

Recommendations from Ināia tonu nei: a low-emissions future for Aotearoa

Recommendation 1 – Emissions budget levels

We recommend the Government set and meet the emissions budgets as outlined in the table below. These emissions budgets are expressed using GWP100 values from the IPCC’s Fifth Assessment Report (AR5) for consistency with international obligations relating to Inventory reporting.

	2019	Emissions budget 1 (2022 – 2025)	Emissions budget 2 (2026 – 2030)	Emissions budget 3 (2031 – 2035)
All gases, net (AR5)		290 MtCO ₂ e	312 MtCO ₂ e	253 MtCO ₂ e
Annual average	78.0 MtCO ₂ e	72.4 MtCO ₂ e/yr	62.4 MtCO ₂ e/yr	50.6 MtCO ₂ e/yr

Recommendation 2 - Break down of emissions budgets

We recommend that the Government implement policies that will meet emissions budgets based on the balance of emissions and removals as outlined in the table below.

	Emissions budget 1 (2022 – 2025)	Emissions budget 2 (2026 – 2030)	Emissions budget 3 (2031 – 2035)
Total net emissions budget <i>Annual average</i>	278 MtCO ₂ e 69.5 MtCO ₂ e/yr	298 MtCO ₂ e 59.7 MtCO ₂ e/yr	240 MtCO ₂ e 47.9 MtCO ₂ e/yr
REMOVALS			
Forestry carbon removals <i>Annual average</i>	26 MtCO ₂ e 6.6 MtCO ₂ e/yr	50 MtCO ₂ e 10.0 MtCO ₂ e/yr	69 MtCO ₂ e 13.8 MtCO ₂ e/yr
EMISSIONS – LONG-LIVED GASES			
Gross long-lived gases	178 MtCO ₂ e	199 MtCO ₂ e	166 MtCO ₂ e
<i>Carbon dioxide</i>	136 MtCO ₂ e	149 MtCO ₂ e	121 MtCO ₂ e
<i>Nitrous oxide</i>	32 MtCO ₂ e	38 MtCO ₂ e	36 MtCO ₂ e
<i>F-gases</i>	7 MtCO ₂ e	8 MtCO ₂ e	6 MtCO ₂ e
<i>Non-biogenic methane</i>	3 MtCO ₂ e	4 MtCO ₂ e	3 MtCO ₂ e
EMISSIONS – BIOGENIC METHANE			
Gross biogenic methane*	5.04 MtCH ₄	5.99 MtCH ₄	5.70 MtCH ₄

*Note that biogenic methane amounts are provided in megatonnes of methane (MtCH₄). Megatonnes of methane do not equate one-for-one to megatonnes of carbon dioxide equivalent (MtCO₂ e). As a result, the amounts in this table cannot be summed to give the total net emissions budget. However, the methane volume can be converted into a CO₂ e amount by multiplying by 25, the IPCC AR4 GWP100 value for methane.

Recommendation 3 - Reductions by greenhouse gas to meet the emissions budgets

We recommend that the Government implement policies that deliver emissions reductions of each greenhouse gas as outlined in the table below.

	2019	Emissions budget 1 (2022 – 2025)	Emissions budget 2 (2026 – 2030)	Emissions budget 3 (2031 – 2035)
Total net emissions (MtCO₂e/yr)				
Annual average	74.9	69.5	59.7	47.9
Reduction from 2019		5.4	15.3	27.0
Total gross emissions (MtCO₂e/yr)				
Annual average	82.3	76.1	69.7	61.7
Reduction from 2019		6.2	12.6	20.6
<i>Broken down by:</i>				
Carbon dioxide (gross) (MtCO₂e/yr)				
Annual average	37.5	34.0	29.8	24.1
Reduction from 2019		3.5	7.7	13.4
Nitrous oxide (MtCO₂e/yr)				
Annual average	8.4	7.9	7.6	7.2
Reduction from 2019		0.4	0.8	1.2
F-gases (MtCO₂e/yr)				
Annual average	1.8	1.8	1.6	1.3
Reduction from 2019		0.0	0.2	0.6
Non-biogenic methane (MtCO₂e/yr)				
Annual average	0.9	0.8	0.7	0.7
Reduction from 2019		0.1	0.2	0.3
Biogenic methane (MtCH₄/yr)				
Annual average	1.35	1.26	1.20	1.14
Reduction from 2019*		0.09	0.15	0.21

