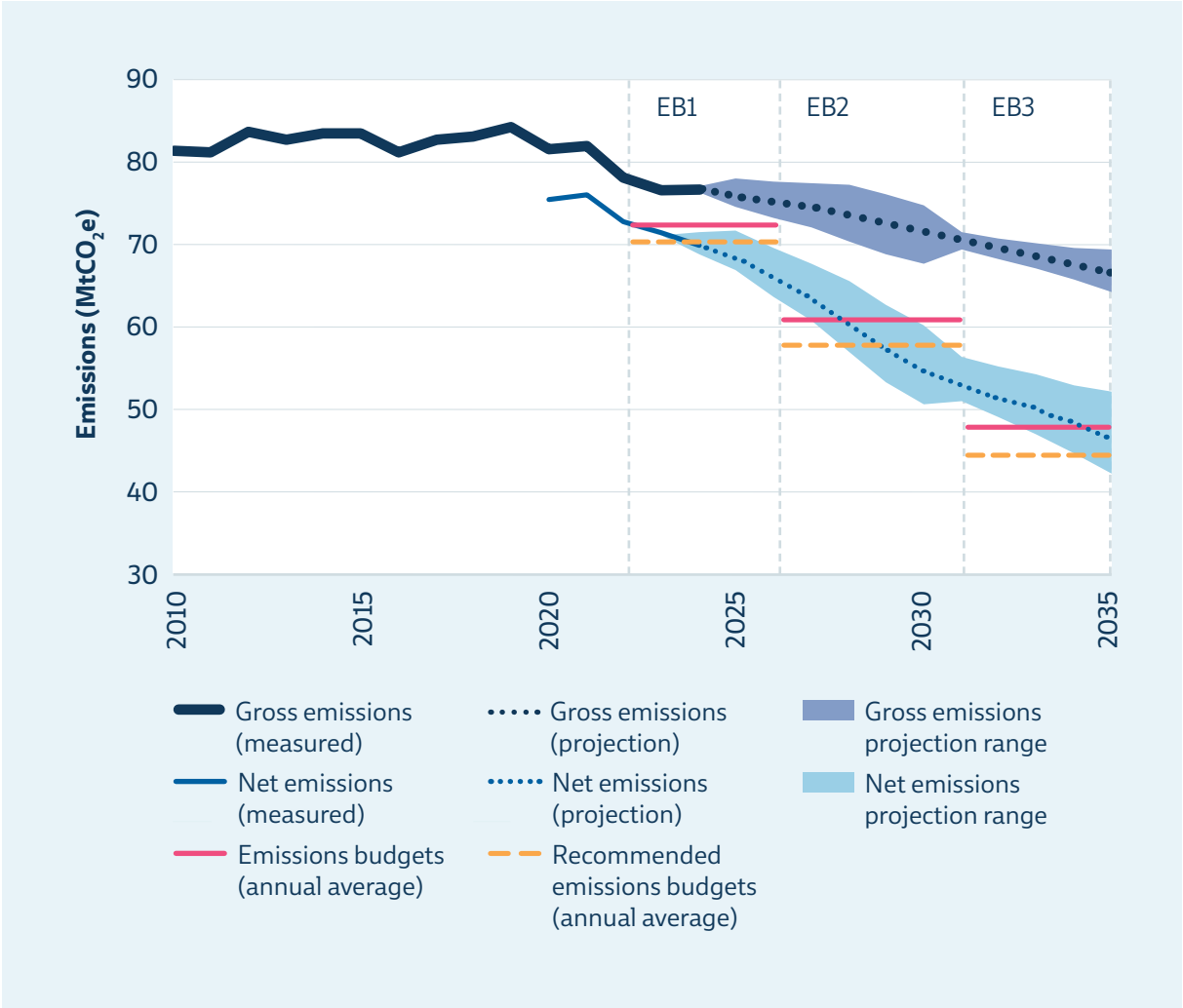
Source: Commission analysis. Refer to the Technical Annex for more information on our scoring

The Government's projections

Although the Government's projections indicate the second emissions budget (305 $MtCO_2e$) is likely to be met, the available buffer is smaller than the emissions reductions that are at risk. The budget should therefore still be regarded as at risk. The central estimate (the figure Government modelling expects to happen) of 301.4 $MtCO_2e$ in 2030 is 3.6 $MtCO_2e$ below the budget (**Figure 2.7**). Our assessment shows 12.4 $MtCO_2e$ of the planned emissions reductions are at significant risk.

The high estimate would exceed the budget by 21.7 $MtCO_2e$ (**Table 2.3**).

Figure 2.7: Historic and projected gross and net emissions in the first, second and third emissions budgets



Source: Commission analysis of current Government projections against the set second emissions budget and the Commission's recommended budget

Table 2.3: Estimates of total net emissions in the second and third emissions budgets

	Second emissions budget, 2026–2030 ($MtCO_2e$)	Third emissions budget, 2031–2035 ($MtCO_2e$)
Set emissions budgets	305	240
Commission recommendation for revision to the emissions budgets	290	222
Government projections (central estimate)	301.4	248.7
Government projections (low estimate)	286.1	234.0
Government projections (high estimate)	326.7	271.5

Source: Commission analysis of New Zealand's second emissions reduction plan 2026–30 and Commission advice on the fourth emissions budget

Question 3: How is the country tracking towards meeting future emissions budgets and the 2050 target?

Current plans are insufficient to meet the third emissions budget, and the 2050 target is also at risk without further action. Although the third emissions reduction plan is not due until 2029, long lead times mean action is needed now.

The gap in the emissions reduction plan for the third budget was not significantly addressed last year. Our assessment of risk has increased in the last year with planned agriculture policies now insufficient to deliver planned reductions (Figure 2.5).

Given the lead-in time, the Government has a range of choices to accelerate emissions reductions to meet the budget. Clean energy economics are increasingly favourable and global geopolitical trends support investing in resilience.

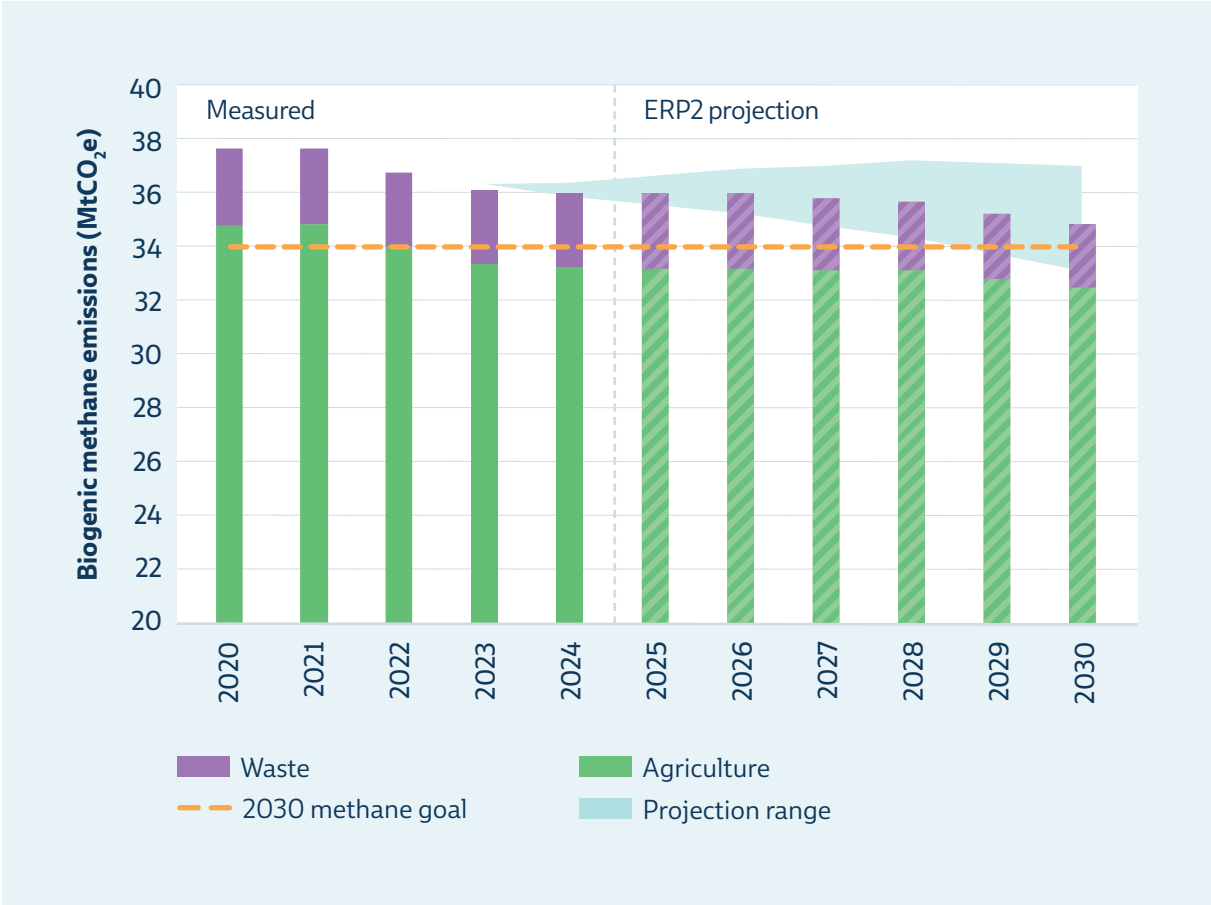
Current policies are also likely insufficient to meet the 2050 target unless further action is taken. In agriculture, there is a risk that technologies do not get taken up without pricing or incentives and that emissions intensity decreases without absolute emissions falling. Risks in aviation, freight and waste may also endure to 2050.

Box 2.1: Finding on biogenic methane

Current Government plans are insufficient to achieve the 2030 biogenic methane target.

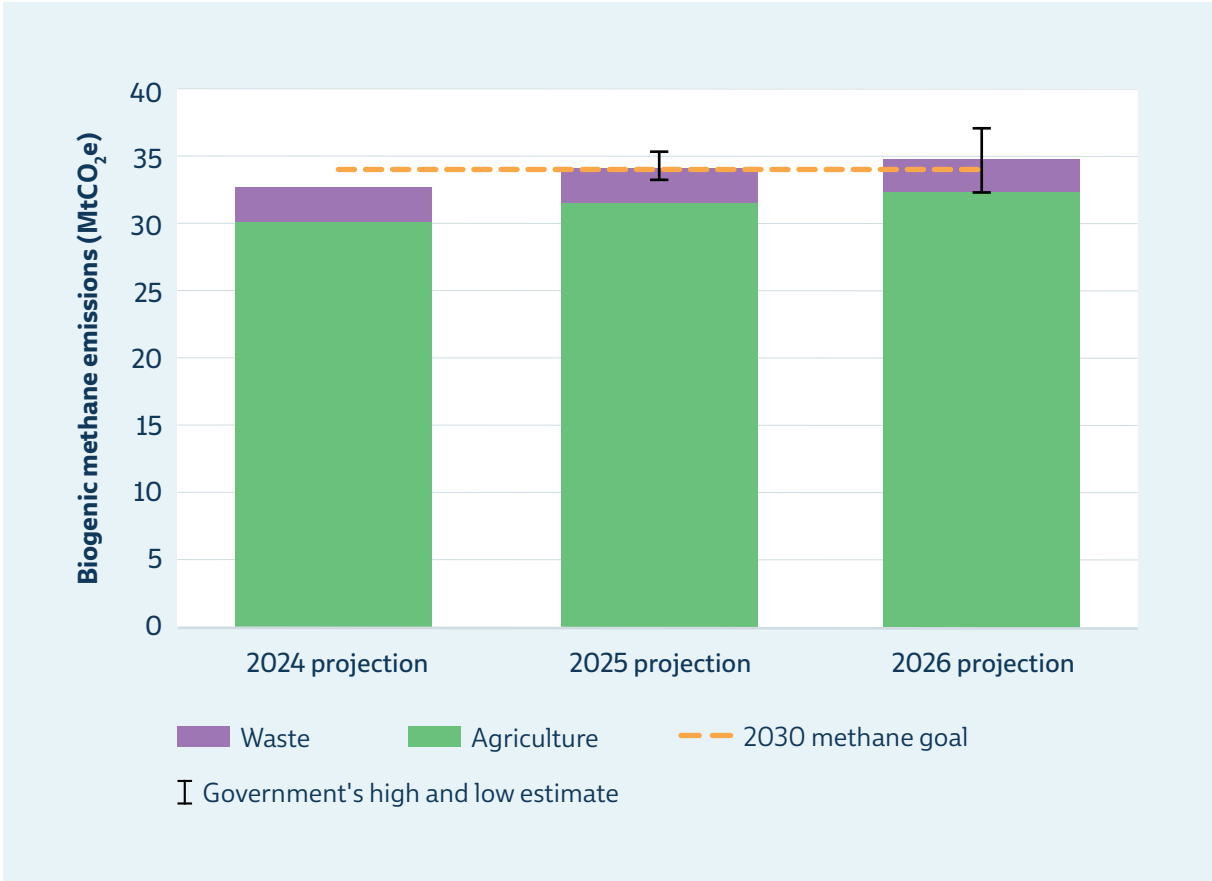
The Government's projections now indicate that the 2030 biogenic methane target will not be met. A 7.9% reduction is expected compared to a target of 10% below 2017 levels (**Figure 2.8**). The Government had previously been on track to meet this target (**Figure 2.9**).

Figure 2.8: Biogenic methane emissions projections by sector in the Government's second emissions reduction plan



Source: Commission analysis of New Zealand's second emissions reduction plan 2026-30

Figure 2.9: Increases in projected biogenic methane emissions in 2030 over the last three years



Source: Commission analysis of New Zealand's second emissions reduction plan 2026–30

Risk assessments for sectors of the economy

Most areas of emissions reductions in the third budget are at significant risk or are insufficient (Figure 2.10).

Forestry: This sector is expected to contribute 49.3% of emissions reductions in the period. Reliance on forestry increases vulnerability for achieving the third budget and highlights why the effective functioning of the NZ ETS is important for achieving emissions budgets.

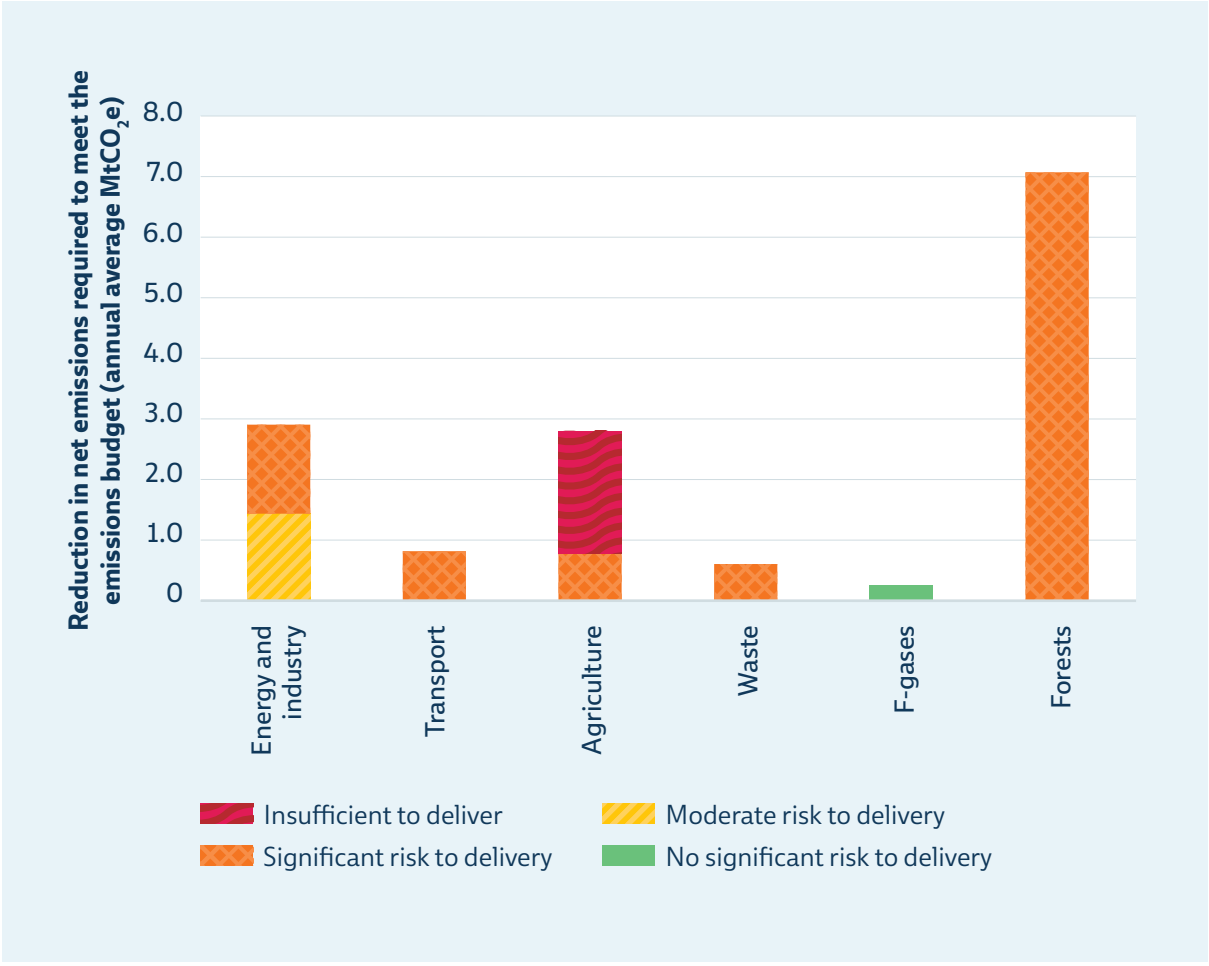
Agriculture: Risks have increased to insufficient. Agricultural emissions pricing has been removed from the second emissions reduction plan[39] and the agricultural reductions modelled for the third budget are not based on concrete policy, timelines or signals for how they could be achieved.

Industry: This area is at significant risk. Most emissions reductions to date, excluding demand destruction (e.g. factories closing or scaling back production), have come from GIDI-funded projects. Once the remaining committed projects are commissioned, there is no policy mechanism (beyond the new Gas Transition Loan Guarantee Scheme announced in May 2026) to drive projects for the third budget. The 2037 coal boiler ban is an important signal but may not drive conversions in time to materially affect either the second or third budget. Specific issues include the NZ ETS structure, high upfront costs and electricity system affordability and reliability concerns.

NZ ETS: Market confidence in the NZ ETS is fragile, and by the mid-2030s the scheme will struggle to provide an investment signal for either decarbonisation or forestry. Industrial allocation remains misaligned with the 2050 target; under current forecasts units would continue to be allocated to 2050 and beyond. The NZ ETS will need to be amended to be an effective tool to reduce net emissions in the 2030s and beyond.

Workforce: Workforce availability may already be holding back the pace of industrial decarbonisation, despite investment activity and major infrastructure delivery remaining subdued.[40] Industry bodies highlight persistent skills deficits in the energy and engineering workforce.[41] These factors suggest workforce capacity is an existing and latent risk that could become more significant if policy ambition and investment accelerate in the future.

Figure 2.10: Assessment of risks to sectors' contributions to emissions reduction under current policies and plans – for the third emissions budget period (2031–2035)



Source: Commission analysis

The Government's projections

The Government's projections for the third emissions budget show that the budget of 240 $MtCO_2e$ would not be achieved. The central projection of 248.7 $MtCO_2e$ in 2035 is 8.7 $MtCO_2e$ over the budget.

Only the low estimate shows emissions under the budget, with the high estimate exceeding the budget by 31.5 $MtCO_2e$ (**Table 2.3**).

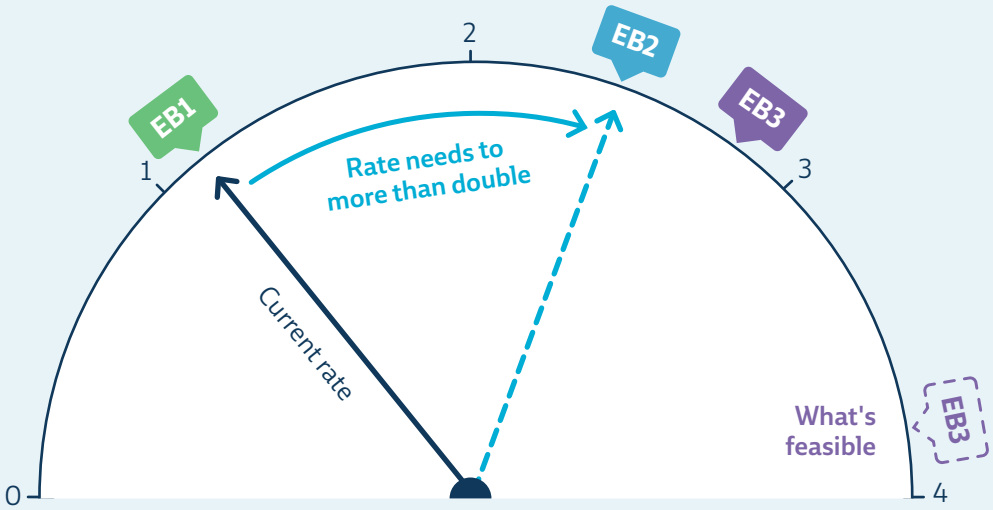
Question 4: How can Aotearoa New Zealand ensure it meets future emissions budgets and the 2050 target?

Aotearoa New Zealand needs to more than double the current pace of decarbonisation to meet the second and third emissions budgets as well as the 2050 target (Figure 2.11). This is feasible with additional action.

Acting earlier will allow the country to realise greater and more durable emissions reductions. This will help manage the risks from climate disruption by strengthening resilience, reducing exposure to future shocks, and lowering costs for households, businesses and the country.

Analysis by the Sustainable Business Council suggests that earlier action to decarbonise the economy could result in gross domestic product around $22 billion higher by 2035 than continuing to emit at current levels.[42]

Figure 2.11: Increases in rate of decarbonisation required to meet future emissions budgets (annual average $MtCO_2e$)



Source: Commission analysis. This shows the annual emissions reductions required to meet each budget, based on the Government's projections. Refer to the Technical Annex for more detail

Opportunities

Prioritising action to realise opportunities for Aotearoa New Zealand

There are practical opportunities available now to accelerate emissions reductions, but current policy settings are not making full use of them.

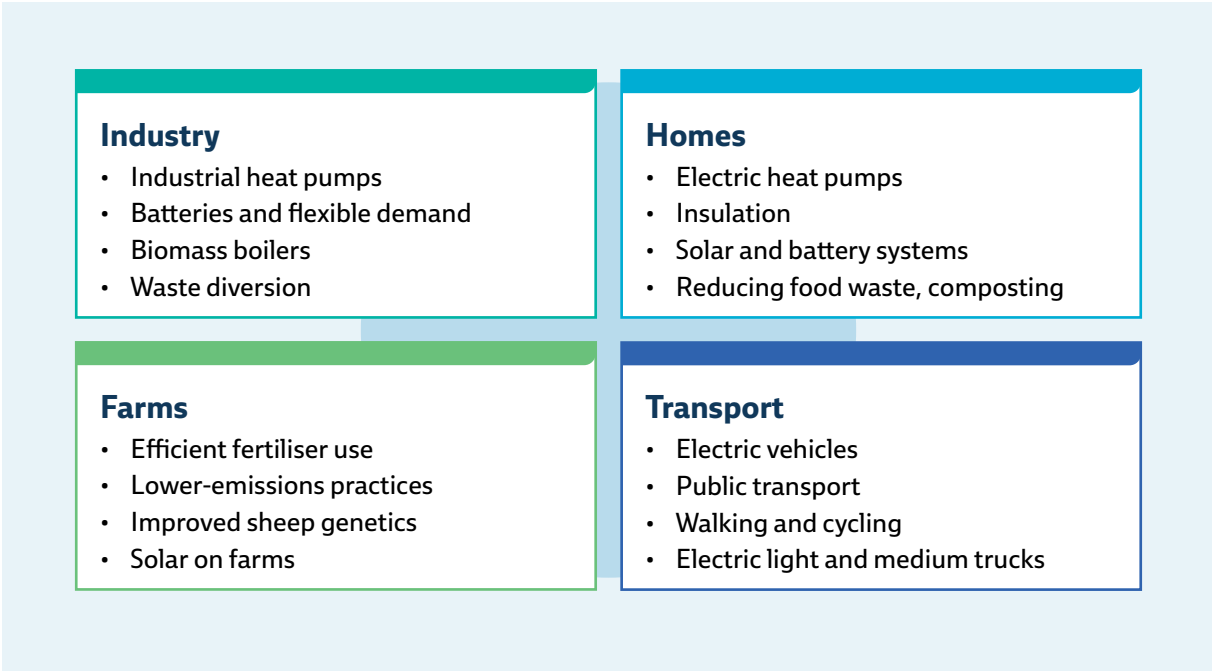
More than 80% of Aotearoa New Zealand households changed their household spending in response to recent high oil prices, with 29% cutting their spending on necessities.[43]

Switching to low-emissions technologies can reduce exposure to fuel price shocks and lower costs over time. For example, due to falling battery prices, some EVs are now a comparable purchase price to ICE vehicles, but have much lower running costs (see **Figure 2.13**). It's also now cheaper for businesses to replace any type of fossil-fuel boiler with a heat pump (see **Figure 2.14**).

The findings above point to several short-term policy actions that could reduce risk and support further emissions reductions. **Table 2.4** illustrates some of these options.

Figure 2.12 shows short-term actions that are already economic for households and businesses.

Figure 2.12: Actions with clear benefits for households and businesses to adopt now



Source: Commission analysis

Wider, cross-sectoral enablers alongside these actions would create conditions to reduce emissions even further for the longer term. These include:

- coordinating urban development and transport planning to encourage greater transport mode shift
- incentivising indigenous afforestation
- improving workforce and supply-chain capacity through coordinated planning
- supporting a circular economy
- encouraging access to low-cost financing.

Together, these actions and enablers could be designed to reduce emissions and also increase household energy resilience during disasters, improve health outcomes, reduce traffic congestion, lower cost-of-living pressures and improve food security.

Current policies do not take full advantage of the opportunities to reduce emissions and strengthen resilience or effectively manage the negative impacts

Barriers are preventing households and businesses taking climate action and avoiding negative impacts. These include upfront costs, access to finance, split incentives (e.g. landlords paying for improvements that tenants benefit from), sector coordination challenges and regulatory constraints (e.g. building consents). A variety of policy or regulatory mechanisms can help address these barriers, many of which come at little or no financial cost to the Government.

For example, electric vehicles and heat pumps could be adopted at much greater rates to reduce emissions, lower energy costs, strengthen resilience and reduce exposure to external shocks. See Box 2.2 for more detail.

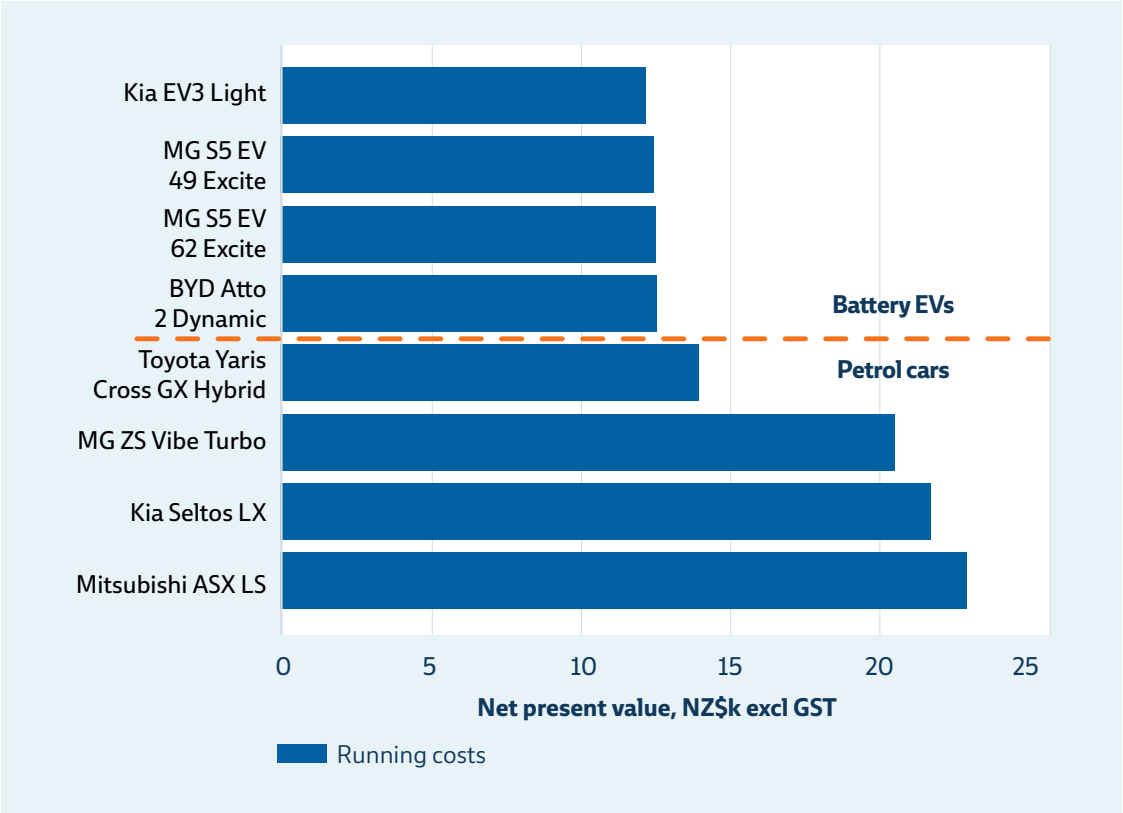
Box 2.2: Electric vehicles and heat pumps

EVs are increasingly price competitive with similar internal combustion engine vehicles. Electric models in all vehicle classes may cost more upfront but more than pay for themselves in lower fuel and maintenance costs, in some cases, after only five years. For compact SUVs, an EV owner could save around $7,500 on average over five years in running costs. Greater adoption of EVs could mean emissions in 2035 up to 3.1 $MtCO_2e$ lower than currently projected. See Box 8.1 'Electric vehicles can cost you less' at the end of *Chapter 8: Transport*.

Electric heat pumps are now generally cheaper than fossil-fuel options for new or replacement low-temperature process heat (<100°C) applications, provided they have at least 30% utilisation and don't require major electricity network upgrades. Switching existing gas boilers to heat pumps is generally economic for low temperatures across a range of possible gas prices, and switching from LPG would be economic even with a costly electricity network upgrade. Heat pumps have significantly lower operational costs, on average 39% cheaper than coal and 54% cheaper than gas. Biomass can also now be cheaper than coal or gas across the temperature range, particularly if hog fuel or wood chip is available locally. Emissions in 2035 could be up to 3.0 $MtCO_2e$ lower from faster decarbonisation of non-transport energy. See Box 7.1 'Low-carbon process heat' at the end of *Chapter 7: Energy, industry and buildings*.

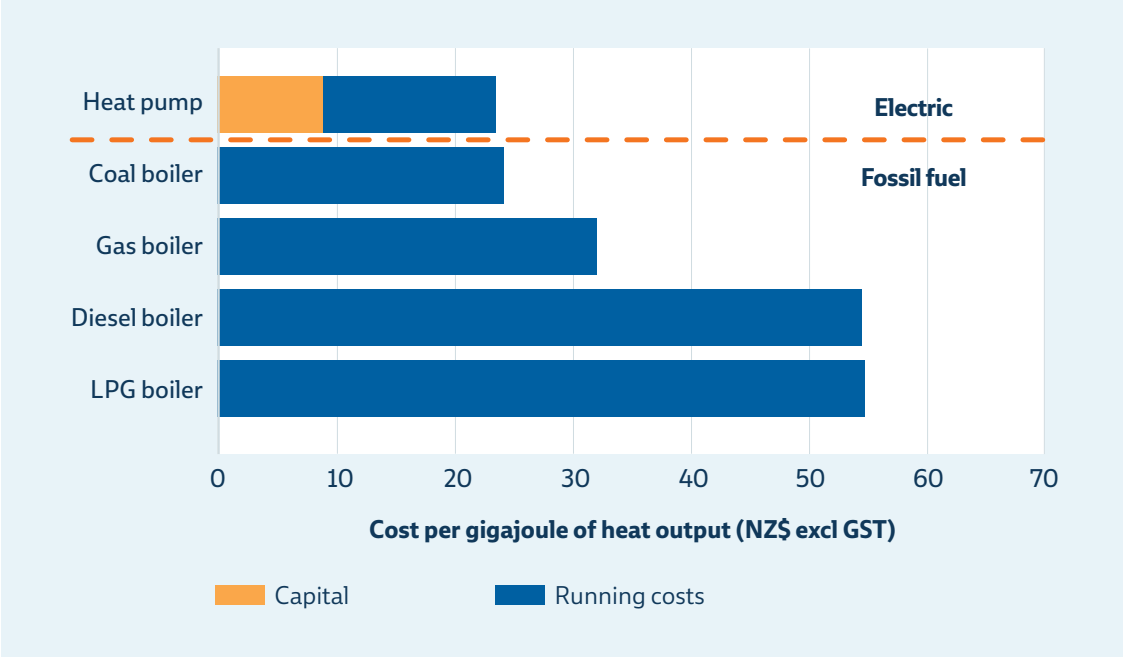
Uptake of electric vehicles and industrial heat pumps is being limited by upfront costs, limited access to finance and mixed policy signals – addressing these could reduce emissions beyond projected levels.

Figure 2.13: Five-year running costs for comparable compact sports utility vehicles (SUVs)



Source: Commission analysis

Figure 2.14: Cost of installing and running a new heat pump compared with running existing fossil fuel boilers



Source: Commission analysis

Many actions to reduce emissions have long lead-in times

Long lead-in times mean action is needed now to secure emissions reductions for future budgets. Technologies can take years or decades to develop and deploy. Industrial projects such as the NZ Steel electric arc furnace take years from initial investment decisions to starting to reduce emissions.

Long-term decisions, such as in forestry, urban design or infrastructure, can affect emissions levels for decades and influence behaviour patterns. Designing infrastructure to support low-emissions choices can be cheaper and easier upfront, compared to changing and retrofitting infrastructure in the future.

Some active decisions or a lack of action can mean the country misses out on opportunities or even puts progress back. For example:

- Removal of the Clean Car Discount stalled EV uptake – at the end of 2023, sales of new EVs were approaching 20% but fell to about 5%. Analysis at the time estimated that, if both the Discount and Clean Vehicle Standard continued beyond 2023, increased EV uptake would deliver a net present value benefit of $2.7bn, or $3.5bn including avoided emissions. Cumulative avoided emissions were estimated at 3.0 $MtCO_2e$ to 2030 and 9.8 $MtCO_2e$ to 2050. Repealing the Discount but retaining high Standard penalties was estimated to reduce the number of EVs by 100,000 by 2030.[44]
- In Aotearoa New Zealand, there is no government support for home batteries. In Australia, the Cheaper Home Batteries Program supports households and small businesses with a discount on the cost of small-scale battery systems connected to new or existing rooftop solar. Since it launched in 2025, more than 400,000 home battery storage systems have been installed, equalling 11.2 GWh of storage capacity.[45] This has contributed to retail electricity prices falling in Australia for the first time in years. Price decreases are up to 10.7% for households and 20.9% for small businesses, though rates vary by region.[45,46] Recent expansion of the scheme is expected to see more than 2 million Australian homes install a battery by 2030, delivering around 40 gigawatt hours of additional storage capacity.[47]

Our recommendations for decision-makers

Risks to meeting the third emissions budget have increased since our 2025 monitoring report, and the 2030 biogenic methane target is no longer projected to be met. Action in the next one to two years is critical to reduce these risks.

Recommendation 1

We recommend that the Government takes action to address market barriers and failures within the next year to ensure it can meet its emissions goals, including:

- start determining how to incentivise further emissions reductions and removals in the 2030s given that the New Zealand Emissions Trading Scheme in its current form will struggle to do this
- for the primary sector:
  - immediately scale up support measures to meet the 2030 biogenic methane target
  - reduce barriers for high-value, low-emissions agricultural products for long-term reductions and resilience
- expand resource recovery facilities, services and planning, and extend landfill gas capture requirements to class 2 landfills
- encourage electric vehicle uptake through strong supply- and demand-side measures, and support greater shifts to public and active transport
- address upfront cost barriers to fuel-switching for households and businesses.

Investors need credible, well-signalled policies on the Government's approach to climate change, to give them confidence that investments in emissions reduction will generate returns.

Even with a well-functioning NZ ETS, complementary policies will be required to address barriers and market failures associated with the transition. The NZ ETS covers less than 40% of net emissions, and in its current form and at current prices, is unlikely to incentivise further net emissions reductions from around 2034 onwards.

To encourage the investments needed, the Government will need to act now. This could be a transparent process to reform the structure and operation of the NZ ETS or a more comprehensive suite of other policies to reduce emissions, or both.

Without this there is a risk that future emissions reductions will be driven by reduced demand and business closures instead of sustainable changes to technology and behaviour.

Illustrative potential policy options are outlined in Table 2.4.

Table 2.4: Potential policy interventions to complement the NZ ETS

Energy	• Funding or finance mechanisms (e.g. low-interest loans, loan guarantees, on-bill financing, rates-based finance, grants). • Accelerated provision of bioenergy sources. • Supporting new renewable generation delivery and ensuring robust competition.
Transport	• Stronger vehicle fuel efficiency standards. • Upfront and ongoing cost support for EVs (e.g. equal RUC settings, funding and finance mechanisms). • Greater investment in public transport, new walking and cycling projects and reprioritising road use (e.g. cycle lanes, bus lanes).
Agriculture	• Incentivising uptake of new farming practices and technology. • Supporting transitions to low-emission land uses and biodiversity credits. • Cross-sector advisory and extension services and government partnerships. • Pilot schemes and negotiating improved market access for low-emissions products.
Waste	• A long-term resource recovery plan to guide investment. • Signalling future policy shifts to align with infrastructure planning. • Indicating future restrictions on disposal. • Extending landfill gas (LFG) capture to non-municipal landfills.

Scenario-based projections

The Government's most recent emissions modelling projections include areas where the assumptions underlying the projections do not appear to be driven by a realistic assessment of current policy. While scenarios provide useful information, they do not replace the need for robust modelling of the likely effects of the Government's policies. In areas such as agricultural technology, forestry on Crown-owned land and LFG capture, the assumptions are not based on realistic policy implementation. In particular, agriculture projections assume that industry incentives to take up technology are expanded, which is not currently proposed by the market.

Recommendation 2

We recommend that the Government update its approach to emissions projections to ensure they provide a robust indication of likely future policy impact.

Areas for attention

As part of our monitoring role, we identify the main areas where further attention may be needed to reduce risks to meeting emissions budgets and the 2050 target. The points below bring those areas together in one place. More detailed discussion is provided in the relevant chapters.

Identified areas for attention – by sector

Energy and industry

- Conflicting signals and policy decisions increase uncertainty and risk locking in fossil fuels.
- Firming adequacy remains a central system risk.
- Industrial decarbonisation risks in the third emissions budget remain unresolved.
- Electricity system flexibility presents a big opportunity but needs rapid scaling to avoid higher-cost options being locked in.

Transport

- Supporting EV uptake in the light vehicle fleet.
- Integrating urban development and transport planning to encourage alternative modes.
- Incentivising zero-emissions heavy road freight.

Waste and f-gases

- Introducing measures to divert organic waste beyond NZ ETS pricing.
- Clear policy or pathway to achieve efficiency gains for LFG capture.
- Greater information and training for safe use of natural refrigerants.

Agriculture

- Planned policies will not meet the 2030 biogenic methane target.
- Market factors alone are unlikely to reduce absolute emissions significantly.
- Addressing the risk of over-reliance on technological solutions.
- Supporting extension and advisory services for farmers.
- Incentivising uptake of new farming practices and technology.

Forests

- Clarifying forest management accounting rules and methods.
- Monitoring the effects of policy settings on afforestation rates.
- Prioritising adaptation and resilience planning to address the climate risks to forests.
- Addressing the risk of over-reliance on forest removals.
- Realising the benefits of indigenous afforestation and permanent forests.

Identified issues for attention – across the wider system

Economy and emissions pricing

- Greater policy stability to give businesses confidence to invest.
- Beginning work now on how to incentivise further net emissions reductions given the NZ ETS will soon no longer achieve this.
- Addressing market barriers that cause underinvestment by the private sector.
- Planning for and addressing workforce effects with policy before they appear.
- Greater investment in research to improve innovation and uptake of low-emissions technologies.

Impacts and benefits

- Reducing barriers to households choosing low-emissions options that have advantages for cost-of-living, health and household resilience.
- Monitoring and market reliance is not enough to prevent negative impacts and realise the positive impacts of climate action.
- A plan to identify and manage impacts of emissions reductions policies is needed.

Whakahekenga rehukino (iwi/Māori)

- Supporting iwi/Māori and councils to expedite projects and work already under way.
- Setting policy for after the Māori Climate Platform ends.
- Greater consideration of how decisions can impact the Crown–Māori relationship and emissions reduction efforts.
- Removing barriers to funding and finance, including high-effort compliance and reporting or overly restrictive criteria that disincentivise funding applications.
- Removing barriers to data that continue to slow iwi/Māori emissions reduction efforts.

Nature and adaptation

- Considering the importance and co-benefits of integrating nature-based solutions and adaptation measures with emissions reduction strategies.
- Increased investment by the Government and private investors in nature-based solutions and adaptation.

Chapter 3

Economy and emissions pricing

Stable and predictable policy settings aligned with long-term emissions goals are important because they shape investment decisions, transition costs and the pace of emissions reduction. In Aotearoa New Zealand, ongoing policy uncertainty is now affecting business confidence and weakening incentives for low-emissions investment.

The Government has chosen the New Zealand Emissions Trading Scheme (NZ ETS) as its main tool for reducing emissions, but in its current form it is unlikely to be able to drive reductions or removals for long. More broadly, effective emissions reduction depends on getting system-level settings right, including financing conditions, workforce readiness, and support for innovation and technology uptake where market barriers and uncertainty are preventing otherwise cost-effective investment.