Recommendation 4 - Limit on offshore mitigation for emissions budgets and circumstances justifying its use

We recommend that, given that emissions budgets must be met as far as possible through domestic action, for the purposes of meeting emissions budgets: a. The limit on offshore mitigation should be zero for the first three emissions budgets. b. The only circumstances that at this stage would justify the use of offshore mitigation is as a last resort in exceptional circumstances beyond the Government's control, such as force majeure events, where domestic measures cannot compensate for emissions impacts.

Recommendation 5 The rules for measuring progress towards emissions budgets and the 2050 targets

We recommend the following package of rules for measuring progress:

- a. Use of the production-based approach from New Zealand's Greenhouse Gas Inventory as the basis for accounting for emissions budgets and the 2050 targets.
- b. Use of the modified activity-based framework for land emissions accounting, with a 1990 base year and 'averaging' for post-1989 forests, substantially aligning emissions budget accounting with the approach used for accounting for the Nationally Determined Contribution (NDC).
- c. Within the modified activity-based land emissions accounting framework, to:
 - I. Include the land areas and uses corresponding to afforestation, reforestation, and deforestation, as confirmed for the first NDC.
 - II. Exclude forest management, the activity relating to the impact of management practices on pre-1990 forest carbon stocks. This is despite its inclusion in NDC accounting because the forest management reference level has not yet been set for the period through to 2030 and we have been unable to assess how it manages accuracy and uncertainty risks.

- Improved management of pre-1990 forests nevertheless remains important and should be encouraged through policy.
- III. Include harvested wood products (HWPs) from post-1989 forests, but not HWPs from pre-1990 forests because they are accounted for as part of forest management which is excluded from emissions budget accounting.
 - IV. Include a natural disturbances provision, aligned with the first NDC and the 2013 IPCC Kyoto Protocol Supplement. The Commission will judge whether to invoke the provision in its reports that monitor progress each year and at the end of an emissions budget period.
- d. From 2021, if the Government allows voluntary offsetting for carbon neutral claims to take place in Aotearoa through cancelling New Zealand Units (NZUs), adjustments corresponding to the amount of NZUs cancelled must be made to the relevant emissions budget, or to the inventory, to avoid the emissions reductions claimed from being negated by increases to the New Zealand Emissions Trading Scheme (NZ ETS) cap.

We also recommend that the Government undertake the following work to improve emissions estimates and broaden the options available for emissions budgets accounting in future:

- e. Continue to produce and improve annual reports on national consumption emissions estimates
- f. Develop an appropriate method to reflect changes in carbon stored in above ground biomass and harvested wood products due to increased use of biomass for energy
- g. Develop methods for tracking emissions and removals by sources and sinks not yet included in the country's domestic or international target accounting. This should include:
 - I. Prioritising development of methods to account for carbon in organic soils (such as peat) and biomass (such as small lots of trees and regenerating vegetation), with a view to allowing them to be included in future target accounting.
 - II. Examining the feasibility of using the land-based approach in accounting for targets and emissions budgets for sources and sinks other than production forests, while managing the uncertainty and emissions fluctuations from the harvest cycles of production forests.
- g. Develop sound and transparent practices for accounting for domestic voluntary mitigation and offsetting claims, in relation to the NZ ETS, emissions budgets and NDCs.