Reducing emissions can boost economic resilience and long-term competitiveness by lowering exposure to fossil fuel and gas supply shocks, while many low-emissions technologies now offer lower lifetime costs than higher-emissions alternatives. Failing to reduce emissions also increases trade and market-access risks as climate expectations tighten in key export markets.[42]

Key points

- Stability of policy is important for low-emissions economic growth, but ongoing uncertainty is impacting business investment decisions because of concern the rules could change and affect the value of investments.
- The NZ ETS will soon no longer be able to drive further net emissions reductions due to structural issues and its effectiveness is likely being affected by an unstable policy environment.
- Work needs to begin now on evolving the NZ ETS and strengthening incentives for emissions reductions and removals. This work needs to be undertaken in a careful, transparent way with clear communication and engagement.
- Market barriers that result in underinvestment in emissions reduction by the private sector require further attention.

continues next page

- Energy independence, through reduced reliance on imported fossil fuels, will improve resilience by lowering exposure to geopolitical shocks. Recent high fuel-prices have created a near-term incentive to decarbonise.
- Workforce effects are not currently being considered. There are skills shortages in sectors essential for the transition, and no policies to manage the effect on those who need to leave declining sectors.
- Low investment in research and innovation creates a risk of missing opportunities for new technologies and understandings of climate science to enable emissions reductions at lower cost and with greater benefits for Aotearoa New Zealand.
- There has been progress made on the funding and financing actions in the second emissions reduction plan, but the company size threshold for climate-related disclosures – an action to support credible efficient financing markets – is now much higher.

Economic context

Why this matters

The current economic environment affects both the feasibility and public acceptability of emissions reduction measures. In this context, stable policy settings matter because they help households and businesses make decisions in the face of uncertainty.

Gaps, risks and opportunities

Aotearoa New Zealand is facing soft economic conditions alongside constrained fiscal capacity. This increases the importance of emissions reduction measures that also lower costs, and of targeted policy that addresses barriers where uptake would otherwise be slow.

Quarterly gross domestic product (GDP) growth was uneven through 2025, and the outlook remains uncertain.[48] Wage growth has been subdued, while inflation remains elevated. Annual inflation was around 3.1% in the year to March 2026 and is expected to rise further due to higher global energy prices linked to the conflict in the Middle East.[49] This has placed pressure on households' real purchasing power and contributed to ongoing cost-of-living concerns.[50]

Rising fuel prices have added to these pressures by increasing transport and production costs, but they also create incentives to reduce reliance on fossil fuels where lower-emissions alternatives are available and affordable.

Fiscal capacity is limited. Government debt has increased, and fiscal consolidation has been delayed. In March 2026, Fitch revised New Zealand's outlook from stable to negative, citing challenges in reducing debt.[51]

Economic growth

Why this matters

Evidence increasingly suggests that action to reduce emissions can support economic growth.[52] While emissions reduction can involve costs and structural adjustment as the economy transitions, it can support growth through increased innovation and investment. Evidence for this is mounting for Aotearoa New Zealand and for overseas,[53–56] including recent Sustainable Business Council estimates that reducing emissions could boost GDP by more than NZ$22 billion per year by 2035.[42] When structural adjustment occurs gradually and is well-managed, workforce impacts can be absorbed over time, including through natural attrition.

By contrast, when action to reduce emissions is delayed and happens in a disorderly fashion, this can be costly. The Australian Treasury found a disorderly transition would cost the Australian economy $2 trillion by 2050.[56] A more abrupt transition limits the ability of firms and workers to adapt over time, increasing the risk of leaving people and capital stranded and reducing the opportunity for innovation.

Current policies do not fully address these transition risks, particularly in relation to workforce adjustment and support for affected sectors. They also do not position Aotearoa New Zealand's firms, sectors and workers well to take advantage of the opportunities of a low-emissions economy.[42]

Gaps, risks and opportunities

Policy stability is important for economic growth and emissions reductions

Recent policy changes have increased uncertainty about the future direction of climate policy. In the last year this has included changes to the methane target, cancellation of planned agricultural emissions pricing[57] and changes to climate-related disclosure reporting entities.[58]

Evidence suggests that policy uncertainty is a significant barrier to investment. The Survey of Aotearoa New Zealand Investors: Climate Policies and Actions 2025 found that policy or regulatory uncertainty was the second highest barrier identified to climate investment.[59] Uncertainty about the long-term effectiveness of the NZ ETS and policy settings further contributes to this risk, particularly as government projections show that current policies will not meet the third budget.

Energy independence will improve economic resilience

The recent conflict in the Middle East and the resulting impact on global fuel prices has highlighted Aotearoa New Zealand's exposure to geopolitical risks through reliance on imported fossil fuels. Higher oil prices flow directly into domestic fuel costs and more broadly into production and transport costs across the economy.

Using less imported fossil fuels, for example by using more domestically generated renewable electricity, for production and transport can improve resilience to these shocks.[60] At the same time, a reduction in use of fossil fuels will reduce our energy-related greenhouse gas emissions.

The recent increase in fossil fuel prices strengthens the case for decarbonisation. There is already evidence that higher energy prices have accelerated interest in electrification, including demand for solar panels and electric vehicles.[61]

Trade may be affected if Aotearoa New Zealand does not reduce emissions

International trade is increasingly influenced by climate policies and expectations. Aotearoa New Zealand's free trade agreements with the European Union (EU) and the United Kingdom (UK) include obligations to reduce emissions. Climate-related disclosures are required or actively proposed for countries receiving almost 70% of the country's exports[62] and some high-value customers such as UK supermarkets are requiring their suppliers to reduce emissions.[63]

Policy developments in key trading partners are reinforcing these pressures. The EU is implementing the Carbon Border Adjustment Mechanism (CBAM), which imposes a levy on imports where carbon pricing is considered insufficient.[64] As the NZ ETS price is lower than that of the EU ETS, some exports could face additional costs.[65] While current impacts are limited they may increase over time, including through indirect costs such as shipping. Other countries including the UK are also considering implementing similar policies.

Emissions pricing

Why this matters

The Government has chosen the NZ ETS as its main policy tool for reducing emissions

The Government has stated that it intends to rely on the NZ ETS as the main policy tool to reduce emissions. Emissions pricing is an important tool, which is widely used internationally. However, to be effective it requires stable policies and for policy settings to be aligned with long-term emissions goals.

Globally, emissions pricing mechanisms continue to expand in both coverage and sophistication. Around 29% of global greenhouse gas emissions are now subject to carbon pricing,[66] and jurisdictions representing around two thirds of global GDP have carbon taxes or emissions trading schemes in place.[67]

The second emissions reduction plan states that it prioritises supporting a credible NZ ETS and restoring broader market confidence by providing regulatory predictability and strengthening market governance. The plan also highlights the Government's intention to align the scheme with the second emissions budget through:

- making decisions on the NZ ETS for unit limits and price controls
- setting the NZ ETS emissions cap
- updating industrial allocation settings.

Key policy changes to date

Changes in the last year

- In May 2025 the Government announced changes intended to strengthen NZ ETS market governance.[68]
- In August 2025 the Government announced its 2025 NZ ETS settings decision, including maintaining existing auction volumes.[69]
- As part of its 2025 NZ ETS settings decision, the Government set an NZ ETS emissions cap for the second emissions budget period, and a provisional emissions cap for the third emissions budget period.[69] While this provided some clarity, it did not set out how the Government would approach changing these emissions caps over time. The Government's decision in October 2025 to no longer pursue agricultural emissions pricing also creates uncertainty for the NZ ETS due to the risk that the cap may need to be reduced to compensate.
- In December 2026 the Climate Change Response Act 2002 was amended to remove the requirement for the NZ ETS settings to accord with nationally determined contributions under the Paris Agreement. The Government stated that this clarified the purpose of the NZ ETS as the key tool for driving domestic emissions reductions.[70]
- In 2025 the Government introduced restrictions on the amount of newly planted exotic forest land on land-use capability classes 1–6 that can be registered in the NZ ETS.[71]
- In November 2025 the Government announced a range of changes it intends to make to the Climate Change Response Act (2002). These include changing the regulation updates for the NZ ETS settings from annual to occurring every two years, and removing allocative baseline and eligibility reviews for industrial free allocation.[72]

Changes since the start of 2022

- Over 2023 and 2024 the Government reviewed and updated allocative baselines for industrial free allocation. The updated baselines came into force on 1 January 2025.[73]
- The second emissions reduction plan stated that New Zealand Units (NZUs) will not be vintaged, and forestry units will not be treated differently from non-forestry units.

Gaps, risks and opportunities

The NZ ETS in its current form is unlikely to effectively drive emissions reductions

For an ETS to drive emissions reductions it is important for it to provide a sustained price signal. This provides confidence for people and businesses to make decarbonisation investment decisions.

Through our engagement for our 2026 NZ ETS settings advice and this report, we heard that for some emitters the NZ ETS is not a core part of their decision-making when it comes to reducing emissions due to low NZU prices and uncertainty about future prices. We heard that the expected cost saving from a reduced liability in the NZ ETS alone is not sufficient to support a business case for emissions reductions.

As shown in Figure 3.1 below, over the last year the NZ ETS market has been volatile with low NZU prices. This follows several periods of high volatility in previous years, connected with policy decisions made by successive governments and regulatory uncertainty.

Figure 3.1: NZU spot prices and relevant market events January 2024–May 2026[v]

A	Commission's third NZ ETS settings advice (2025–2029) released	**H**	Government announces decision on NZ ETS settings for 2026–2030
B	March 2024 auction partially clears at floor price	**I**	Government announces change to the 2050 target
C	Government consultation on NZ ETS settings begins, includes option of lowering price control settings	**J**	Government announces changes to the Climate Change Response Act 2002, including removal of requirement for NZ ETS settings to accord with NDCs
D	Government announces decision on NZ ETS settings for 2025–2029	**K**	Government announces amendment to second emissions reduction plan
E	December 2024 auction partially clears at floor price	**L**	Commission publishes letters between Minister of Climate Change and Commission Chair
F	Government announces restrictions on exotic forests registering in NZ ETS	**M**	Commission's fifth NZ ETS settings advice (2027–2031) released
G	Commission's fourth NZ ETS settings advice (2026–2030) released		

Source: Carbon News NZU Carbon Price Index

v This graph has been updated since our 2026 NZ ETS settings advice to include an additional two months of data.

Price volatility can create uncertainty about future prices. Evidence suggests that uncertainty can undermine the effectiveness of an ETS. A recent study of the EU ETS found a 10-percentage point increase in carbon price uncertainty had a similar effect on investment as an €11.20 (NZ$22.10[vi]) drop in the carbon price.[74] Other studies indicate that policy credibility reduces price volatility and uncertainty, and so plays a crucial role in the efficiency and effectiveness of emissions trading policies.[75,76]

This highlights that a well-functioning ETS needs clear emission reduction objectives and strong, sustained political commitment. Transparent, well-signalled implementation and review processes are also essential.

Like all government policies, change to the NZ ETS is inevitable – but it should be clearly communicated and follow a predictable process. Participants' trust in the system is necessary for the market to enable investment to flow and an efficient transition.

Structural issues with the NZ ETS need to be addressed now

The NZ ETS will soon no longer be able to drive further net emissions reductions

As illustrated by **Figure 3.2** below, our analysis indicates that the proposed NZ ETS emissions cap for the third emissions budget period would not allow for any further auctioning after 2034. This is earlier than our previous analysis has suggested and could shift even earlier.

For an ETS to drive emissions reductions, units need to be made progressively scarcer. The only way that the Government can currently achieve this (without changing legislation) is by reducing the volume of units available at auction over time. At some point industrial allocation and forestry units will provide supply up to (or exceeding) the emissions cap and no further auctioning of units will be possible.

There would therefore be no incentive for emitters to further reduce emissions, because there would be sufficient units to meet their demand. There also would not be any incentive for further afforestation,[vii] as there would be no demand for the extra units it would generate.

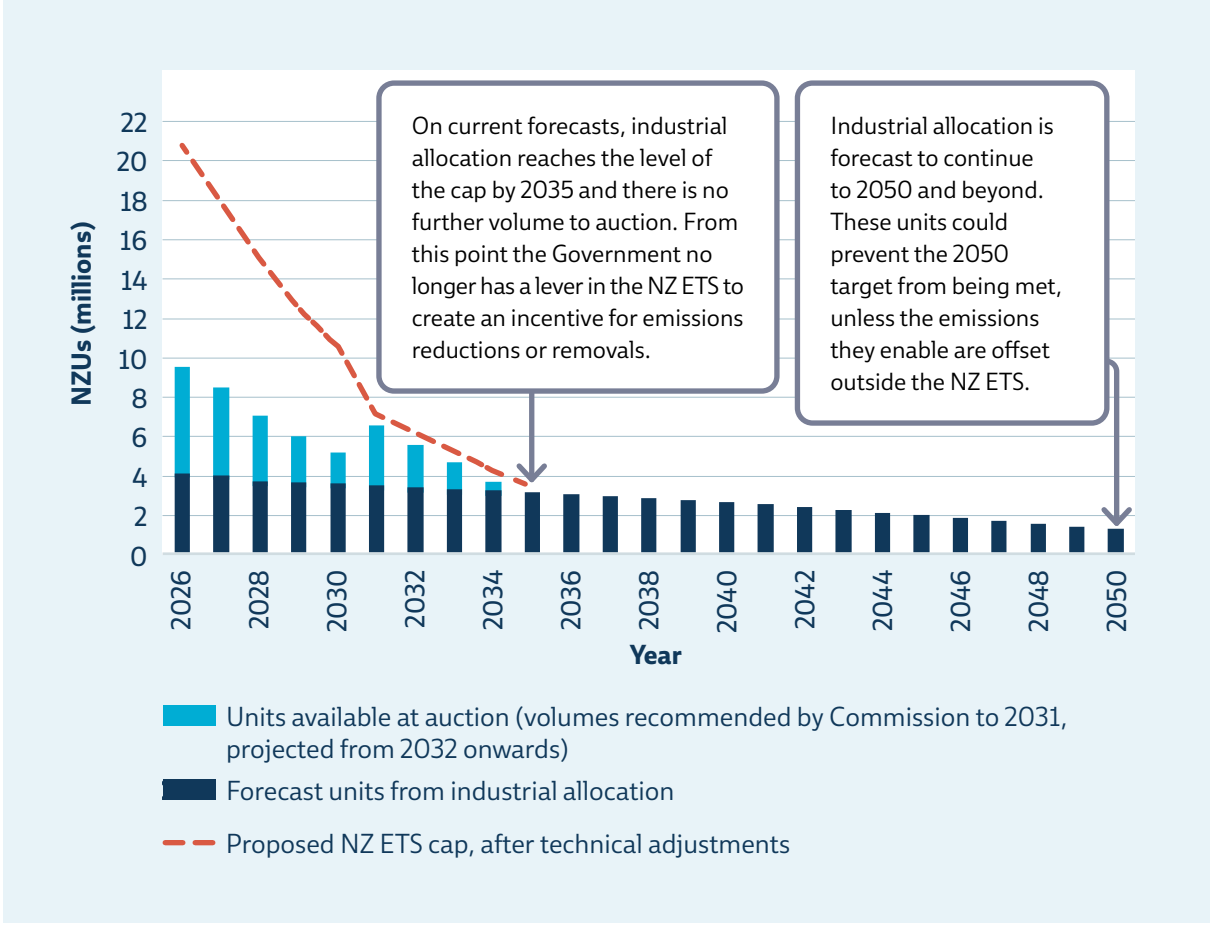
Our analysis suggests this point could be reached by 2034, before the net-zero component of the 2050 target is met. This means that the NZ ETS in its current form would not be able to incentivise the further emissions reductions required beyond the mid-2030s to meet the 2050 target.

This could also leave the NZ ETS in an unstable state, with unit supply from forests not well matched to demand from emitters. If the sectoral coverage of the NZ ETS remains the same, the scale of units available could risk the NZU price falling below the marginal cost of forestry, enabling deforestation and increasing net emissions. This could lead to boom-and-bust cycles of forestry, and large swings in net emissions that could put meeting emissions budgets and the 2050 target at risk.

vi Based on an exchange rate of 0.507 European euros per New Zealand dollar on 19 March 2026, sourced from the Reserve Bank of New Zealand.

vii Some further afforestation may occur once existing production forests reach the age at which they no longer receive NZUs, however this would only maintain the level of removals rather than increasing removals.

Figure 3.2: Forecast industrial allocation and auction volumes to 2050



Source: Commission analysis, undertaken for our 2026 NZ ETS settings advice which is currently being considered by the Government

A clearer pathway to meeting emissions budgets could support a more effective NZ ETS

The Government has stated it intends to take a net-based approach to meeting emissions budgets with no preference between emissions reductions or removals.

The NZ ETS in its current form is expected to largely drive afforestation rather than gross emissions reductions, due to the low cost of afforestation relative to emissions reductions. While emissions budgets can be met through removals by forests, there is a high degree of uncertainty about whether sufficient planting will occur to meet budgets.

For forests to contribute removals to an emissions budget, they generally need to be planted three to four years prior to the budget period beginning. This is due to the lag time between a forest being planted and it beginning to sequester meaningful amounts of carbon. This means that by the time there is certainty about the level of new planting that will contribute removals to an emissions budget, there is limited time left to achieve any balance required in gross emissions reductions. This creates uncertainty for businesses and limits their ability to make long-term investment plans.

A clearer overall vision for how emissions budgets are intended to be met would help provide greater confidence and support more efficient investment. It is also necessary for the success and durability of any efforts to address the scheme's structural problems.

Industrial allocation remains misaligned with the 2050 target

Emissions-intensive trade-exposed emitters are allocated some units for free (industrial free allocation) to reduce the risk that emissions pricing drives production of goods overseas, resulting in an increase in global emissions (emissions leakage).

While some changes have been made to the industrial allocation settings, as Figure 3.2 illustrates it remains misaligned with the 2050 target, increasing the cost and difficulty of meeting it. There is merit in investigating other approaches to managing emissions leakage that could be more conducive to meeting the 2050 target at a lower cost to taxpayers. In some cases, alternative approaches may better support domestic emissions reductions and/or help to avoid the loss of strategically valuable industries. A mix of approaches may be appropriate, to allow solutions to be tailored for each industry.

Work on evolving the NZ ETS needs to start now, and be well signalled, communicated and engaged with

Participants in the NZ ETS have made investment decisions based on its current structure and expectations about the future operation of the scheme. Any changes need to be well signalled and clearly communicated to avoid undermining confidence in the market.

Over the lifetime of the NZ ETS, we have seen several instances where unexpected policy changes or announcements have resulted in large drops and volatility in the NZU spot price. A study of volatility in the NZ ETS found that "predictable and well-communicated policy transitions contribute to a more stable and mature carbon market".[77]

Work on evolving the NZ ETS needs to start now to allow sufficient time for a careful and well-considered process. All options the Government is considering need to be carefully described and the implications for market participants need to be considered and communicated. Engagement and consultation will be crucial. As has been noted by others, for example the Parliamentary Commissioner for the Environment,[78] co-design and partnership with iwi/Māori will also be critical to any evolution of the NZ ETS. This is to ensure that impacts for Māori landowners, iwi/Māori foresters and other interested iwi/Māori groups, including those who may not be directly participating in the NZ ETS or forestry activities, are understood and reflected in policy decisions.

There is a range of options for evolving the NZ ETS and strengthening incentives for emissions reductions and removals

Government Ministries are best placed to develop and implement policy, given the need for direction from Ministers, and collaboration across government agencies, with iwi/Māori, and with stakeholders. We have described some possible options for amending NZ ETS incentives below. This is intended to give a sense of available approaches. It is not an exhaustive list, and there may be other options available as well as variations or hybrids of the options we discuss. It is also not intended to indicate that He Pou a Rangi Climate Change Commission favours these approaches.

The final three options discussed below involve vintaging of some NZUs, limiting the proportion of forestry NZUs that emitters can surrender and adjusting the volume of NZUs issued for removals by forests. We note the second emissions reduction plan ruled out vintaging of any NZUs and stated it would not treat forestry units any differently from non-forestry units. However, we have included these options to provide a fuller view of the possible options.

Option: Introduce a minimum emissions price for emitters via an additional levy or fee

In this approach, the price of forestry NZUs would remain undifferentiated from other units, but an additional fee would subject emitters to a higher incentive, even if NZU prices dropped. This would be similar to the UK's Carbon Price Support, applied since 2013 to electricity generators on top of UK ETS (or previously, EU ETS) obligations.[79] The extra charge is based on the estimated price needed to drive low-carbon investment, and has been assessed as contributing to significant falls in coal electricity generation.[viii]

A challenge with this approach is that it may be difficult for the Government to determine the appropriate level at which to set the additional fee, which would need to be tailored to the abatement opportunities relevant to the emitting sectors in the NZ ETS. An opportunity is that it would raise revenue, which could be reinvested into the climate response.

Option: Increase demand in the NZ ETS

Increasing demand in the NZ ETS could extend the incentive the NZ ETS provides for afforestation.

This could be achieved in several ways. Extending the NZ ETS to cover agricultural emissions would provide greater demand, although we note that the current Government has ruled out pricing agricultural emissions. Another example would be to link the NZ ETS to other markets, however prospects for this remain very uncertain and challenging issues would need to be worked through, including those related to compatibility with Article 6 of the Paris Agreement.

Option: Move forestry into a separate project-based mechanism

A separate mechanism could be created to incentivise afforestation, leaving the NZ ETS to focus on driving gross emissions reductions.

An example is the Australian Carbon Credit Unit (ACCU) Scheme, a voluntary scheme in which participants can register projects that reduce emissions or sequester carbon. These projects then can earn units when emissions reductions or removals are achieved.

Participants can sell these units on the secondary market, although until 2023 the Australian Government was the main source of demand through carbon abatement contracts.

In Aotearoa New Zealand, such a scheme could focus on forestry only, although it could also be expanded to other activities not covered by the NZ ETS, such as peatland restoration. It could use the systems and processes already developed for forestry in the NZ ETS for carbon measurement and reporting.

This approach would enable more direct control over the rate of afforestation incentivised. Decisions would be needed on whether projects could sell their emissions reductions or removals only to the Government, or also to voluntary carbon market buyers and into the NZ ETS. This would affect the extent to which the NZ ETS incentive for decarbonisation is separated from forestry.

In this option, as with all options, it would be important to consider how existing participants in the NZ ETS would be affected and how the transition to a new system would be managed. One possibility in this option would be to 'grandfather' forests already registered in the NZ ETS, allowing them to continue to participate based on the existing NZ ETS rules.

viii In 2026 the UK Government announced that the Carbon Price Support (CPS) will be discontinued from April 2028. The CPS is considered to have performed its role, with the UK ETS now more mature and coal electricity generation fully phased out. See https://questions-statements.parliament.uk/written-statements/detail/2026-04-16/hcws1519

Option: Limit the area of new forest land that can register into the NZ ETS each year

In 2025 the Government introduced some limits on newly planted forest registering in the NZ ETS depending on the land-use capability class on which the forest is planted.[71] However, this change did not create an overall limit on the area of new forest land that can register in the NZ ETS.

This option would offer more direct control over how much forest planting the NZ ETS would drive each year. This would be useful if maintaining a steady, measured pace of afforestation is valued. An overall quota would be set to limit the forest area that could be registered into the NZ ETS each year.

How the quota is allocated would have to be considered. A first-come-first-served system might be viewed as unfair. A ballot system could be used, as is being implemented under the new land-use capability restrictions.[ix] Another option would be to auction the rights to entry each year. This would create a new source of revenue for the Government, but it could also create unfair barriers to participation. For example, many iwi/Māori entities have limited access to financial resources, and any upfront cost could further disadvantage them in their ability to participate in the NZ ETS.

Option: Limit the proportion of forestry units that emitters can surrender

This approach has been used internationally in several other emissions trading schemes. For example, in California's cap-and-trade scheme, participants can meet only up to 6% of their surrender obligations with offset units.[80]

Such a limit would reduce demand for forestry NZUs and create a difference in their price relative to other NZUs in the scheme. Emitters would be subject to an incentive that is a mix of the two prices, with that incentive strengthening with the stringency of the limit on forestry NZUs.

With this option, it may be difficult to determine the appropriate limit. It would not give direct control over the amount of afforestation driven by the NZ ETS and would add complexity with participants needing to consider two different types of units and prices.

Careful consideration would need to be given to how this might apply to forestry NZUs already in the market or that will be generated from forests already registered in the NZ ETS. It may be seen as unfair to impose this limit on all forestry units, given investment decisions and plans for managing surrender obligations, such as offtake agreements, will have already been made based on the previous rules.

An opportunity with this option would be to differentiate the price of units from native forests. For example, if the limit only applied to units generated by fast-growing exotic species, units generated from native or slower-growing forests would trade at a premium to those units.

This option may not be consistent with the second emissions reduction plan, which committed to treating forestry and non-forestry NZUs in the same way.

ix There will be two annual ballots allowing up to 15,000 hectares of new exotic forestry on land-use capability class 6 land. The first of these ballots will be run over June–July 2026. (See https://www.mpi.govt.nz/forestry/forestry-in-the-emissions-trading-scheme/about-forestry-in-the-emissions-trading-scheme-ets/ets-land-use-capability-class-restrictions/ballots-for-land-use-capability-class-6-land-permits)

Option: Introduce an exchange rate between forestry and other NZUs or reduce the quantity of NZUs allocated for carbon sequestration by forests

These are two variations which would have a similar effect of differentiating the incentive for forests relative to that for decarbonisation. The exchange rate option would specify that a certain number of forestry NZUs are equivalent to only one tonne of gross emissions. For example, it could be required that two forestry NZUs be surrendered for one tonne of gross emissions, while other units would remain one-for-one. This would increase the incentive for reducing gross emissions to double the marginal cost of forestry. Other ratios would be possible and would change the differential between the incentives.

The other approach would reduce the allocation of NZUs by applying a discount to sequestration by forests – for example a 10% discount would mean that a forest would have to remove 1.1 tonne of CO_2e to earn one NZU.

The exchange rate or the discount could be varied over time, depending on progress made to reduce gross emissions or to meet emissions reduction targets. A disadvantage is that the multipliers or discounts would make it complex for both market participants and the Government to understand how unit supply matches up to emissions budgets, as in target accounting each tonne of carbon dioxide removed would still be counted as such. Settling on an appropriate exchange rate or discount would likely be challenging.

This option may not be consistent with the second emissions reduction plan, which committed to treating forestry and non-forestry NZUs in the same way.

Option: Reduce the ability to bank forestry NZUs by applying an expiry date ('vintaging')

This option would put a time limit on forestry NZUs, so after a certain date they would not be valid for surrender. This would reduce the usefulness of forestry NZUs to emitters, thereby reducing demand and their price relative to other units.

This issue has been looked at before, when the NZ ETS was established and in previous NZ ETS reviews. It was rejected previously partly because under stock change accounting, forestry participants need to hold units for decades as part of planning for future harvest liabilities. Since 2023, averaging accounting has been compulsory in the NZ ETS for newly registered forests, making this reasoning less compelling.

A downside of this option is that it would add complexity. It might also change how market participants approach obtaining units for hedging and surrender obligations, using some units earlier or later. This could affect market dynamics and potentially cause undesired outcomes.

This option may not be consistent with the second emissions reduction plan, which ruled out vintaging of any NZUs.

Funding and financing

Why this matters

Policies that improve access to finance, reduce risk, and provide clear and stable signals – such as regulatory certainty – can help to unlock private investment and support emissions reduction.

Many ways of reducing emissions require upfront investment but deliver lower operating costs over time. In the current economic environment, where households and businesses face tighter financial constraints and higher borrowing costs, access to finance can be a key barrier to undertaking these investments. As a result, cost-effective opportunities may not be realised, even where emissions pricing is in place.

The private sector may underinvest due to financial constraints and market failures, including the difficulty for investors to capture the full benefits of emissions reductions and broader societal outcomes. Government policy can play an important role in addressing these barriers. This does not necessarily require significant public expenditure.

Funding and financing were discussed in depth in the previous emissions reduction monitoring report, and the conclusions still hold, subject to the updates below.

Progress to date

Changes in the last year

- The Centre for Sustainable Finance has provided recommendations to the Government on a national sustainable finance strategy.[81]
- The first Sustainable Finance Taxonomy, for agriculture and forestry, has been published and taxonomies for other sectors are under development.[82]
- The threshold for reporting requirements for climate-related disclosures was changed from NZ$60 million in market capitalisation to NZ$1 billion.[83]
- Policy uncertainty has reduced from last year, with the resolution of the Finance and Expenditure Committee inquiry into banking competition[84] and Commerce Commission investigation into banks' net-zero strategies.[85]

Changes since the start of 2022

The Government has decreased its funding support for emissions reduction by ending the:

- Government Investment in Decarbonising Industry (GIDI) Fund[86]
- New Zealand Green Investment Finance programme[87]
- Energy Efficiency and Conservation Authority State Sector Decarbonisation Fund.[88]

The Gas Transition Loan Guarantee Scheme announced in May 2026 to support businesses to reduce their dependency on gas will increase funding support.

Gaps, risks and opportunities

Market barriers that result in underinvestment by the private sector remain unaddressed

Market barriers are a key reason why the private sector would underinvest in emissions reductions. We have heard concerns from the business sector that the closure of the GIDI fund without replacement resulted in a gap that had not been filled by private finance to enable businesses to transition away from gas.[89] The Gas Transition Loan Guarantee Scheme announced in May 2026 may go some way to addressing this. This is detailed more in *Chapter 7: Energy, industry and buildings*.

Small- and medium-sized businesses also face specific challenges obtaining finance, and as discussed in *Chapter 5: Whakahekenga rehukino*, this is even more the case for pakihi Māori.

Climate-related disclosures are likely to continue despite changes to reporting thresholds

Our engagement indicates that some banks are encouraging their customers who are no longer covered by climate-related disclosures to continue the practice on a voluntary basis.

Deloitte notes that "Voluntary reporting, when approached with rigour and intent, remains a powerful tool for maintaining credibility, supporting informed decision making and responding to stakeholder expectations."[90] Many affected firms have already invested in systems to support disclosure. For many of these businesses, there may have been little reduction in costs due to the change in threshold.

Workforce

Why this matters

Greater workforce planning is required to reduce economic disruption, support emissions reductions and enable economic growth. The transition to a low-emissions economy will require a skilled workforce to install solar panels, electrify factories, provide expert advice to farmers, and more. The electricity supply sector alone was recently projected to need 13,700 more workers by 2040, a 66% increase.[40] Without sufficient skills and labour capacity, workforce constraints could slow emissions reduction and limit economic growth.

At the same time, structural change will reduce demand for some skills, particularly those that are used primarily in the fossil fuel sector. People in those sectors are at greater risk of becoming unemployed, which can have significant negative social and economic impacts.

A well-managed transition can reduce disruption by allowing workforce changes to occur gradually, including through attrition, and by supporting workers to retrain and move into emerging sectors. A more abrupt or unplanned transition is more likely to result in both labour shortages in growing sectors and unmanaged job loss in declining ones.

Gaps, risks and opportunities

Workforce planning for the transition is insufficient

Current policy settings do not adequately address workforce planning. While the Government has an Employment Action Plan[91] and the Developing Talent pillar of the Going for Growth Strategy,[92] it does not appear to consider the impact of emissions reduction activities on the workforce.

There is a small amount of discussion in the action plan on workforce planning and skills mismatch, but no details of skills that will be needed.

There is no evidence of substantive or targeted action to address the impacts on the workforce from the transition. Without improved planning there is a risk of both skilled worker shortages and job insecurity. These impacts will be felt unequally, with Māori,[x] older people, people with lower levels of education, disabled people and those in regions with a high concentration of affected industries likely to require greater retraining support.

Research, science, technology and innovation

Why this matters

Ensuring a strong and sustained pipeline of innovation, alongside continued advances in climate science, is critical to enabling cost-effective emissions reductions and supporting the transition. Innovation can reduce structural changes required to lower emissions and reduce costs through learning-by-doing and economies of scale. Many of the technologies Aotearoa New Zealand needs will be developed overseas, but innovation and learning is still required to bring them successfully into the local context. Improved climate science supports earlier and more decisive action on both adaptation and mitigation, which can reduce long-term costs.

However, market failures mean private investment in low-emissions research, development and deployment is likely to be below what is needed. Recent science-system reforms may improve coordination, but they do not yet appear to be clearly shaped by climate objectives, and their implications for emissions reduction remain uncertain.

Progress to date

Changes in the last year

- The Government has undertaken significant reforms to the science funding system: creating the Prime Minister's Science and Technology Advisory Council, merging the Crown Research Institutes and creating Research Funding New Zealand.[93]
- Reforms to gene technology laws have progressed through Select Committee. It is unclear if there is sufficient social licence to progress these reforms further.[94,95]
- There have been improvements to standardise intellectual property rules across universities and research organisations.[96]

Gaps, risks and opportunities

Aotearoa New Zealand has low investment in research and development

Aotearoa New Zealand invests below the OECD average in research and development as a proportion of GDP.[97] Although this had been increasing over time to keep pace with average increases across the OECD, in 2024 it was just 57% of the OECD average and investment declined in 2025.[98,99]

While there are targeted initiatives like Ara Ake[xi] and recent Government investment into fusion energy,[100] overall public investment into energy research and development appears to be low compared with other countries.

For agriculture research and development, the OECD has found that while public investment for emissions reduction by Aotearoa New Zealand is large for the size of the country, it is below average when measured against the size of the sector.[101] New agricultural technologies are a key action in the Government's emissions reduction plan,

x Māori are over-represented as employees in climate-sensitive industries.
xi Budget 2026 discontinued Crown funding for Ara Ake.

so investment needs to be appropriately scaled to achieve the reductions sought alongside measures to transition to high-value, low-emissions land uses and other mitigation options – see *Chapter 9: Agriculture* for more.

There are risks for the long-term pipeline of innovation

Recent reforms to the science system have the potential to bring greater coordination and efficiency across research investment. However, the Government has not yet indicated how climate research will be prioritised within these. A mix of near-term and longer-term ("blue skies") research will be required to sustain a pipeline of innovation for emissions reductions.

The Australian Climate Change Authority last year identified as a risk that 40% of Australian climate research is in collaboration with USA researchers and may be impacted by changing research investment in the USA.[102] Equivalent information is not available for Aotearoa New Zealand but this may also be a risk to monitor here.

Circular and bioeconomy

Why this matters

Circular approaches could reduce emissions and improve resilience, but progress remains fragmented, and policy is too disconnected across sectors. Literature suggests that through circular economy measures, a global average emissions reduction of 33% could be achieved.[103]

Creating a more circular economy means increasing levels of re-use, repair, regeneration and recycling; optimising energy and resource use; and reducing imported goods. Circular economy measures can occur throughout a product's lifecycle from design to end-of-life reclamation and reuse.

More circular practices can help build a more sustainable bioeconomy and create more self-sufficient businesses, reducing levels of economic risk including the risks associated with relying on imported goods and materials.[104]

Circular practices will also often have wider economic benefits. For example, establishing a beverage container return scheme would reduce emissions and could be a net benefit to society of around NZ$1,400 million, with benefits exceeding costs by 47%.[105]

Gaps, risks and opportunities

Greater connection across sectors and policies

Currently, circular approaches are slowly being advanced but the disconnect between sectors and policies limits improvements in resource and energy efficiency, and in emissions. Circular economy opportunities for Aotearoa New Zealand exist across industrial, agricultural, construction, transportation and waste sectors. Connecting opportunities across sectors could be strengthened through policy.

Bioeconomy opportunities

The importance of advancing the generation of bioenergy and biogas has been recognised by the Government, but more can be done to achieve circular bioeconomy practices.

There is a continued focus on the opportunity to use woody biomass for bioenergy. The Government released a Wood Energy Strategy and Action Plan and statement supporting biogas in October 2025, including small amounts of co-funding for wood energy aggregation facilities and energy supply manufacturing facilities.[106]

Stronger circular waste management policy to divert organic waste from landfill is an immediate opportunity for the Government. Diverting waste can help provide sustainable biomass supply for bioenergy.

Reducing embodied materials and increasing reuse

Embodied emissions can be reduced through the advancement of eco-design practices, reuse and repair, integrating environmental and emissions considerations into the design and development of products and materials. The Government has proposed an extended producer responsibility framework which could support this.

Reducing the use of climate-intensive materials through recycling, reuse and substitution could result in climate benefits. There are particular opportunities in the construction sector, such as capping whole-of-life embodied carbon through building consents.

Areas for attention

- Greater policy stability would allow businesses to have more confidence to invest.
- The NZ ETS will soon no longer be able to drive further net emissions reductions, and work needs to begin now to strengthen incentives for emissions reductions and removals.
- Market barriers that result in underinvestment by the private sector require further attention.
- Workforce effects – both skills shortages and potential unemployment – need to be planned for and addressed with policy before they appear.
- Greater investment in research could improve innovation and Aotearoa New Zealand's uptake of low-emissions technologies, helping both the economy and emissions reductions.

Chapter 4

Benefits and impacts

Individuals and households can benefit from action to reduce emissions, but some will face barriers or be disproportionately affected by the actions of others.

When individuals and households face barriers to reducing emissions, they may be less able or willing to take action, which can slow the country's overall progress. Where the costs of taking actions are unevenly distributed, some groups may experience disproportionate impacts on their material standard of living. This can affect their willingness or ability to participate in efforts to reduce emissions. It's important to recognise that different people experience different benefits and impacts. If these barriers and impacts are not addressed, they can slow emissions reductions and weaken the durability of the transition.

Aspects of benefits and impacts are covered in other chapters, including *Chapter 3: Economy and emissions pricing, Chapter 5: Whakahekenga rehukino* and *Chapter 6: Adaptation and nature*.

Key points

- Cost-of-living pressures that are affecting households now can be eased while also reducing emissions and delivering wider co-benefits through actions such as increasing the use of alternative transport and electric vehicles, expanding rooftop solar and reducing food waste.
- Barriers and market failures are currently making it more difficult for households to take actions that would reduce their cost-of-living pressures while also reducing emissions.
- Where negative impacts are not being addressed, this may start to reduce willingness to take further action, making it more difficult to meet emissions goals.
- Current policy relies mainly on market forces to drive choices about cost-effective emissions reductions, but impacts can be unevenly distributed and there may be significant negative impacts on particular households and communities.
- While the improvements in data and monitoring proposed by the Government are useful, they do not replace the need for decision-makers to anticipate and prepare for negative impacts.

Maximising the benefits of the transition

Why this matters

For many people, issues such as climate change, global tensions and economic pressures are related, and solutions for them can overlap. Many households are facing increasing costs for food, housing, energy and other essentials. The recent high oil prices led 81% of adults to make changes in response, including 29% reducing spending on necessities.[43]

There are actions households could take that would reduce their cost-of-living pressures while delivering other benefits including reducing emissions. Many of these take the form of investing in resilience, so that they are protected from sudden shocks and costs such as high oil prices or an extended power outage due to a storm. But households face barriers to taking these actions, such as split incentives (e.g. for landlords versus renters), information gaps and financial constraints. Market failures such as coordination challenges and infrastructure constraints also prevent action – this is an opportunity for Government to reduce barriers and enable actions.

Gaps, risks and opportunities

Alternative transport modes provide health benefits and reduce traffic congestion

Using alternative modes of transport like public transport, walking and cycling lowers emissions and is often cheaper than using a private car. These modes also reduce traffic congestion and air pollution and can provide health benefits through more exercise. These benefits may be greater for some groups, including Māori and older people, reflecting existing health inequities and transport access.[107–110] They may also support mental health, wellbeing, social connection and accessibility, giving cities and towns "a sense of vitality and social cohesion".[108] Alternative modes of transport are especially effective for replacing short trips.

Barriers to using alternative modes include:

- time and convenience – public transport can be more appealing when it is fast and frequent, and available at the times and locations needed
- cost – while often still more affordable than private car use, the fare increases enacted in 2025 by the Government in the proportion of the cost of public transport paid by users makes it less affordable or worthwhile to use public transport, particularly for low-income households[111]
- safety concerns – infrastructure can be designed to protect walkers and cyclists from interacting with other road traffic; lighting and other safety improvements can help to address the concerns women and other groups may have about personal safety after dark
- physical difficulties – some people, including older people, children and disabled people may face challenges using certain transport modes.

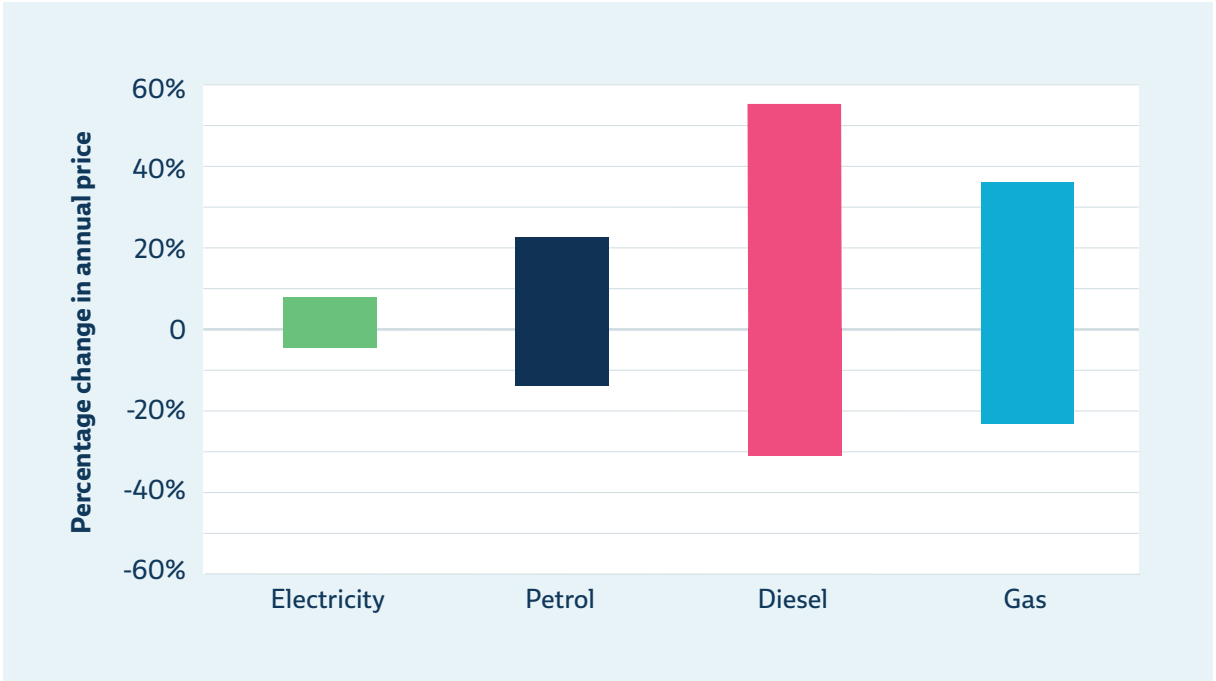
This makes alternative transport one of the clearest and lowest-cost opportunities to reduce emissions while also easing cost-of-living pressures and improving health, air quality and congestion outcomes.

Providers of public transport are working with representatives of the disabled community so that physical difficulties pose less of a barrier to using their services. The New Zealand Transport Agency (NZTA) has guidance for designing public transport infrastructure with safety in mind.[112] However, this is dependent on funding and the budget for walking and cycling infrastructure improvements was reduced by more than 50% for the 2025/26 financial year, which may affect outcomes.[113] Alternative modes of transport are discussed further in *Chapter 8: Transport*.

Electric vehicles reduce air pollution while maintaining on-demand transport

In addition to alternative modes of transport, electric vehicles can be a good option to reduce household costs. They are cheaper to run than internal combustion vehicles, with lower fuel and maintenance costs,[5] and electricity prices tend to be less volatile than petrol (see **Figure 4.1** below). For compact sports utility vehicles (SUVs), an electric vehicle (EV) owner could save around $7,500 on average over five years in running costs. EVs also produce much less air pollution than internal combustion vehicles.

Figure 4.1: Maximum and minimum annual change in residential energy prices of electricity compared with other fuels (1995–2025)[114]



Source: Commission analysis

As shown in Figure 4.1, electricity prices tend to be much less volatile than fossil fuel prices, even when looking at annual averages. Households that are more fully electrified are likely to face fewer and smaller energy price shocks than households that remain reliant on fossil fuels.

The gap is narrowing between the upfront purchase cost of electric and internal combustion vehicles, and in some cases electric vehicles are cheaper. EVs typically have lower running costs and can now be cost-effective over relatively short ownership periods. However, electric vehicle savings accumulate over time, whereas the purchase cost must be met upfront. Households may place greater weight on upfront costs than future savings, or hesitate due to uncertainty, which can limit uptake even where the overall economics are favourable.

Lower-income households often stand to benefit most from the lower running costs of an electric vehicle. Upfront costs are a challenge, especially when higher petrol prices reduce discretionary income and the ability to save. Some support is available in the form of low-interest loans from banks[115] and car-sharing schemes,[116] which could be scaled up to support greater EV uptake.

Growing access to EV chargers helps address range anxiety, and newer longer-range EVs are becoming available. There is a coordination

challenge, where the uptake of electric vehicles and the availability of supporting infrastructure depend on each other. Households without off-street parking (and even some with off-street parking) will have difficulty charging at home where it is usually cheapest. On the road, there are fewer public chargers per electric vehicle in Aotearoa New Zealand than in most developed countries including Australia and the United Kingdom.[8]

The Government is working to increase the rollout of public chargers,[9] which will help reduce the barriers to some people choosing to purchase EVs.[117] Further actions that address the upfront cost of electric vehicles would likely be required to achieve a faster transition to EVs, especially for households with limited financing options. Road user charges have not been extended yet to all light vehicles, leaving electric vehicles paying more than the average petrol vehicle.[118]

Lower running costs alone are unlikely to drive equitable EV uptake while upfront cost and charging access remain significant barriers.

Electric vehicles are discussed further in *Chapter 8: Transport*, including a more detailed analysis of policies addressing barriers.

Solar panels increase resilience during storms and other disasters

Rooftop solar is one of a range of options that can improve household energy resilience and reduce emissions.

Once installed, solar panels can provide low-cost electricity that reduces household reliance on grid-supplied power. When paired with a battery and appropriate backup-power capability, solar systems can provide electricity during outages, increasing household resilience to storms and other disasters.[119] These events are expected to become more severe and widespread, and already significant storms have increased from once a month over the last fifteen years to once every eight days on average now.[3]

Access to financing – such as low-interest "green loans" or other lending mechanisms – can enable households to spread the upfront investment costs over time. The upfront investment costs of installing home solar are significant, with systems costing NZ$8,000–$30,000 to purchase and install and with typical payback periods of 7–10 years.[120] At present, access to financing options is uneven; for example, low-interest green loans are generally tied to mortgages. As a result, financing constraints mean not all households can benefit from solar, even where it may be cost-effective.

Other barriers to installing rooftop solar relate to the characteristics of the housing system:

- split incentives – while tenants (around 34% of households[121]) get the benefits of lower energy bills, landlords pay the upfront costs, reducing the incentive to invest
- condition of the roof – roofs in poor condition may need to be repaired or replaced before solar can be installed, creating an additional barrier, particularly for lower-income households who are more likely to live in lower-quality housing.

Addressing these non-financial barriers – including through regulatory approaches, improvements to housing standards, and reducing information and transaction costs – may be important for enabling uptake where rooftop solar is appropriate and cost-effective.

Regulation changes in the last year and the recently announced Sector Review of solar installation regulation[122] could remove regulatory barriers and reduce some transaction costs, but will not address other significant barriers, like financing constraints.

Solar panels are discussed further in *Chapter 7: Energy, industry and buildings*.

Better insulation and home heating can improve housing quality and health and support adaptation

Improving the insulation and heating of a home can deliver significant health and wellbeing benefits and, in many cases, reduce emissions from energy use and household bills. These health improvements can reduce time away from work or education from illness and reduce medical costs (for both individuals and the Government), with benefit-to-cost ratios typically greater than 4:1.[123–126] Benefits may be greater for those in colder parts of the country.

Insulation can also reduce overheating risk by slowing heat gains during hot weather, particularly when combined with shading and ventilation. Heat pumps can provide efficient heating in winter and cooling in summer. Heat waves are becoming more frequent and intense as the climate warms, increasing the benefits of insulation and heat pumps to support adaptation.

Current programmes deliver clear benefits, but more comprehensive, whole-of-home retrofit approaches could achieve substantially larger health, resilience, energy and emissions gains. This would require stronger policy direction, coordination and financing mechanisms.

Reducing food waste can help lower cost-of-living pressures while reducing emissions

Households could save hundreds of dollars a year from reduced food waste, and surplus food could be redirected to address food insecurity, which would reduce methane emissions. Estimates of the cost to households of food waste vary. A study using 2018 waste audit data found that 'avoidable' food waste was worth NZ$644 per household per year,[127] while a 2025 study of households found food waste was around NZ$1,364 per household per year.[128]

Food rescue programmes can help address these impacts by redistributing surplus food to people in need while diverting organic waste from landfills. Food rescue organisations are estimated to currently handle less than 1% of food waste in Aotearoa New Zealand.[129] Evidence from food rescue programmes indicates every dollar invested in food rescue provides a social return of $4.50,[129] suggesting this is a cost-effective way to help households facing food insecurity and reduce emissions at the same time.

The Government is increasing investment through the Waste Minimisation Fund, currently focused on "infrastructure projects that help divert organic waste from landfill".[130] While this can reduce emissions, it is unlikely to unlock the other benefits of reducing food waste earlier in the system the way, for example, a food rescue programme could.

Food waste is discussed further in *Chapter 10: Waste and fluorinated gases*.

Minimising negative impacts of the transition

Why this matters

Like most public policy, climate mitigation policy does not impact everyone equally and can have impacts beyond reducing emissions. These impacts may be both positive (such as improved health or energy resilience) and negative (such as increased costs for some households or sectors).

Well-designed policy will identify these effects and, where appropriate, take steps to enhance positive outcomes, minimise negative effects and address distributional concerns. Policies that do this are more likely to be publicly acceptable, long-lasting and effective at reducing emissions.

Progress to date

Changes since the start of 2022

- The Government cancelled development of an Equitable Transition Strategy in 2024 as part of changes made to the first emissions reduction plan,[131] and no replacement policy has been announced.
- The Government made income tax bracket adjustments to low- and middle-income households in 2024.[132] While this provided short-term relief, it was a one-off measure and does not establish a sustained approach to addressing the impacts of the transition.
- The Climate Change Chief Executives Board has developed a set of draft indicators to monitor impacts, and plans to start collecting data for them in 2026.
- The Climate Data Initiative to collate and integrate Aotearoa New Zealand's climate change data began in 2023. While it continues to receive funding, there is currently no evidence of progress.

Taken together, these developments suggest some progress on data and short-term relief, but not yet a clear or sustained approach to identifying and managing the impacts of the transition.

Gaps, risks and opportunities

A cost-effective mitigation approach does not guarantee impacts will be minimised

The second emissions reduction plan states that a key policy or action to address the impacts of climate mitigation policy is "[t]aking a cost-effective mitigation approach to minimise impacts."[57] The Government appears to be defining cost-effective mitigation as relying on the New Zealand Emissions Trading Scheme (NZ ETS) as a market-based tool to achieve lowest-cost choices to meet emissions targets, and has put in place minimal supporting policies.[133] A least-cost approach at system level does not guarantee that impacts will be fairly distributed or that barriers to uptake will be addressed.

When costs are borne by households, this creates distributional effects. Households differ in their transport and energy needs, and in their ability to absorb costs and finance the higher upfront costs of lower-emissions alternatives. For example, higher fuel costs disproportionately impact those who rely on driving, such as those who live in rural areas or work shifts, or individuals with certain disabilities. Many of these groups may also have less ability to afford to switch to lower-emissions alternatives, such as electric vehicles. People shifting to low-emission energy sources can also change energy costs for other users who cannot afford to shift. The Government does not appear to have policies to address these impacts. Policy choices can also shift costs between communities through wider impacts such as land-use change impacting rural communities.

As discussed in *Chapter 7: Energy, industry and buildings*, energy affordability and barriers to transitioning energy systems are resulting in emissions reductions through business closures in some cases, rather than by transitioning to clean fuels. As well as being more costly to the national economy, this has significant economic and social effects on communities, particularly those supported by a single sector (for example, Kawerau's pulp and paper industry).

Barriers to households taking up emissions-reducing technology include upfront costs and regulatory constraints (e.g. building consents). Failing to address these barriers can cost the Government and economy in other ways, while policy options can address them, often at little or no financial cost to the Government.

Improving data will allow impacts to be monitored

Indicators to monitor the impacts of climate mitigation policy are under development by the Climate Change Chief Executives Board, with data collection planned to start this year. Good indicators will have features like:

- the ability to be broken down by income quintiles, regions, ethnicity and other demographic details
- a close connection to the policy being monitored
- the ability to distinguish policy impacts from other effects like the broader economic environment.

Improving the networks between social and environmental organisations may help the quality of indicators and policy in general in this space.

While it is valuable to monitor the effects of policies, it cannot replace anticipating and planning for impacts. There can be lags of years between a problem occurring, appearing in the data and being addressed by policy. The Government needs to take a more proactive approach and develop a clear plan to anticipate, identify and manage impacts of emissions reduction policies.

Areas for attention

- Policies that reduce barriers to households choosing low-emissions options have advantages for cost-of-living, health and household resilience.
- Relying on cost-effective technology and monitoring is not enough; policy also needs to anticipate and manage the impacts of emissions reduction measures.
- A plan to identify and manage impacts of emissions reduction policies is needed.

Chapter 5

Whakahekenga rehukino

Iwi/Māori play an important role in emissions reduction in Aotearoa New Zealand, providing leadership in communities and across sectors, and more can be done to support and resource this.

This chapter considers the impacts of emissions reduction actions on iwi/Māori and on the Crown–Māori relationship, as required in the Climate Change Response Act 2002 (the Act). Māori-led climate efforts grounded in intergenerational and te ao Māori principles are not currently matched by Crown partnership or resourcing. This chapter considers what can get in the way of effective action by iwi/Māori, and how Government action to reduce emissions can be adjusted to mitigate impacts.

Key points

- We've heard funding allocation for Māori-led climate initiatives, iwi/Māori emissions reduction plan coverage and iwi/Māori representation in governance structures are useful tohu to monitor.
- Iwi/Māori continue to provide climate leadership by reducing emissions and supporting adaptation at a local level alongside councils.
- There is opportunity for Government to accelerate reductions by providing more sustained support focused on action at a local level by iwi/Māori alongside local government.
- The funding for the Māori Climate Platform is ending with no planned replacement, creating significant risk for the Crown–Māori relationship.
- Funding and finance continue to be a significant barrier, including high-effort compliance or reporting, or overly restrictive criteria that disincentivise applications for funding.
- We've heard there should be a greater focus on removing barriers to data which continue to slow iwi/Māori emissions reduction efforts.
- Consider policy measures to improve access to capital, including a focus on Māori-led initiatives.

Context

Iwi/Māori maintain a role in climate adaptation and emissions reduction leadership. The critical contribution this role can make to reducing emissions should remain a key focus. Perspectives on iwi/Māori climate leadership do not sit on their own; they consistently link to issues around funding, the Crown–Māori relationship and how the Government can support iwi/Māori climate work for the benefit of all. Maintaining a strong Crown–Māori relationship can speed up progress on emissions reductions and increase long-term benefits for Aotearoa New Zealand.

The Crown–Māori relationship has tangible implications which are often found at a flax-roots level. Although usually focused on adaptation, examples include the work under way in Maketū and projects in Taitokerau/Northland being funded by local government.

In our Te Taitokerau/Northland case study we heard about marae switching to solar and the locally produced food in the Hokianga as part of emissions reductions and resilience building. We have heard about the close relationship between iwi/Māori and councils, and how Māori are getting on with the work that needs to be done when it comes to climate change.

There are opportunities for Aotearoa New Zealand in recognising the strength of these relationships and the substantial impact projects throughout the motu have on climate efforts. Iwi/Māori across the country are making the most of the opportunities available in their communities and rohe. The Government can best support this by providing sustainable assistance for the work already under way by councils and iwi/Māori at a more granular level.

Approach

Te ao Māori encompasses a diverse range of aspirations and whakaaro, and we are careful not to limit or homogenise iwi/Māori perspectives in the creation of our reports. Ensuring that our advice accurately reflects these perspectives – both in a way that is true to hapori Māori and useful for monitoring – has been an intentional focus of our engagement work.

This is the third iteration of Whakahekenga Rehukino that He Pou a Rangi the Climate Change Commission has produced in our emissions reduction monitoring reports. Since the first report, the Commission has evolved its approach to iwi/Māori-specific advice and our overall monitoring functions, including ongoing development of tohu.

In previous advice, we have signalled a consistent approach to our analysis, built through clear and thorough engagement, and generating a greater level of detail over time. Partly this reflects a lack of empirical data in relation to whenua Māori, Māori businesses and emissions reduction. However, importantly, this approach also helps ensure that our advice reflects real-world priorities for iwi/Māori.

What we have heard

The messages the Commission has heard from Māori have been consistent over the years. As the impacts of climate change increase in frequency and severity, the calls for a more consistent and sustainable approach by the Government to the Crown–Māori relationship continue to grow.

In 2025 we undertook a joint engagement approach for our adaptation and emissions reduction monitoring reports. This was to ensure we were respectful of the generous time offered by those we engaged with, and because adaptation and mitigation are

often grappling with the same issue but from different ends. Themes from the wānanga held in 2025 were being specifically sought for areas where there was a gap in our analysis and available evidence, where it was crucial to have flax-roots-level perspectives. We held an additional wānanga in 2026 that was focused specifically on pakihi Māori and what barriers and opportunities exist for them in taking climate action.

Rangatiratanga

Through wānanga we heard that exercising rangatiratanga is about communities taking action and moving forward in a way that supports whānau and hapū needs and aspirations. We also heard about how nuanced and varied a term like rangatiratanga can be, and the need for the Commission to exercise care when using it.

The importance of community

In both wānanga we held we heard that creating a sense of connection, supporting collaboration and bringing people together across silos and from across the community is an important part of any process that supports rangatiratanga. But there was also a strong sense that doing this creates opportunities, and is essential for creating good outcomes at whānau, hapū and community level. There was also a strong sense that engagement and connection, including through wānanga, is what transforms ideas into action and long-term change and outcomes.

Specifically, we also heard about the important role pakihi Māori play in supporting their communities, often being relied upon during climate emergencies. We know that climate-resilient pakihi that can reduce emissions help provide jobs and economic opportunities and are invaluable for thriving communities.

Tohu

We discussed three high-level tohu in our first wānanga, and they were broadly acknowledged as a useful starting point:

- funding allocation for Māori-led climate initiatives
- iwi/Māori emissions reduction plan coverage
- Māori representation in governance structures

There was broad agreement that any tohu the Commission uses need to drive action and focus on measuring outcomes, which is an aspect we will continue to work on. We were cautioned to avoid blanket or generic indicators and were also cautioned to keep in mind the tension between people-centred vs environment-centred framing.

As part of strengthening our monitoring advice and based on the kōrero we have heard in preparation for this report as well as previous reports, we are providing an assessment of the funding levels based on the information available at the time of writing. This assessment is intended to be a flow-on from the tohu around funding opportunities available for iwi/Māori.

We note the other two tohu and the need for them to be brought into future assessments. At this stage we intend to complete an assessment of them in our next round of emissions reduction monitoring advice.

Funding allocation for Māori-led climate initiatives

We have heard clearly that it is difficult for communities to find sufficient funding for emissions reduction work, especially for hapū and marae. While funding does become available at times, it is often in recognition of the leadership role marae and hapū play during climate change events and can therefore be limited to clean-up initiatives.[134]

We know from previous conversations that there is interest in emissions reduction projects that have co-benefits with resilience building, such as parakore approaches in communities, kai sovereignty and greater use of solar power. During the wānanga we held, participants noted that there are small, fragmented pockets of pūtea, but it is not enough to sustain the level of action required.

Participants also noted that available funding is often tied to highly prescribed or restrictive criteria that limits the actions that communities can take, despite them having the knowledge of what options work best for them. Too often communities lose time, effort and resources to high levels of compliance checking or overly high levels of accountability. Compliance factors can disincentivise to the point where some communities choose not to seek inefficient funding options.

In response to our emissions reduction monitoring report 2025, the Government indicated that the Māori Climate Platform continues to be the main mechanism for meeting its obligations to Māori and noted that it was "on track".[135] While we note that funds through the Māori Climate Platform are being dispersed, in our 2025 monitoring report we identified that the total funding amount through the platform declined, paired with slow delivery of projects.

The funding cycle for the Māori Climate Platform is ending and we understand it has now been fully allocated. At the time of writing this report, the Government has not indicated any intention to top up its funding or introduce a replacement.

While we note the existence of other funds and their benefits for iwi/Māori communities across Aotearoa New Zealand, there is a tendency for these funds to be non-climate specific. Additionally, these funds are not Māori specific, nor are they designed by and for iwi/Māori. Other funds which are accessed by iwi/Māori tend to have a focus on post-climate-event work, such as the one-off million-dollar fund provided to marae following the Summer 2026 climate events, or the adaptation work made possible due to local government funding in the Hawke's Bay. In the work we have done to date, we have not identified an uptake of emissions reduction funding by iwi/Māori through alternative funding mechanisms, which is a key gap.

As such, we were only able to identify the Māori Climate Platform as a climate-specific funding mechanism that is Māori-led. The funds that were available in the Māori Climate Platform were inadequate given the crucial role it plays in supporting the Crown-Māori relationship. Given it has completed its financial cycle and that, at the time of writing this report, there are no alternative options being created, we are concerned there is a risk of broader Treaty implications for the Crown and an erosion of the Crown–Māori relationship. The lack of specific support will also impede emissions reduction efforts from iwi/Māori in their communities, which currently lack the funding to realise them.

Crown–Māori relationship

The Climate Change Response Act sets a clear foundation for our focus on the Crown-Māori relationship, requiring the Commission to consider the impacts of advice on the Crown-Māori relationship and iwi/Māori where it is relevant.

With this statutory requirement as a foundation to our approach, we stress that a partnership between the Crown and Māori that recognises the diverse and localised perspectives of iwi/Māori across Aotearoa New Zealand should be an integral aspect of shaping national climate change policy. A strong Crown–Māori relationship, grounded in iwi/Māori climate leadership and local priorities in communities across the country, is a major opportunity to accelerate emissions reductions. Critical to this is a strong commitment by the Crown to Māori.

At a time when many important issues compete for the energy and focus of iwi/Māori, it is crucial that the Crown fosters trust and goodwill through clear commitments and consistent actions.

Across previous adaptation and emissions reduction advice, we have consistently raised concerns that the Crown's commitments and actions do not meet the scale of emissions reductions required, and the diversity of need and priorities across te ao Māori when it comes to climate action.[136] We highlighted the need for sustainable funding options that are consistent with iwi/Māori aspirations and priorities, and that ensure mātauranga plays a prominent role in accelerating emissions reductions. In this report, we are highlighting our concern that current actions will not be enough to achieve long-term emissions reduction goals, and may weaken the Crown–Māori relationship, slowing progress.

The Māori economy

Māori businesses and collective entities are significant participants in the primary sector and other emissions-intensive sectors, including transport. This means the Māori economy may be disproportionately affected by emissions reduction and policies may be needed to address the unique barriers discussed in this report, including access to capital.

The Māori economy refers to the contribution of Māori-owned businesses, collective entities and self-employed Māori to the broader Aotearoa New Zealand economy. As of 2023, this contribution is estimated to be 8.9% of GDP and the iwi/Māori commercial asset base is valued at NZ$126 billion.[137] Māori businesses and collective entities contribute to all sectors of the Aotearoa New Zealand economy, and their contribution and emissions reduction efforts have been discussed in relevant sections throughout this report.

Many iwi/Māori businesses bring an ao Māori perspective into their decisions and are making investment decisions in alignment with their obligations to future generations and kaitiaki duties. These aspirations are balanced with the imperative to be profitable. At the same time, many iwi/Māori businesses face unique and more prevalent barriers and constraints in the external business environment that may hamper their ability to undertake emissions reduction action.

Barriers and impacts

Finance

We've heard through engagement with pakihi Māori that access to finance is preventing pakihi Māori from taking climate action. This makes it relatively harder for Māori firms to invest in capital equipment, R&D and land-use change for emissions reduction, possibly slowing emissions reduction in the Māori economy.

Aotearoa New Zealand's capital markets are shallow by international standards,[138] with a public market that tends to work well for larger businesses but is less effective for small and medium enterprises. Small- and medium-sized pakihi Māori have well-documented barriers to accessing capital. Some of these barriers are specific to iwi/Māori, such as difficulty obtaining debt finance due to legal protections on whenua Māori, whereas others disproportionately affect iwi/Māori, such as financial market failures in some rural areas.[139] This means that, on average, pakihi Māori face higher borrowing costs. The Reserve Bank of New Zealand found in 2022 that Māori firms pay up to an additional 50 basis points on liabilities in comparison to non-Māori firms.[140]

The OECD has stated that improving iwi/Māori access to capital will require a combination of policy measures, market innovation and Māori-led solutions, and that capital and financial markets need to take into account the objectives of iwi/Māori as well as the known constraints.[138]

Data

It is difficult for researchers and groups such as iwi to access government and council data. Through engagement we heard that data is currently scattered across a range of places, including government agencies, universities and councils. Too often the data required does not exist, or it is prohibitively expensive, essentially making it inaccessible to many marae, hapū and researchers.

In the absence of data, it is difficult for iwi/Māori to make decisions around emissions reductions, particularly those with larger asset portfolios who can sustain their own emissions reduction and climate efforts. There is no current published emissions profile for the Māori economy. This is a point we have raised in several pieces of our advice. Iwi/Māori need to be supported in quantifying their emissions profile. Without a full account of the iwi/Māori contribution to the national emissions profile, the difficulty of accurately reflecting the priorities and needs of iwi/Māori and their communities in policy remains.

Areas for attention

- There is an opportunity for the Government to increase funding and other mechanisms of support to iwi/Māori and councils, expediting projects and work already under way. We encourage the Government to have a greater focus on Māori initiatives and consider how iwi/Māori and their communities can be better supported to realise opportunities.
- Consider policy approaches beyond the immediate future. The Māori Climate Platform may be on track, but the implications for iwi/Māori climate action following the end of the platform are significant.
- Have a greater regard for how decisions can potentially impact the strength of the Crown–Māori relationship, and how in turn this will affect national emissions reduction efforts.
- Focus on removing barriers to funding and finance, including high-effort compliance, reporting back or overly restrictive criteria that disincentivise applications for funding.
- Focus on removing barriers to data that continue to slow iwi/Māori emissions reduction efforts.

Te reo Māori glossary

hapori (Māori)
(Māori) communities

hapū
kinship group comprised of whānau who share a common ancestry

iwi
extended kinship group of whānau and hapū who share a common ancestry and are associated with a distinct territory

kai
food

kaitiaki
guard, custodian, guardian, caregiver, keeper, steward

marae
the open area in front of the wharenui, where formal greetings and discussions take place; often used to include the complex of buildings around the marae

mātauranga Māori
Māori knowledge, the body of knowledge originating from Māori ancestors, including the Māori world view and perspectives

pakihi Māori
Māori business

parakore
unblemished or immaculate; in this context it describes waste and refuse minimisation

pūtea
Money, funding, finance

rohe
boundary, district, region, territory

te ao Māori
the Māori world – a philosophy and knowledge system

Te Taitokerau
Northland region

tohu
Indicator or sign

wānanga
Discussions, deliberations, workshops

whakairo
thoughts, plans and ideas

whakahekenga rehukino
emissions reduction

whenua Māori
land that is subject to Te Ture Whenua Māori Act 1993

Chapter 6

Adaptation and nature

When managed well, integrating nature and adaptation measures with emissions reduction policies can increase effectiveness and deliver numerous co-benefits.

Awareness of the important connections among climate change mitigation, adaptation and nature is increasingly recognised, both globally and within Aotearoa New Zealand. Policies that recognise and act on these interconnections can provide opportunities across all emissions sectors.

This chapter, a new addition to our third monitoring report, considers how effectively these interconnections are reflected in Government actions and policies.

Key points

- Reducing net emissions, adapting to climate change and supporting the natural environment are not separate choices. Taking integrated action can reduce risks, lower costs and deliver greater co-benefits.
- Additional planning and policy are needed to clarify how the Government will support the integration of these factors to ensure climate goals are met and negative impacts are avoided.
- Nature-based solutions beyond forestry offer significant opportunities to support climate goals but are not currently incentivised in ways to enable their full potential.
- Investment in adaptation and nature-based solutions is not occurring at the pace or scale required due to insufficient financial incentives and broader governance barriers.

Adaptation

Why this matters

There are two primary pillars of climate action: adaptation to climate-related risks and emissions mitigation. Adaptation and mitigation are intrinsically linked. Global emissions reductions will fundamentally shape adaptation requirements and their effectiveness. Integrating adaptation and mitigation measures can maximise emissions reductions while improving resilience and lowering costs. It can also provide a range of co-benefits for the economy, communities, ecosystems and individuals.

He Pou a Rangi Climate Change Commission's 2026 National Climate Change Risk Assessment released in May this year shows that the risks facing Aotearoa New Zealand from climate change are serious and their severity will increase this century. The assessment identifies that the effects of climate change will vary across the country and there are unique considerations for different people and locations. Climate hazards interact with longstanding structural factors to create a set of interconnected risks that specifically affect iwi/Māori communities. Adaptation planning is needed to reduce Aotearoa New Zealand's exposure and vulnerability to these risks.[141]

International research found the greatest potential for synergies between adaptation and mitigation is in the energy and land-related sectors.[142] This is important within the Aotearoa New Zealand context, where agriculture accounts for over 50% of gross emissions, and energy, industry and buildings in combination with agriculture and forestry are expected to comprise over 80% of net emissions reductions sought in the second and third emissions budgets.[136]

Progress to date impacting adaptation

Changes in the last year

- The Government introduced a National Policy Statement for Natural Hazards, which came into effect in January 2026. The statement is a transitional measure while broader reforms to the resource management system are developed and implemented.[143]
- In December 2025 the Government introduced the Planning Bill and the Natural Environment Bill as part of legislation to replace the Resource Management Act 1991 (RMA). The reforms strengthen councils' ability to decline land-use consents or impose relevant conditions where there are significant natural hazard risks, such as those exacerbated by climate change.[144]
- In October 2025 the Government published its National Adaptation Framework, a "long-term, strategic approach to help New Zealand prepare for, and respond to, the impacts of climate change". The framework includes a goal to improve risk and response information sharing and clarity over whose role it is to manage risks. However, the framework does not discuss an explicit connection to mitigation.[145]
- Amendments have been proposed to the Climate Change Response Act 2002, which will change governance arrangements for both mitigation and adaptation. Proposed changes include additional requirements for councils to show how they plan to adapt to natural hazards in high-priority areas.[72]

Changes since the start of 2022

- In December 2024 the Government released Aotearoa New Zealand's second emissions reduction plan, which included three specific adaptation goals, including actions to reduce emissions that deliver adaptation co-benefits and avoid maladaptation. Several actions from the first emissions reduction plan relating to adaptation have been discontinued, such as transition support for regions and industries.

Gaps, risks and opportunities

Delaying emissions reductions increases the costs of climate impacts and reduces the effectiveness of adaptation

People are already feeling the effects of climate events: globally, 75% say they feel vulnerable to climate change in their daily lives.[146] Adaptation needs will be fundamentally shaped by the extent of climate change impacts, which are driven by greenhouse gas emissions. Therefore, it is important that Aotearoa New Zealand contributes to global emissions reductions to prevent climate impacts from becoming worse.

Delaying emissions reductions will increase the overall costs of climate impacts, exacerbate the uneven distribution of impacts and reduce the effectiveness of adaptation measures while increasing their costs. However, because of historic emissions, some level of climate change is already locked in. This means adaptation will be required no matter how much or how quickly emissions are reduced.[141]

Integrating adaptation and mitigation can support each other and deliver co-benefits

A coordinated approach to adaptation and mitigation can increase emissions reductions and carbon removals while also reducing climate-related risks and improving resilience. It can also generate additional co-benefits for communities, the economy and the natural environment. Examples include:

- Urban planning is an important enabler of adaptation in the built environment and can also support mitigation. For example, urban wetlands can help to reduce flooding, while also sequestering carbon.[147]
- Retrofitting buildings to improve thermal and energy performance can reduce emissions while making buildings more comfortable during temperature extremes.
- Resilience projects along waterways can create opportunities to expand active travel. For example, the Ngauranga to Petone Shared Path, Te Ara Tupua, which opened in May 2026, incorporated development of a seawall to protect infrastructure with a shared walking and cycle path. This may help to reduce vehicle emissions and improve public health.[148]
- Energy resilience through mechanisms such as microgrids or roof-top solar with battery storage can reduce emissions from energy consumption while improving resilience and reducing harm, particularly for communities that may become isolated following extreme events.[149] This is reflected in Gisborne and Hawke's Bay having the highest uptake of batteries in their solar systems in Aotearoa New Zealand after both regions experienced significant extreme weather events in recent years.[150]
- Practices such as agroforestry integrate trees into grazing systems and sequester carbon while decreasing vulnerability to climate extremes by protecting soil from erosion, providing livestock shelter from heat and storms, and potentially providing additional forage during drought conditions.

In contrast, when adaptation and mitigation are not considered together, some adaptation measures may increase emissions, while some emissions reduction measures may increase vulnerability to climate change risks.

Policy and information systems do not yet fully support integration of adaptation and mitigation

The second emissions reduction plan sets out three specific adaptation goals that highlight the importance of adaptation and mitigation co-benefits. However, there continues to be a lack of clear policy direction and planning to support these goals. For example, the National Adaptation Framework does not discuss how emissions mitigation could be incorporated into its four pillars, such as information sharing or investment in risk reduction.[145] Similarly, it is unclear how the National Policy Statement for Natural Hazards integrates mitigation and adaptation. While the policy is likely to support some level of increased resilience, it is not clear how it will also support mitigation outcomes.[143]

In addition, timely information, guidance and data are needed to support decision-making, as significant decisions are already being made across sectors about how to reduce emissions. However, sufficient additional information and guidance have not yet been made available to support this. The Government has also recently increased the mandatory climate reporting threshold. This limits the number of entities required to report, which could reduce the availability of information on climate risks and responses.[58]

Nature

Why this matters

Nature plays a key role in all aspects of life, underpinning ecosystems as well as human and economic wellbeing. Nature can refer to natural, modified or restored ecosystems. The relationship with nature is particularly significant for iwi/Māori, given the relationship between the environment and iwi/Māori identity, language, knowledge, governance and intergenerational wellbeing. It is important the interactions with nature are considered when undertaking emissions reduction efforts.

Nature-based solutions are actions to protect, manage and restore ecosystems while also addressing climate change challenges by reducing emissions and supporting climate adaptation. They often provide additional co-benefits for factors such as health, culture and the economy.

An example of a nature-based solution is the protection and restoration of wetlands, which can increase carbon removals, reduce risks of flooding, and support biodiversity.

Progress to date impacting nature-based solutions

Changes in the last year

- In May 2026 the Government announced their new approach to support voluntary domestic and international nature and carbon markets. The schemes intend to allow private money to fund projects that restore nature or remove greenhouse gases from the atmosphere.[151]
- The Government has introduced the Planning Bill and Natural Environment Bill, which would repeal and replace the RMA. The stated intention of the Natural Environment Bill is to manage the impacts from the use of natural resources and protect the environment from harm. The draft Bill lists "adapting to the effects of climate change and reducing the risks from natural hazards" as an additional objective.[144,144,152]
- In November 2025 the Government released the Carbon Removals Assessment Framework, which assessed the potential for non-forestry carbon removals to be recognised under the New Zealand Emissions Trading Scheme (NZ ETS) or through a different mechanism. It was signalled this met the previous commitment to investigate biodiversity credits for wetlands.[153]

Changes since the start of 2022

- Nature-based solutions were listed as one of five-pillars of the Government's climate strategy released in 2024.[154] Non-forest removals and nature-based solutions were noted as promising opportunities that could be further developed.

Gaps, risks and opportunities

Forestry is a major component of Aotearoa New Zealand's approach to climate change mitigation and is incentivised through the NZ ETS

Forestry is a nature-based solution that is critical in Aotearoa New Zealand's emissions reduction plans and meeting emissions budgets. The NZ ETS incentivises forestry by allocating New Zealand units for planting and maintaining forests to sequester carbon.

The NZ ETS currently incentivises exotic forestry more strongly than indigenous forestry due to the faster rate of growth and carbon sequestration of some exotic species, particularly *Pinus radiata*. This has resulted in significantly larger areas of exotic plantation.[155]

The NZ ETS does not explicitly recognise or reward the wider co-benefits of indigenous forestry, such as biodiversity enhancement, cultural values and improved land resilience. Engagement with iwi/Māori has highlighted a desire for greater recognition of the additional benefits, along with stronger incentives for indigenous forestry within the NZ ETS.

The significant reliance on exotic afforestation as the dominant nature-based mitigation approach carries risks for achieving emissions budgets and delivering broader adaptation and biodiversity outcomes. This is discussed further in *Chapter 11: Forestry*.

Other nature-based solutions have potential to deliver significant and wide-reaching benefits

Many nature-based solutions can reduce emissions and improve resilience to climate change, while also delivering wider co-benefits for society and the economy. Examples include:

- Restoring, protecting or enhancing coastal and marine ecosystems can sequester carbon or reduce emissions from ecosystem degradation, while improving resilience to sea-level rise, coastal erosion and storm surges. These actions may also help to reduce threats to mahinga kai and taonga species, helping to avoid cultural and spiritual losses for iwi and hapū.[141]
- Diversifying Aotearoa New Zealand's forests and protecting and restoring permanent indigenous forests can provide long-term carbon sinks while improving biodiversity, stabilising soils and reducing economic risks to the forestry sector associated with reliance on a single species.[156]
- Aotearoa New Zealand's peatlands show significant resilience to drought while providing carbon sequestration. Restoring peatlands will help improve water quality and support biodiversity, with potential economic benefits including ecotourism.[141]

Investment in nature-based solutions is constrained by financial, regulatory and market barriers

Investment in nature-based solutions is not currently occurring at the pace or scale feasible. A key challenge is that despite many nature-based solutions known to remove carbon from the atmosphere, such as wetland restoration, they are not currently recognised as emissions removals that contribute towards emissions budgets under the country's target accounting framework.[157] Including any additional nature-based removals into the target accounting framework would require a

review of existing budgets and the 2050 target to ensure their integrity and the interaction with emissions pricing must be considered carefully.

Funding and finance for nature-based solutions and natural assets are critical to help Aotearoa New Zealand meet its climate change targets and support ecosystems. However, significant barriers continue to limit investment.

In 2025 the Aotearoa Circle conducted an open survey with individuals and businesses interested in nature-related projects. Of respondents, 52% had abandoned or delayed investments due to financial and non-financial barriers and 73% identified legal and regulatory barriers as a key constraint. Respondents cited the RMA as the primary barrier to natural asset investment. Given the RMA is currently in the process of being replaced, this is a critical time to address these barriers, such as through establishing a more enabling consenting system. Additional constraints cited by respondents included the lack of a clear framework for voluntary carbon and nature markets, and regulatory settings, such as tax settings, that limit investment attractiveness.[158]

The Government has recently proposed supporting the growth of voluntary international and domestic nature and carbon markets, which may work as a mechanism to address some of these concerns. The schemes will provide credits for projects that restore nature or remove greenhouse gases.[151] This could provide a clearer framework for investors and enhance incentives for investment. However, the scale of potential outcomes remains uncertain, and it is unclear whether private markets alone would provide sufficient incentives for significant investment without any additional Government support.

Careful management of climate mitigation and adaptation is needed to avoid negative impacts on the natural environment

While many emissions reduction policies deliver co-benefits for the natural environment, there is also potential for adverse environmental impacts if they are not appropriately assessed and managed. Examples include:

- Development of new hydropower infrastructure may require flooding of large areas, altering water flows and potentially affecting habitats for birds and fish species.[141]
- Extensive planting of exotic production forests may provide habitat for invasive mammals (e.g. possums) and increase vulnerability to fungal diseases like Dothistroma needle blight.[141]
- Increased demand for minerals and metals to support low-emissions technologies can cause pollution, land degradation and groundwater contamination during extraction, processing and disposal.[159]
- Land-use change from dairy to horticulture may reduce biogenic methane emissions but can also result in increased use of fertiliser and pesticides. This may increase the risk of chemical runoff into waterways, potentially contributing to the loss of fish and invertebrate species, such as freshwater crayfish (kōura).[160]

It is important that the Government considers the implications for the natural environment and climate adaptation when developing mitigation strategies.

Co-benefits that reduce emissions or increase carbon removals, support the natural environment and strengthen climate adaptation should be more explicitly incorporated into appraisals, cost-benefit analyses and broader decision-making on climate change-related policies.

Box 6.1: Significant risks to nature and the bioeconomy identified in the National Climate Change Risk Assessment

The 2026 National Climate Change Risk Assessment identified risks to ecosystems and biodiversity and risks to forestry as significant risks requiring attention in the next national adaptation plan.

Risks to ecosystems and biodiversity

Climate change is affecting the country's ecosystems – including land, freshwater, coastal and marine ecosystems – and indigenous biodiversity. Increasing land and marine temperatures change the environmental conditions species live in, while extreme weather events and wildfire cause shocks to ecosystems. This risk is greater because of existing pressures and threats to the country's ecosystems such as land degradation, invasive species, resource extraction and pollution.

Under some scenarios from around the middle of the century, the combined effects of climate change and existing pressures on ecosystems could push some systems past a point where they can recover. The consequences are important not only for the intrinsic value of ecosystems, but also for the effects that will flow across all aspects of life: water, soil and air quality, the viability of jobs and businesses that depend on nature, the health of individuals and communities, and cultural and recreational connections to nature.

Risks to forestry

Climate change will affect the country's managed and production forests, and the sector can better prepare for these impacts, including extreme weather, drought and wildfire, and new pests and diseases. Forestry delivers a suite of benefits to the country: wood products, export earnings and removal of carbon from the atmosphere. The sector is growing rapidly in both value and area, with the area in managed and production forests expected to nearly double over the next 50 years.

Damage to these forests reduces not only their capacity to absorb carbon and the sector's economic contribution but also exposes waterways and downstream communities to devastating sediment and debris flows. The risks to forestry from climate change are already great and there is a need to accelerate adaptation planning and action in forestry to increase resilience. Most forests planted now will not reach harvest age for more than 20 years – meaning they will grow under changing environmental conditions and intensifying extreme events. Acting now will help avoid locking in future outcomes that increase the risks to forestry.

Areas for attention

- Policy planning needs better integration of adaptation, mitigation and nature-based solutions to ensure co-benefits are realised. Current approaches do not consistently recognise these interconnections, leading to missed opportunities and unintended outcomes.
- Nature-based solutions are not yet fully enabled by existing incentives and accounting frameworks. This limits their uptake beyond forestry and constrains the delivery of wider benefits.
- Investment in nature-based solutions and adaptation is constrained by regulatory, financial and market barriers as well as gaps in information and planning. These barriers are slowing the pace and scale of implementation.

Chapter 7

Energy, industry and buildings

Switching from fossil fuels to clean energy is increasingly viable, but high upfront costs, uncoordinated policies and weak policy signals mean the transition is not occurring at the pace required.

Snapshot of emissions

Total sector emissions	
2023	**2024**
17.7 $MtCO_2e$	17.9 $MtCO_2e$

Percentage of country's gross emissions
23.6%

Percentage of projected net reductions (2026–2030)
45.2%

Changes in emissions between 2023 and 2024
+30.3% in electricity generation
–6.9% in industry
–2.2% from fuel use in the residential, commercial and institutional sectors
+5.9% in gas supply chains

Greenhouse gas emissions in this sector come from burning fuel to produce electricity, manufacture goods, operate mobile equipment and power buildings. They also result from the production, transmission and storage of fossil fuels, and from chemical reactions that occur during the production of certain products, like steel.

The country can reduce these emissions by improving efficiency, shifting to less emissions-intensive production processes and switching from fossil fuels to renewable energy sources. A secure, reliable and affordable supply of electricity is also a critical enabler of electrification, which has a wider role for reducing emissions in other sectors.

Key points

Changes in emissions

- Energy and industry emissions were largely unchanged between 2023 and 2024, due to large emissions increases in some areas that masked reductions in others.
- Electricity generation emissions rose sharply because lower inflows (rain and snow melt) limited the amount of water available for hydropower.
- Manufacturing emissions fell mainly due to a drop in production linked to declining gas availability, rather than from genuine reductions driven by efficiency improvements or switches to lower-emissions technologies and energy sources.

Policy changes in the last year

- The Government advanced the procurement of a liquefied natural gas (LNG) import facility and interventions in gas supply, signalling a focus on energy security alongside incremental progress on electricity market reforms.
- Consenting and enabling system reforms advanced, with the fast-track approvals process starting to bed in. Alongside new and updated national policy instruments, this aims to improve consenting certainty and efficiency.

Risks to achieving planned emissions reductions

- Ongoing affordability and reliability concerns – coupled with the uncertain timing and effectiveness of interventions such as LNG – risk weakening confidence and delaying investment in the electrification needed to unlock economy-wide emissions reductions.
- High upfront capital costs, weak New Zealand Emissions Trading Scheme (NZ ETS) investment signals and limited demand-side support put the industrial emissions reductions modelled for the third emissions budget at significant risk.