Recommendation 6 Treaty of Waitangi and the Crown-Māori relationship

We recommend that the Government commit to:

Working in partnership with Iwi/Māori and local government to develop a strategy to ensure the principles of Te Tiriti o Waitangi/The Treaty of Waitangi are embedded in subsequent emissions reduction plans. The strategy should:

1. Include an outcomes framework and action plan, as well as an evaluation framework outlining agreed accountability milestones and measures.
2. Specify outcomes that align with the principles of protection, partnership, participation, and equity, recognising the guarantee of rangatiratanga and kaitiakitanga for Iwi/Māori under Te Tiriti o Waitangi/The Treaty of Waitangi.
3. Include actions to give effect to Recommendations 26 and 27 (see Chapter 19: Policy direction for an equitable transition for Iwi/Māori).
4. Take a whole of systems approach that addresses climate change in parallel with wai (water) and whenua (land).
5. Be resourced appropriately.

Recommendation 6 - Provisional progress indicators

1. Government to work in partnership with Iwi/Māori, by 30 June 2022, to agree on an approach for developing the strategy, and to develop and publish the strategy. This should include an outcomes framework with a phased implementation plan.
2. Government to have initiated, by 31 December 2022, the first phase of implementation and work in partnership with Iwi/Māori to develop an evaluation framework.
3. Government to report annually, from 31 of December 2022, on a suite of indicators, including how the strategy will be resourced and funded.

Recommendation 7 - Cross-party support for emissions budgets

We recommend that the Government commit to:

1. Seeking cross-party support on emissions budgets.
2. Debating emissions budgets in Parliament before they are notified, so that the positions of each political party are on the parliamentary record.

Recommendation 8 - Aligning central and local government efforts

We recommend that the Government commit to:

1. Aligning policy and investments to enable local government to make effective decisions for climate change mitigation and adaptation. This should include aligning the Local Government Act, the Building Act and Code, the Resource Management Act (RMA). national direction under the RMA, proposed RMA reforms and the infrastructure plan.
2. Implementing funding and financing mechanisms that provide adequate funding to enable local government to take action aligned with emissions reduction plans, and the implementation of climate adaptation plans.

Recommendation 8 - Provisional progress indicators

1. Government to have, by 30 June 2022, published an agreement that sets out the mechanism for achieving the necessary alignment between central and local government.
2. Government to have published a work plan by 31 December 2022, outlining how alignment and funding will be addressed, and the milestones for achieving this plan

Recommendation 9 - Coordinate efforts to address climate change across government

We recommend that the Government commit to:

1. Nominating specific Ministers and agencies with accountability for implementing policies and strategies in the emissions reduction plans in line with emissions budgets.
2. Assessing and meeting funding requirements for implementing each emissions reduction plan in line with emissions budgets.
3. Establishing Vote Climate Change as a specific multi-agency appropriation which consolidates existing and future government funding for core climate change mitigation and adaptation activities.
4. Providing consistent signalling across investments, policy statements, direction to officials, internal policies and directives to ensure that all regulatory and policy frameworks and decisions are aligned with low emissions and climate resilience objectives.

Recommendation 10 - Ensure inclusive and effective consultation, engagement and public participation

We recommend that the Government commit to:

1. Evolving more effective mechanisms to incorporate the views of the public when determining how to prioritise climate actions and policies to meet emissions budgets, to create more inclusive policy development.

Recommendation 11 - Strengthen market incentives to drive low-emissions choices

We recommend that, in the first emissions reduction plan, the Government commit to:

Amending and continually improving the NZ ETS so that it delivers the incentives needed to achieve emissions budgets. This should include:

1. Amending the NZ ETS to strengthen the incentive for gross emissions reductions and to manage the amount of exotic forest planting the NZ ETS drives, in line with the Commission's advice on the proportion of emissions reductions and removals necessary for meeting emissions budgets (see also Recommendation 25).
2. Updating NZ ETS unit supply and price control settings to:
 - a. Align unit volumes with emissions budgets, taking into account the need to reduce the NZU stockpile.
 - b. Increase the cost containment reserve trigger price to \$70 at the first possible opportunity and then every year by at least 10% plus inflation.
 - c. Maintain continuity with recent prices, by increasing the auction reserve trigger price to \$30 as soon as practical, followed by annual increases of 5% plus inflation per year.
3. Establishing an effective market governance regime for the NZ ETS as soon as possible to mitigate risks to market function, delivered through an interagency team.
4. Continually improving the NZ ETS, including by:
 - a. Developing and implementing a plan for recycling proceeds from NZ ETS unit auctions into emissions reductions, adaptation, climate education, equitable transitions and meeting international climate change obligations. This plan should include mechanisms to ensure that it contributes to equitable outcomes for Iwi/Māori.
 - b. Implementing the legislated process for review and phase-out of industrial free allocation, reviewing other aspects of industrial free allocation policy to ensure they are fit for purpose and exploring other policy instruments that over the longer term could be used to address the risk of emissions leakage.
 - c. Providing more information to reduce uncertainty about adjustments to NZ ETS settings, to support informed decision-making by market participants.
 - d. Urgently clarifying the role and avenues for voluntary mitigation in Aotearoa, so that businesses and other organisations can understand the options available to them for making robust voluntary commitments or claims.

Recommendation 11 - Provisional progress indicators

1. Government to have, by 31 December 2022, developed proposals for strengthening the NZ ETS incentive for gross emissions reductions and managing the amount of exotic forest planting driven by the scheme, with amendments to be effective by 31 December 2024.
2. Government to ensure that, in the next annual update to NZ ETS settings, unit volumes are aligned with emissions budgets and price control settings are increased.
3. Government to develop proposals by 30 June 2022 for establishing an effective market governance regime for the NZ ETS, and to have legislated to address the most significant risks by no later than 30 June 2023.

4. Government to develop and publish a plan for recycling proceeds from NZ ETS unit auctions by 30 June 2022, followed by annual reporting on the implementation of the plan and how the proceeds have been used.

Recommendation 12 - Make investments net-zero compatible

We recommend that, in the first emissions reduction plan, the Government commit to: Ensuring policy decisions and investments made now support Aotearoa moving towards a thriving, climate-resilient and low-emissions society. This should include:

1. Starting to factor shadow emissions prices into policy and investment analysis in central government immediately.
2. Encouraging and facilitating local government and the private sector to use shadow emissions prices by, for example, providing guidance to upskill and grow local government capacity to use them in their policy and investment analysis.
3. Measuring and reporting on how the post-COVID-19 economic stimulus is delivering climate benefits and the transformational investment needed to reach the climate and economic goals.
4. Requiring Crown agencies, entities and Crown-owned companies to include climate change as part of their decision making. This should be a particular focus for long-lived investments such as housing and transport infrastructure, to help achieve emissions reduction and climate-resilience objectives, and should include embedded emissions.

Recommendation 13 - Enable system-level change through innovation, finance and behaviour change

We recommend that, in the first emissions reduction plan, the Government commit to: Enabling system-level change in Aotearoa through innovation, finance and behaviour change This should include:

1. Accelerating the transition through innovation by:
 - a. Giving high priority to low-emissions research, development and innovation within public science and innovation funding approaches. This should include support for research, development and innovation that draws on mātauranga Māori.
 - b. Introducing targeted measures to support low-emissions research, development and innovation. This could include tax incentives, research grants and intellectual property regulations, and must include mechanisms to enable Māori-collectives and researchers to equitably benefit.
 - c. Creating an enabling regulatory environment for new and emerging low-emissions industries and sectors, including removing barriers for Iwi/Māori to participate in these opportunities.
2. Mobilising finance for low emissions and climate-resilient investments:
 - a. Investigating and developing actions government can take to help mobilise private sector finance, including ways to improve access to low-emissions finance for Māori-collectives.
 - b. Exploring the extension of the mandatory climate-related disclosure regime to cover a broader range of activities, for example, public entities at the national and local level.
 - c. Evaluating the benefits of extending mandatory climate-related disclosure to cover emissions enabled by loans, from financial institutions, over a certain threshold.
3. Supporting behaviour change:

- a. Including behaviour change in the design of climate change policies and programmes, in order to enable New Zealanders to make choices that support low-emissions outcomes.
- b. Identifying a lead agency and establishing a dedicated, well-resourced fund for education and information to promote and socialise the wide-scale behaviour changes needed. This should involve communities, Iwi/Māori and local knowledge.