Areas for attention

- Without a clear plan and sufficient demand-side support to enable fuel switching, conflicting policy decisions risk locking in fossil-fuel-based pathways.
- Despite new renewable generation being commissioned, low-emissions firming and flexible demand remain insufficient. The electricity system is therefore still exposed to winter and dry-year risks, undermining affordability and confidence in electrification.
- Upfront capital cost barriers are limiting industrial, commercial and residential fuel switching. While the newly announced Gas Transition Loan Guarantee Scheme is a positive step, further action is urgently needed.
- Flexibility initiatives must be scaled rapidly to avoid network owners defaulting to costly grid reinforcement and locking in higher long-term system costs.

Opportunities for further reductions

- Falling costs for solar panels and batteries are improving affordability. Uptake by households and businesses could be accelerated by electricity pricing that better reflects underlying supply and demand conditions and broader access to low-interest, long-term finance, supporting affordability and resilience.
- There is a growing economic opportunity to decarbonise industrial heat. Switching to industrial heat pumps is now cheaper than continuing to run coal, gas, LPG or diesel systems for low-temperature applications. For higher-temperature applications, low-carbon options can be cost-competitive with fossil fuels as well.

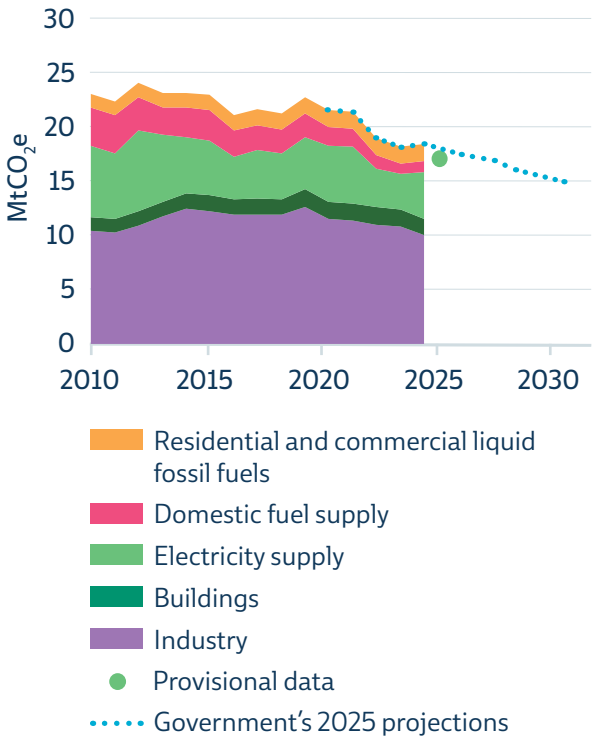
Progress to date

Emissions reductions

The key trends in energy and industry emissions are as follows:

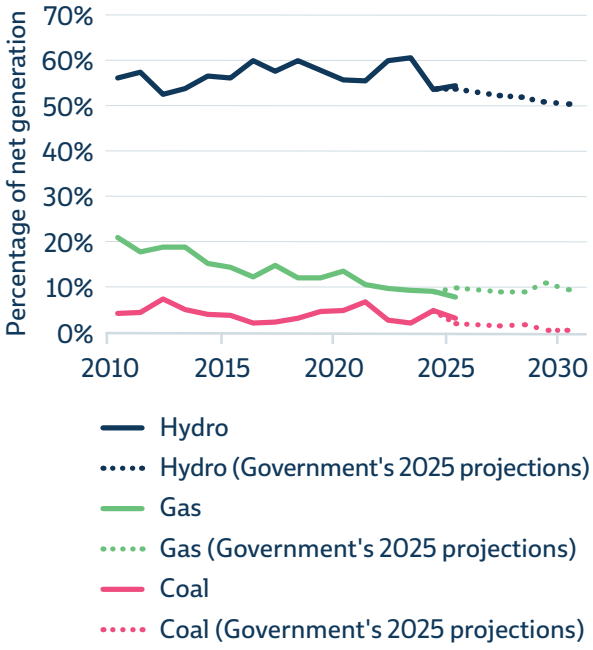
- Energy and industry emissions were stable between 2023 and 2024 (**Figure 7.1**), with a significant increase in power generation emissions masked by emissions reductions in industry, as outlined below.
- Electricity generation emissions increased by almost 1.0 $MtCO_2e$ (30.3%) to 4.2 $MtCO_2e$ relative to 2023. This reflected unusually low generation emissions in 2023 due to strong hydro inflows and a prolonged low-inflow period during winter 2024, which resulted in higher coal-fired generation. (**Figure 7.2**)
- Manufacturing energy-related emissions fell by 0.7 $MtCO_2e$ (11.9%) to 5.4 $MtCO_2e$. **Figures 7.3** and **7.4** show that this was driven primarily by lower industrial activity: fossil fuel energy use has declined since the late 2010s, without a corresponding increase in electricity use or direct renewables (which also declined over the same period). Total industrial energy use has fallen by 27.3% since 2019, reinforcing that emissions reductions largely reflect lower production rather than widespread fuel switching.
- Total gas use declined by 22% compared with 2023, largely due to curtailed production at Methanex, which shut down operations for part of winter 2024 and subsequently restarted at reduced capacity (**Figure 7.3**).[161] This resulted in chemical sector emissions reducing by 0.6 $MtCO_2e$ (45.0%).
- Emissions in the residential and commercial segments were relatively stable (**Figure 7.1**) despite strong population and housing growth, indicating underlying emissions pressures are growing and that achieving reductions will require further action.
- Provisional 2025 emissions estimates suggest the 2024 increase in power generation emissions was reversed, largely due to improved water availability. Manufacturing emissions continued to decline, largely driven by further falls in production. However, there is some evidence of genuine emissions reductions, particularly in food processing.

Figure 7.1: Emissions by subsector



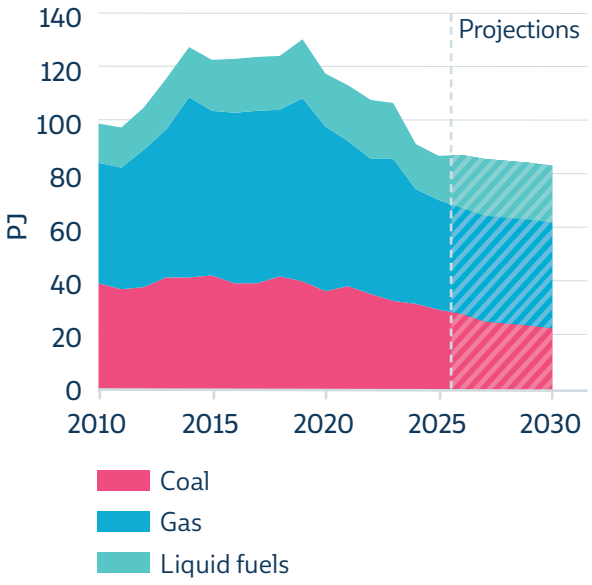
Source: Commission analysis of GHG Inventory

Figure 7.2: Proportion of electricity generation from hydro, coal and gas



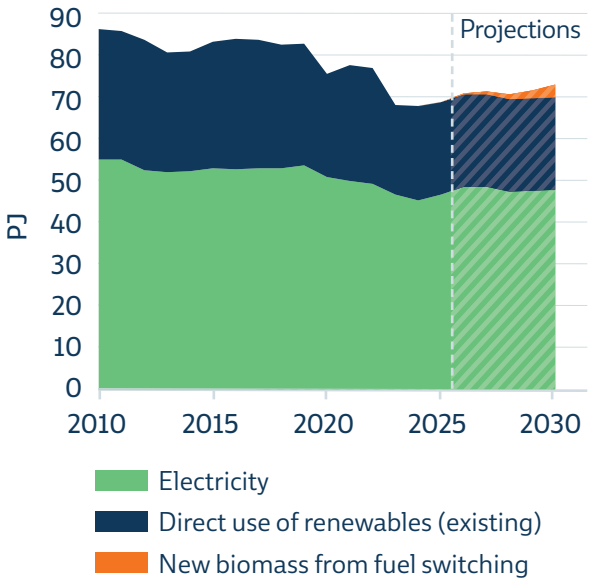
Source: Commission analysis of MBIE energy statistics

Figure 7.3: Industrial fossil fuel energy use



Source: Commission analysis of MBIE energy statistics[xii]

Figure 7.4: Industrial electricity and direct renewable energy use



Source: Commission analysis of MBIE energy statistics[xiii]

xii Historical figures to 2025 and the Government's 'with additional measures' projections from 2025 onwards.

xiii Historical figures to 2025 and the Government's 'with additional measures' projections from 2025 onwards. Note: Government projections do not include existing direct use of renewables, so this is assumed to remain constant.

Policy progress

Policy progress to reduce emissions in energy and industry is summarised below.

In May 2026, the Government announced a Gas Transition Loan Guarantee Scheme to provide up to $1.2 billion in bank lending for gas users (over 1,000 GJ/year) to reduce their dependence on gas.[29] It is enabled by an 80% Crown guarantee and complemented by EECA advisory support and improved gas market information disclosure.

This is a step in the right direction to address upfront cost barriers to fuel switching. However, the impact will depend on uptake. If the signalled 10 PJ per year reduction in gas use is achieved, this could reduce emissions by up to 0.5 $MtCO_2e$ annually, depending on the solutions deployed. Its scope is limited to piped natural gas users only, and it is unlikely to address all cost barriers.

The announcement came after our assessment period, so it is not reflected in our policy scorecards below. It will be evaluated further in next year's report.

Changes in the last year

Government policy continues to focus on measures intended to improve energy security and affordability, with a strong emphasis on electricity system resilience alongside support for gas supply continuity and market performance.

Electricity market performance and security of supply

- In October 2025, the Government released its response to the Frontier Economics Review of the Performance of Electricity Markets, with LNG infrastructure procurement as the headline action. While framed as a response to electricity system security risks, LNG has implications across both electricity and gas markets. The Frontier Review did not specifically recommend LNG, and the Government's response reflects a selective adoption of its recommendations.
- In February 2026, the Minister of Energy confirmed that LNG procurement would be progressed, aiming to contract by mid-2026 for potential commissioning in 2027 or 2028. At the time of finalising this report, it was not confirmed whether this initiative would proceed, but it signals a willingness to underwrite fossil-based firming to manage dry-year and winter peak risks.

Electricity market regulation, competition and flexibility

- Energy sector regulators have continued implementing and consulting on measures to improve competition, efficiency, affordability and system flexibility. Initiatives include proposed non-discrimination obligations in wholesale markets, standards for smart devices (such as EV chargers), and reforms to expand time-of-use pricing and demand response.

Gas supply interventions and upstream settings

- A $200 million Gas Security Fund was established to facilitate new domestic gas supply. The scope of the fund was later widened to include proposals for storage projects and action to boost short-term production.[162]
- Legislative changes to the Crown Minerals Act 1991 to increase gas investment have progressed, including relaxing decommissioning liability settings and repealing the offshore oil and gas exploration ban.

Alternative fuels and industrial energy transition enablers

- Policy activity to support emerging alternative fuel pathways includes the Woody Bioenergy Strategy, EECA support to address feedstock coordination challenges, a Government Biogas Statement and an industry-developed biogas action plan.

Planning, consenting and system-level enablers

- Several resource management and consenting reforms have progressed, including Fast-track Approvals Act 2024 amendments and updated national direction intended to reduce consenting timeframes for renewable generation, networks and associated infrastructure.

Changes since the start of 2022

- National direction under the Resource Management Act 1991 was implemented, supporting more nationally consistent consideration of greenhouse gas emissions in consenting decisions across councils.
- The Fast-track Approvals Act 2024 was passed, with 22 renewable energy projects enabled to apply for approval directly. As of April 2026, a further nine projects have been granted referral, and three projects have been approved.[163]
  - Strong uptake of fast-track consenting pathways suggests developers perceive improved certainty, which may support higher consenting rates and stronger investment confidence over time.
- Implementation of projects co-funded by the now disestablished Government Investment in Decarbonising Industry (GIDI) fund is well underway. These include Fonterra's first electrode boiler at the Edendale plant in 2025,[164] and NZ Steel's electric arc furnace, which is expected to be commissioned in 2026.[165]

Policy assessment

Policy scorecard: Gas supply

Overall assessment	
Moderate risks	Planned emissions reductions are small, so delivery risk is low. However, policy signals from measures like LNG procurement could influence investment decisions, raising emissions above projections or locking in higher transition costs. The NZ ETS is providing weak decarbonisation incentives. Without a clear gas phase-down strategy, the transition could be slower, costlier and less orderly than necessary.
Change since 2025	Our 2025 report found significant risks for upstream gas and insufficient plans for gas networks. These are now assessed together. Discontinuation of the Kapuni carbon capture project and the stalled carbon capture, use and storage legislation lowered the projected reductions. This lowers delivery risk, resulting in moderate risk overall.

Main tools **Moderate**	The Government plans few policies to actively limit emissions from the gas supply chain. Instead, policy signals risk reinforcing gas demand and increasing emissions. These include Government funding for gas supply, LNG procurement, repeal of the offshore exploration ban and associated regulatory signals. Such policies can influence emissions ahead of new gas arriving, e.g. via contracting decisions and delayed end-user fuel switching.
Funding and finance **EB2: Moderate** **EB3: Significant**	An LNG facility may support energy security, but risks prolonging gas networks and delaying decarbonisation, particularly if funded by an electricity levy. Regulated gas distribution pricing provides a stable funding path for safe pipeline operation, but does not account for emissions reduction or an orderly phase-down. As connection numbers decline,[166] rising costs may be spread across a shrinking customer base. Misaligned funding streams and weak NZ ETS price incentives increase the likelihood of inefficient investment and higher transition costs, with risks growing after 2030.
Timelines **Moderate**	The interaction of gas distribution pricing, LNG procurement and the absence of a comprehensive gas network phase-down plan creates a risk that policy timing reinforces gas demand or locks in higher transition costs. Clearer sequencing and signalling are important to avoid delaying decarbonisation or embedding long-term system inefficiencies.
Barriers and enablers **Moderate**	Renewable gas policy lacks mandates, targets or price support. Ongoing energy-security warnings risk short-term decisions that favour fossil-fuel options. The absence of a comprehensive phase-down plan creates uncertainty for investors and consumers.

Policy scorecard: Industry

Overall assessment	
EB2: No significant risks **EB3: Significant risks**	Committed GIDI projects are expected to deliver significant emissions reductions in the second emissions budget. For the third budget, industrial decarbonisation depends heavily on policy credibility, yet key settings remain weak. The NZ ETS does not currently provide a robust long-term investment signal, high upfront capital costs remain a major barrier, electricity affordability and reliability concerns persist, and there is no clear timeline for policy improvement. Together, these factors create significant risks.
Change since 2025	The second emissions budget risk assessment has reduced, reflecting greater confidence that the NZ Steel electric arc furnace will be commissioned earlier and deliver larger emissions reductions.

Main tools **EB2: No significant risks** **EB3: Significant**	The main policy tools for industry are the (disestablished) GIDI fund, the NZ ETS and national direction on industrial process heat. For the second emissions budget, projected emissions reductions are largely expected to be delivered by committed and sufficiently advanced GIDI projects, particularly NZ Steel's electric arc furnace and Fonterra's fuel-switching investments. For the third budget, progress relies more heavily on emissions pricing and regulation. Confidence in the NZ ETS is fragile, limiting its ability to provide a durable investment signal, and industrial allocation issues remain unresolved. While the coal-boiler phase-out by 2037 provides a strong signal and hard backstop, it may not drive switching early enough to materially affect the budget, and transition to a new resource management system adds uncertainty.
Funding and finance **EB2: Moderate** **EB3: Significant**	For the second budget, previously committed public co-funding under GIDI agreements drives most industrial reductions. For the third budget, the lack of funding support (as at 1 April), weak NZ ETS incentives and limited progress on mobilising private finance limit firms' ability to overcome high upfront capital costs. Uncertainty over energy prices remains a significant barrier.

Timelines **Moderate**	Main policy tools are already in place, but supporting actions to strengthen long-term investment lack clear timeframes. There is no roadmap to address known policy gaps, such as issues with industrial allocation, or how to incentivise further reductions in the 2030s when the NZ ETS is no longer able to. Given multi-year lead times for industrial projects, policies introduced in the 2030s may arrive too late to influence outcomes.
Barriers and enablers **EB2: Moderate** **EB3: Significant**	Workforce constraints, information gaps and immature low-emissions fuel supply chains hinder industrial fuel switching. Initiatives such as the Wood Energy Strategy aim to address some barriers, but benefits will take time to materialise. Additional R&D support is likely to be needed for hard-to-abate sectors. Deteriorating gas supply and LNG procurement create conflicting signals and uncertainty for firms planning fuel switching.

Policy scorecard: Electricity generation

Overall assessment

EB2: Significant risks

EB3: Moderate risks

There is significant risk that current policies will not deliver the expected emissions reductions in the second emissions budget. Planning reforms and market initiatives have progressed. However, the electricity system still lacks sufficient low-emissions firming to manage dry years and winter peaks while maintaining affordability and reliability to support electrification.

Near-term security responses, such as the Huntly coal reserve, improve reliability but raise emissions risk. Weak NZ ETS price signals limit the scheme's ability to drive further emissions reductions. Government procurement of LNG infrastructure has advanced, but it carries uncertain emissions and affordability implications, and path-dependence risks.

For the third emissions budget, the outlook improves only if policy delivery is sustained, lower-emissions firming is delivered at scale and investment pathways avoid locking in emissions-intensive options. The absence of a clear, long-term energy system roadmap remains a persistent risk.

Change since 2025

The second emissions budget shifts from moderate to significant risk, reflecting:

- further deterioration in the gas outlook and greater coal reliance
- new uncertainty and risks associated with pursuing LNG
- greater weight on whether capital is flowing to a mix of assets that support firming and flexibility, rather than total renewable build.

Main tools

EB2: Significant

EB3: Moderate

Policy settings combine planning and consenting reform, electricity market measures, fuel-transition initiatives and the NZ ETS. Policy clarity has improved since 2025. Securing low-emissions firming and flexibility at scale remains unresolved.

Risks have increased for the second emissions budget. Deteriorating gas availability is increasing reliance on high-emissions generation and electricity price volatility. Lack of confidence in the NZ ETS and low unit prices limit the scheme's ability to drive additional emissions reductions. Biomass substitution and geothermal reinjection may be particularly at risk.

Structural risks have persisted, yet the policy response, especially on competition, remains incremental. Measures such as non-discrimination obligations are positive but may not address incentives in the wholesale market to keep supply narrowly ahead of demand and sustain elevated prices.

High prices and tighter supply have supported renewable generation investment, with additional capacity commissioned and more under construction. Resilience to dry years or winter peaks still needs resolving with water, gas and coal availability driving volatility.

As consenting reforms bed in and electricity market initiatives mature, policy credibility improves for the third emissions budget, provided settings are sustained and lower-emissions firming solutions materialise.

Funding and finance **Moderate**	Private capital continues to flow strongly into renewable generation, with no evidence of limited investment appetite. A key risk is whether market settings direct investment toward low-emissions firming and long-duration flexibility, which are critical for emissions outcomes. Investment is largely concentrated in solar and wind generation, improving average supply but leaving shortfalls during dry periods and winter peaks. Government involvement has increased since 2025's report, through LNG procurement and upstream gas investment. This may reduce reliability risks, but can increase and lock in emissions if fossil fuels receive financial assistance while renewable and low-emissions alternatives do not. Emissions outcomes will depend on LNG contract and infrastructure design choices and whether low-emissions firming is supported.
Timelines **Moderate**	Timelines are clearer than in 2025. Most interventions targeting firming, security of supply and market performance will not materially influence outcomes until the late 2020s or early 2030s. This creates a compressed window for the second emissions budget, leaving limited scope to respond if delivery falls short. The third emissions budget is less time-constrained, but without a clear roadmap covering the wider energy system and the future role of the NZ ETS, greater clarity is needed on how and when policy gaps will be addressed.
Barriers and enablers **Moderate**	Barriers include workforce shortages, supply-chain constraints, data gaps, social licence and fragmented governance, which can delay delivery even when funding and consents exist. Limits in technology and data systems constrain demand-side flexibility at scale, meaning system stress is managed largely through fossil-fuelled firming, with emissions and affordability impacts. Public acceptance of new energy infrastructure is challenging, particularly as planning reforms limit participation. Governance remains split across agencies. Stronger partnerships with iwi/Māori could help unlock capability, capital and social licence while supporting emissions reductions.

Policy scorecard: Buildings

Overall assessment	
Moderate risks	Planned reductions are small. Current policies are fragmented and not primarily designed to drive reductions. These can plausibly deliver the planned modest reductions. Delivery depends on many small decisions by households and businesses, creating execution risk.
Change since 2025	Lower emissions reduction is projected due to modelling changes rather than policy shifts, lowering the risk.

Main tools **Moderate**	Policies to address the largest opportunity for emissions – fuel switching for space and water heating – are limited. The key barrier is the upfront cost to replace existing appliances, which current policies (as at 1 April) do not address. Emissions reductions are a co-benefit of several policies to improve buildings. These include energy efficiency standards in the Building Code, minimum energy performance standards and labelling for appliances, Healthy Homes standards, the Warmer Kiwi Homes programme, and price signals from the NZ ETS and gas distribution pricing (DPP4). Together, these can reduce energy demand and shift relative energy costs, but they will not drive fuel switching at scale.
Funding and finance **Moderate**	Fuel switching and deep efficiency upgrades in buildings require upfront capital that current policy tools do not provide. Most costs fall on owner-occupiers, landlords and businesses. With the State Sector Decarbonisation Fund closed and the planned expansion of GIDI to commercial buildings cancelled, funding is limited to targeted insulation and heating support through Warmer Kiwi Homes. DPP4 may result in higher gas network charges if mechanisms allowing cost recovery as demand declines are included. Along with price signals from the NZ ETS, this could incidentally improve the lifetime economics of electrification. However, neither policy addresses the upfront cost barrier to replacing fossil-fuel appliances.
Timelines **Moderate**	Key instruments are already in force or will commence early in the budget period, but no policies are being developed to address major gaps. The absence of an energy system strategy, including buildings, sustains uncertainty and may defer decarbonisation decisions.
Barriers and enablers **Moderate**	Barriers include workforce capability, limited data (e.g. no common energy-performance disclosures), institutional lock-in, replacement logistics that favour like-for-like gas, electricity price volatility and rising lines charges.

Policy scorecard: Electricity networks

Overall assessment	
Moderate risks	Moderate risk remains that current tools may not deliver the change required. The core regulatory tools are clear but focus on prudent investment rather than emissions reductions. Regulated electricity network price settings (RCP4/DPP4) accommodate increased investment to meet forecast electrification demand, but effectiveness depends on implementation and responsiveness to evolving demand. Many initiatives are now being delivered, yet benefits will not emerge until the late 2020s, limiting scope to adjust if needed. Ongoing gaps in data access, supply chain readiness, workforce capacity, affordability and system-wide coordination contribute to risk.
Change since 2025	No change.

Main tools	
Moderate	There has been increased investment and streamlined processes for new connections in the last year. RCP4/DPP4 (from April 2025) added innovation provisions and increased investment allowances (subject to deliverability guardrails). New distribution connection pricing rules took effect in April 2026, with further process changes expected from late 2026. Retailers must now offer time-of-use plans, and distributors must reward peak distributed generation. Consenting reforms, including the Fast-track Approvals Act 2024, can ease network development. There is progress on distributed flexibility, with pilot projects and EECA's work on smart devices ongoing. There is a moderate risk for the second emissions budget, as many initiatives are still developing. The third budget is also assessed at moderate risk as cross-system gaps remain. There is no roadmap or strategy considering integrated energy system outcomes.

Funding and finance	
Moderate	Investment in transmission, distribution and the systems that enable flexibility is rising. These costs are largely recovered from consumers through regulated charges. While this funding model is credible, the ongoing significant investment in networks needed to enable electrification and increase resilience to climate-related hazards increases costs for consumers, which creates social licence risk. This risk is compounded by general cost-of-living challenges. Bill increases should be well communicated, and impacts on customers mitigated to prevent backlash from slowing the investment needed. Affordable long-term electrification finance for households and businesses remains limited, with bank green loans short term and a council-linked scheme still in development. This creates moderate risk.

Timelines **Moderate**	Timelines are clearer in the last year for some initiatives. These include connection pricing rules (April 2026), time-of-use retail tariffs (July 2026), connection process reforms (from late 2026), RCP4/ DPP4 (in force) and new national policy statements for networks and renewables (from January 2026). Practical benefits will not emerge until the late 2020s, leaving limited scope to adjust if needed.
Barriers and enablers **Moderate**	Workforce shortages, long equipment lead-times and fragmented governance are key challenges. Network visibility and smart meter data access are improving, but remain uneven, limiting confidence in non-network solutions. These gaps need to be resolved quickly, otherwise traditional poles-and-wires expansion risks remaining the default for new demand. These factors present moderate risks.

Areas for attention

Conflicting signals and policy decisions increase uncertainty and risk locking in fossil fuels

A new wave of large, capital-intensive investment decisions is needed soon to achieve outcomes for the third emissions budget. These decisions require confidence in long-term policy settings and businesses being able to overcome high upfront costs for fuel switching, process changes and supporting infrastructure.

Government work on LNG procurement, the Gas Security Fund and Crown Minerals Act changes is framed around energy (particularly electricity) security, but together these interventions signal an extended role for fossil fuels. This increases the risk that lower-emissions investment (e.g. in storage, flexibility, biomass) is crowded out. With the gas outlook further deteriorating and LNG unavailable until at least mid-2027, firms face mixed incentives that could delay fuel switching, leading to higher emissions.

Firming adequacy remains a central system risk

Recent additions of renewable generation since winter 2024 have materially improved average electricity supply and left the system in a stronger position than during that period. However, these additions do not fully resolve dry-year resilience or winter-peak risk, particularly in the absence of scalable low emissions firming.

The electricity system continues to lack sufficient low-emissions, reliable firming to manage winter peaks and dry-period conditions, and the worsening gas outlook heightens exposure to system stress. The decision to pursue LNG introduces further uncertainty around future emissions, costs and investment signals, and risks weakening incentives to deliver lower-emissions alternatives, particularly in the absence of a clear long-term transition pathway.

Third emissions budget industrial decarbonisation risks remain unresolved

Capital availability and cost remain a central constraint. The discontinuation of GIDI, weak and uncertain NZ ETS price signals, limited demand-side support, and unresolved electricity price and contractability concerns leave many firms unable to justify or finance

multi-year investment programmes in the timeframes needed for the third emissions budget. Even where long-term phase-out signals are in place, such as the 2037 coal boiler ban, firms are likely to defer investment until closer to asset end-of-life unless switching is economically compelling or supported by additional policies. The recently announced Gas Transition Loan Guarantee Scheme may improve access to finance for some but, on its own, cannot fully address these constraints. These barriers are more pronounced for small and medium-sized enterprises (SMEs) and for Māori businesses, which often face more limited access to finance and funding options.

Workforce constraints, information gaps and uncertainty over key enablers such as biomass supply further compound risk, leaving many firms without the certainty required to invest.

There is growing industry consensus on the need for demand-side policy, reflected in calls from the Gas Working Group, the BusinessNZ Energy Council and Boston Consulting Group (via its Energy to Grow report). While the Gas Transition Loan Guarantee Scheme begins to address financing barriers, current policies remain targeted toward supply-side interventions, and broader support for firms ready to transition away from fossil fuels remains limited.

Flexibility presents a big opportunity, but needs rapid scaling to avoid higher cost options being locked in

Progress has occurred in several initiatives to improve the flexibility of the electricity system, such as time-of-use retail plans, distribution pricing that better recognises the value of distributed generation and flexibility, and regulatory changes to help enable distributed energy resources such as rooftop solar and batteries. Ongoing flexibility trials generate lessons, while new research has highlighted significantly greater potential than previously estimated of up to $3 billion in avoided costs.[167]

However, progress to date has been largely concentrated in the residential and small-consumer segments. Mechanisms and incentives for commercial and industrial flexibility remain limited.

Core enablers such as data access, network visibility, open communication protocols, deployment of smart devices and workforce capability require coordinated action. With electrification expected to accelerate, there is a narrow window to resolve these barriers and demonstrate flexibility at scale. Doing so could enable networks to defer or avoid some capital-intensive reinforcement, lowering long-term costs for consumers and improving the affordability of electrification.

New opportunities

Falling costs, rising uptake, and growing value of solar and batteries

As highlighted in last year's report, prices for solar panels and stationary battery systems have continued to trend downward, driven by global manufacturing scale-up and technology evolution. While international cost reductions do not fully translate into lower installed prices domestically, recent market evidence indicates that solar is becoming increasingly attractive for households. Survey data from 2025 suggests that average domestic residential solar installation costs were around $2 per watt, down from roughly $2.20–$2.30 per watt in 2024, with larger systems offering better value.[168]

Battery costs remain comparatively high but have continued to edge downward. Survey evidence suggests households increasingly value batteries for energy independence, resilience during outages and greater control over electricity use.[168] There are early signs that the uptake of solar and batteries is accelerating; although, deployment remains well below levels that would materially reduce peak demand pressures or system stress at scale.

There remains significant scope to accelerate uptake through cost-reflective electricity and lines pricing, alongside widespread access to stable, low-interest, long-term finance. Rapid, scaled-up deployment of solar and batteries can reduce energy costs for consumers, and defer more capital-intensive network and generation investment, while supporting emissions reduction across the electricity system.

Recent geopolitical instability and heightened global energy security concerns underscore the value of distributed, domestically sourced energy resources. While not a substitute for system-level solutions, distributed solar and storage can play a complementary role in strengthening resilience to external shocks and fuel supply risks.

Growing opportunity to decarbonise industrial heat

Box 7.1: Low-carbon process heat

The improving economics of low-carbon process heat solutions can help address high and volatile gas prices that are causing scaled-back industrial production and business closures.

Industrial process heat is used for manufacturing activities such as cooking, drying, cleaning and sterilisation. It is a significant source of emissions (approximately 2.8 $MtCO_2e$)[xiv] with coal and gas boilers having long been the dominant technologies. Although low-carbon alternatives have been technically viable for years, their economics were often uncertain.

Low-carbon options, particularly industrial heat pumps, are now cost-competitive in more situations, including some where they replace existing fossil fuel systems ahead of end-of-life. This reflects updated assumptions on energy prices, technology performance and utilisation. This is true for a range of gas prices – refer to the Technical Annex for further analysis. This creates a significant opportunity to cut emissions from industrial heat, particularly in low-temperature applications, which make up the largest share of demand.

The analysis calculated the Levelised Cost of Heat (LCOH, which is the total discounted lifetime cost of the heating system divided by the total heat delivered) for different technologies. The results are summarised in **Figure 7.5** below.

Heat pumps are now often the lowest cost for low-temperature heat

For low-temperature process heat (below 100°C), industrial heat pumps are typically the lowest-cost option when assessed over their lifetime.

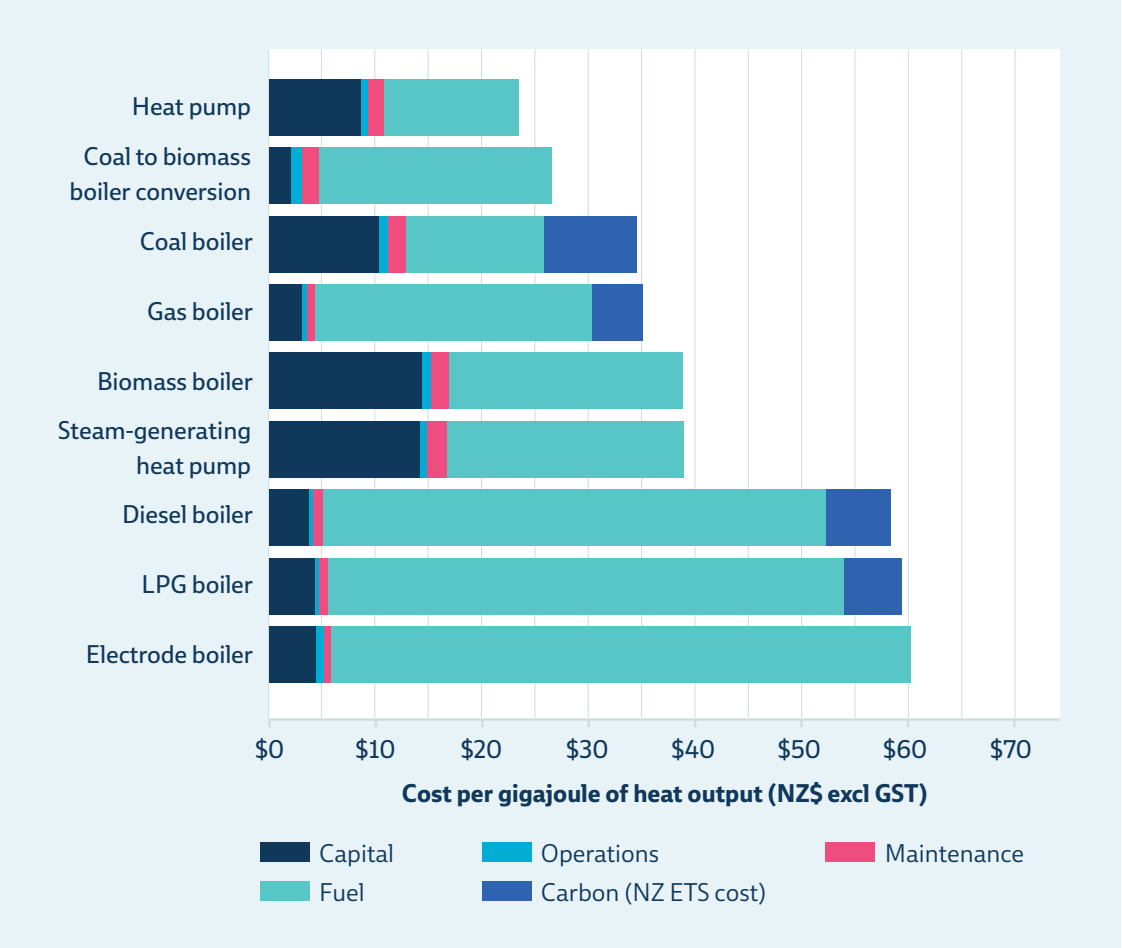
Because heat pumps use electricity to move heat rather than generate it directly, they are highly efficient. This efficiency advantage translates into lower operating costs, which increasingly outweigh their higher upfront capital cost. The analysis finds that:

- Heat pumps are generally cheaper than fossil fuel boilers for greenfield installations or for replacement at end of life (**Figure 7.5**).
- They can also be cost-competitive when switching from *existing* fossil fuel systems. Heat pumps are significantly cheaper than continuing to run gas, LPG and diesel systems, and are even slightly cheaper than the running costs of the lowest-cost fossil option (coal): $23.50 per gigajoule for capital and operating costs compared to $24.10 for the operating costs of a coal boiler alone.

Heat pumps can meet a large share of industrial demand, with most low-temperature heat use in sectors such as food processing falling within their operating range.

xiv For low- and medium-temperature heat in 2023, calculated using EECA's Energy End-Use Database.

Figure 7.5: Lifetime cost for new boiler systems or replacement at end of life, for < 100°C applications for an average user



Source: Commission analysis

Low-carbon options can also be competitive for higher temperatures

For medium-temperature process heat (100–300°C), several low-carbon options are available.Economics vary more than for low-temperature heat and depend heavily on site-specific conditions.

Electrode boilers

Electrode boilers are a mature option with many domestic installations. They have relatively low capital costs and can be integrated into existing steam systems. Uptake has been supported by public co-funding and favourable electricity supply arrangements. Their lower efficiency results in higher operating costs and higher lifetime costs than other low-carbon options, although they can be competitive in niche or low-utilisation applications.

Steam-generating heat pumps

These systems can deliver heat up to around 150°C at lower efficiency and higher cost than standard heat pumps, but still more efficiently than fossil fuel systems. They are commercially proven internationally and have improved rapidly. They can be competitive with new gas or coal systems, and with existing gas systems, in some high-utilisation settings, where a suitable waste heat source is available.

Biomass boilers

Biomass boilers can provide medium- and high-temperature heat and can offer lifetime costs similar to steam-generating heat pumps. Their feasibility depends strongly on local biomass availability and logistics. Where low-cost biomass fuel is available, or where existing coal boilers can be converted, biomass can be cost-competitive when switching from fossil fuel systems.

What is shaping the economics of low-carbon process heat?

Several factors are improving the business case:

- Declining gas availability has raised prices and price volatility.
- Technology improvements and international deployment are expanding the range of applications and lowering costs.
- Operational cost savings accumulate over time if firms can access capital.

Declining gas availability is an operational risk for industrial users, with some firms unable to secure reliable supply, creating the potential for scaled-back production or closure. More broadly, higher and more volatile gas prices are squeezing margins and eroding competitiveness for gas-reliant manufacturers. The improving economics of low-carbon process heat options are particularly significant in this context, as they provide a viable pathway for many firms to manage energy cost and supply risks while reducing emissions.

Costs remain highly site-specific

Project economics depends on factors such as:

- **Utilisation** (how often the plant runs), which affects how capital costs are spread
- **Relative energy prices**, which can vary significantly with location, contracts and scale.
- **Infrastructure requirements**, including potential electricity network upgrades.
- **Availability of biomass**, which can determine project viability.

Emissions reductions

There is a growing opportunity to reduce emissions from industrial process heat, but high upfront capital costs are a key barrier. Limited access to finance and weak policy signals mean that even projects with strong long-term economics may not proceed. Addressing these barriers, which the Gas Transition Loan Guarantee Scheme announced in May 2026 may help to do, could unlock the opportunity to reduce industrial emissions beyond currently projected levels. For example, pursuing decarbonisation at the pace of the Commission's EB4 demonstration path would reduce non-transport energy emissions in 2035 by 3.0 $MtCO_2e$ (relative to current Government projections). This would be a 4.5% reduction in total projected 2035 emissions.

7.1 Embodied emissions

Embodied emissions are those produced across a product's lifecycle, from raw material extraction, through manufacturing, to end of life. They are a major contributor to emissions in the building sector, particularly from emissions-intensive materials like steel and cement.

Embodied emissions from buildings were 2.8 $MtCO_2e$ in 2023,[146] an increase of approximately 0.3 $MtCO_2e$ since 2018.[xv] These emissions are often perceived as difficult to reduce due to the carbon intensity of conventional materials. However, lower carbon alternatives are available for most residential and low- to mid-rise commercial buildings. For example, greater use of timber and engineered wood products, alongside low-emissions design approaches, can materially reduce embodied emissions.

Institutional lock-in is the primary constraint, with entrenched design norms and procurement practices, limited sector-wide awareness, and weak regulatory or financial incentives slowing adoption.

Initiatives on construction waste reduction and circular construction practices are under way, alongside ongoing research into regulatory and system barriers to material reuse, repurposing and recycling.[135,169]

Key improvements have been made in data availability and tools. A national embodied carbon data repository has improved coverage and accessibility of material-level data, and funding has been approved for an industry-led benchmarking platform expected to be operational in 2026.[135] These initiatives address longstanding barriers related to limited information and inconsistent methodologies. Uptake is voluntary and relies on early adopters.

Regulatory signals also remain limited. Embodied emissions are not currently considered within the Building Code, which constrains the pace and consistency of change and reinforces existing inertia in material choice and design. Stronger regulatory signals could support more rapid adoption of low-emissions materials and design practices.

In summary, current initiatives are promising but rely on voluntary uptake. There is no overarching strategy that integrates data, capability-building, incentives and regulation into a coherent framework to drive widespread adoption. Stronger incentives and coordinated action could accelerate uptake, unlocking lasting emissions reductions using proven existing technologies and practices.

xv Commission analysis of page 228 and Figure 12.1 in Aotearoa New Zealand's first emissions reduction plan: https://environment.govt.nz/assets/publications/Aotearoa-New-Zealands-first-emissions-reduction-plan.pdf

Chapter 8

Transport

Transport provides significant opportunities to reduce emissions, lower costs and improve health and resilience, but relying on the few existing policies will not deliver these benefits.

Snapshot of emissions

Total sector emissions	
2023	**2024**
13.8 $MtCO_2e$	13.7 $MtCO_2e$

Percentage of country's gross emissions
18.1%

Percentage of projected net reductions (2026–2030)
8.7%

Changes in emissions between 2023 and 2024
-0.6% in passenger transport
+0.2% in freight
-1.5% in domestic aviation

Transport emissions come from burning fossil fuels for travel and freight movement by road, rail, air or coastal shipping. They can be reduced by decarbonising the light and heavy vehicle fleets, greater use of rail or coastal shipping for freight, as well as more fundamental shifts in how we plan, invest in and move around cities.

Transport accounts for about a fifth of the country's emissions. There is a risk that, without intervention, lower-emissions technologies and practices are missed out on and rising transport use offsets emissions reductions.

Key points

Changes in emissions

- Transport emissions declined slightly in 2024 to 13.7 $MtCO_2e$, down 0.1 $MtCO_2e$ (0.5%) from 2023.
- Between 2023 and 2024, changes in emissions from passenger transport and freight were small. Aviation emissions fell slightly, despite domestic flight hours increasing to their highest point in over a decade, and road freight volumes continued to decline.

Policy changes in the last year

- Policy changes in the last year that could *reduce* emissions include time-of-use charging legislation and funding support for electric heavy vehicles.
- Policy changes that may *increase* emissions include changes to the Clean Vehicle Standard and its potential removal, and delays installing public electric vehicle (EV) charging points.

Risks to achieving planned emissions reductions

- There are significant risks in most areas. This is due to changes to the Clean Vehicle Standard, and uncertain timing of the Low Emissions Heavy Vehicle Fund (LEHVF) and the sustainable aviation fuel (SAF) mandate. As well, there are no policies to lower upfront purchase costs of light EVs or address the barriers identified in the Aotearoa New Zealand Freight and Supply Chain Strategy.
- In the second emissions budget period there are moderate risks to achieving a shift from cars to walking, cycling and public transport, and this rises to significant for the third budget. This is due to poor integration of land-use and transport planning, and reduced funding for walking and cycling infrastructure after 2027.

Areas for attention

- Supporting EV uptake in the light vehicle fleet with supply- and demand-side measures. Increased EV uptake helps achieve emissions reductions, is cheaper for households in the medium to long term, and provides resilience against international fuel price shocks.
- Integrating urban development and transport planning to encourage alternative transport modes. Compact, mixed-use areas that support walking, cycling and public transport can reduce emissions and deliver significant co-benefits.
- Incentivising zero-emissions heavy road freight. The electrification of a wide range of heavy vehicles is being proven through trials and fleet conversions, and continued support can help overcome cost and charging barriers.

Opportunities for further reductions

- Battery technology such as vehicle-to-grid (V2G) and vehicle-to-home (V2H) is maturing and offers potentially significant benefits to consumers and the energy system as it gets closer to commercialisation.[170,171]
- EVs are increasingly available at prices comparable to or better than internal combustion engine (ICE) vehicles after five years. High petrol prices improve this case, and a wider range of EV models and falling battery costs continue to drive lower EV prices.

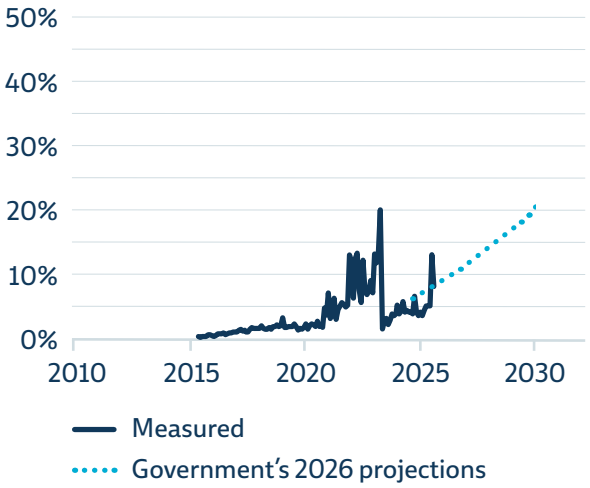
Progress to date

Emissions reductions

The key trends in transport emissions are as follows:

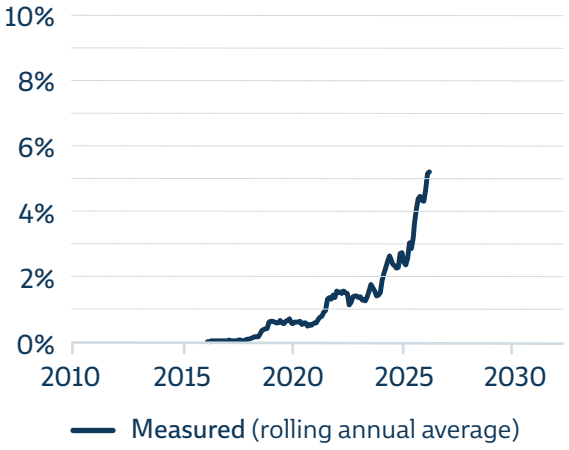
- Passenger transport emissions decreased 0.6% between 2023 and 2024. Vehicle kilometres travelled increased 0.87%,[172] but this was partially offset by improvements in fuel efficiency and EV uptake. The share of zero- and low-emissions vehicles[xvi] entering the light fleet was around 5% in late 2025 and early 2026, before rising to 13% in March 2026 due to high fuel prices (**Figure 8.1**).
- Freight emissions increased very slightly between 2023 and 2024. Road freight volumes continued to decline.[172] Goods moved by rail decreased by 244. 8 million tonne kilometres between 2023 and 2024, continuing a three-year decline. This rose slightly in 2025 but is still 807 million tonne kilometres below the post-Covid high in 2021.[171]
- Zero- and low-emissions heavy vehicle uptake has doubled in the last year to an average share of 5.3% (**Figure 8.2**).
- Domestic aviation emissions decreased 0.01 $MtCO_2e$ between 2023 and 2024 and have not yet returned to 2019 levels.[xvii] Domestic flight hours in 2025 were the highest in over a decade, exceeding pre-Covid levels, partly offsetting fuel efficiency improvements.[173]

Figure 8.1: Share of zero- and low-emissions vehicles entering the light fleet (%)



Source: Commission analysis

Figure 8.2: Share of zero- and low-emissions heavy vehicles entering the fleet (includes buses)[xviii] (%)



Source: Commission analysis

xvi Battery electric, plug-in hybrid electric vehicles and fuel cell electric vehicles.

xvii The previous GHG Inventory had domestic aviation emissions in 2022–2023 rising to above pre-Covid levels but a methodological change has produced lower emissions for these years in the latest GHG Inventory. This is due to updated jet A1 aviation fuel allocation between international and domestic aviation and improved data availability.

xviii This includes buses due to vehicle categories in the GHG Inventory.

Policy progress

This section sets out policy changes that could increase or decrease transport emissions.

Changes in the last year

- Clean Vehicle Standard charges have been temporarily reduced by nearly 80%, existing credits protected until 31 December 2028 and a review started with recommendations due to Cabinet by June 2026, through the Clean Vehicle Standard Bill passed in November 2025.[36]
- The Land Transport Management (Time of Use Charging) Amendment Bill will come into force in November 2026 after passing its third reading in November 2025.[174]
- Targeting installation of 2,574 new public charge points, two interest-free loans to ChargeNet and Meridian Energy totalling $52.7 million were announced. The companies are co-investing $60 million.[175]
- The Low Emissions Heavy Vehicle Fund vehicle categories have been expanded, eligibility for conversions broadened, and grant levels increased through a refresh in May 2025.[176]
- $5 million of co-funding has been made available through an Energy Efficiency and Conservation Authority (EECA) Request for Proposals for electric heavy vehicle charging infrastructure.[177]

Changes since the start of 2022

- The Government Policy Statement on land transport 2024 (GPS-LT)[113] and the 2024–2027 National Land Transport Programme (NLTP)[178] were finalised, including the Rail Network Investment Programme 2024–2027 (RNIP) and a Coastal Shipping Resilience Fund.
- Emissions targets set by the Clean Vehicle Standard were amended, the Clean Car Discount was discontinued, road user charges (RUCs) for EVs and plug-in hybrid electric vehicles (PHEVs) were introduced, and public EV charger grants were replaced with an interest-free loan scheme.[179–182]
- The Government announced that two new Cook Strait ferries due in 2029 will have road and rail decks.[183]
- The Aotearoa New Zealand Freight and Supply Chain Strategy was published in 2023.[184]

Policy assessment

Policy scorecard: Reduce passenger transport emissions intensity

Overall assessment	
Significant risks	A fuel efficiency standard is a credible policy, but changes and an ongoing review of the Clean Vehicle Standard will likely mean its impact on vehicle emissions and EV uptake will be limited, particularly without policy addressing the main barrier of higher upfront prices. Public EV charging rollout is behind schedule.
Change since 2025	Our overall risk assessment has been raised from moderate to significant risks. This is due to the lowering of the Standard's charges and uncertainty over its future.

Main tools **Significant**	The Clean Vehicle Standard is a credible policy and similar schemes exist in many countries. Relying on one policy poses risks to ongoing emissions reductions. Charges for failing to meet emissions limits have been lowered and the Government is considering the Standard's future.[37] Any further weakening, combined with the absence of policies targeting the upfront cost of EVs, would slow the shift to lower-emissions vehicles. A target of 10,000 public EV charging points by 2030 and the Supercharging EV Infrastructure work programme are credible policies. The New Zealand Emissions Trading Scheme (NZ ETS) is expected to play a supporting role as it has a limited effect on driving behaviour.
Funding and finance **No significant risks**	The Standard has transitioned from government funding to a cost-recovery model, with importers and consumers covering ongoing costs. Current funding appears sufficient and stable. Funding for EV charging continues and the Government has updated how it co-invests with the private sector.
Timelines **Moderate**	The Standard is an ongoing policy but there is no commitment to continue it beyond 2029, and it is being reviewed. There are no plans or interim deadlines for the installation of public EV charging points to meet the target of 10,000 by 2030. It is currently behind schedule.
Barriers and enablers **Significant**	There is no policy to address the higher purchase price of EVs compared to ICE vehicles. Prices are trending downwards but this is uneven across markets.[26] Higher prices are a particular barrier for low-income households, of which iwi/Māori are over-represented. Removing the RUC exemption for EVs has increased ownership costs. Introducing a flat RUC rate puts EVs on a level playing field with petrol vehicles but reduces incentives for efficient petrol vehicles. There is no policy support for low-carbon liquid fuels.

Policy scorecard: Reduce demand for high-emissions passenger transport

Overall assessment	
EB2: Moderate risks **EB3: Significant risks**	Investing in walking, cycling and public transport and time-of-use charging are credible tools. Greater emissions reductions could be achieved by combining these with integrated land-use and transport planning that prioritises walking, cycling and public transport. Public transport funding has been increased but progress is put at risk by decreasing funding for walking and cycling after 2027.
Change since 2025	No change.

Main tools **Moderate**	Investment in walking, cycling and public transport and time-of-use charging schemes are credible policies. The passing of the Time of Use Charging Bill provides more certainty for potential schemes, though mode shift does not appear to be a focus. There is no available funding for new walking and cycling projects.
Funding and finance **EB2: Moderate** **EB3: Significant**	There is funding for public transport and existing walking and cycling projects only in NLTP 2024–2027. Possible cost overruns for major public transport projects and higher fare recovery targets create risk, and private funding has fallen over the last five years. From 2027, funding for walking and cycling is expected to decrease due to tighter rules on using other funding streams and maintenance costs for existing facilities. Walking and cycling funding relies heavily on local government, which faces its own constraints. Proposed rates caps[185] may further limit the funding available.
Timelines **Moderate**	Implementation delays pose moderate risks to meeting the second and third emissions budgets. Detailed timelines are restricted to the current NLTP period but there is a 10-year funding indication through the GPS-LT and a process for the next 3-year round of project funding. A national ticketing system has been launched and is expected to be operational throughout the country by the end of 2027.[186,187]
Barriers and enablers **Moderate**	The low-density and dispersed development of urban areas has led to poorly integrated land use and transport infrastructure, posing a significant barrier to reducing transport emissions. Decisions around land use, transport and housing are often not coordinated. There could be greater risk to achieving future emissions budgets if planning and investment decisions continue to prioritise roading infrastructure and private vehicles. There are significant opportunities for improved health and social outcomes for iwi/Māori from increased walking and cycling.

Policy scorecard: Reduce freight emissions intensity

Overall assessment	
Significant risks	The main policy tools are credible but there is a reliance on the Low Emissions Heavy Vehicle Fund (LEHVF). Funding is due to end in 2028 and its future is uncertain. Timelines are a particular risk due to long lead times for infrastructure and fleet replacement and a lack of clarity around the future of policies. Actions would benefit from being part of a coherent, integrated approach to the freight system with clear timeline commitments.
Change since 2025	No change.

Main tools **Moderate**	The LEHVF and RUC exemption for electric heavy vehicles are credible policies. There is uncertainty about which vehicles the market will choose and whether LEHVF funding is sufficient. The Rail Plan, RNIP and Coastal Shipping Resilience Fund are credible policies but there are no concrete policy proposals for low-carbon liquid fuels or alternative fuels for coastal shipping.
Funding and finance **EB2: Moderate** **EB3: Significant**	Funding for the LEHVF is available until 2028. The Government has not confirmed whether the fund will be renewed once it is fully committed, either by 2028 or earlier if demand is high. If funding is not renewed, or is insufficient, road freight emissions may not significantly reduce due to high upfront costs of zero- and low-emissions heavy vehicles. Funding for rail improvements continues and Budget 2025 allocated greater funding for RNIP in 2026/27. Funding may not be sufficient to address maintenance challenges and deliver a resilient network over the longer term.[188]
Timelines **Significant**	The LEHVF end date is uncertain if funding is exhausted. The RUC exemption for electric heavy vehicles has been extended – a further decision will be required in 2027. Detailed timelines are needed for actions stemming from the Rail Plan and other supporting policies (e.g. alternative fuels, charging infrastructure and regulatory barriers to heavy zero- and low-emissions vehicles).
Barriers and enablers **Moderate**	The LEHVF and RUC exemption target cost barriers for road freight. Other barriers need addressing. For example, vehicle mass and dimension rules, charging access beyond depots and driving behaviour could be addressed by supporting policies in the second emissions reduction plan but greater clarity is needed on timelines. Māori-owned businesses make up a significant proportion of the transport sector but often face difficulties accessing capital and higher borrowing costs, making it harder to decarbonise.

Policy scorecard: Reduce demand for high-emissions freight

Overall assessment	
Significant risks	The main policy tools are credible, but a lack of detailed actions and timelines creates a risk of freight emissions increasing. The Aotearoa New Zealand Freight and Supply Chain Strategy identifies barriers across the sector but lacks measures to address them, and the Rail Plan and Coastal Shipping Resilience Fund will not do so on their own. A substantive work programme is behind schedule, and no progress has been made on a national action plan to reduce maritime emissions and set decarbonisation targets.
Change since 2025	No change.

Main tools **Significant**	The Rail Plan, RNIP and Coastal Shipping Resilience Fund will contribute to reducing freight emissions over the medium to long term but will not address the issues identified in the Strategy on their own. The status of a national action plan to reduce maritime emissions and set targets is unclear.
Funding and finance **Moderate**	NLTP/RNIP funding continues and Budget 2025 allocated greater funding in 2026/27 to deliver the priorities set out in the Rail Plan. The funding may not be sufficient to address maintenance challenges and deliver a resilient network over the longer term,[188] and there is no evidence of funding for Aotearoa New Zealand Freight and Supply Chain Strategy initiatives. Recipients of the Coastal Shipping Resilience Fund have been announced.[189]
Timelines **Significant**	A lack of detailed actions underpinning the long-term outlook of the Aotearoa New Zealand Freight and Supply Chain Strategy creates risk due to the long lead times for freight infrastructure. A signalled work programme identifying actions for freight and supply chains is overdue. There is no timeline for a national action plan or targets for maritime emissions.
Barriers and enablers **Moderate**	The Aotearoa New Zealand Freight and Supply Chain Strategy and Rail Plan identify the main enablers and barriers but the next steps to address these were not implemented in 2024 as planned. There are opportunities in the Māori economy, which provides examples of investment in key enablers (e.g. Ruakura Superhub) and overall growth. Key freight infrastructure (particularly the infrastructure required to facilitate the movement of freight between trucks, rail and coastal shipping, e.g. integrated freight hubs) and workers and skills are key enablers that require focus to support decarbonisation.

Policy scorecard: Reduce domestic aviation emissions

Overall assessment	
Significant risks	There is no evidence of policy detail or implementation of a SAF mandate. Despite no forecast emissions reductions in the second emissions budget, delayed policy action, slow aircraft efficiency improvements and rising demand risk emissions increasing.
Change since 2025	No change.

Main tools **Significant**	A SAF mandate is a credible tool, but its status is unclear. There is no SAF uptake forecast for the second emissions budget, but without implementation progress it is unlikely that SAF uptake will deliver its projected emissions reductions in the third emissions budget. NZ ETS exposure should encourage efficiency improvements and affect demand, but a significant price difference between conventional jet fuel and alternative fuels means the current low ETS price is not sufficient to encourage SAF uptake without additional policy support. Government projections assume an 8% adoption of battery electric planes for regional flights in 2035 but there is no policy support. Changes to emissions compliance obligations could put this at risk if they affect airline costs.[190]
Funding and finance **Moderate**	Domestic SAF production would require private investment from producers and airlines. The costs would fall primarily on the private sector and consumers. Efficiency improvements through fleet renewal are driven by commercial needs and costs do not appear to have a significant financial impact for airlines.[190]
Timelines **EB2: Moderate** **EB3: Significant**	Implementation of a SAF mandate is well behind announced timelines and the Government does not appear to be pursuing this policy. Actions to support SAF adoption are needed now to achieve forecast emissions reductions in the third emissions budget.
Barriers and enablers **Moderate**	Higher costs of SAF production compared to fossil jet fuel and the lower availability of supply could affect consumer costs or airline profits. A SAF mandate would encourage private investment, helping address these barriers. Aircraft efficiency improvements are slower than expected, with supply chain issues delaying fleet renewal.[191,192] Domestic flight hours continue to rise and there is a risk that demand increases faster than expected and eliminates emissions reductions. Domestic SAF production could support job creation in the bioeconomy and Māori economy.

Areas for attention

Supporting EV uptake in the light vehicle fleet

EVs are available with lower total cost of ownership over five years than ICE vehicles but barriers including high upfront price and a lack of charging infrastructure can prevent people switching.[193] Financing such as low-interest loans is available[115] but may not be widely available or sufficient. He Pou a Rangi Climate Change Commission analysis also shows that efficient petrol vehicles pay significantly less in excise tax than EVs pay in RUC, which penalises EV owners (see Box 8.1, below).

EV uptake stalled when the Clean Car Discount and RUC exemption were removed and changes to the Clean Vehicle Standard have further reduced support. New EV sales rose in March 2026 with high fuel prices from conflict in the Middle East,[30] but electrification of the fleet overall is slow. Battery EVs (BEVs) made up only 2% at the end of 2025.[194] A combination of supply- and demand-side measures have been shown to best encourage EV uptake.[26,195]

Integrating urban development and transport planning to encourage alternative transport modes

Poor integration between land-use and transport decision-making has led to mismatches between where urban growth occurs and transport infrastructure. Prioritising investment in roads contributes to Aotearoa New Zealand having one of the highest car ownership rates in the world.[194,196,197] Better integration between transport and urban development can encourage compact, mixed-use areas that support walking, cycling and public transport. See Section 8.1 'Urban design, planning and infrastructure' at the end of this chapter for further detail.

A mix of incentives and disincentives, at both national and local level, can reduce emissions and deliver a range of other outcomes.[198,199] There is an opportunity when the current GPS-LT and NLTP end after 2027 to re-focus investment towards new walking and cycling projects. Active transport provides quick win opportunities and options include low traffic neighbourhoods, bike support schemes, and connected, separated cycle lanes.[107-110,200-202]

Incentivising zero-emissions and electric heavy road freight

Freight emissions intensity is expected to contribute 2.6% and 1.8% of emissions reductions in the second and third emissions budgets respectively. Zero- and low-emissions freight vehicles are becoming more viable but limited public charging infrastructure, high upfront costs and weight regulations hold uptake back. Funding and financing (e.g. green loans) is available but may not be sufficient to overcome the combined costs for some businesses.[203]

While more suited to medium trucks and urban routes, electrification of a wide range of freight vehicles is being proven through continuing trials and fleet transitions.[204] The LEHVF has supported trials, conversions and purchases. Continued support is required once the LEHVF is spent.

New opportunities

Battery and charging technology such as vehicle-to-grid and vehicle-to-home is maturing

Battery technology such as vehicle-to-grid (V2G) and vehicle-to-home (V2H) is maturing, with V2G capability available in many EVs. Drive Electric's 2026 State of the Nation Report found that if 30% of the vehicle fleet were V2G-enabled, the output would be comparable to every power station running at full capacity.[205] EECA is conducting a V2G trial in Queenstown to understand how this technology works and how households and businesses can use it effectively.[170] Research in Australia has also found that V2H charging paired with solar can significantly reduce household electricity costs.[171]

EVs are increasingly price competitive

The range of EV models continues to expand, with electric options for small cars up to sports utility vehicles (SUVs) and utility vehicles (utes). Chinese manufacturers are showing rapid growth, with new EV models available in Aotearoa New Zealand this year. Battery prices continue to fall,[12] which is reflected in EV manufacturing costs and vehicle prices, though the narrowing price premium between EVs and ICE vehicles is uneven between markets.[26] See Box 8.1 'Electric vehicles can cost less'.

Box 8.1: Electric vehicles can cost less

EVs are becoming increasingly affordable for Aotearoa New Zealand households and businesses. Many EVs are now available at prices and running costs that are comparable or better than similar fossil fuel vehicles. This reduces costs for households and protects against fuel price shocks.

These EVs are better value even without considering their much lower emissions, which help reduce the country's overall emissions and enhance health through cleaner air.

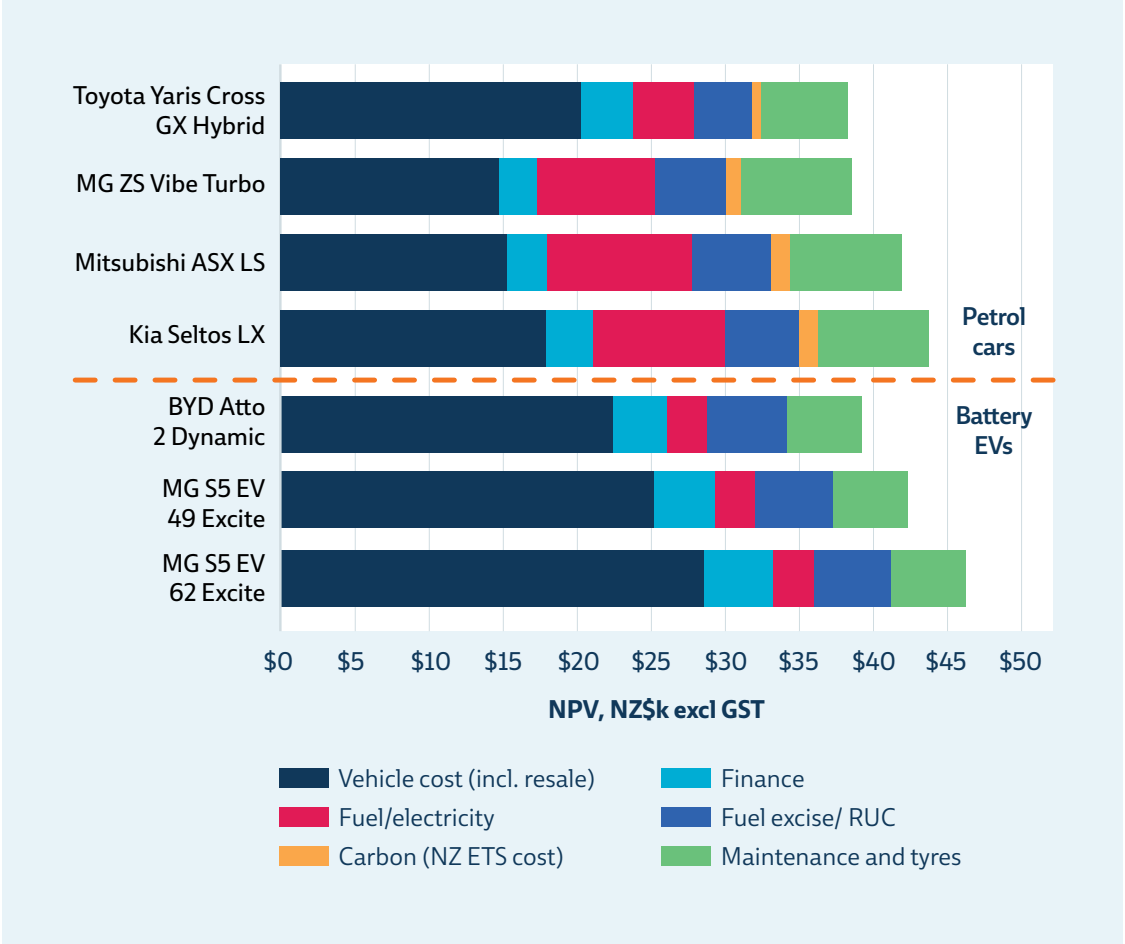
We have looked at a range of cost factors – purchase price, fuel and maintenance costs, taxes and charges, usage, resale values and finance – that contribute to the total cost of vehicle ownership. This analysis assumed a petrol price of $2.80 per litre.

An EV may have a higher purchase price, but it could more than pay for itself in lower fuel and maintenance costs over the period of ownership. Some EVs are now beating their ICE comparators on purchase price as well. The purchase prices modelled here are accurate as of February 2026.

Some EVs on the market today would generate economic benefits to the country of over $10,000 per vehicle due to the cost savings they provide. In addition, they reduce exposure to petrol price shocks.

Using the popular compact SUV class and assuming a short ownership period of five years, a BYD Atto 2 Dynamic EV costs more to buy than a petrol Mitsubishi ASX LS ($39,990 vs $28,990) but its estimated total cost over 5 years is $39,182 versus $41,838 for the Mitsubishi. Figure 8.3 shows the total cost breakdown for a selection of compact SUVs. The pattern is not uniform – some higher specification EV models have higher total costs.

Figure 8.3: Five-year total cost of ownership: compact sports utility vehicles



Source: Commission analysis

The factors that most influence the financial difference are the time that the vehicle is owned, distance travelled, the cost of petrol and resale values.

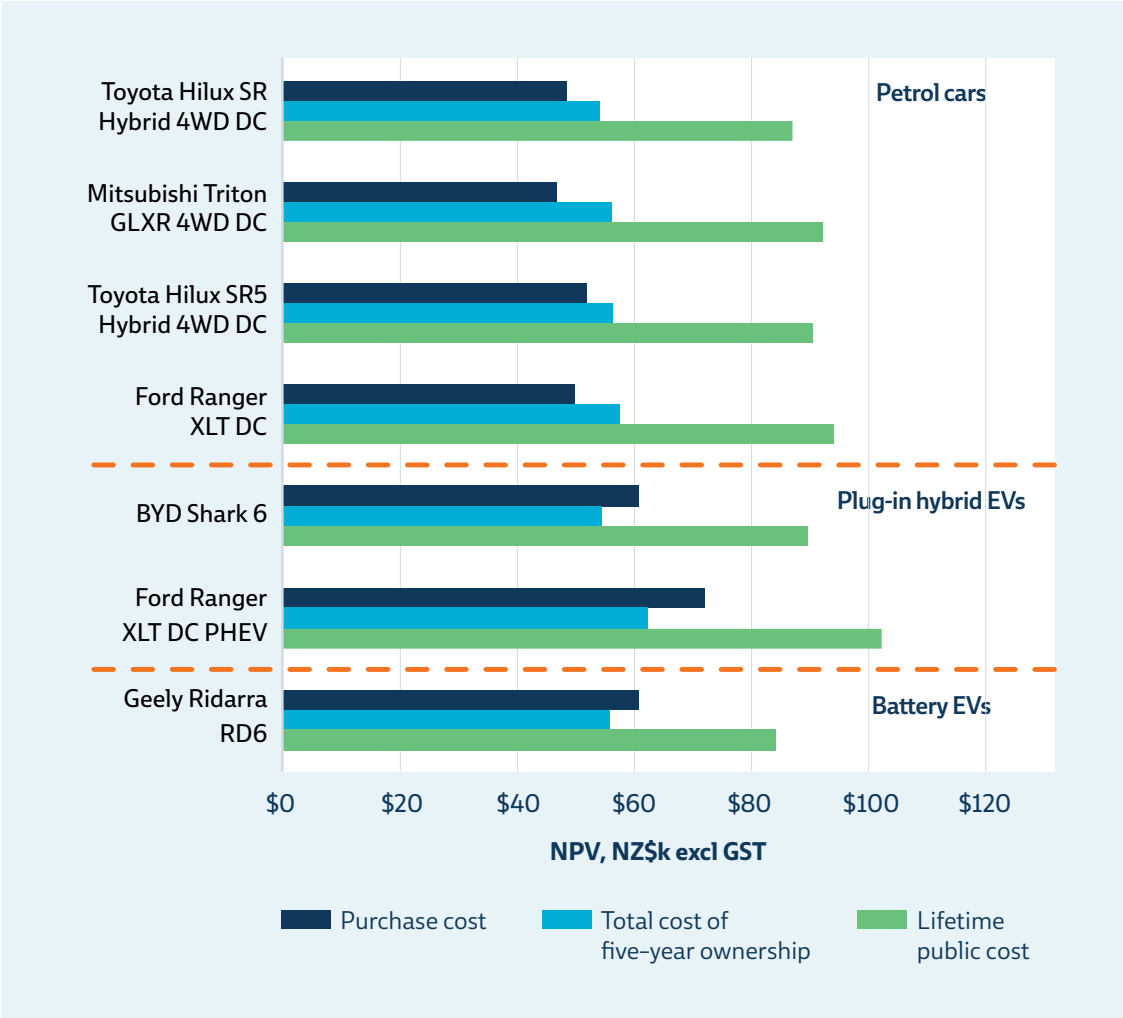
The longer an EV is owned, the more its owner will save in lower fuel and maintenance costs. Petrol prices are volatile, and these benefits will be greater with higher petrol prices.

The ownership period also influences resale price. EVs typically sell second-hand for less than ICE vehicles (reflecting the rapid advances in EV technology). While a lower resale price is a cost for the first owner, it benefits later owners.

An EV owner can pay significantly more (up to $600 per year) in road taxes for the same distance travelled than an efficient ICE vehicle owner (e.g. Toyota Yaris hybrid).

Electric vans and utes available in New Zealand showed strong business cases relative to ICE equivalents. Figure 8.4 compares the lifetime costs and total costs of the first owner of ICE and PHEV utes against the all-electric Geely Ridarra RD6. Lifetime costs further favour EVs because lower running costs are enjoyed over a longer period by different owners.

Figure 8.4: Cost comparisons: Utility vehicles



Source: Commission analysis

Emissions reductions

On the road, EVs contribute much lower emissions of greenhouse gases. Emissions incurred in the manufacture of EVs are more than for ICE vehicles, but the total lifecycle emissions are fewer.

Government projections estimate EVs will increase from 154,500 in 2026 to 743,800 in 2035 compared to the Commission's EB4 demonstration path figure of 1,530,800 by 2035. Emissions in 2035 would be 3.1 $MtCO_2e$ lower with that higher adoption.

8.1: Urban design, planning and infrastructure

The shape of cities and towns affects emissions across sectors, particularly transport. Urban design, planning and infrastructure can accelerate or constrain emissions reductions and influence a range of other outcomes.

Historical land use and transport planning and investment decisions in Aotearoa New Zealand have prioritised private car travel and left us with high car dependence.[196,197] This locks in high-emissions behaviour patterns and the infrastructure itself often has significant embodied emissions.

Issues with coordinating effectively across government and the private sector are a barrier to aligning transport, housing and infrastructure planning with each other and with climate goals and community priorities. Ongoing reform of the planning system – with the Planning Bill and Natural Environment Bill introduced in December 2025 – and changes in Government direction also inhibit the ability of territorial authorities to plan effectively.

There are policy directions and funding from Government that should encourage intensification and support public transport, but these decisions are often not coordinated. For example, Going for Housing Growth promotes intensification along transport corridors and the GPS-LT aims to unlock land outside urban centres for housing. The Government has also announced a reduction to the minimum housing capacity required for Auckland Council's Plan Change 120, from 2 million to 1.4 million.[206,207]

Local decisions can also create positive change but councils face funding challenges[185] and often experience backlash.

There is significant potential to reduce emissions and deliver a range of other benefits, including more equitable access to transport, by changing how to plan cities and invest in infrastructure. This may be expensive and take time, but better integration of urban design, infrastructure and transport planning systems with longer-term horizons can be complemented by local measures that have been shown to shift travel behaviour and create lower-emissions, healthier, more accessible cities.[199,208]

Progress to date

The Government has announced the establishment of a new Ministry for Cities, Environment, Regions and Transport.[20] This provides an opportunity to take a more holistic approach to connecting transport and housing policy, for example by considering the role of destination charging for EVs, pricing mechanisms and planning rules.

The Government also released the National Infrastructure Plan in February 2026.[209] Three transport-related recommendations are: implementing time-of-use charging and fleetwide road user charges; prioritising and sequencing major land transport projects; and upzoning around key transport corridors. There is an opportunity to use the National Infrastructure Plan and the Aotearoa Circle's Natural Infrastructure Plan[210] to reconsider interactions between infrastructure priorities and urban development needs in a way that recognises the impacts on nature and the role of nature as infrastructure to strengthen the country's economy and resilience.

Chapter 9

Agriculture

Planned policies are insufficient to deliver the required emissions reductions: further action beyond market incentives is needed to achieve the reductions the Government aims for in agriculture.

Snapshot of emissions

Total sector emissions	
2023	**2024**
40.3 $MtCO_2e$	40.1 $MtCO_2e$

Percentage of country's gross emissions
53.0%

Percentage of projected net reductions (2026–2030)
13.7%

Changes in emissions between 2023 and 2024
+1.1% emissions from dairy cattle
-2.0% emissions from sheep and beef
-0.1% emissions from soils, fertiliser and lime

Agricultural emissions are mostly methane (CH_4) from ruminant livestock digestion and farm manure, nitrous oxide (N_2O) from soils and fertilisers, and some carbon dioxide (CO_2) from urea and lime use. Agriculture emissions amount to more than half of the country's emissions and can be reduced by adjusting on-farm practices, adopting new technologies and changing to lower-emissions land uses. Cutting methane emissions from agriculture is essential to meet the 2030 biogenic methane target, which coincides with the end of the second emissions budget period.

Agriculture also generates CO_2 emissions captured under other sectors. These can be reduced through electrification and solar on farms. See *Chapter 7: Energy, industry and buildings* and *Chapter 8: Transport* for more.

Key points

Changes in emissions

- Reductions in agricultural emissions show a marked slow-down, down just 0.3% in 2024, and are expected to flatline in 2025. Government projections have worsened and now show Aotearoa New Zealand well off-track for the 2030 biogenic methane target.
- There has been some progress with mitigation technology such as EcoPond being trialled on commercial farms and included in the methodology for New Zealand's Greenhouse Gas Inventory. There have also been some setbacks, with other key technologies being delayed.

Policy changes in the last year

- In the past year there have been two major changes in agricultural emissions policy: removal of the intention to set agricultural emissions pricing by 2030 and a lower 2050 methane target range. This has limited incentives to cut emissions.
- There are limited new measures to drive agricultural emissions reductions. Other policy changes include the ongoing Resource Management Act 1991 (RMA) reforms, the Primary Sector Growth Fund, a Grass Fed certification scheme, voluntary nature credit pilot schemes and free trade agreements.

Risks to achieving planned emissions reductions

- There are significant risks to achieving the planned emissions reductions from farming in the second emissions budget period, and current policies are insufficient for the third emissions budget. The overall risk has increased since our last monitoring report.
- There is significant uncertainty as to whether market drivers and industry incentives can deliver absolute emissions reductions at the scale required. The second emissions reduction plan relies heavily on the uptake of uncertain technologies, and the limited transition to low-emissions land uses expected is also at significant risk.

Areas for attention

- Planned policies will not meet the 2030 biogenic methane target and action must accelerate. The current projections fall short of the target of a 10% reduction by 2030, with projections for agricultural methane indicating only a 6.6% emissions[xix] reduction and limited time to respond.
- Market factors alone are unlikely to reduce absolute emissions significantly. The Government needs to ensure positive work from industry can align with national targets to reduce total agricultural emissions.
- The risk of over-reliance on technological solutions with high uncertainty can be addressed by strengthening the transition to high-value, low-emissions land uses and other mitigation options.
- Supporting extension and advisory services for farmers through clearer government signals and a more coordinated national approach could support uptake of emissions-reducing practices and technologies.
- Incentivising the uptake of new farming practices and technologies, including clearer value propositions for novel mitigation technology to support early adoption.

xix Including waste emissions, a 7.9% reduction in total biogenic methane is projected by 2030.

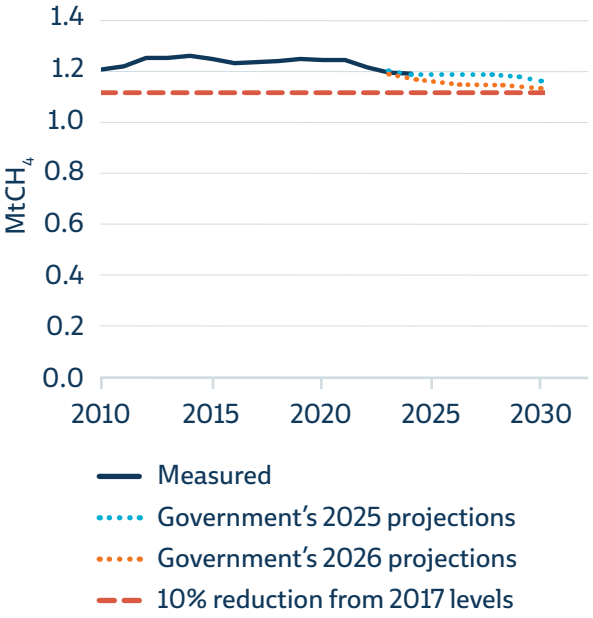
Progress to date

Emissions reductions

The key trends in agricultural emissions are as follows:

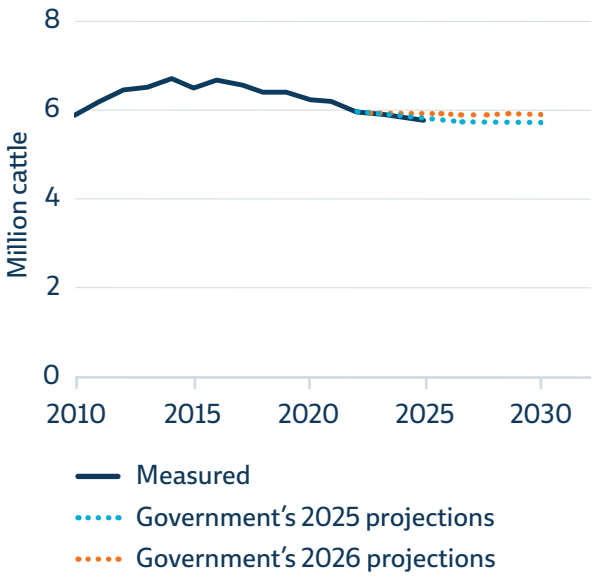
- Emissions have reduced but the rate of change is slowing. Emissions reduced 2.3% in 2022 and 2023, but this has slowed to 0.3% in 2024,[197] and is expected to flatline in 2025.[211]
- Projections for reductions in agricultural biogenic methane have worsened (**Figure 9.1**) and are off-track for the 2030 biogenic methane target.
- One new mitigation technology has been deployed on-farm (EcoPond),[212] joining low-methane sheep genetics and urease inhibitor. The rollout of others has been delayed. AgriZeroNZ tools and technology ventures increased from 9 to 12 investments.[213]
- Methane emissions from dairy cattle increased 1.1% in 2024, although dairy cow numbers were down slightly. Increased emissions were driven by increased production.[197] Production has increased further in 2025/2026,[214] and cow numbers are also projected to increase (**Figure 9.2**).[215]
- Methane emissions from sheep and beef reduced by 2.0% in 2024, driven by a reduction in sheep numbers, partially offset by increasing numbers of beef. The national sheep and beef farm area reduced by 0.3% in 2024, a smaller reduction than expected. Sheep and beef livestock numbers are drifting above the plan's latest projections (**Figure 9.3**).
- Nitrous oxide emissions are up 1.2% in 2024, driven by a 5.2% up-tick in nitrogen fertiliser use. Provisional values from the Fertiliser Association indicate a further 2.1% increase in nitrogen fertiliser use in 2025 (**Figure 9.4**).
- Favourable commodity prices for dairy, beef and lamb, combined with good pasture growing conditions through 2025/2026 have driven higher milk yields, greater animal growth and farmers holding on to stock longer.[214] These factors could increase emissions, but pressure on future commodity prices, input prices or potential El Niño drought conditions could offset those increases.

Figure 9.1: Total agricultural biogenic methane



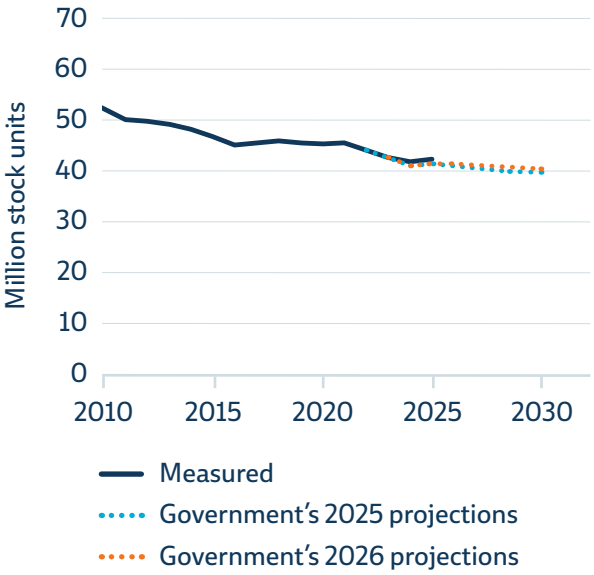
Source: Commission analysis

Figure 9.2: Total dairy cattle



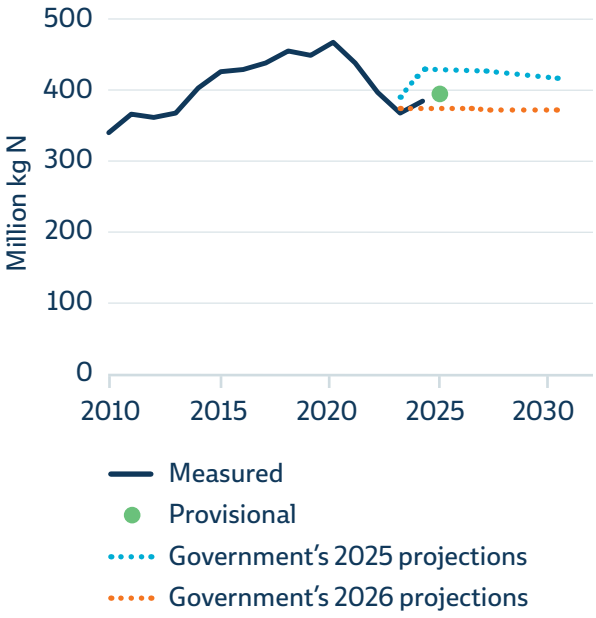
Source: Commission analysis

Figure 9.3: Total sheep and beef livestock



Source: Commission analysis

Figure 9.4: Total nitrogen fertiliser use



Source: Commission analysis

Policy progress

Policy progress to reduce emissions in agriculture is summarised below.

Changes in the last year

- Significant changes in agricultural emissions policy occurred. The Government lowered the biogenic methane target to 14–24% below 2017 levels by 2050, and removed a policy commitment to price agricultural emissions by 2030.[39]
- Overhaul of the resource management system. The Government introduced two bills to replace the RMA. Objectives include reducing compliance costs, enabling on-farm development, and supporting growth in the primary sector.[216]
- New trade and market initiatives launched. These include the conclusion of a free trade agreement with India,[217] negotiations on a Green Economy Partnership with Singapore and Chile,[218] and the New Zealand Grass Fed certification to support market differentiation.[219] Growth in low-emissions products *could* follow.
- Investigations into voluntary nature credits. The Government supported various pilot voluntary nature credit schemes aiming to give farmers alternative income streams to fund nature restoration on their land, which could facilitate emissions reductions.[220] Further backing of voluntary nature credits has since been announced.[220]
- Funding and investment changes. The Primary Sector Growth Fund (PSGF) was introduced, replacing the Sustainable Food and Fibre Futures (SFFF) Fund.[217] Approximately 6% of PSGF funding has so far been allocated to projects that may contribute to reduced emissions from agriculture.[221] Funding of $36 million over four years was announced in Budget 2025 to support catchment groups.[219]

Changes since the start of 2022

- First standard on-farm emissions methodology released by the Ministry for Primary Industries (MPI) in December 2024.
- Streamlining of regulations for low-emissions agricultural products through the Agricultural and Horticultural Products Regulatory Review.
- The Government set a target to double the value of exports in 10 years (by 2034).
- Establishment of the Centre for Action on Agricultural Emissions and its key components, the Ag Emissions Centre and AgriZeroNZ.
- Setting up of MPI On Farm Support service.
- Nitrogen fertiliser cap limits reported annually from the 2021/22 farming season.