Recommendation 14 - Increase the circularity of the economy

We recommend that, in the first emissions reduction plan, the Government commit to: Developing and delivering a long-term strategy to move Aotearoa to a more circular economy. This should include:

1. Acting in partnership: To be enduring, the strategy must be created in partnership with Iwi/Māori, give effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and align with the He Ara Waiora framework. Consideration should also be given to:
 - a. How to embed a complementary mātauranga Māori approach in the strategy (see also Recommendation 26 on equitable and proactive partnership with Iwi/Māori).
 - b. Enabling Māori-collectives to participate in associated business opportunities.
2. Prioritising and investing in data collection to support measurable indicators to enable monitoring of progress towards circularity and the impact on emissions.
3. Providing a clear governance structure, including tasking a minister and lead agency to assess and implement actions for a more circular economy.
4. Setting up a mechanism that enables active collaboration with Iwi/Māori, local government and industry.

Recommendation 15 - Develop a thriving, climate-resilient bioeconomy that delivers emissions reductions

We recommend that, in the first emissions reduction plan, the Government commit to: Developing and delivering a strategy for a thriving, climate-resilient bioeconomy that reduces emissions through displacing fossil fuel-derived production materials and energy sources. This should include:

1. Acting in partnership: To be enduring, the strategy must be created in partnership with Iwi/Māori, give effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and align with the He Ara Waiora framework. Consideration should also be given to:
 - a. How to embed a complementary mātauranga Māori approach in the strategy (see also Recommendation 26 on an equitable and proactive partnership with Iwi/Māori).
 - b. Enabling Māori-collectives to participate in associated business opportunities
2. Providing a clear governance structure, including tasking a Minister and lead agency to assess and address competing interests and trade-offs within and across the sectors involved in the bioeconomy.
3. Setting up a mechanism that enables active collaboration with Iwi/Māori, local government and industry.
4. Integrating considerations across the agriculture, building, energy, forestry, land, transport, and waste sectors (see relevant sector recommendations) including:
 - a. Collating and publishing data on existing biomass resource supply and demand to identify potential regional supply chains.
 - b. Introducing regulatory or investment settings that prioritise high value and emissions reduction uses for biomass resources.

- c. Evaluating the future value of the bioeconomy including as a source of fuels, construction materials, other products, employment and economic opportunity.
- d. Creating an environment that enables research and innovation to drive a valuable future bioeconomy (consistent with Recommendation 13 on innovation, finance, and behaviour change).

Recommendation 16 - Enable emissions reductions through changes to urban form, function and development

We recommend that, in the first emissions reduction plan, the Government commit to: Enabling emissions reductions through changes to urban form, function and development. This should include:

1. Developing a policy approach in partnership with Iwi/Māori to ensure well-integrated planning and policies related to urban form, function and development. This approach must also be developed in active collaboration with local councils and communities.
2. Promoting urban design solutions that acknowledge Iwi/Māori whakapapa, identity and tūrangawaewae and the need to preserve and protect their wāhi tapū and sites of cultural significance.
3. Developing a consistent approach to quantifying the emissions impacts of urban development decisions. Use this to continually improve the way emissions consequences are integrated into decision making on land use, transport and infrastructure investments.
4. Improving the evidence base on the relationship between urban form, function, density, transport systems, land use and other factors. This will support the design of approaches to reduce emissions across different urban areas. For existing urban areas:
5. Retrofitting existing public spaces and infrastructure to prioritise the use of active and public transport and other low emissions choices. This recommendation should be considered alongside Recommendation 17 for transport and Recommendation 13 for behaviour change.
6. Ensuring regulatory settings allow for increased density and use of existing infrastructure, land and built form to reduce emissions. For new urban areas:
7. Enabling low emissions choices by ensuring services, amenities, facilities and infrastructure are accessible and interconnected. This includes providing safe cycle and walkways and connections to public transport.