Policy assessment

Policy scorecard: Reduce emissions from farming

Overall assessment	
EB2:Significant risks **EB3: Insufficient**	The main policy tools of improving access to mitigations and supporting emissions reductions are useful, but are not sufficient to achieve the level of reductions indicated in the Government's projections. There is substantial uncertainty that industry incentives or policies will drive sufficient reductions in absolute emissions in the second emissions budget and there is no credible policy framework beyond 2030. As noted in our 2025 emissions reduction monitoring report, the plan's strong reliance on technology presents risks: while some tools are available, others face delays or unresolved uncertainties, and there is no clear contingency if they fail or are not adopted. This focus may also slow improvements in existing on-farm practices, which could benefit from stronger advisory support. With the removal of emissions pricing by 2030, there is an intensified risk that market-driven incentives reduce emissions intensity without achieving necessary reductions in gross emissions.
Change since 2025	Our assessment has changed from moderate (second emissions budget) and significant risk (third emissions budget) in 2025 to significant and insufficient, respectively. The removal of emissions pricing has reduced incentives for absolute reductions, and there is no credible policy framework beyond 2030.

Main tools **EB2: Significant** **EB3: Insufficient**	Key policies include access to mitigations, support for emissions reductions and market drivers. Technologies suited to pasture-based systems could reduce emissions significantly, and the pipeline and capacity to bring products to market has increased. However, further work is needed to ensure widespread adoption and impact of novel technology at scale. Support for producers is uneven, limited and largely driven by dairy companies, with current initiatives likely to produce only gradual change. There is little coordinated national effort, and Government signals have reduced the perceived importance of emissions reductions. Uptake will require clearer farm-level evidence, stronger guidance and better coordination across government, industry and research bodies. The removal of agricultural emissions pricing by 2030 shifts responsibility to industry. Current market signals encourage higher production, which may increase emissions despite efficiency gains. Existing incentives target emissions intensity rather than absolute reductions and may be insufficient or short-lived. With rising livestock units, risks that future dairy cow numbers could be higher, and uneven incentives, there is a high risk that emissions will not decline as expected. Overall, the policy package is not a credible framework to reduce emissions at the required rate due to technology risks, limited support and weak incentives.
Funding and finance **EB2: Moderate** **EB3: Significant**	Funding relies on a mix of public investment (e.g. Ag Emissions Centre, AgriZeroNZ) and private contributions, but its durability is uncertain. Removing emissions pricing without alternative policy increases reliance on private finance, which may be insufficient. Many technologies are unlikely to be adopted without stronger financial signals, creating risks for long-term investment and uptake. Opportunities for reduced emissions may be supported by sustainability-linked loans. Risks are moderate for the second emissions budget, but significant for the third emissions budget.
Timelines **EB2: Significant** **EB3: Insufficient**	Timelines under the first and second emissions reduction plans are increasingly misaligned with required outcomes. Key technologies face delays and uptake pathways lack clarity. Reliance on industry targets increases delivery risk. Beyond 2030, there are no concrete policies or frameworks to guide any scenario modelled, and some actions, such as low-methane breeding, require long lead times.
Barriers and enablers **Significant**	Plans do not adequately address the gap between emissions intensity and absolute reductions. Initiatives like the Net Zero Pilot Dairy Farm offer some progress, but drivers for reducing total emissions have weakened. Identifying and leveraging co-benefits for efficiency and environmental outcomes is an important opportunity.

Policy scorecard: Transition to low-emissions land uses

Overall assessment	
Significant risks	The New Zealand Emissions Trading Scheme (NZ ETS) remains the main policy tool, with recent restrictions placed on whole-farm forestry conversions. The NZ ETS does not incentivise shifts to high-value, low-emissions land uses such as horticulture. Significant barriers persist, including limited access to capital (particularly for some Māori businesses), high establishment costs and gaps in infrastructure, advisory services and skilled labour. Proposed RMA reforms may reduce regulatory barriers, but their impact is uncertain. Sector growth frameworks aimed at doubling export value and new free trade agreements could support horticulture expansion and help offset the risk of increased high-emissions land use.
Change since 2025	The overall risk assessment remains at significant risk, though risks related to barriers and enablers have improved from significant to moderate.

Main tools **Moderate**	The major land-use change driving agricultural emissions reductions is farmland conversion to forestry eligible to register under the NZ ETS (see Net forest removals scorecard). While new limits on some forestry conversions registering in the NZ ETS may restrict further reductions, targets for land-use change in the second and third emissions budgets are relatively low. The plan assumes stable dairy land and modest growth in horticulture. Actively driving expansion of high-value, low-emissions land uses would require additional measures, particularly to counter potential increases in dairy area.
Funding and finance **Moderate**	The NZ ETS doesn't require government funding, and forestry conversions outside the scheme depend on relative economic returns. Funding for transitions beyond forestry is limited. Shifting to horticulture relies heavily on private investment, which faces constraints including high capital costs, labour shortages and insufficient processing and market infrastructure. In contrast, dairy conversions face fewer financial barriers. The NZ Taxonomy for Agriculture, Forestry, and Other Land Use[59] could support financing, but its impact remains unclear. Overall, there is moderate risk that funding will be insufficient to enable the planned transition to low-emissions land uses.

Timelines **Significant**	The NZ ETS is established and ongoing, but recent restrictions on whole-farm forestry conversions registering in the NZ ETS introduce uncertainty about the scale of long-term emissions reductions from shifting livestock land to forests. There is no clear plan or roadmap within the current plan to guide the transition to lower-emissions land uses, although MPI's Sector Growth Framework[222] may provide direction once further detail is available. Expansion of horticulture will take time, given the need to build supporting infrastructure, develop skills and knowledge, and allow for long establishment periods for perennial crops. Clear government strategy, signals and timelines would help reduce uncertainty and support investment decisions in transitioning to low-emissions land uses.
Barriers and enablers **Moderate**	Key barriers include limited access to capital, high setup costs and insufficient infrastructure, advisory services and labour. Enablers include streamlined consenting, improved supply chains, expanded processing and stronger value chain partnerships. There is a risk that regulatory changes and market conditions could favour expansion of higher-emissions land uses beyond what is modelled. Without additional mitigations or pricing, this could undermine targets. Emerging initiatives, including peatland restoration, wetlands and biodiversity credits, may encourage appropriate land retirement, though details are still developing.

Areas for attention

The plan does not meet the 2030 biogenic methane target

The second emissions reduction plan path does not meet the 2030 biogenic methane target and so is inadequate, with the latest Government projections reaching just a 6.6% reduction by 2030 for agricultural methane. Government could play a greater role in supporting emissions reductions in partnership with industry to build a low-emissions competitive advantage. Urgent acceleration of action is required, with only a short runway to effect change before the target is exceeded.

Market factors alone are unlikely to reduce absolute emissions significantly

When agricultural emissions pricing by 2030 was removed, the expectation was that industry commitments would fill the gap. Many industry players have publicly committed to driving down the greenhouse gas footprint of farm produce. Industry greenhouse gas reduction commitments and incentivisation are typically on an emissions intensity (kg CO_2e / kg product) basis. This is not always completely compatible with the country's commitments to reduce absolute greenhouse gas emissions. For example, in many cases, actions to improve the resilience of sheep and beef farming improve emissions intensity but increase absolute emissions.[223] Similarly, in the dairy industry, one unintended consequence of focusing on improving emissions intensity is increasing total emissions.[224]

There is clear value in improving emissions intensity on farm through a focus on improved efficiency and practice change. Technology may be essential to drive the absolute reductions required, but it is unknown if market forces will be sufficient to drive the needed adoption of these technologies.

Addressing the risk of over-reliance on technological solutions

The second emissions reduction plan places increasing reliance on technological solutions to reduce agricultural emissions, particularly from ruminants. If this approach does not deliver, there is no back-up plan, increasing the risk that future emissions reductions will need to be more abrupt or costly. Industry has also noted deployment of novel technology as a key risk to meeting emissions targets.[225]

Placing greater emphasis on transitioning to high-value, low-emissions land uses could help mitigate this risk. The introduction of biodiversity credits or non-forestry removal initiatives could enable the retirement of less productive farmland. These measures may create alternative income streams, reduce gross emissions and support climate adaptation.

Supporting extension and advisory services for farmers

Emissions reductions from agriculture have stalled, with contributing factors including unclear policy signals and the spread of misinformation. Mixed messages can discourage farmers from participating in programmes and taking up safe and effective technologies. A wide range of advisors continue to support emissions reduction across the rural sector, but their role has become more challenging in the current environment. Evidence indicates that engagement in emissions reduction initiatives declines when external drivers (e.g. emissions pricing) weaken.[226] Stronger, clearer signals from government that reducing emissions remains a priority would help reinforce advisory and extension efforts.

A more coordinated, national approach to advisory services for reducing emissions could improve consistency, strengthen on-farm support and enable more effective uptake of emissions-reducing practices, technology and land use in ways that make the most sense for individual farmers. Strengthening farmer networks and supporting early adopters can further encourage uptake by building confidence, sharing practical examples and sustaining engagement.[226,227]

Incentivising uptake of new farming practices and technology

There are limited current incentives for producers to reduce emissions, and the removal of agricultural emissions pricing by 2030 has extinguished this future driver. Without a clear value proposition for adopting methane mitigation practices, on-farm uptake is likely to be limited.[228] Early action to reduce emissions may be important for maintaining a competitive edge and accessing currently available industry incentives. Supporting earlier adoption of new technologies and farm practices – tailored to the needs of different sectors and individual farms – could also help maximise the return on Government research and development investment and shore up Aotearoa New Zealand's competitive position.

Chapter 10

Waste and fluorinated gases

The most effective way to reduce waste emissions further is additional action to prevent disposal to landfill in the first place.

Snapshot of emissions

Total waste sector emissions	
2023	**2024**
3.0 $MtCO_2e$	3.0 $MtCO_2e$

Total f-gas sector emissions	
2023	**2024**
1.2 $MtCO_2e$	1.1 $MtCO_2e$

Percentage of country's gross emissions	
Waste: 4.0%	F-gases: 1.5%

Percentage of projected net reductions (2026–2030)	
Waste: 4.2%	F-gases: 3.1%

Changes in emissions between 2023 and 2024
–1.5% from managed landfills
+0.1% from unmanaged landfills
–5.1% in f-gases

This chapter looks at greenhouse gas emissions in three areas: organic waste, landfill gas (LFG) capture and fluorinated gases (f-gases). In Aotearoa New Zealand waste emissions come mostly from the disposal of organic waste to landfills. Smaller quantities are from wastewater treatment, the incineration and burning of solid waste, and treatments such as composting. Waste emissions are mostly methane, with the remainder being carbon dioxide and nitrous oxide.

Highly potent f-gases are used in refrigeration, air conditioning and heating systems. Existing technology and practices to limit leaks and the release of gases during disposal are effective at reducing these emissions.

Key points

Changes in emissions

- Emissions from waste were virtually unchanged between 2023 and 2024, reducing by 0.014 $MtCO_2e$. While methane emissions from managed landfills decreased by 1.5% or 0.021 $MtCO_2e$ since 2023, emissions from unmanaged disposal sites increased by 0.1% or 0.0008 $MtCO_2e$
- Overall, emissions from f-gases reduced by 5.1% or 0.0613 $MtCO_2e$ between 2023 and 2024.

Policy changes in the last year

- Proposals for new legislation include broadening how waste levy funds can be spent by territorial authorities.[229] This has the potential to undermine waste minimisation activities undertaken by councils.
- The Ōtautahi Christchurch Organics Processing Facility received resource consent and is scheduled to start operating from early 2027. A new steam plasma arc refrigerant destruction facility opened in Kawerau in 2026, enabling the onshore destruction of synthetic refrigerant gases.[230]

Risks to achieving planned emissions reductions

- The second emissions reduction plan primarily relies on investing in resource recovery through the Waste Minimisation Fund to achieve organic waste reduction. Projections indicate this approach will not achieve the systems change necessary for sustained reductions.
- There is now a timeline risk for the implementation of regulated product stewardship of refrigerants to achieve the projected emissions reductions in 2027. The timeline for improved training and qualification requirements for refrigerant handlers as part of the scheme is also uncertain.

Areas for attention

- Measures to address barriers to organic waste diversion and support circular economy practices are needed – pricing through the New Zealand Emissions Trading Scheme (NZ ETS) alone is unlikely to be sufficient.
- There is no transparent policy commitment or pathway to achieve the anticipated LFG capture expansion and efficiency gains – it is unclear if projections are achievable.
- There is a lack of technician training and education to support the safe use of natural refrigerants.[xx,231] This is needed for the transition away from high global warming potential (GWP) f-gases.

Opportunities for further reductions

- Limiting the use of reclaimed high-GWP synthetic refrigerants where low-GWP alternatives exist.
- Expanding LFG capture systems to non-municipal landfills could further reduce emissions by nearly 1 $MtCO_2e$ in the third emissions budget. The majority of these reductions would be Class 2 landfills.
- Improved organic waste management practices using existing policy measures can reduce emissions by up to 0.6 $MtCO_2e$ in second emissions budget and 1.3 $MtCO_2e$ in the third emissions budget.

xx A common low-GWP alternative to f-gases is a group of substances referred to as 'natural refrigerants'. These substances have a lower environmental impact than f-gases and are typically more affordable. However, they also have several properties that can make them difficult or dangerous to handle.

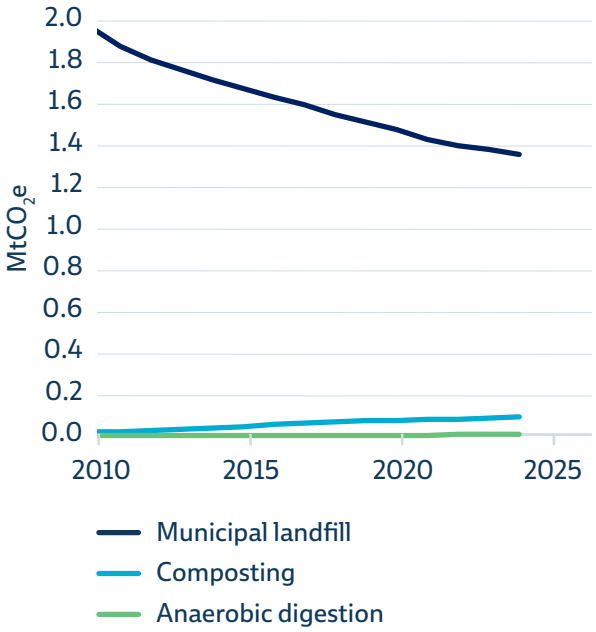
Progress to date

Emissions reductions

The key trends in waste emissions and rates of waste disposal are as follows:

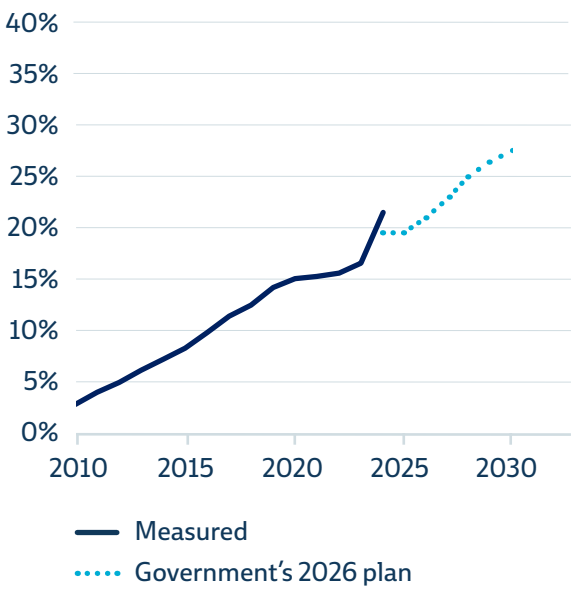
- Overall, emissions from waste were virtually unchanged between 2023 and 2024, reducing by 0.014 $MtCO_2e$.
- While methane emissions from managed landfills decreased by 1.5% or 0.021 $MtCO_2e$ since 2023, emissions from unmanaged disposal sites increased by 0.1% or 0.0008 $MtCO_2e$.
- In 2024, municipal landfills produced 1.34 $MtCO_2e$, compared to composting which produced 0.086 $MtCO_2e$ and anaerobic digestion which produced 0.0013 $MtCO_2e$ (see **Figure 10.1**).
- There was a 4.8% increase in the amount of organic waste being diverted, resulting in a 475.5 kilotonne increase in diversion between 2023 and 2024 (see **Figure 10.2**).
- While total emissions from composting and anaerobic digestion have increased as more organic material is diverted from landfill, both deliver substantially lower emissions per tonne of waste. In 2024, anaerobic digestion produced approximately 97% lower emissions per tonne than landfill, and composting was around 78% lower than landfill.
- Methane emissions from domestic wastewater treatment have been steadily increasing over the last 10 years, increasing 19.8% or by 0.03 $MtCO_2e$ over this time.

Figure 10.1: Waste management emissions



Source: Commission analysis

Figure 10.2: Diversion of organic waste from landfill

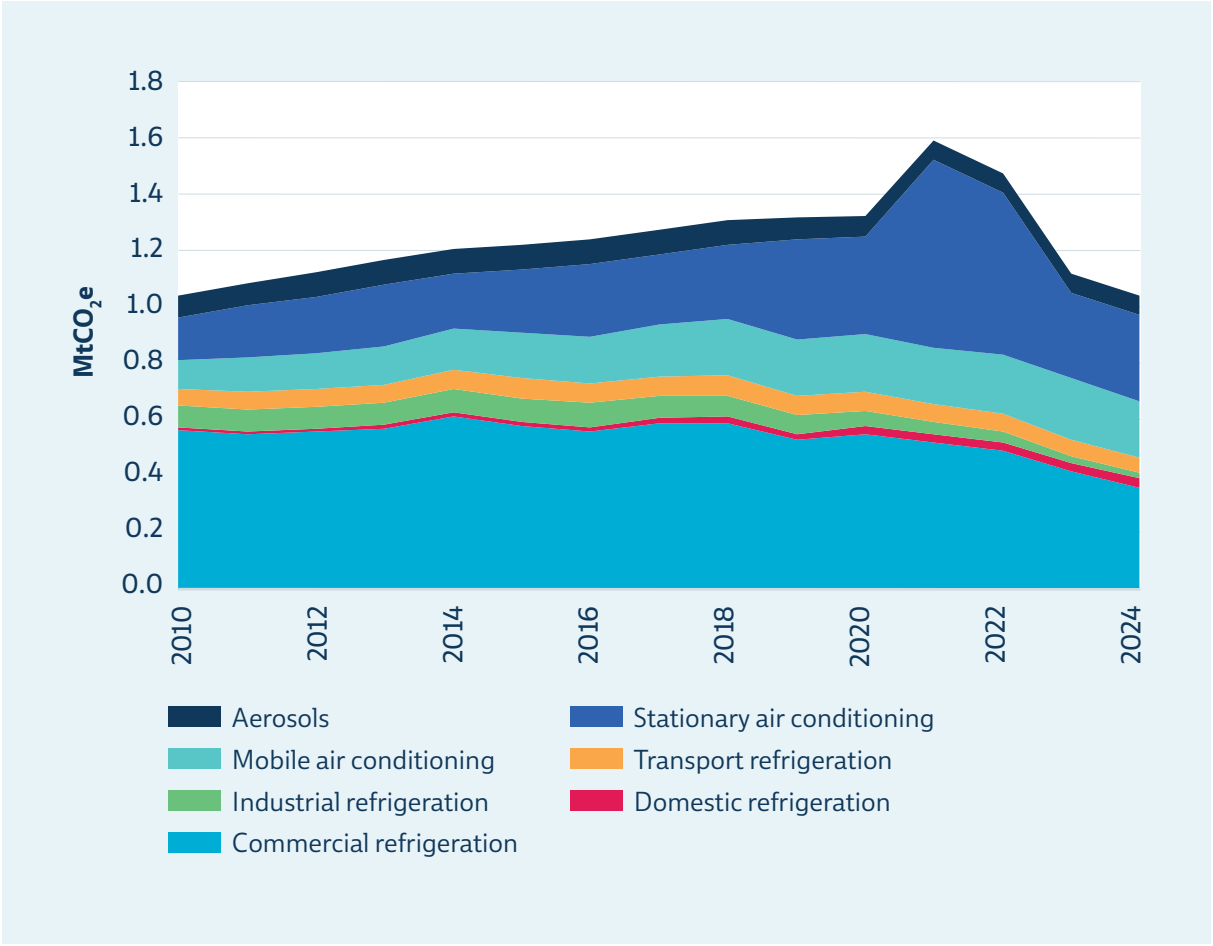


Source: Commission analysis

Key trends in f-gas emissions

- Changes in f-gas emissions:
  - A 0.076 $MtCO_2e$ or 6.8% reduction for HFCs
  - A 0.0026 $MtCO_2e$ or 15.7% reduction for SF_6
  - An increase of 0.017 $MtCO_2e$ or 28.1% for PFCs.[xxi]
- Refrigeration and air conditioning categories contributed 93% of HFC emissions in 2024.
- HFC recovery rates have been steadily increasing over the last 10 years, despite a dip of 16.6% between 2023 and 2024 (see the Technical Annex on our website).

Figure 10.3: Breakdown of HFC emissions by activity



Source: Commission analysis

xxi According to the New Zealand Aluminum Smelter environmental monitoring report, higher cell instability was experienced in 2024 due to Demand Response, resulting in more anode effects per cell day and therefore higher PFC emissions.

Policy progress

Policy progress to reduce emissions in the waste sector and related to f-gases is summarised below.

Changes in the last year

- The Government has consulted on proposals to amend the Waste Minimisation Act 2008 and the Litter Act 1979.[229] Proposals include expanding how waste levy funds can be spent by territorial authorities. This has the potential to undermine waste minimisation activities undertaken by councils.
- The Ōtautahi Christchurch Organics Processing Facility received resource consent[232,233] and is scheduled to start taking organic waste from early 2027. The facility is designed to handle up to 100,000 tonnes of organic waste annually.[234,235] A new steam plasma arc refrigerant destruction facility also opened in Kawerau in March 2026. The plant has the capacity to destroy up to 100,000 kg of gases per annum, which could have a combined GWP of approximately 0.22 $MtCO_2e$ per annum.[230]

Changes since the start of 2022

- The New Zealand waste strategy 2023 was superseded by the New Zealand waste and resource efficiency strategy 2025. This removed timebound targets for waste generation, diversion and specific emissions reductions for waste.[236]
- Waste levy funding was cut by NZ$177 million over four years from 2024/25 to 2027/28, with the potential use of the Waste Minimisation Fund broadened to fund functions that had not typically been levy funded.
- Policy support ceased for: the separation and diversion of food waste away from landfill for households and businesses; recycling requirements for all urban areas; food waste diversion requirements for councils; and data reporting for private household recycling providers.
- Work ceased on the creation of a resource recovery and waste minimisation infrastructure plan to guide investment over a 10-year period; on the development of a national resource recovery network; and on a consumer and business behaviour change campaign to avoid organic waste.
- Consultation proposals for prohibiting targeting pre-charged refrigeration and air-conditioning equipment with high-GWP HFCs were deferred in 2023.
- Cool-Safe was selected by the Government to be the accredited product stewardship scheme for the priority product refrigerants and other synthetic greenhouse gases, and the commencement of drafting of regulations to support product stewardship for refrigerants was approved in 2024.

Policy assessment

Policy scorecard: Organic waste

Overall assessment	
Significant risks	Reductions primarily rely on investing in resource recovery through the Waste Minimisation Fund. Projections suggest that providing project-by-project funding via the fund will not achieve the systems change necessary for sustained reductions. Addressing policy shortcomings and the risks and uncertainties of current plans is needed.
Change since 2025	No change.

Main tools **Significant**	The Government's main tools are the Waste Minimisation Fund and investigating ways to improve organic waste disposal. Relying on the fund for organic waste diversion may not deliver sustained reductions as it does not address the infrastructure deficit or entrenched disposal practices. Additional policy support and incentives to divert organic waste would be beneficial.
Funding and finance **Significant**	In 2024, waste levy use began shifting from its core purpose to minimise waste. The Government now proposes to further broaden councils' use of these funds, which may undermine waste minimisation. There is no clear plan to address the $4 billion waste management infrastructure deficit estimated by industry.[215]
Timelines **Significant**	The lack of policy necessary to shift from entrenched disposal-based practices creates a significant timeline risk. The assumed levels of organic waste diversion through anaerobic digestion and composting by 2035 may require stronger policy settings.
Barriers and enablers **Significant**	The primary barrier is the absence of policy to support sustained, large-scale organic waste reduction and diversion. Failure to address this will perpetuate the infrastructure deficit, resulting in limited and inequitable waste diversion services and facilities. Accessible diversion facilities and services in urban areas would enable future organic waste disposal restrictions. Proposed changes to the waste levy could exacerbate risks if funding becomes disconnected from the purpose of waste minimisation.

Policy scorecard: Landfill gas capture

Overall assessment	
Significant risks	There are significant risks associated with LFG-related policy due to: • the lack of a transparent policy action pathway to achieve the anticipated increase in efficiency and the expansion of LFG capture • the existence of ongoing and unaddressed barriers to emissions reduction, as reported on in last year's report. It is also unclear if the Government's anticipated modelled increases in LFG capture efficiency and the assumed extension in LFG coverage at municipal landfills can be achieved.
Change since 2025	No change.

Main tools **Significant**	The main policy tools include the ongoing use and potential expansion of LFG capture systems, air quality regulations and the use of the NZ ETS. There is an absence of a transparent policy commitment and pathway to achieve LFG capture efficiency gains. It is also unclear whether the assumed increases in LFG capture efficiency at municipal landfills with existing LFG capture systems already in place are achievable.
Funding and finance **Moderate**	There are moderate funding risks due to the lack of effective regulatory requirements or incentives to invest in more efficient gas capture systems.
Timelines **Insufficient**	There is insufficient policy detail available to establish if the assumed level of emissions reductions through LFG capture is achievable. Policy action and decision-making pathways are vague, and the policy review may not result in changes to improve and expand LFG capture systems.
Barriers and enablers **Moderate**	The primary barriers to emissions reductions are: • the lack of LFG capture at non-municipal landfills and closed landfills, primarily Class 2 landfills • high-performance LFG capture remains under-incentivised through the NZ ETS and RMA air quality frameworks. Substantial upfront costs for LFG installation can create a significant barrier for operators, and the minimal baseline air quality requirement offers limited motivation to pursue performance beyond compliance.[xxii] • the LFG-related policy review will need to result in regulatory policy action to address the outstanding barriers.

xxii See our advice on the second emissions reduction plan, pg 331.

Policy scorecard: F-gases

Overall assessment	
EB2: Moderate risks **EB3: No significant risks**	There are moderate risks to the second emissions budget related to implementing the regulated product stewardship scheme for refrigerants. This is due to the limited time left to implement the regulations to achieve the anticipated emissions reductions in 2027.
Change since 2025	Risks have increased from no significant risks due to delays to regulated product stewardship implementation.

Main tools **No significant risks**	A regulated product stewardship scheme for refrigerants is the only f-gas policy in the second emissions reduction plan. This is a credible tool. Cool-Safe has been formally accredited to do this.
Funding and finance **No significant risks**	The Cool-Safe product stewardship scheme will be self-funded through NZ ETS units for removing f-gases either through export or destruction. The scheme is estimated to earn approximately NZ$115 million in units over the first seven years of operation.[237]
Timelines **EB2: Moderate** **EB3: No significant risks**	The second emissions reduction plan states that regulated product stewardship regulations would be enacted from 2025, with abatement impacts anticipated from 2027, including 0.46 $MtCO_2e$ in 2027 itself. The Government approved drafting of regulations in 2024, but they have not yet been released. The scheme is now behind schedule creating moderate risk to the second emissions budget. Ambiguity remains around the timeline for implementing an improved training and qualification scheme for refrigerant handlers as part of the product stewardship scheme. Additionally, the Government has not confirmed when the training and accreditation will occur to ensure the industry is informed and trained to safely use natural refrigerants.
Barriers and enablers **No significant risks**	Broader barriers and opportunities that could be addressed beyond the regulated product stewardship include: • knowledge and training for safe use of low-GWP f-gas alternatives • establishing limits on the use of reclaimed high-GWP synthetic refrigerants, where low-GWP alternatives are viable • phasing out high-GWP f-gases in certain applications of pre-charged refrigeration and air-conditioning equipment • ensuring establishment of the regulated product stewardship scheme is robust, transparent, avoids wider industry capture, and has adequate government oversight.[xxiii]

xxiii See our advice on the second emissions reduction plan, pgs 226–227.

Areas for attention

Barriers to divert organic waste mean pricing through the NZ ETS is unlikely to be sufficient

A range of factors are limiting the achievement of organic waste diversion. There is an opportunity to revise regulatory and policy settings to more effectively reduce organic waste disposal to landfill and further reduce emissions.[238,239] Alternative systems, such the use of anaerobic digestion and composting, may offer a lower-emissions solution for managing organic waste. Current barriers include the resource recovery infrastructure and service deficit, alongside the lack of strategic regulatory and policy support for reducing organic waste disposal to landfill. A strategic resource recovery infrastructure plan could increase confidence to invest in resource recovery.

There is no clear policy commitment or pathway to achieve LFG capture efficiency gains

Government projections suggest high increases in LFG capture efficiency at municipal landfills. However, there is no clear policy pathway to give effect to these improvements. The projections anticipate:

- up to 16% increase in LFG capture efficiency within the next four years at municipal landfills with LFG capture, and up to 30% for these landfills by 2050
- up to 26% increase in LFG capture efficiency within the next four years at closed municipal landfills and up to 60% by 2050
- a 66% increase in LFG capture coverage for municipal landfills currently without LFG systems within the next four years, achieving 100% coverage by 2040.

The lack of policy transparency around how the assumed LFG capture efficiency increases will be achieved, and the extension of LFG capture coverage are points of concern.

Lack of information and training to safely use natural refrigerants

Shifting to use of natural refrigerants is a necessary part of the transition away from the use of high-GWP f-gases. To achieve this, technicians and other professionals in the industry will need to be informed and trained to safely use natural refrigerants.[231]

Natural refrigerants are a common low-GWP alternative to f-gases. Natural refrigerants have a lower environmental impact than f-gases and are typically more affordable. However, they also have several properties that can make them difficult or dangerous to handle.

There is currently a lack of technician training and education in this area. Addressing this issue will be necessary to enable the wider use and uptake of natural refrigerant gases, and to protect the health and safety of refrigerant technicians and the public.

New opportunities

Limiting the use of reclaimed high-GWP synthetic refrigerants

The reuse of high-GWP f-gases promotes the circularity of high-GWP gases. Reuse also extends the potential lifecycle opportunities for gas leakage. Limiting the reuse of high-GWP reclaimed refrigerants where low-GWP alternatives exist is therefore an opportunity to reduce f-gas leakage.

Requiring LFG capture at Class 2 landfills

Commission modelling illustrates that expanding LFG capture systems to non-municipal landfills could further reduce emissions by nearly 1 $MtCO_2e$ in the third emissions budget. The majority of these reductions will be at Class 2 landfills.

Improving organic waste management practices

Commission modelling suggests by improving organic waste management practices based on existing policy measures, there is potential for further reductions of up to 0.6 $MtCO_2e$ in the second emissions budget and 1.3 $MtCO_2e$ in the third emissions budget.

Chapter 11

Forestry

Forestry has a dominant role in Aotearoa New Zealand's approach to reducing emissions, and there is a risk in overly relying on removals rather than encouraging gross reductions.

Snapshot of emissions

Total sector emissions	
2023	**2024**
-6.0 $MtCO_2e$[xxiv]	-7.1 $MtCO_2e$

Percentage of projected net reductions (2026–2030)
25.1%

Changes in emissions between 2023 and 2024
-2.6% in afforestation and reforestation[xxv]
-52.3% in deforestation
-71.6% in forest management[xxvi]

When forests absorb more carbon dioxide than they release, they are a net sink (rather than a net source) of emissions, called 'removals'. The country can increase removals by afforestation and reforestation, reducing deforestation and managing the carbon stores in existing forests. Afforestation rates have been at historic highs since 2019, but they will likely decrease substantially in the next few years due to policy settings.

The second emissions reduction plan places an outsize reliance on forestry: removals comprise 25% of net reductions in the second emissions budget and almost half of net reductions in the third emissions budget.

Forestry: Explaining the terms

Afforestation: Establishing new forests on non-forest land

Reforestation: Re-establishment of forest on land that was forested but has been converted to non-forest land

Deforestation: Conversion of forest to non-forest land

Forest management: Forest management activities (such as harvesting) of existing (pre-1990) forests

xxiv Negative emissions signal that this quantity is a removal.
xxv Removals increased between 2023 and 2024 by 2.6%. This is called a decrease in emissions.

Key points

Changes in emissions

- Forest removals increased in 2024 to -7.1 $MtCO_2e$, almost 19% more than 2023,[xxvii] due to both more carbon taken up by forests and less deforestation.
- Coming off recent peak levels of planting, afforestation remained historically high in 2024, which was expected to continue in 2025.

Policy changes in the last year

- Restrictions were placed on registering exotic forestry converted from highly productive land into the New Zealand Emissions Trading Scheme (NZ ETS) via the Climate Change Response (Emissions Trading Scheme – Forestry Conversions) Amendment Act, which came into force in October 2025.

Risks to achieving planned emissions reductions

- The NZ ETS has structural issues that may undermine its ability to incentivise the high level of afforestation necessary to meet the third emissions budget and prevent higher-than-expected levels of deforestation or harvesting.
- The disproportionate reliance on forests to deliver emissions budgets is a risk in and of itself. Projections indicate forest removals would deliver 25% of the action needed to achieve the second emissions budget and almost half that needed to reach the third emissions budget.

Areas for attention

- The Government has not yet confirmed how it plans to account for forest management activities after previously indicating it would align with accounting used for the nationally determined contribution (NDC).
- The risks to forests were recognised as among the most significant risks in the second national climate change risk assessment. Adaptation and resilience need to be integrated into all forest planning and management, including their role in climate mitigation.

Opportunities for further reductions

- Voluntary carbon markets are gaining traction, both in policy development and potential participants. This may create new opportunities for long-term, durable carbon removals.

xxvi Provisional accounting quantities for forest management, showing annual emissions against the forest reference level (developed for the first nationally determined contribution), were reported in the 2026 New Zealand's Greenhouse Gas Inventory (GHG Inventory), but they are not yet considered final figures nor included by the Ministry for the Environment in the forest accounting quantity. The Government has not yet finalised a method for forest management accounting.

xxvii Based on the provisional accounting quantity, excluding forest management published in the 2026 GHG Inventory.

Progress to date

Removals increases and emissions reductions

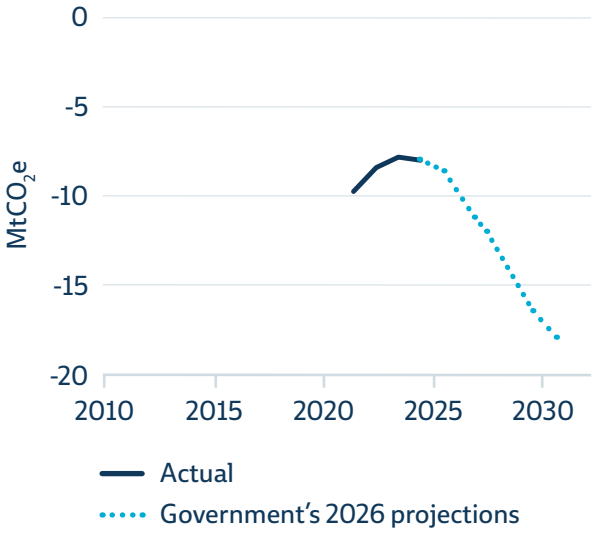
The key trends in forest removals are as follows:

- Net forest removals increased in 2024 to –7.1 $MtCO_2e$, almost 19% more than in 2023, due to both more carbon sequestration in forests (higher removals) and less deforestation (lower emissions).[197,240]
- Net emissions from afforestation and reforestation were –8.0 $MtCO_2e$ (**Figure 11.1**), almost 3% more than in 2023, attributed to carbon sequestration rates starting to increase in the large area of forests planted since 2019.[197,240]
- Emissions from deforestation also decreased compared to 2023 due to lower levels of deforestation activity, continuing a decreasing trend (**Figure 11.2**).[xxviii,197,240]
- Preliminary estimates indicate forest management activities in pre-1990 forests were 3.8 $MtCO_2e$ more than the baseline over the last three years.[xxix,240]
- Coming off recent peak levels of planting, afforestation remained historically high in 2024. New planted forest area, both production and permanent, was 67,235 hectares. New natural forest was 4,702 hectares (**Figure 11.3**).[240]
- When last reported in 2024, planting intentions were uncertain due to policy and market changes. High levels of exotic planting were expected to continue in 2025 in anticipation of restrictions on NZ ETS registrations and decrease thereafter In contrast, indigenous afforestation was projected to be static (for tall planted indigenous species) or decrease (for mānuka) (**Figure 11.3**).[241]

xxviii Note deforestation estimates are subject to change: levels are provisional for the most recent two years.

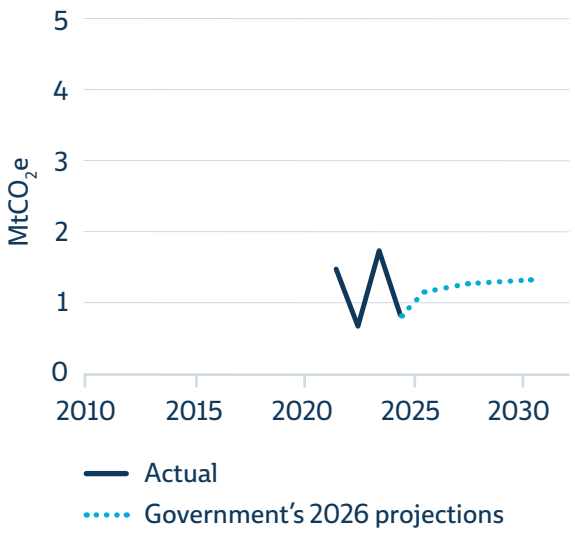
xxix The positive net emissions suggest more emissions (mostly from harvesting activity) occurred than would have been expected under business-as-usual practices. However, this figure is only indicative and not yet included in forest accounting for the budgets. It is based on the 2022–2024 provisional accounting quantities published in the 2026 GHG Inventory, which use the forest reference level (FRL) set for the first nationally determined contribution (NDC1) period (2021–2030) as the baseline. The Government has yet to confirm the approach to forest management accounting for the first emissions budget period, including specifying a baseline, and cautions the NDC1 FRL may not be the baseline used for the shorter time period of the first emissions budget.

Figure 11.1: Net emissions from afforestation and reforestation, target accounting method



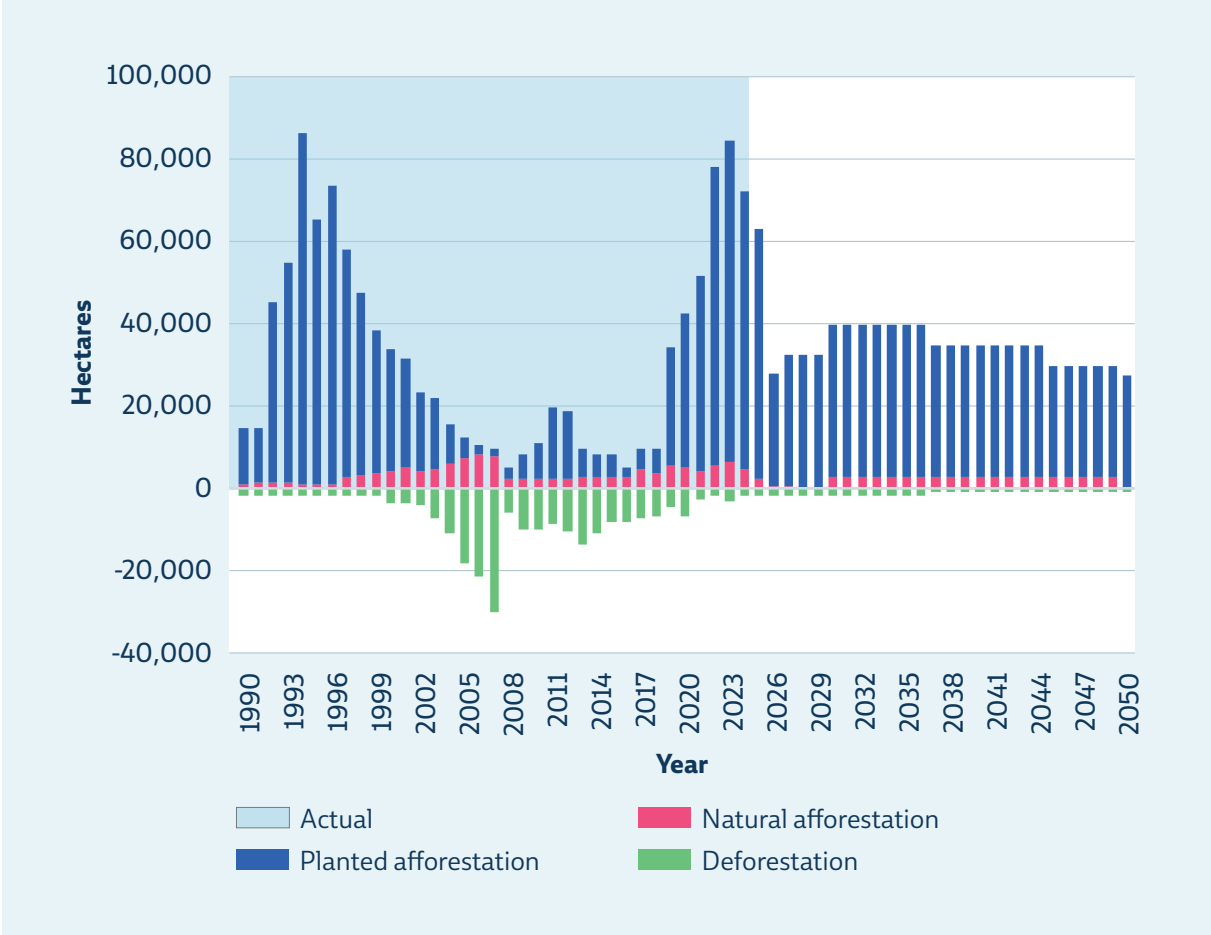
Source: Commission analysis

Figure 11.2: Net emissions from deforestation, target accounting method



Source: Commission analysis

Figure 11.3: Afforestation and deforestation activity



Source: Commission analysis

Policy progress

This section sets out policy changes that could increase or decrease the amount of carbon dioxide absorbed by forests.

Changes in the last year

- The Climate Change Response (Emissions Trading Scheme – Forestry Conversions) Amendment Bill came into force on 31 October 2025. It restricts NZ ETS registrations of exotic forestry planted on land designated as land-use capability (LUC) classes 1–6.[71]
- Changes were made to the National Environmental Standards for Commercial Forestry, coming into effect in June 2026. The changes include removing duplication in afforestation and replanting planning requirements, amending regulations regarding council oversight of afforestation and replacing universal slash regulations with a risk-based approach.[242]
- In May 2026, the Government announced a package to grow Aotearoa New Zealand's voluntary nature and carbon markets by backing them with a new assurance role.[243]

Changes since the start of 2022

- Changes to the NZ ETS registry and reduction of NZ ETS charges.
- A Request for Information was conducted in early 2025 on a proposal for 'planting trees on low-value Crown-owned land', and submissions were published in September 2025. No further information has been made publicly available.
- The National Environmental Standards for Commercial Forestry (NES-CF) amended the National Environmental Standards for Plantation Forestry 2017 (NES-PF) in November 2023. This change provided nationally broad-scale regulations to manage associated environmental impacts.
- Following Cyclone Gabrielle, the Ministerial Inquiry into Land Uses in Tairāwhiti-Gisborne and Wairoa made recommendations for forestry management of woody debris (including forestry debris) and associated sediment.
- The Government discontinued the Forestry and Wood Processing Industry Transformation Plan (Forestry ITP), which included future planning and improving integration across the sectors.

Policy assessment

Policy scorecard: Net forest removals

Overall assessment	
EB2: Moderate risks **EB3: Significant risks**	Overall, we have found continued levels of uncertainty associated with the scope and effectiveness of the second emissions reduction plan related to achieving carbon dioxide removals through forestry. While forestry plantings leading to carbon removals are largely locked in for the second emissions budget, there are still lower-level risks associated with the sequestration potential of forests as a consequence of possible storm damage and forest fires. Uncertainty is higher in the third emissions budget due to NZ ETS effectiveness issues, which increase the risk of reduced afforestation within this period. The dependence on forestry to reduce emissions within this budget period has also increased.
Change since 2025	No change.

Main tools	
EB2: Moderate **EB3: Significant**	Encouraging afforestation through appropriate market incentives can help achieve carbon dioxide removals. However, the use of market incentives (the NZ ETS) currently exists in isolation from a more cohesive policy package identifying the desired forestry objectives and outcomes. This market-driven approach creates risks for the sustainability of forestry outcomes and the extent to which forestry will work to create a long-term carbon sink. The uncertainty surrounding the effective functioning of the NZ ETS from the mid-2030s[244] may also affect the ability of the scheme to incentivise afforestation and replanting from the third emissions budget onward. These risks may undermine confidence in the scheme and increase risks for the forestry sector. Projections further suggest that indigenous afforestation will reduce in 2026. Indigenous afforestation levels are not expected to increase without policy intervention to incentivise additional planting. These risks become more significant entering into the third emissions budget period, with the government relying on forestry to deliver 49% of the emissions reductions required by 2035. The high reliance on forestry to achieve the third emissions budget itself increases the level of risk for budget achievement.

Funding and finance **EB2: Moderate** **EB3: Significant**	The Government has chosen to rely on the NZ ETS as the primary tool to incentivise and fund carbon dioxide removals through forestry. However, the more NZ ETS-registered forestry is relied upon to achieve emissions budgets and its identified structural issues remain unaddressed, the more risk there will be for budget achievement in the third emissions budget and beyond. If not addressed, limited forestry investment and planting in the 2030s due to ineffective incentives could increase costs to the Government and businesses to reduce emissions through other sectors. Current incentives to plant indigenous forestry are also noted as insufficient.
Timelines **EB2: Moderate** **EB3: Significant**	Encouraging afforestation through the NZ ETS is the primary policy mechanism applied to reduce emissions through forestry. The window for new planting to add carbon removals to the second emissions budget has essentially closed. Ongoing issues may hinder the effectiveness of the NZ ETS, which may affect the ability to achieve the third emissions budget. There is ongoing possibility of deforestation, from which there is no time to recover during the second emissions budget. Likewise, the accounting approach to reconcile forest management activities at the end of a budget could add more emissions (decreasing overall removals) without any option to address it.
Barriers and enablers **EB2: Moderate** **EB3: Significant**	Risks to the second and third emissions budgets from policy barriers remain: • the absence of broader policy and funding support to direct the outcomes sought from forestry • insufficient incentives and policy support to achieve increasing levels of indigenous afforestation • entrenched constraints that continue to limit the use of whenua Māori and related decision-making. Action to further enable Māori landowners to engage in forestry remains an opportunity for carbon removals. There also remains an opportunity to recognise and address the various risks facing the country's managed and production forests, including those from climate change, biosecurity, single-species dominance, with systemic adaptation and resilience approaches.[156] This could be achieved by increasing the breadth of policy packages beyond the use of emissions pricing tools to incentivise afforestation. Creating opportunities for afforestation on Crown land has been proposed as a supporting policy to promote carbon removals. While this proposal may contribute to afforestation, it will not add removals to the second emissions budget due to timing of carbon sequestration after planting. It remains essential that this policy, including the establishment of a clear decision-making process, timeline and associated planting proposals, is fulsomely considered in order to avoid potential adverse impacts for the environment, people and/or climate policy.

Areas for attention

Forest management accounting: Finalised rules and methods are due

The first emissions budget has now ended and the assessment of whether it was met will take place next year. However, the Government still has not confirmed how it will account for forest management in the accounting rules for emissions budgets. At time of writing, the Government was not ready to share decisions or methods about forest management accounting.

In 2022, the Government indicated it would align accounting for emissions budgets with the accounting approach used for the first nationally determined contribution (NDC1).[245] The Government now publishes annual provisional accounting quantities for forest management using the baseline developed for NDC1, but does not yet include them in the forest accounting numbers since forest management emissions will only be reconciled for technical corrections, methodological consistency and actual activity at the end of the NDC1 reporting period.[240,246] Cumulative forest management activity emissions (3.8 $MtCO_2e$) for the first 3 years of the first emissions budget (2022–24) can be summed from the published provisional accounting quantities, but the Government does not yet consider this figure or approach applicable to the first emissions budget and is considering whether a different baseline is needed for the 4-year first emissions budget period rather than the 10-year NDC1 period. See the Technical Annex on our website for more information.

To provide transparency, it is important that the Government finalise, and share, its approach for forest management accounting. Clear rules are required to ensure confidence in and the integrity of emissions budgets:

- Changing the accounting framework at the end of a budget period can undermine the integrity of the system. People need confidence budgets will be met as a result of real emissions reductions and removals rather than changes to methods or accounting rules.
- The accounting framework used for the first to third emissions budgets should be consistent, as they were set together.
- Reporting these emissions only at the end of a budget period means there is no ability for the Government to use an adaptive management approach to ensure budgets are met.

Afforestation rates: Monitor effect of policy settings

The outlook for afforestation is uncertain due to changes in policy settings. Restrictions on registering exotic forestry conversions of LUC class 1–6 farmland on NZ ETS registrations came into effect on 31 October 2025. While afforestation itself is not restricted, almost all respondents to the 2024 Afforestation and Deforestation Intentions Survey (ADIS) considered the LUC restrictions and other uncertainty about the NZ ETS to be a barrier to afforestation.[241]

There will be some planting inertia in the system, with transitional exemptions possible for investments in exotic afforestation made before 4 December 2024. Afforestation levels in 2025 were higher than previously expected, remaining at the elevated levels of recent years as forest owners and managers sought to complete planting before the new LUC restrictions came into place, according to the 2024 ADIS, which was conducted when the policy was announced in late 2024.[241] According to the same survey, forward-looking afforestation intentions for 2026 onwards were approximately 75% lower than recent planting levels as the sector awaited more certainty about land-use restrictions, the carbon price and NZ ETS settings.[241]

The 2025 ADIS would have been conducted shortly after the LUC restrictions came into effect, but the findings had not been published at time of writing, leaving a gap in confirming 2025 planting activity (ahead of next year's New Zealand's Greenhouse Gas Inventory) and reporting updated sector sentiment and afforestation intentions for the next few years.[xxx]

The overall effect of the NZ ETS registration restrictions on afforestation rates is unknown and will need to be monitored over the coming years to understand the implications for emissions budgets. Since the NZ ETS has been the primary policy tool to date to incentivise forest carbon removals, and these carbon removals are the largest component of meeting emissions budgets, a broader range of carbon removal policies may be needed.

Risks to forests from the effects of climate change: Prioritise adaptation and resilience planning

The second national climate change risk assessment identified risks to both managed and production forests and natural ecosystems (including natural forests) from the effects of climate change as among the country's most significant risks and priorities for action.[141] Climate change mitigation and adaptation are linked. Emissions budgets and the 2050 net zero target rely on forest removals of carbon dioxide from the atmosphere to offset gross emissions. These removals are threatened when the forests are at risk.[156,247] To ensure forest removals function as long-term carbon stores, risks to forests from the effects of climate change need to be considered and adaptation and resilience planning included as part of standard operating practice.

Risk of over-reliance on forest removals

Under the second emissions reduction plan, forest removals are expected to comprise 25% of net emissions reductions sought in the second emissions budget and 49% in the third emissions budget. This heavy reliance on forests would require higher levels of planting past 2050 to counterbalance ongoing greenhouse gas emissions and impose a commitment to maintain the forests to ensure that emissions remain net zero in perpetuity. The effects of climate change (such as altered growing conditions, wildfire and drought) and human activity pose risks to the permanence of carbon storage in forests.

The Commission's modelling over time has shown reducing gross emissions at source across all sectors would reduce the reliance on removals through the forests sector. This approach would reserve forest removals for emissions that are more difficult to address, provide greater resilience to emissions reduction efforts, and improve confidence in sufficiency of actions to meet emissions budgets. Reducing gross emissions often provides broader benefits to society than would be achieved by only increasing forest removals – such as improved air quality, warmer and drier homes, health benefits from active transport, and jobs in new and innovative sectors.

xxx For a second year in a row, the Afforestation and Deforestation Intentions Survey (ADIS) was not published at time of writing. The ADIS is usually conducted in November–December each year and published the following May. The 2024 ADIS was released in August 2025 (with a May 2025 publication date) and so is reported here for the first time. The 2025 ADIS (conducted in November 2025 and due to be published in May 2026) was not available at time of writing.

Benefits of indigenous afforestation and permanent forests

Planting permanent forests and indigenous afforestation considerably lags exotic monoculture production forests. Currently, the NZ ETS and limited funding programmes are currently the main policy tools to encourage increases in indigenous afforestation.
The NZ ETS does not explicitly recognise or reward the wider co-benefits of indigenous forestry, such as biodiversity enhancement, cultural values and improved land resilience. Further incentivising indigenous afforestation, particularly as enduring carbon sinks, would likely be beneficial across social, economic and environmental considerations. (See also *Chapter 6: Adaptation and nature*)

New opportunities

The Government's May 2026 announcement to support voluntary nature and carbon markets may encourage additional forest carbon removals projects, likely for indigenous and permanent projects, in addition to other non-forestry removal options. This was announced after the monitoring window for this report closed and can be considered further in the 2027 monitoring report.

Technical glossary

Note there is a reo Māori glossary provided at the end of *Chapter 5: Whakahekenga rehukino*, which provides English contextual translation of kupu Māori used in that chapter.

2030 biogenic methane target	The biogenic methane component of Aotearoa New Zealand's domestic climate change target set out in the Climate Change Response Act 2002 has two time-based targets. To reduce biogenic methane emissions by at least 10% by 2030 and 14–24% by 2050 and beyond, compared to 2017 levels. See '2050 target'.
2050 target	The target set out in the Climate Change Response Act 2002, for Aotearoa New Zealand to: • reduce emissions of greenhouse gases, other than biogenic methane, to net zero by 2050 and beyond – this relates to emissions of carbon dioxide, nitrous oxide, non-biogenic methane and fluorinated-gases (hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride). • reduce biogenic methane emissions by at least 10% by 2030 and 14–24% by 2050 and beyond, compared to 2017 levels. The target does not currently include international shipping and aviation emissions.
afforestation	The conversion of land from another use, such as pasture for grazing, to forest.
alternative fuels	Liquid fuels derived from sources other than fossil fuels like petroleum or diesel.
average global temperatures	An estimate of Earth's mean surface air temperature, averaged globally.
biodiversity credit	A tradeable unit issued to landowners who take additional and enduring measures to protect and restore ecosystems and native wildlife.
bioeconomy	The parts of the economy that use renewable biological resources to produce food, products, and energy.
bioenergy	Energy from biological materials such as wood or food waste.
biogenic methane	All methane emitted in the agriculture and waste sectors, mainly from ruminant animals and decomposing waste (as reported in New Zealand's Greenhouse Gas Inventory).

biomass	Organic material from living sources – such as wood and wood waste, crops or animal manure – that can be used as an energy source.
bolus	A slow-release capsule administered to ruminant animals via the mouth to deliver a methane-inhibiting compound to the rumen over an extended period.
Carbon Border Adjustment Mechanism (CBAM)	A tool that applies a price adjustment at the time goods are imported into a market for the carbon dioxide emitted during their production. This is intended to avoid emissions leakage by ensuring that imported products are subject to emissions prices comparable to those produced within the market.
carbon capture and storage	Refers to a suite of technologies that capture carbon dioxide emissions from an industrial or energy-related point source (such as a factory chimney) for permanent storage in a biological or geological reservoir.
carbon dioxide removal techniques	Over 99% of current carbon dioxide removal is from conventional methods including afforestation. Novel methods (non-conventional) include techniques such as biochar, bioenergy with carbon capture and storage, and direct air capture with carbon capture and storage.
carbon sequestration	The process of storing atmospheric carbon dioxide in a reservoir, such as the oceans, and by growing trees.
circular economy	Refers to an economic system based on designing out waste and pollution, and reusing products and materials. This system promotes the circularity of resources and energy within production systems by establishing a restorative cycle and regenerating natural systems.
clean energy	Energy from low-emissions sources that produce minimal air pollution and low or zero greenhouse gas emissions over their lifecycle. This can include renewable sources such as wind, solar, hydro, geothermal and sustainably sourced biomass.
Climate Change Response Act 2002	The Act that establishes the Climate Change Commission and contains the framework for the 2050 emissions reduction target and emissions budgets. It also provides a legal framework to enable Aotearoa New Zealand to meet its international obligations under the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement; and provides for the implementation of the New Zealand Emissions Trading Scheme (NZ ETS) and the synthetic greenhouse gas levy.
climate mitigation	Human actions to reduce emissions by sources or enhance removals by sinks of greenhouse gases. Examples of reducing emissions by sources include walking instead of driving a fossil-fuel powered vehicle, or replacing a coal boiler with a renewable electric powered one. Examples of enhancing removals by sinks include growing new trees to absorb carbon, or industrial carbon capture and storage activities.

climate-related disclosures	Climate-related disclosures provide information to investors about what a company is doing in relation to climate change risks and opportunities. In Aotearoa New Zealand they are required by law for certain organisations with more than NZ$1 billion in assets. See 'mandatory climate reporting threshold'.
co-benefit	A positive effect that a policy or measure aimed at one objective has on another objective, thereby increasing the total benefit to society or the environment.
CO_2e	Carbon dioxide equivalent. This is a way to describe different greenhouse gases on a common scale. One of the most frequently used approaches is to relate the warming effect of emissions of a particular gas to that of carbon dioxide, over a specified period of time. Under the rules set out by the United Nations Framework Convention on Climate Change, it is calculated by multiplying the quantity of that greenhouse gas by the relevant global warming potential (GWP). The current values used are the 100-year GWPs (GWP_{100}) from the Intergovernmental Panel on Climate Change (IPCC) 5th assessment report (AR5).
decarbonise	To reduce the levels of carbon emissions (such as carbon dioxide) caused by or involved in something, such as an activity or process.
deforestation	The conversion of forest land to another use such as grazing or urban development. In greenhouse gas emissions accounting and policy relevant to Aotearoa New Zealand, deforestation is defined as clearing forest and not replanting within four years. It does not include harvesting where a forest is replanted.
demonstration path	A pathway for how Aotearoa New Zealand could meet emissions budgets and the 2050 target. It is a set of measures and actions within sectors that could deliver recommended emissions budgets.
distributed generation	A variety of technologies that generate electricity at or near the point of use. These can be household-scale systems like rooftop solar and batteries, or larger-scale systems like solar farms, wind turbines, grid-scale batteries and micro-hydro schemes. They are connected directly to local networks rather than to the national grid.
distributional effects	The way positive and negative impacts (for example, health benefits) are shared between different groups in society depending on factors such as income levels, ethnicity, age, and how they interact with the pre-existing situations of the people in those groups.
dry year	In Aotearoa New Zealand, hydro lakes only hold enough water for a few weeks of winter energy demand if inflows (rain and snow melt) are very low. When inflows are low for long periods of time, hydro generation is reduced and the system relies on other forms of generation, including natural gas and coal. These periods of time are often colloquially referred to as 'dry years'.

ecotourism	Responsible travel to natural areas that focuses on environmental conservation, awareness and benefits for local communities.
electric vehicle (EV)	A vehicle that has an electric motor powered by a battery, which is charged by an external source of electricity. There are two main types of EVs: (1) Battery electric vehicles (BEVs) – these are powered by a battery only. (2) Plug-in hybrid electric vehicles (PHEVs) – these have a motor powered by a battery that is charged externally, and an internal combustion engine powered by petrol or diesel. Conventional forms of petrol hybrids aren't considered EVs as they aren't charged by 'plugging in'. Their batteries are only charged by re-capturing energy when braking or from electricity generated by the engine.
electrification	The shift from fossil fuels to electricity as an energy source.
embodied emissions	The sum of emissions involved in making a product, sometimes termed the 'carbon footprint'.
emissions	Greenhouse gases released into the atmosphere. The Climate Change Response Act 2002 covers the following greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.
emissions budget	The cumulative amount of greenhouse gases that can be emitted over a certain period. In the Climate Change Response Act 2002, emissions budgets are the total amount of all greenhouse gases (expressed as a net amount of carbon dioxide equivalent) that can be released over a five-year period (or four years in the case of 2022–2025).
emissions intensity	The ratio of greenhouse gas emissions to a unit of activity or output. This could be emissions per unit of economic output, such as GDP, to give a measure across an entire economy, or relative to other variables such as per kilometres travelled for modes of transport, or per unit of revenue or of a good produced in firms' production processes, such as per litre of milk solids. Measures of emissions intensity allow comparison of emissions performance across different activities and tracking of progress over time, where changes in economic activity can obscure some types of progress such as efficiency improvements.
emissions leakage	Occurs if efforts to reduce emissions in one location cause an increase in emissions somewhere else so that global emissions overall do not reduce. Emissions leakage risk is created by the uneven implementation of climate policies around the world.
emissions pricing	Emissions pricing places a fee on emitting certain greenhouse gases, providing an incentive to invest in technologies and practices that reduce emissions.
emissions reduction plan	A plan setting out the policies and strategies for meeting an emissions budget, as required by the Climate Change Response Act 2002.

energy – in terms of electricity supply	When considering the security of electricity supply, energy refers to the availability of generation and transmission capacity to meet expected national demand over a longer period of time.
energy efficiency	Using less energy to provide the same amount of useful output from a service, such as heating water or lighting.
energy security	The uninterrupted availability of energy sources at an affordable price.
external factors	Variables outside of the Government's direct control including economic activity, weather (affecting hydro lake inflows) and international developments such as oil prices.
f-gases	Fluorinated gases, such as hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.
firming	The mechanisms used to ensure a reliable supply of power year-round despite variations in renewable electricity generation.
fiscal capacity	The ability of a government to afford a policy via revenue from taxes and other means, while maintaining financial sustainability.
free trade agreement	A set of rules for how countries treat each other when it comes to doing business together, including importing and exporting goods or services and investing.
global warming potential (GWP)	A factor relating the warming effect of a tonne of emissions of a particular greenhouse gas to those of a tonne of carbon dioxide emissions over a specified period of time. See also 'CO_2e'.
greenhouse gases	Atmospheric gases that trap heat and contribute to climate change. The gases covered by the Climate Change Response Act 2002 are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.
gross emissions	Total greenhouse gas emissions from agriculture, energy, industrial processes and product use (IPPU) and waste. Greenhouse gas emissions and removals from land use, land-use change and forestry (LULUCF) are excluded. See also 'net emissions'.
heavy vehicle	A vehicle over 3.5 gross tonnes. These are typically trucks and buses.
hydroelectricity generation	Generation of electricity from hydroelectric dams that control the flow of water stored in a pool or reservoir, like a lake or river.
impacts	The consequences of climate mitigation policy beyond reduced emissions. They are generally effects on human lives, livelihoods, health and wellbeing, and can be harmful or beneficial. Also known as consequences or outcomes.

incentives	The factors that motivate individuals, businesses or governments to take certain economic actions or make specific decisions. They are typically based on the potential for gaining a benefit or avoiding a cost.
indicator	A sign or signal that shows something exists and its level of progress.
industrial allocation	The provision of free New Zealand Units (NZUs) to firms undertaking activities considered emissions intensive and trade exposed. This reduces the cost of the NZ ETS for these firms and is intended to reduce the risk of emissions leakage.
Intergovernmental Panel on Climate Change (IPCC)	Intergovernmental panel under the United Nations, which prepares comprehensive Assessment Reports about the state of scientific, technical and socio-economic knowledge on climate change, its impacts and future risks, and options for reducing the rate at which climate change is taking place.
internal combustion engine (ICE)	The engine, typically associated with transport, found in petrol and diesel vehicles.
land-use capability (LUC) classes	An assessment and categorisation of land's capability for use, based on its physical attributes or limitations and its versatility for sustained production. There are eight classes, ranging from LUC class 1 (most versatile) to LUC class 8 (severe to extreme limitations to all productive use).
light vehicle/light passenger vehicle	A vehicle under 3.5 gross tonnes. These are typically cars, sports utility vehicles (SUVs), utility vehicles (utes), vans and motorbikes.
liquified natural gas	Natural gas that has been cooled to a very low temperature so that it becomes a liquid, significantly reducing its volume and making it easier to store and transport, especially by ship. When needed, it is warmed and returned to a gaseous state for use as fuel.
low-carbon liquid fuels	These fuels provide much lower greenhouse gas emissions than fossil fuels. They include biofuels (made from plants, algae and waste), advanced biofuels (from things like crop residues and wood) and synthetic fuels (made using renewable energy and captured carbon). Some of these fuels, like biofuels, still release carbon dioxide when burned – but because the carbon comes from plants or the atmosphere, they add far less new carbon overall. Others, like hydrogen-based fuels, may not release any carbon dioxide at all when used. This means low-carbon fuels can help cut emissions across their full lifecycle.
mahinga kai	Garden, cultivation, food-gathering practices and/or places.

maladaptation	When adaptation actions cause negative outcomes. This could include, for example, actions that may lead to increased risk of adverse climate-related outcomes, including increased greenhouse gas emissions, increased vulnerability to climate change impacts and/or reduced welfare, now or in the future. Maladaptation is usually an unintended consequence.
managed landfill	Municipal disposal facilities that primarily accept household and commercial waste but also receive industrial and other solid waste streams.
mandatory climate reporting threshold	Certain NZX-listed companies are required to prepare and disclose annual statements detailing their climate-related risks and opportunities. In October 2025 the Government lifted the threshold from companies with NZ$60 million market capitalisation to NZ$1 billion. See 'climate-related disclosures'.
market access	Ability to enter a foreign market by selling goods and services.
microgrid	A self-contained energy system that can generate, store and distribute electricity independently or alongside the main power grid.
mode shift	Changing to travel by public transport and cycling and walking, rather than by private motor vehicle.
model/modelled	Representation of an idea, object, process or system to describe or explain phenomena that cannot be experienced directly, to discover features of and ascertain facts about a system and its behaviour.
$MtCH_4$	Megatonnes (million tonnes) of methane.
$MtCO_2e$	Megatonnes (million tonnes) of carbon dioxide equivalent.
nationally determined contribution (NDC)	Each country that is party to the Paris Agreement must define its contribution to achieving the long-term temperature goal set out in the Paris Agreement. The first NDC adopted by Aotearoa New Zealand is a target to reduce greenhouse gas emissions by 50% below 2005 levels by 2030. Aotearoa New Zealand's second NDC is to reduce greenhouse gas emissions by 51–55% below 2005 levels by 2035.
net emissions	These differ from gross emissions in that they also include emissions from the land use, land-use change and forestry (LULUCF) sector as well as removals of carbon dioxide from the atmosphere, for example through absorption by forests as trees grow.
net negative emissions	Net negative emissions is achieved when, as result of human activities, more greenhouse gases are removed from the atmosphere than are emitted into it.

net present value (NPV)	A measure of the total value of an investment. The net present value is the current value of all future cash flows of an investment, calculated by discounting all cash inflows and outflows (at an assumed rate) and subtracting the initial investment.
New Zealand Emissions Trading Scheme (NZ ETS)	Aotearoa New Zealand's main emissions pricing policy. It creates a market for emissions by requiring certain businesses to acquire and surrender one New Zealand Unit (NZU) for every tonne of CO_2e emitted.
New Zealand Emissions Trading Scheme emissions cap	Emissions budgets can be achieved by sectors both inside and outside the New Zealand Emissions Trading Scheme (NZ ETS) reducing their emissions. The emissions cap is the intended share of the emissions budget allocated to sectors within the NZ ETS.
New Zealand's Greenhouse Gas Inventory (GHG Inventory)	Official annual report of all human-induced emissions and removals of greenhouse gases in Aotearoa New Zealand. It is the key source of evidence on Aotearoa New Zealand's greenhouse gas emissions trends. Emissions from fuel sold for use in international transport (e.g. international bunker fuels) are reported separately as a memo item, as required.
organic waste	Waste containing organic matter that decays to create greenhouse gases. If the decay happens in the presence of oxygen, carbon dioxide is created. If it happens without oxygen, methane is created.
Paris Agreement	An international treaty aimed at post-2020 climate change action that was adopted by Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015. See also United Nations Framework Convention on Climate Change.
peatlands	Terrestrial wetland ecosystems where partially decomposed plant material accumulates over time to form peat soils, storing large amounts of carbon.
permanence	When relating to removals of carbon dioxide through forestry: the expected duration of the carbon storage.
plug-in hybrid electric vehicle (PHEV)	See 'electric vehicle'. These are not zero-emissions vehicles (see 'zero-emissions vehicle') as they can be driven using an internal combustion engine (i.e. without using the battery).
pre-1990 forests	Forests or shrub land established before 1 January 1990.
projections/ projected	Estimated value of a future quantity (such as emissions levels) based on a prescribed set of assumptions.
range anxiety	Concern that an electric vehicle will run out of battery charge before reaching a charging station or finishing the trip.

removals	Activities that remove carbon dioxide from the atmosphere and durably store it in ocean or terrestrial reservoirs, or in products. In Aotearoa New Zealand, this usually refers to absorption of carbon by forests as trees grow.
renewable sources of energy	Aotearoa New Zealand's renewable energy sources are used for electricity generation and direct use. Renewable sources for electricity generation are geothermal, hydro, solar and wind. Renewable energy sources for direct use includes geothermal energy used as heat for industrial applications.
risk assessment	The scientific estimation of risks, which may be either quantitative or qualitative.
road user charges (RUCs)	A per-kilometre charge paid to the National Land Transport Fund by heavy vehicles and light vehicles that are diesel, electric or plug-in hybrid and operate on New Zealand roads. Light petrol vehicles and petrol or diesel hybrids (that do not plug in to charge) contribute via a petrol tax and do not pay road user charges.
scenarios (for emissions modelling)	A plausible set of assumptions about economic and social development, and technological and behavioural changes.
social licence	The perceptions of people that a policy, a project, a company or an industry that operates in a given area or region is socially acceptable or legitimate.
split incentives	When one party pays for an action and a different party gets the benefits. The result is that the action is unlikely to happen even if the total benefits outweigh the total costs.
spot price	The current market price of a security, currency or commodity (such as electricity) available to be bought/sold for immediate settlement. In other words, it is the price at which the sellers and buyers value an asset right now.
structural adjustment	Where an economy changes how it is organised, often by reducing the size of some sectors and growing others.
sustainable aviation fuel (SAF)	There are multiple types of sustainable aviation fuel. Some of the more common ones include bio-based aviation fuels – produced from renewable feedstocks like animal fats, waste, and crops or forests without major environmental or land-use impacts, and e-fuels (also called power-to-liquid fuels) – which are created by using renewable electricity and water to produce green hydrogen, and then combining that green hydrogen with carbon dioxide from the air.
sustainable finance taxonomy	A classification system that defines which economic activities are aligned to a sustainable, low-emissions future, with a goal of directing investment to the activities required for the transition.

system-level	Something that applies across different sectors, and often to the whole economy or society. It includes economy-wide effects that cannot be divided into smaller parts.
taonga species	Native plants, animals and natural resources that hold cultural and spiritual significance for iwi and hapū.
target accounting	The accounting system used to measure progress towards Aotearoa New Zealand's emissions reduction goals. Target accounting emissions include all gross emissions, but only a subset of emissions and removals from land use and forestry – namely emissions and removals that are the result of recent and future forestry activities. Target accounting is designed to incentivise emissions reductions and to avoid relying on actions that occurred before 1990 (such as forest planting in the 1970s and 1980s) that continue to result in emissions and removals today. It also applies an averaging approach to production forests to smooth out emissions and removals over harvest cycles.
Te Tiriti o Waitangi/The Treaty of Waitangi	Aotearoa New Zealand's founding document, signed between Māori and representatives of the British Crown in a series of signing events beginning 6 February 1840.
tonne kilometre(s)	The movement of one metric tonne of goods (freight) over one kilometre. For example, 1 tonne moved 10 km = 10 tonne kilometres, and 10 tonnes moved 1 km = 10 tonne kilometres.
unmanaged landfill	A variety of landfill types without controls in place, including farm fills and sites used for construction, demolition or industrial waste.
upfront costs	The costs paid when first purchasing an item, excluding benefits that accrue over time.
urease inhibitor	A substance or biological compound that reduces ammonia losses when applied with urea fertiliser, maximising the nitrogen available for plant uptake, and resulting in reductions in nitrous oxide emissions.
vehicle-kilometres-travelled	The number of kilometres travelled across a number of vehicles. For example, four people in one car travelling 1 kilometre is 1 vehicle-kilometre-travelled.
vintaged	Emissions units that expire after a given date.
voluntary nature and carbon markets	A privately run market that enables environmental credits from independently verified projects to be sold to organisations and individuals who wish to support environmental outcomes.
zero-emissions vehicle	Battery electric vehicles (see 'electric vehicle') and hydrogen fuel cell electric vehicles (FCEVs) that produce no emissions during their use. FCEVs generate electricity on-board using a fuel cell and do not plug in to charge.

References

1. He Pou a Rangi Climate Change Commission. *Advice on Aotearoa New Zealand's fourth emissions budget*. 2024. https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/preparing-advice-on-emissions-budgets/advice-on-the-fourth-emissions-budget/final-report
2. World Meteorological Organization. *State of the Global Climate 2025*. 2026. 23 March. https://wmo.int/publication-series/state-of-global-climate/state-of-global-climate-2025
3. IAG. A storm every eight days: weather claims spike 256%. Accessed 21 May, 2026. https://www.iag.co.nz/newsroom/news-releases/wild-weather-tracker-issue-8
4. He Pou a Rangi Climate Change Commission. *Priorities for action – 2026 National Climate Change Risk Assessment for Aotearoa New Zealand*. 2026. https://www.climatecommission.govt.nz/reports-and-evidence/publications/2026-national-climate-change-risk-assessment/
5. Crippa M, Guizzardi D, Pagani F, Banja M, Muntean M. *GHG emissions of all world countries – 2025 report*. 2025. https://edgar.jrc.ec.europa.eu/report_2025
6. United Nations Framework Convention on Climate Change Secretariat. NDC Registry. Accessed 30 March, 2026. https://unfccc.int/NDCREG
7. United Nations Environment Programme (UNEP). *Emissions Gap Report 2025*. 2025. 4 November. https://www.unep.org/resources/emissions-gap-report-2025
8. Sapere. *Driving Sustainable Growth: Opportunities for New Zealand's Economy*. 2026. https://climateleaderscoalition.org.nz/resources/driving-sustainable-growth-opportunities-for-new-zealands-economy/
9. European Commission. Carbon Border Adjustment Mechanism. Accessed 27 March 2026, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en
10. U.K. Government. Draft regulations: Carbon Border Adjustment Mechanism (CBAM). Accessed 27 March 2026, https://www.gov.uk/government/consultations/draft-regulations-carbon-border-adjustment-mechanism-cbam
11. World Business Council for Sustainable Development. *Business Breakthrough Barometer 2025*. 2025. 23 June. https://www.wbcsd.org/resources/business-breakthrough-barometer-2025/?submitted=true
12. International Energy Agency (IEA). *Electricity 2026: Analysis and forecast to 2030*. 2026. https://www.iea.org/reports/electricity-2026?utm_campaign=IEA+newsletters&utm_medium=Email&utm_source=energy+snapshot
13. International Energy Agency (IEA). *Energy Technology Perspectives 2026*. 2026. 26 March. https://www.iea.org/reports/energy-technology-perspectives-2026
14. Ministry of Transport. Fleet statistics: Weekly Low Emission Vehicle report. Ministry of Transport. 2026. https://www.transport.govt.nz/statistics-and-insights/fleet-statistics/sheet/low-emissions-vehicle-report
15. Electricity Authority Te Mana Hiko. Installed distributed generation trends. Accessed 30 March, 2026. www.emi.ea.govt.nz/r/wmlyd
16. Department for Energy Security and Net Zero (UK). Solar photovoltaics deployment. Updated 26 March 2026. Accessed 30 March, 2026. https://www.gov.uk/government/statistics/solar-photovoltaics-deployment
17. Shetty S. Western Europe's Solar Surge: Netherlands Leads the Charge with One in Three Homes Solar-Powered. *Solarquarter*. 17 April 2025. https://solarquarter.com/2025/04/17/western-europes-solar-surge-netherlands-leads-the-charge-with-one-in-three-homes-solar-powered/
18. National Renewable Energy Laboratory (NREL). *Spring 2025 Solar Industry Update*. 2025. 15 May. https://research-hub.nlr.gov/en/publications/spring-2025-solar-industry-update/
19. Ministry for the Environment. Climate Change Chief Executives Board. Ministry for the Environment. 2026. https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/about-new-zealands-climate-change-programme/climate-change-chief-executives-board/

20. New Zealand Government. New ministry to deliver better housing, transport, and environmental outcomes. New Zealand Government; 2025. https://www.beehive.govt.nz/release/new-ministry-deliver-better-housing-transport-and-environmental-outcomes
21. New Zealand Government. Improving New Zealand's climate change act. New Zealand Government; 2025. https://www.beehive.govt.nz/release/improving-new-zealand%E2%80%99s-climate-change-act
22. Parliamentary Commissioner for the Environment. *Submission on the Government's response to the Climate Change Commission's emissions reduction monitoring report for 2025*. 2025. https://www3.parliament.nz/resource/en-NZ/54SCENV_EVI_4e80dfe7-666c-4ae3-f981-08de0d2d236a_ENV81976/759f7bba67421d9652658c437d979febe6c7875d
23. Ministry for the Environment Manatū Mō Te Taiao. New Zealand's projected greenhouse gas emissions to 2050. Updated 29 January 2026. Accessed 25 March 2026, https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/emissions-reductions/emissions-reduction-targets/new-zealands-projected-greenhouse-gas-emissions-to-2050/
24. Ministry for the Environment. Data from: Emissions in New Zealand (ENZ) model. 2025. Deposited October 2025.
25. Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. 2013:1535. https://www.ipcc.ch/report/ar5/wg1/
26. International Energy Agency (IEA). *Global EV Outlook 2025*. 2025. https://www.iea.org/reports/global-ev-outlook-2025
27. International Energy Agency. *World Energy Outlook 2024*. 2024. https://www.iea.org/reports/world-energy-outlook-2024
28. Steele M. Beef farmers likely first in line for emissions-reducing livestock pill. *Radio New Zealand*. 31 July 2025. https://www.rnz.co.nz/news/country/568535/beef-farmers-likely-first-in-line-for-emissions-reducing-livestock-pill
29. New Zealand Government. Loans to help businesses transition away from gas. New Zealand Government; 25 May, 2026. https://www.beehive.govt.nz/release/loans-help-businesses-transition-away-gas
30. New Zealand Transport Agency. Motor vehicle registrations – dashboard and open data. Accessed 7 April, 2026. https://www.nzta.govt.nz/vehicles/how-the-motor-vehicle-register-affects-you/motor-vehicle-registrations-dashboard-and-open-data
31. New Zealand Transport Agency. Public transport monthly data updated – March 2026. Updated 6 May 2026. Accessed 27 May, 2026. https://nzta.govt.nz/resources/public-transport-monthly-data-update?_searchAnalytics=eyJlbmdpbmVOYW1lIjoibnp0YTItcHJvZC1tYWluLXNpdGUiLCJkb2N1bWVudElkIjoic2lsdmVyc3RyaXBlX2Ntc19tb2RlbF9zaXRldHJlZV8zNTA0MSIsInJlcXVlc3RJZCI6IktPTjdHTHZ3VHkyNnRyRVluRUVvS3cifQ%3D%3D
32. Auckland Transport. How many people are taking buses, trains and ferries. Accessed 27 May, 2026. https://at.govt.nz/about-us/reports-publications/how-many-people-are-taking-buses-trains-and-ferries
33. Ministry of Transport. Fuel response monitoring dashboard. Accessed 28 May, 2026. https://www.transport.govt.nz/statistics-and-insights/fuel-response-monitoring-dashboard
34. Ministry of Business, Innovation and Employment. Energy in New Zealand 2025: Gas. Accessed 5 May 2026, https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-publications-and-technical-papers/energy-in-new-zealand/energy-in-new-zealand-2025/gas
35. New Zealand Government. Low gas production threatens energy security. New Zealand Government; 2024. https://www.beehive.govt.nz/release/low-gas-production-threatens-energy-security
36. New Zealand Government. Clean Vehicle Standard Bill passes third reading. New Zealand Government; 20 November, 2025. https://www.beehive.govt.nz/release/clean-vehicle-standard-bill-passes-third-reading
37. Newton K. Government considering scrapping entire clean car standard. *Radio New Zealand*. 5 March 2026. https://www.rnz.co.nz/news/political/588668/government-considering-scrapping-entire-clean-car-standard
38. New Zealand Steel. Transition to lower emissions steel making can go further, faster. 2025. https://www.nzsteel.co.nz/news-and-media/securing-the-future-of-steelmaking-in-nz/
39. New Zealand Government. Government sets methane targets for 2050. 12 October, 2025. https://www.beehive.govt.nz/release/government-sets-methane-targets-2050
40. Energy Resources Aotearoa, Electricity Engineers' Association. *Re-Energise 26 – Building the Workforce for New Zealand's Energy Future: An Industry Skills Action Plan*. 2026. https://www.energyresources.org.nz/dmsdocument/379
41. Engineering New Zealand. *Engineering workforce long-term skills shortage: Action Plan 2025*. 2025. https://d2rjvl4n5h2b61.cloudfront.net/media/documents/Engineering_workforce_Skills_shortage_Action_plan_1.pdf

42. Sustainable Business Council. *Driving Sustainable Growth: Opportunities for New Zealand's Economy*. 2026. https://sbc.org.nz/business-leaders-quantify-major-sustainable-growth-opportunity-for-new-zealand-economy
43. HorizonPoll. Concerns high over fuel, many changing behaviours. Accessed 18 May, 2026. https://horizonpoll.co.nz/page/749/concerns-high-o?gtid=4F6EFE82-38D2-4188-9BC6-73A1F5E263A5
44. Concept Consulting Group. *Likely cost-benefit of removing the Clean Car Discount: A report to Drive Electric*. 2023. https://driveelectric.org.nz/wp-content/uploads/2023/12/Concept-Consulting-CCD-Cost-Benefit-for-Drive-Electric-1.pdf
45. Australian Energy Regulator, Australian Government. *2026–2027 Default market offer: Final determination*. 2026. 26 May. https://www.aer.gov.au/industry/registers/resources/reviews/default-market-offer-2026-27/final-determination
46. Wood T. Why are retail power prices finally falling? *The Conversation*. 26 May 2026. https://theconversation.com/why-are-retail-power-prices-finally-falling-283760
47. Department of Climate Change, Energy, the Environment and Water. Cheaper Home Batteries Program. Australian Government. Updated 13 February 2026. https://www.dcceew.gov.au/energy/programs/cheaper-home-batteries
48. Stats NZ. Gross domestic product: December 2025 quarter. Accessed 8 May 2026, https://www.stats.govt.nz/information-releases/gross-domestic-product-december-2025-quarter/
49. Stats NZ. Labour market statistics: March 2026 quarter. Accessed 21 May 2026. https://www.stats.govt.nz/information-releases/labour-market-statistics-march-2026-quarter/
50. Reserve Bank of New Zealand Te Pūtea Matua. *Purchasing power and the real cost of living in New Zealand*. 2026. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/publications/speeches/2026/purchasing-power-and-the-real-cost-of-living-in-new-zealand.pdf
51. Fitch Ratings. Fitch Revises Outlook on New Zealand to Negative; Affirms at 'AA+'. Accessed 8 May 2026, https://www.fitchratings.com/research/sovereigns/fitch-revises-outlook-on-new-zealand-to-negative-affirms-at-aa-20-03-2026
52. Stern N. *The Growth Story of the 21st Century: The Economics and Opportunity of Climate Action*. LSE Press; 2025.
53. Organisation for Economic Co-operation and Development (OECD). *Investing in Climate for Growth and Development: The Case for Enhanced NDCs*. 2025. https://www.oecd.org/en/publications/investing-in-climate-for-growth-and-development_16b7cbc7-en/full-report/accelerated-climate-action-can-deliver-strong-economic-benefits_bee34dd7.html
54. International Energy Agency (IEA). *GHG emissions of all world countries*. Publications Office of the European Union; 2024.
55. UK Climate Change Committee. Cost of Net Zero by 2050 less than a single fossil fuel price shock – CCC. Accessed 8 May 2026, https://www.theccc.org.uk/2026/03/11/cost-of-net-zero-by-2050-less-than-a-single-fossil-fuel-price-shock-ccc/
56. Commonwealth of Australia. *Australia's net zero transformation: Treasury modelling and analysis*. 2025:53. Accessed 17 March 2026. https://treasury.gov.au/sites/default/files/2025-11/p2025-700922.pdf
57. Ministry for the Environment Manatū Mō Te Taiao. Amendment to the second emissions reduction plan. Ministry for the Environment Manatū Mō Te Taiao. Updated 29 January 2026. Accessed 26 March, 2026. https://environment.govt.nz/news/amendment-to-the-second-emissions-reduction-plan/
58. New Zealand Government. Commonsense changes to boost capital markets. 2025. https://www.beehive.govt.nz/release/commonsense-changes-boost-capital-markets
59. Centre for Sustainable Finance. *Survey of Aotearoa New Zealand Investors: Climate Policies and Actions 2025*. 2025. https://sustainablefinance.nz/resource/survey-of-aotearoa-new-zealand-investors-climate-policies-and-actions-2025/
60. Organisation for Economic Co-operation and Development (OECD). *OECD Economic Surveys: New Zealand 2026*. 2026. https://www.oecd.org/en/publications/oecd-economic-surveys-new-zealand-2026_3ec5de98-en.html
61. EVDB. EV Market Stats 2026. 8 May 2026, https://evdb.nz/ev-stats
62. The Aotearoa Circle. Update – Protecting New Zealand's Competitive Advantage. Accessed 13 May 2026, https://www.theaotearoacircle.nz/post/update-protecting-new-zealands-competitive-advantage
63. New Zealand Trade & Enterprise. Leveraging NZ's sustainability credentials in UK supermarkets. Accessed 21 May, 2026. https://my.nzte.govt.nz/article/20250917-leveraging-nzs-sustainability-credentials-in-uk-supermarkets

64. European Commission. CBAM successfully entered into force on 1 January 2026. Accessed 8 May 2026, https://taxation-customs.ec.europa.eu/news/cbam-successfully-entered-force-1-january-2026-2026-01-14_en
65. New Zealand Trade & Enterprise. EU carbon regulations for emissions-intensive products. Accessed 8 May 2026, https://my.nzte.govt.nz/article/incoming-eu-carbon-regulations-for-emissions-intensive-products
66. World Bank Group. *State and Trends of Carbon Pricing 2026*. 2026. https://openknowledge.worldbank.org/entities/publication/64c7e4b9-bdd4-4761-9f3f-35fcccb4b7ef
67. World Bank Group. *State and Trends of Carbon Pricing 2025*. 2025. https://openknowledge.worldbank.org/entities/publication/e5f6e755-e6a6-4d2c-927a-23b5cc8a9b03
68. New Zealand Government. Strengthening ETS Market Governance. 27 May, 2025. https://www.beehive.govt.nz/release/strengthening-ets-market-governance
69. Ministry for the Environment Manatū Mō Te Taiao. New Zealand Emissions Trading Scheme settings and regulations updated. Updated 19 August 2025. https://environment.govt.nz/news/nzets-settings-and-regulations-updated/
70. New Zealand Government. New methane target set in Parliament. Updated 12 December 2025. https://www.beehive.govt.nz/release/new-methane-target-set-parliament
71. Te Uru Rākau New Zealand Forest Service. Limits to restrict farm-to-forest conversions. Ministry for Primary Industries. Updated 03/11/25. Accessed 13 May, 2026. https://www.mpi.govt.nz/forestry/forestry-in-the-emissions-trading-scheme/news-and-changes-to-the-ets/limits-to-restrict-farm-to-forest-conversions
72. Ministry for the Environment. Amending the Climate Change Response Act. Ministry for the Environment. 2026. https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/amending-the-climate-change-response-act/#national-adaptation-framework
73. New Zealand Government. Climate Change (Eligible Industrial Activities) Amendment Regulations (No 2) 2024. 2024.
74. Fuchs M, Ströbel J, Terstegge J. Carbon price uncertainty. 2024. 20 September 2024. https://cepr.org/voxeu/columns/carbon-price-uncertainty
75. Terranova R, Reissl S, Campiglio E. Policy Credibility and Speculation in the EU ETS. 2026
76. Sitarz J, Pahle M, Osorio S, Luderer G, Pietzcker R. EU carbon prices signal high policy credibility and farsighted actors. *Nature Energy*. 30 May 2024;9:691–702. https://www.nature.com/articles/s41560-024-01505-x
77. Yang Y, Wen L, Sharp B, Maani S. Carbon price volatility in the New Zealand Emission Trading Scheme. *Energy Economics*. January 2026;153
78. Parliamentary Commissioner for the Environment. *Alt-F Reset: Examining the drivers of forestry in New Zealand*. 2025. April 2025. https://pce.parliament.nz/media/5v0oorhb/alt-f-reset_examining-the-drivers-of-forestry-in-new-zealand_web.pdf
79. Hirst D. *Carbon Price Floor (CPF) and the price support mechanism*. 2018. 8 January. https://researchbriefings.files.parliament.uk/documents/SN05927/SN05927.pdf
80. California Air Resources Board. Compliance Offset Program – About. Accessed 28 May, 2026. https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/about
81. Centre for Sustainable Finance. A 2030 Strategy for financing sustainable growth in Aotearoa New Zealand. Accessed 11 May 2026, https://sustainablefinance.nz/sustainablefinancestrategy/?mc_cid=8f9648b49a&mc_eid=a19e30f522
82. Centre for Sustainable Finance. NZ Taxonomy. Accessed 11 May 2026, https://sustainablefinance.nz/nz-taxonomy/
83. Ministry of Business Innovation and Employment. *Financial Markets Conduct Amendment Bill: amendments relating to climate-related disclosure regime*. 2026. https://www.mbie.govt.nz/dmsdocument/31732-financial-markets-conduct-amendment-bill-amendments-relating-to-climate-related-disclosures-regime-proactiverelease-pdf
84. The Treasury. Finance and Expenditure Committee inquiry into banking competition. Accessed 11 May 2026, https://www.treasury.govt.nz/news-and-events/reviews-consultation/finance-and-expenditure-committee-inquiry-banking-competition
85. Commerce Commission New Zealand. ComCom finds no evidence of cartel behaviour in banks' involvement in Net-Zero Banking Alliance. Accessed 11 May 2026, https://www.comcom.govt.nz/news-and-media/news-and-events/2025/comcom-finds-no-evidence-of-cartel-behaviour-in-banks-involvement-in-net-zero-banking-alliance/
86. Energy Efficiency and Conservation Authority (EECA). Government Investment in Decarbonising Industry Fund. Accessed 21 May, 2025. https://www.eeca.govt.nz/co-funding-and-support/previously-funded-projects/approved-gidi-projects/
87. New Zealand Government. Government to wind down Green Investment Finance. 8 April, 2025. https://www.beehive.govt.nz/release/government-wind-down-green-investment-finance
88. Energy Efficiency and Conservation Authority (EECA). State Sector Decarbonisation Fund. Accessed 21 May, 2026. https://www.eeca.govt.nz/co-funding-and-support/previously-funded-projects/state-sector-decarbonisation-fund/

89. BusinessNZ Energy Council. *The Need for Government Assistance in the Gas Transition*. 2026. https://bec.org.nz/wp-content/uploads/2026/04/The-Need-for-Government-Assistance-in-the-Gas-Transition.pdf
90. Deloitte. *Gearing up for action: Beyond mandatory climate disclosures*. 2026. https://www.deloitte.com/nz/en/services/consulting/perspectives/beyond-mandatory-climate-disclosures.html
91. New Zealand Government. *Employment Action Plan*. 2024. https://www.beehive.govt.nz/release/action-plan-get-more-people-employment
92. Ministry of Business Innovation and Employment. Developing Talent. Accessed 4 May 2026, https://www.mbie.govt.nz/business-and-employment/economic-growth/going-for-growth/developing-talent
93. Ministry of Business Innovation and Employment. Refocusing the science, innovation and technology system. Accessed 11 May, 2026. https://www.mbie.govt.nz/science-and-technology/science-and-innovation/refocusing-the-science-innovation-and-technology-system
94. New Zealand Parliament. *Final Report of the Health Committee on the Gene Technology Bill*. 2025. 10 October. https://selectcommittees.parliament.nz/v/SelectCommitteeReport/45bf8d76-863f-42b9-0938-08de07841f04?lang=en
95. Ministry of Business Innovation and Employment. *Gene Technology Bill Officials' report to the Health Committee*. 2025. May. https://www3.parliament.nz/resource/en-NZ/54SCHEA_ADV_22059628-b0cc-4931-5e07-08dd18a12bfb_HEA41493/8603be5e20fbfb7b9ea326f419822000d59abda1
96. New Zealand Government. New IP rules to boost research commercialisation. Beehive; 13 November, 2025. https://www.beehive.govt.nz/release/new-ip-rules-boost-research-commercialisation
97. Climate Policy Lab. Global Public Energy RD&D Expenditures Database. Accessed 3 March, 2026. https://www.climatepolicylab.org/rddmap
98. OECD. Data from: Gross domestic spending on R&D. 2025.
99. Stats NZ. Research and development survey: 2025. Accessed 13 May, 2026. https://www.stats.govt.nz/information-releases/research-and-development-survey-2025/
100. New Zealand Government. Government backs fusion energy research. New Zealand Government; 4 February 2026, 2026. https://www.beehive.govt.nz/release/government-backs-fusion-energy-research
101. OECD. *Agricultural Policy Monitoring and Evaluation 2025*. 2025. https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/10/agricultural-policy-monitoring-and-evaluation-2025_354e7040/a80ac398-en.pdf
102. Climate Change Authority. *2025 Annual Progress Report*. 2025. 27 November. https://www.climatechangeauthority.gov.au/2025-annual-progress-report
103. European Environment Agency (EEA). Assessing the climate mitigation potential of circular economy. Accessed 13 March 2026, 2026.
104. Bocconi University EMF, Intesa Sanpaolo,. *The circular economy as a de-risking strategy and driver of superior risk-adjusted returns*. 2021. https://www.ellenmacarthurfoundation.org/the-circular-economy-as-a-de-risking-strategy-and-driver-of-superior-risk
105. Davies P, Barton B. *A Container Return System for New Zealand: Cost-benefit analysis update*. 2022. https://environment.govt.nz/publications/a-container-return-system-for-new-zealand-cost-benefit-analysis-update/
106. Watts HS. Accelerating bioenergy in New Zealand. Updated 22 October 2025. Accessed 13 march 2026, 2026. https://www.beehive.govt.nz/release/accelerating-bioenergy-new-zealand
107. Bassett D, Hosking J, Ameratunga S, Woodward A. Variations in the health benefit valuations of active transport modes by age and ethnicity: A case study from New Zealand. *Journal of Transport & Health*. 1 December 2020;19:100953. doi:https://doi.org/10.1016/j.jth.2020.100953
108. Chapman R, Keall M, Howden-Chapman P, et al. A Cost Benefit Analysis of an Active Travel Intervention with Health and Carbon Emission Reduction Benefits. *International Journal of Environmental Research and Public Health*. 2018;15(5):962. doi:https://doi.org/10.3390/ijerph15050962
109. Osborne E, Davies C, Shaw C. Fun, confidence and better health: Inside a year on an e-bike. Public Health Expert Briefing. Public Health Communication Centre Aotearoa; 2026. https://www.phcc.org.nz/briefing/fun-confidence-and-better-health-inside-year-e-bike
110. Shaw C. Walking and cycling for transport is good for physical activity levels in Kiwis! *Public Health Expert Briefing*. Public Health Communication Centre Aotearoa; 2017. https://www.phcc.org.nz/briefing/walking-and-cycling-transport-good-physical-activity-levels-kiwis
111. New Zealand Transport Agency. *MIN-4872 Private Share Targets for Public Transport Authorities*. 2025. https://www.nzta.govt.nz/assets/About-us/docs/oia2-2025/MIN-4872-Private-share-targets-for-public-transport-authorities.pdf

112. New Zealand Transport Agency. Getting to and from public transport. New Zealand Transport Agency. Accessed 19 May, 2026. https://www.nzta.govt.nz/partners/design-guidance/public-transport-design-guidance/getting-to-and-from-public-transport
113. New Zealand Government. Government Policy Statement on land transport 2024-2034 (New Zealand Government) (2024).
114. Ministry of Business Innovation and Employment Hīkina Whakatutuki. Energy prices. Accessed 18 May, 2026. https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/energy-prices
115. Edmunds S. So you want to buy an EV – here's what your bank could offer. *Radio New Zealand*. 20 April 2026. https://www.rnz.co.nz/news/business/592773/so-you-want-to-buy-an-ev-here-s-what-your-bank-could-offer
116. Ngāti Whātua Ōrākei. Hiko Iwi Electric Initiative. Accessed 1 May, 2026. https://ngatiwhatuaorakei.com/parongo/hiko/
117. New Zealand Government. EV chargers to roll out faster under new rules. New Zealand Government; 9 April, 2026. https://www.beehive.govt.nz/release/ev-chargers-roll-out-faster-under-new-rules
118. Transport and Infrastructure Committee. *Final report: Road User Charges (Light Electric RUC Vehicles) Amendment Bill*. 2024. 14 March. https://selectcommittees.parliament.nz/v/SelectCommitteeReport/d37ebc51-52fe-41d6-aca9-08dc42f59301
119. Sustainable Energy Association of New Zealand. Exemplifying the resilience of solar and batteries: Stories unveiled in the wake of Cyclone Gabrielle. SEANZ. Accessed May, 2026. https://www.seanz.org.nz/case-study-resilience-after-gabrielle
120. Energy Efficiency and Conservation Authority (EECA). Solar costs and savings. Accessed April 2026, https://www.eeca.govt.nz/for-homes/solar-for-homes/solar-costs-and-savings/
121. Stats NZ. Housing in Aotearoa New Zealand: 2025. https://www.stats.govt.nz/reports/housing-in-aotearoa-new-zealand-2025/
122. Johnston K. Government 'kicked the tyres' on solar subsidies but went with 'minor' tweaks instead. *Radio New Zealand*. 3 March 2026. https://www.rnz.co.nz/news/in-depth/588445/government-kicked-the-tyres-on-solar-subsidies-but-went-with-minor-tweaks-instead
123. Grimes A, Denne T, Howden-Chapman P, et al. *Cost Benefit Analysis of the Warm Up New Zealand: Heat Smart Programme*. 2012. https://www.motu.nz/our-research/urban-and-regional/housing/cost-benefit-analysis-of-the-warm-up-new-zealand-heat-smart-programme
124. Grimes A, Preval N. *Warmer Kiwi Homes Evaluation 2020: Phase 1*. 2020. https://www.eeca.govt.nz/insights/eeca-insights/warmer-kiwi-homes-research-and-evaluation/
125. Vector. *Energy Efficiency – Insulation and Heat Pump Retrofits*. 2022. https://vector.co.nz/posts/energy-efficiency-a-case-study
126. Fyfe C, Grimes A, Minehan S, Taptiklis P. *Evaluation of the Warmer Kiwis Homes Programme: Full Report including Cost Benefit Analysis*. 2022. https://motu.nz/our-research/urban-and-regional/housing/warmer-kiwis-study
127. Sunshine Yates Consulting. *New Zealand Food Waste Audits*. 2018. https://lovefoodhatewaste.co.nz/food-waste/resources/research/
128. Kantar. *Rabobank New Zealand Food Waste Survey: 2025 Results*. 2025. https://www.rabobank.co.nz/community/food-waste
129. Office of the Prime Minister's Chief Science Advisor. *Food rescue in 2022: Where to from here?* 2022. https://www.pmcsa.ac.nz/topics/food-rescue-food-waste/
130. Ministry for the Environment Manatū Mō Te Taiao. Waste Minimisation Fund. Accessed 18 May, 2026. https://environment.govt.nz/what-you-can-do/funding/waste-minimisation-fund/
131. Ministry for the Environment Manatū Mō Te Taiao. *New Zealand's first emissions reduction plan: Amendment 2024*. 2024. https://environment.govt.nz/publications/new-zealands-first-emissions-reduction-plan-amendment-2024/
132. New Zealand Government. Factsheet: Budget 2024 Tax Relief. Accessed 18 May, 2026. https://www.beehive.govt.nz/sites/default/files/2024-05/Factsheet%20-%20Responsible%20tax%20relief.pdf
133. Ministry for the Environment. *Government Response to the Climate Change Commission: Monitoring Report: Emissions Reduction 2025*. 2025. https://environment.govt.nz/assets/publications/climate-change/2025-government-response-to-CCC-emissions-reduction-monitoring-report.pdf
134. New Zealand Government. $1m for marae providing support following weather events. New Zealand Government; 27 January 2026, 2026. https://www.beehive.govt.nz/release/1m-marae-providing-support-following-weather-events
135. Climate Change Chief Executives Board. First Emissions Reduction Plan – Action Tracker spreadsheet – CCC Reporting Version. 2026.
136. He Pou a Rangi Climate Change Commission. *Monitoring report: Emissions reduction*. 2025. *Annual Monitoring Report*. https://www.climatecommission.govt.nz/reports-and-evidence/publications/erm2025/

137. Business and Economic Research Limited (BERL). *Te Ōhanga Māori 2023: The Māori Economy 2023*. 2024. https://www.mbie.govt.nz/assets/te-ohanga-maori-2023-report.pdf
138. Organisation for Economic Co-operation and Development. *OECD Economic Surveys: New Zealand 2026*. Vol. 2026/11. 2026. https://www.oecd.org/content/dam/oecd/en/publications/reports/2026/05/oecd-economic-surveys-new-zealand-2026_27daa8d8/3ec5de98-en.pdf
139. Cherry R, Cheung C. *Māori Access to Capital – Market Failures*. 2025. https://www.rbnz.govt.nz/hub/publications/bulletin/2025/maori-access-to-capital-markets
140. Reserve Bank of New Zealand Te Pūtea Matua. *Improving Māori Access to Capital: Issues Paper.* 2022. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/maori-access-to-capital/improving-maori-access-to-capital-issues-paper.pdf
141. He Pou a Rangi Climate Change Commission. *Full assessment – 2026 National Climate Change Risk Assessment for Aotearoa New Zealand*. 2026. https://www.climatecommission.govt.nz/reports-and-evidence/publications/2026-national-climate-change-risk-assessment/
142. United Nations Framework Convention on Climate Change. *Information paper on linkages between adaptation and mitigation*. 2022. https://unfccc.int/sites/default/files/resource/linkages_mitigation_adaptation_infpaper.pdf
143. Ministry for the Environment Manatū Mō Te Taiao. *National Policy Statement for Natural Hazards 2025*. 2025. https://environment.govt.nz/assets/publications/RMA/npsnh-2025.pdf
144. New Zealand Parliament. Planning Bill and Natural Environment Bill. 2026. Updated 18 December 2025. Accessed 25 February, 2026. https://www3.parliament.nz/en/pb/sc/make-a-submission/document/54SCENV_SCF_BA467863-D6B0-4968-1027-08DE369D9192/planning-bill-and-natural-environment-bill
145. Ministry for the Environment. *National Adaptation Framework*. 2025. https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/adapting-to-climate-change/national-adaptation-framework/
146. Ipsos Aotearoa New Zealand. *Understanding Aotearoa New Zealand - People and Climate Change: Public attitudes to the climate crisis and the transition to net zero*. 2026. https://www.ipsos.com/en-nz/people-and-climate-change-nz-edition
147. Wetlands RCo. *The value of wetlands for cities*. 2021. https://www.ramsar.org/sites/default/files/2024-10/the_value_of_wetlands_for_cities_e.pdf
148. New Zealand Government. Ngauranga to Petone Shared Path (Te Ara Tupua) opening soon. 2026. https://www.beehive.govt.nz/release/ngauranga-petone-shared-path-te-ara-tupua-opening-soon
149. Global Electricity. Microgrids for Community Resilience. Global Electricity. 2026. https://www.globalelectricity.org/microgrids-for-community-resilience/
150. My Solar Quotes. Batteries With Your Solar? Some Regions Are Going All In. Accessed 1 April, 2026. https://www.mysolarquotes.co.nz/blog/solar-battery-information/batteries-with-your-solar-some-regions-are-going-all-in/
151. New Zealand Government. Government backs growth of trusted voluntary nature and carbon markets. 11 May, 2026. https://www.beehive.govt.nz/release/government-backs-growth-trusted-voluntary-nature-and-carbon-markets
152. Ministry for the Environment Manatū Mō Te Taiao. Natural Environment Bill. Accessed 11 May, 2026. https://environment.govt.nz/acts-and-regulations/acts/natural-environment-bill/
153. New Zealand Government. Improving New Zealand's climate change act. New Zealand Government; 4 November, 2025. Accessed 25 February 2026. https://www.beehive.govt.nz/release/improving-new-zealand%E2%80%99s-climate-change-act
154. Ministry for the Environment. *The Government's climate strategy.* 2024. https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/about-new-zealands-climate-change-programme/governments-climate-strategy/
155. Ministry for Primary Industries Manatu Ahu Matua. Application wait times and statistics for forestry in the ETS. Updated 8 April 2026. Accessed 26 January, 2026. https://www.mpi.govt.nz/forestry/forestry-in-the-emissions-trading-scheme/news-and-changes-to-the-ets/application-wait-times-and-statistics-for-forestry-in-the-ets
156. Lausberg M, Slade A. *The case for change: Increasing resilience in New Zealand forestry through diversification*. 2025:49. August. https://fgr.nz/diversifying-new-zealand-forestry-key-to-sectors-resilience-new-report-says/
157. Ministry for the Environment. Developing a carbon removals strategy. 2026. https://environment.govt.nz/news/developing-a-carbon-removals-strategy/#carbon-dioxide-removals
158. The Aotearoa Circle. *Investing in New Zealand's Natural Assets: Regulatory Actions To Unlock Nature Finance*. 2025. 13 October. https://www.theaotearoacircle.nz/post/unlocking-investment-in-nzs-natural-assets-report-highlights-need-for-regulatory-reform

159. Parliamentary Commissioner for the Environment. *Aotearoa New Zealand's renewable energy transition: critical mineral & metals demand*. 2024. https://pce.parliament.nz/media/iepdsklr/aotearoa-new-zealands-renewable-energy-transition-critical-minerals-and-metals-demand-aurecon.pdf
160. NIWA. Chemical contamination and horticulture. Accessed 1 April, 2026. https://niwa.co.nz/freshwater/kaitiaki-tools/what-proposed-activity-or-industry/horticulture/impacts-horticultural-activities/chemical-contamination-and-horticulture
161. Ministry of Business Innovation and Employment. *Energy in New Zealand 2025*. 2025. https://www.mbie.govt.nz/assets/energy_in_new_zealand_2025.pdf
162. New Zealand Government. Widened scope for co-investment in new gas. 6 November, 2025. https://www.beehive.govt.nz/release/widened-scope-co-investment-new-gas
163. Fast-track, Environmental Protection Authority. Projects listed or referred to follow the Fast-track process under the Fast-track Approvals Act 2024. Accessed 23 April, 2026. https://www.fasttrack.govt.nz/projects
164. Wolfe F. Electric boilers at Edendale Fonterra's next step away from coal. *Energy News*. May 8 2025. https://www.energynews.co.nz/news/process-heat/818317/electric-boilers-edendale-fonterras-next-step-away-coal?utm_source=newsletter&utm_medium=email&utm_campaign=energy-news-newsletter
165. Evans G. Gas still key at NZ Steel – Davies. *Energy News*. 19 December 2025. https://www.energynews.co.nz/news/steel/835895/interview-gas-still-key-new-nz-steel-operation
166. Gas Distribution Asset Management Plan. 27 June, 2025. https://vector.co.nz/posts/gas-distribution-asset-management-plan-1
167. Energy Efficiency and Conservation Authority (EECA). *Understanding the full potential of flexible electricity use in New Zealand*. 2026. January. https://www.eeca.govt.nz/insights/eeca-insights/understanding-the-full-potential-of-flexible-electricity-use-in-new-zealand/
168. Hoare K. The $2 Per Watt Reality: What Kiwis Are Actually Paying for Solar Right Now. April 17, 2026. Accessed May 11 2026. https://www.mysolarquotes.co.nz/blog/new-zealand-energy-news-/the-2-per-watt-reality-what-kiwis-are-actually-paying-for-solar-right-now/
169. Climate Change Chief Executives Board. First National Adaptation Plan – Action Tracker spreadsheet – CCC Reporting Version. 2026.
170. Energy Efficiency and Conservation Authority (EECA). Understanding the potential of vehicle-to-grid chargers. Energy Efficiency and Conservation Authority (EECA). 2025. https://www.eeca.govt.nz/insights/eeca-insights/understanding-the-potential-of-vehicle-to-grid-chargers/
171. Azarbakhsh G, Mahmoudi A, Mahmud A, Kahourzade S, Yazdani A. Impact of Vehicle-to-Home Integration on Optimal Capacity of Solar-Battery System for Houses. *2025 IEEE PES 35th Australasian Universities Power Engineering Conference (AUPEC)*. 2025:1–5. https://researchnow.flinders.edu.au/en/publications/impact-of-vehicle-to-home-integration-on-optimal-capacity-of-sola/
172. Ministry of Transport. Fleet statistics: Annual fleet statistics. 2026. https://www.transport.govt.nz/statistics-and-insights/fleet-statistics/sheet/annual-fleet-statistics
173. Civil Aviation Authority (CAA). Occurrence and activity dashboard. Civil Aviation Authority (CAA). Accessed 22 May, 2026. https://www.aviation.govt.nz/safety/read-reports-and-statistics/occurrence-and-activity-dashboard/dashboard/
174. New Zealand Government. Traffic congestion-busting Bill passes third reading. 11 November, 2025. https://www.beehive.govt.nz/release/traffic-congestion-busting-bill-passes-third-reading
175. New Zealand Government. Charging ahead: 2,500+ EV chargers on the way. New Zealand Government; 23 March, 2026. https://www.beehive.govt.nz/release/charging-ahead-2500-ev-chargers-way
176. Energy Efficiency and Conservation Authority (EECA). Low Emissions Heavy Vehicle Fund. Energy Efficiency and Conservation Authority (EECA). 2026. https://www.eeca.govt.nz/co-funding-and-support/products/low-emissions-heavy-vehicle-fund/?apps={%22id%22:%2210165%22,%22page%22:1,%22filters%22:{}}
177. Energy Efficiency and Conservation Authority. Demand flexible heavy vehicle charging demonstration. Accessed 8 May 2026, https://www.eeca.govt.nz/co-funding-and-support/products/demand-flexible-heavy-vehicle-charging-demonstration/
178. New Zealand Transport Agency. *2024–27 National Land Transport Programme*. 2024. https://www.nzta.govt.nz/planning-and-investment/national-land-transport-programme/2024-27-nltp
179. New Zealand Government. Government aligns Clean Car Importer Standard with Australia to reduce vehicle prices for Kiwis. 9 July, 2024. https://www.beehive.govt.nz/release/government-aligns-clean-car-importer-standard-australia-reduce-vehicle-prices-kiwis
180. New Zealand Transport Agency. Clean Car Discount ended on 31 December 2023. 31 December 2023, https://www.nzta.govt.nz/vehicles/clean-car-programme/clean-car-discount-ended-on-31-december-2023

181. New Zealand Government. Electric vehicles to pay road user charges. 16 January, 2024. https://www.beehive.govt.nz/release/electric-vehicles-pay-road-user-charges#:~:text=The%20coalition%20Government%20is%20confirming,Transport%20Minister%20Simeon%20Brown%20says
182. New Zealand Government. Accelerating the roll-out of public EV chargers. 27 April, 2025. https://www.beehive.govt.nz/release/accelerating-roll-out-public-ev-chargers
183. New Zealand Government. Rail ferries and straightforward infrastructure. New Zealand Government; 31 March, 2025. https://www.beehive.govt.nz/release/rail-ferries-and-straightforward-infrastructure
184. Ministry of Transport. *Aotearoa New Zealand Freight and Supply Chain Strategy*. 2023. https://www.transport.govt.nz/area-of-interest/freight-and-logistics/new-zealand-freight-and-supply-chain-strategy
185. New Zealand Government. Getting rates under control for ratepayers. New Zealand Government; 2025. https://www.beehive.govt.nz/release/getting-rates-under-control-ratepayers
186. MacDuff K. National ticketing system on public transport rolls out in Christchurch. *Radio New Zealand*. https://www.rnz.co.nz/news/national/578441/national-ticketing-system-on-public-transport-rolls-out-in-christchurch
187. New Zealand Transport Agency. National Ticketing Solution. New Zealand Government. 2026. https://www.nzta.govt.nz/walking-cycling-and-public-transport/public-transport/national-ticketing-solution
188. KiwiRail. *Rail Network Investment Programme 2024–27*. 2024. https://www.kiwirail.co.nz/our-network/funding-our-network/rail-network-investment-programme/
189. Ministry of Transport. Coastal Shipping Resilience Fund. https://www.transport.govt.nz/area-of-interest/maritime-transport/coastal-shipping-resilience-fund
190. Air New Zealand. *Climate Statement 2025*. 2025:26. https://p-airnz.com/cms/assets/PDFs/airnz-2025-climate-statement.pdf#page=29
191. Air New Zealand. *Annual Report 2024*. 2024:25. https://p-airnz.com/cms/assets/PDFs/air-nz-2024-annual-results-report.pdf
192. Thornber L. Air NZ dumps 2030 carbon intensity reduction target. *Stuff NZ*. https://www.stuff.co.nz/travel/350360018/air-nz-dumps-2030-carbon-intensity-reduction-target
193. Pamidimukkala A, Kermanshachi S, Rosenberger JM, Hladik G. Barriers and motivators to the adoption of electric vehicles: A global review. *Green Energy and Intelligent Transportation*. April 2024;3(2)doi:https://doi.org/10.1016/j.geits.2024.100153
194. NZIER. *The current and future state of the New Zealand vehicle fleet and industry: A report for the Motor Trade Association*. 2026. https://mta.org.nz/industry-hub/industry-research-insights-forecasts
195. Graham E. *The EV leapfrog – how emerging markets are driving a global EV boom*. 16 December 2025. https://ember-energy.org/latest-insights/the-ev-leapfrog-how-emerging-markets-are-driving-a-global-ev-boom/
196. Ministry of Transport. *Annual fleet statistics 2021*. 2022. https://www.transport.govt.nz/assets/Uploads/Report/AnnualFleetStatistics.pdf
197. Ministry for the Environment. *New Zealand's Greenhouse Gas Inventory 1990–2024*. Vol. Volume 1, chapters 1–10. 2026:477. ME 1963. April. https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-19902024/
198. New Zealand Transport Agency. *Benefits of investing in cycling in New Zealand communities*. 2016. https://www.nzta.govt.nz/assets/Walking-Cycling-and-Public-Transport/docs/benefits-of-investing-in-cycling/cyclelife-benefits-booklet.pdf
199. Kuss P, Nicholas KA. A dozen effective interventions to reduce car use in European cities: Lessons learned from a meta-analysis and transition management. *Case Studies on Transport Policy*. 2022;10(3):1494–1513. doi:https://doi.org/10.1016/j.cstp.2022.02.001
200. Russell E, McKerchar C, Berghan J, Curl A, Fitt H. Considering the importance of transport to the wellbeing of Māori social housing residents. *Journal of Transport & Health*. 2024;36
201. Thu W, Woodward A, Cavadino A, Tin ST. Associations between transport modes and site-specific cancers: a systematic review and meta-analysis. *Environmental Health*. 2024;23(1)
202. Osborne E, Miller A, Randal E, Shaw C. Rapidly reducing oil reliance: Quick wins in active transport. *Public Health Expert Briefing*. Public Health Communications Centre Aotearoa; 2026. https://www.phcc.org.nz/briefing/rapidly-reducing-oil-reliance-quick-wins-active-transport
203. Newton K. Tough road to electrifying New Zealand's truck fleet. *Radio New Zealand*. 9 April 2026. https://www.rnz.co.nz/news/national/591818/tough-road-to-electrifying-new-zealand-s-truck-fleet
204. Transport Talk. WM New Zealand adds first Mercedes-Benz eEconic to growing electric truck fleet. *Transport Talk*. 12 March 2026. https://transporttalk.co.nz/news/wm-new-zealand-adds-first-mercedes-benz-eeconic-to-growing-electric-truck-fleet
205. Drive Electric. *State of the Nation Report: Electric Transport in Aotearoa New Zealand 2026*. 2026. https://driveelectric.org.nz/state-of-the-nation-reports/

206. New Zealand Government. Legislation gives more flex for Auckland's PC120. New Zealand Government; 31 March, 2026. https://www.beehive.govt.nz/release/legislation-gives-more-flex-auckland%E2%80%99s-pc120
207. New Zealand Government. More flexibility for Auckland housing plan. New Zealand Government; 19 February, 2026. https://www.beehive.govt.nz/release/more-flexibility-auckland-housing-plan
208. Kingham S, Curl A. Innovative & affordable transport: lessons from overseas. presented at: Transport Knowledge Conference; 2025; Auckland. https://bpb-ap-se2.wpmucdn.com/blogs.auckland.ac.nz/dist/a/1072/files/2025/12/01_ATRF-TKC-Day-1_Session-3_Simon-Kingham.pdf
209. New Zealand Infrastructure Commission. *National Infrastructure Plan*. 2026. https://tewaihanga.govt.nz/national-infrastructure-plan
210. The Aotearoa Circle. *Natural Infrastructure Plan*. 2026. 4 March. https://www.theaotearoacircle.nz/focus-areas/natural-capital-restoration/natural-infrastructure-plan
211. Stats NZ. Greenhouse gas emissions (industry and household): December 2025 quarter. 9 April 2026, https://www.stats.govt.nz/information-releases/greenhouse-gas-emissions-industry-and-household-december-2025-quarter/
212. Fonterra. Fonterra invests in EcoPond pilot to reduce on-farm emissions. 1 May, 2025. https://www.fonterra.com/nz/en/our-stories/media/fonterra-invests-in-ecopond-pilot-to-reduce-on-farm-emissions.html
213. AgriZeroNZ. Q3 FY26 Scorecard. Accessed 8 May, 2026. https://www.agrizero.nz/progress
214. RaboResearch. *A watch on fuel, fertliser, and freight. New Zealand agribusiness monthly*. 2026. *New Zealand Agribusiness Monthly*. April. https://www.rabobank.co.nz/knowledge/agribusiness-monthly#accordion-b7d8fc90fc-item-a8d502d8d3
215. Ministry for the Environment Manatū Mō Te Taiao. *New Zealand's second emissions reduction plan 2026-2030: January 2026 amendment addendum*. 2026. 29 January 2026. https://environment.govt.nz/assets/publications/climate-change/ERP2/New-Zealands-second-emissions-reduction-plan-January-2026-amendment-addendum.pdf
216. New Zealand Government. RMA replacement to reduce costs and drive on-farm growth. 9 December, 2025. https://www.beehive.govt.nz/release/rma-replacement-reduce-costs-and-drive-farm-growth
217. New Zealand secures landmark Free Trade Agreement with India. 22 December, 2025. https://www.beehive.govt.nz/release/new-zealand-secures-landmark-free-trade-agreement-india
218. New Zealand Government. Negotiations launched for trilateral agreement supporting green trade and investment. 31 October, 2025. https://www.beehive.govt.nz/release/negotiations-launched-trilateral-agreement-supporting-green-trade-and-investment
219. New Zealand Government. New Zealand Grass-Fed certification to take on global competitors. 11 June, 2025. https://www.beehive.govt.nz/release/new-zealand-grass-fed-certification-take-global-competitors
220. New Zealand Government. Government backs voluntary nature credits. New Zealand Government; 12 June, 2025. Accessed 25 February 2026. https://www.beehive.govt.nz/release/government-backs-voluntary-nature-credits
221. Minstry for Primary Industries. Primary sector investment projects. Accessed 8 May, 2026. https://www.mpi.govt.nz/funding-rural-support/sustainable-food-fibre-futures/primary-sector-investment-projects?
222. Ministry for Primary Industries. *Situation and Outlook for Primary Industries December 2025*. 2025:78.
223. Journeaux P, Wreford A, Moot DJ. Climate Change Adaptations on Sheep and Beef Farms: A Case Study Investigation. November 2025;87:11–18. https://www.nzgajournal.org.nz/index.php/JoNZG/article/view/3753
224. DairyNZ. *Emissions & Profitability. Understanding the relationship between greenhouse gas emissions and farm profitability*. 2025. https://www.dairynz.co.nz/research/science-projects/emissions-and-profitability/
225. Fonterra. *The Fonterra Climate Roadmap. Our strategy towards our Net Zero 2050 ambition*. 2025. November 2025. https://www.fonterra.com/nz/en/sustainability/responsible-business/reporting.html#climate-roadmap
226. Matheson L, van Reenen E. *The path to 2050? The research into the capacity of the New Zealand pastoral sector to achieve agricultural emissions reduction through system change*. 2025:46. https://www.ag-emissions.nz/publications/the-future-farm-systems-research-programme-white-paper-the-path-to-2050/
227. Swallow N, Barkemeyer R. Examining farmers' motivations to engage in low-carbon agricultural practices: A study of New Zealand dairy farmers. *Journal of Rural Studies*. 1 October 2024;111:103440. doi:https://doi.org/10.1016/j.jrurstud.2024.103440
228. Stahlmann-Brown P. Survey of Rural Decision Makers 2025. Bioeconomy Science Institute. Accessed 19/2/26, 2026. https://www.landcareresearch.co.nz/discover-our-research/environment/sustainable-society-and-policy/survey-of-rural-decision-makers/srdm-2025

229. Minister for the Environment. *Proactive release of Cabinet paper for waste legislation amendments*. 2025. 16 December. https://environment.govt.nz/assets/publications/Cabinet-papers-briefings-and-minutes/Proactive-release-of-Cabinet-paper-for-waste-legislation-amendments.pdf
230. Cool-Safe. World-leading plasma torch takes aim at NZ's most potent greenhouse gases. Updated 20 March 2026. Accessed 25 May, 2026. https://coolsafe.org.nz/news/world-leading-plasma-torch-takes-aim-at-nzs-most-potent-greenhouse-gases
231. Cool-Safe. Synthetic vs naturals – Changes to international playing field. Accessed 5 March, 2026. https://coolsafe.org.nz/news/synthetic-vs-naturals-changes-to-international-playing-field
232. Environment Canterbury. Details for CRC250284. Accessed 23 March, 2026. https://www.ecan.govt.nz/data/consent-search/consentdetails/CRC250284/ecogas
233. Christchurch City Council. *Report / Decision on a Resource Consent Application (Sections 95A, 95B and 104 / 104C)*. 2024. 25 September. https://ccc.govt.nz/assets/Documents/Consents-and-Licences/resource-consents/Applications-of-Interest/RMA-2024-2050-Ecogas/RMA20242050-Decision.PDF
234. Bioenergy Insight. Christchurch approves new AD plant. Woodcote Media Ltd. Updated 18 August. https://www.bioenergy-news.com/news/christchurch-approves-new-ad-plant/
235. Ecogas. Ōtautahi Christchurch Organics Processing Facility. Accessed 23/03/2026, https://www.ecogas.co.nz/christchurch
236. Ministry for the Environment. *The Government's waste and resource efficiency strategy*. 2025. 7 March. https://environment.govt.nz/assets/publications/new-zealand-waste-strategy-v2.pdf
237. Minister for the Environment. *CAB-472 Cabinet Paper: Proposed product stewardship regulations for synthetic refrigerants*. 2024. 14 November 2024. https://environment.govt.nz/what-government-is-doing/cabinet-papers-and-regulatory-impact-statements/advice-on-refrigerants-for-the-second-emissions-reduction-plan/
238. Morris J, Matthews SH, Morawski C. Review and meta-analysis of 82 studies on end-of-life management methods for source separated organics. *Waste Management*. 2013;33(3):545–551.
239. NSW EPA. Emissions impact of anaerobic digestion for food waste processing. Fact Sheet. Accessed 1 March, 2026. https://www.epa.nsw.gov.au/sites/default/files/24p4524-emissions-impact-of-anaerobic-digestion.pdf
240. Ministry for the Environment. *New Zealand's Greenhouse Gas Inventory 1990–2024*. Vol. 2, annexes. 2026:304. ME 1963. April. https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-19902024/
241. Manley B. *Afforestation and Deforestation Intentions Survey 2024*. 2025:29. MPI Technical Paper No: 2025/18. May. https://www.mpi.govt.nz/dmsdocument/70372-Afforestation-and-Deforestation-Intentions-Survey-2024
242. Ministry for the Environment, Ministry for Primary Industries. *Updating National Direction: Changes to the National Environmental Standards for Commercial Forestry*. 2025:5. INFO 1384. 12 May. https://environment.govt.nz/publications/updating-national-direction-changes-to-the-national-environmental-standards-for-commercial-forestry/
243. Ministry for the Environment. Voluntary nature and carbon markets in New Zealand. Ministry for the Environment. Updated 11 May 2026. 2026. https://environment.govt.nz/what-government-is-doing/areas-of-work/biodiversity/voluntary-nature-and-carbon-markets-in-new-zealand/
244. He Pou a Rangi Climate Change Commission. *Advice on NZ ETS unit limits and price control settings for 2026–2030*. 2025. https://www.climatecommission.govt.nz/assets/ETS-advice/2025/CCC-NZ-ETS-advice-2025_WEB.pdf
245. Ministry for the Environment. *Aotearoa New Zealand's first emissions reduction plan: The Government's response to He Pou a Rangi – Climate Change Commission's recommendations*. 2022:69. ME 1649. May. https://environment.govt.nz/publications/the-governments-response-to-he-pou-a-rangi-climate-change-commissions-recommendations/
246. Ministry for the Environment. *New Zealand's first Biennial Transparency Report under the Paris Agreement*. 2024:394. ME 1864. December. https://environment.govt.nz/publications/new-zealands-first-biennial-transparency-report-under-the-paris-agreement/
247. Watt M, Kirschbaum M, Moore J, et al. Assessment of multiple climate change effects on plantation forests in New Zealand. *Forestry: An International Journal of Forest Research*. 2019;92:1–15. https://academic.oup.com/forestry/article-abstract/92/1/1/5065106?redirectedFrom=fulltext

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