Recommendation 17 - Improve mobility options and reduce emissions

We recommend that, in the first emissions reduction plan, the Government commit to: Improving mobility options and reducing emissions by providing affordable, reliable, convenient and low-emissions alternatives to high-emissions vehicle use. This should include the Government working with local authorities in:

1. Setting targets and implementing plans to substantially increase walking, cycling, public transport and shared transport use to displace vehicle use. This should be delivered through:
 - a. Substantially increasing the share of central government funding dedicated to active and public transport infrastructure. Funding should be aligned with achieving a thriving, climate-resilient and low-emissions Aotearoa.
 - b. Better connecting communities, cities and regions by improving the frequency, accessibility and integration of intermodal low-emissions transport services.
 - c. Reducing public transport fares to encourage greater use of public transport.
 - d. Developing targets, plans and approaches:

- I. In partnership with Iwi/Māori, giving effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and aligning with the He Ara Waiora framework.
 - II. In collaboration with local authorities, consideration should be given to the different circumstances for rural communities, towns and cities.
 - III. In collaboration with stakeholders in the community and business to ensure that outcomes are low emissions, affordable, and support mobility options for diverse communities.
2. Encouraging higher rates of working from home and flexible work arrangements to reduce travel demand and associated emissions. (see also Recommendation 24 (2c) in Chapter 17: Policy direction for agriculture).
 3. Ensuring regulatory settings provide local authorities with the tools needed to deliver a low-emissions and climate-resilient transport system at pace. This should include evaluating the role of pricing incentives beyond the NZ ETS. For example, congestion charges or where public transport fare reduction would have the greatest impact on behaviour change.

Recommendation 17 - Provisional progress indicators

1. Government to have, by 31 December 2022, set targets and implemented a plan, including substantially increasing the share of central government funding, to increase walking, cycling, public transport and shared transport to displace vehicle use.
2. Government to have, by 31 December 2022, identified and implemented the regulatory settings needed to enable local authorities to deliver a low-emissions transport system at pace.
3. Government to report on indicators annually from 31 December 2022. This could include mode share by distance travelled for walking, cycling and private car use, public transport, and would need to be measured regionally and aggregated nationally.

Recommendation 18 - Accelerate emissions reductions from the light vehicle fleet

We recommend that, in the first emissions reduction plan, the Government commit to: Accelerating emissions reductions from the light vehicle fleet. This should include the Government:

1. Setting a time-limit on light vehicles with internal combustion engines entering, being manufactured, or assembled in Aotearoa. The time limit should be no later than 2035 and, if possible, as early as 2030.
2. Setting an emissions efficiency standard for light vehicle imports and steadily strengthening this to improve overall efficiency of the light vehicle fleet.
3. Accelerating the uptake of electric vehicles (EVs) by introducing a range of measures, including:
 - a. A policy to reduce the relative upfront cost of EVs until they reach price parity with internal combustion engine (ICE) vehicles.
 - b. Supporting EV leasing, purchasing and sharing schemes to improve equitable access. Regard needs to be given to ensuring that Iwi/Māori, and those in low income and vulnerable groups have the opportunity to access electric mobility.
 - c. Enabling ways to bulk procure electric vehicle fleets, working with the private sector and public sector procurement to do so.
 - d. Encouraging battery refurbishment, repurposing, and recycling systems, working with the private sector to do so. (See also Recommendation 13 in Chapter 13: Policy direction that cuts across sectors and Recommendation 22 in Chapter 16: Policy direction for waste.)
 - e. Enhancing the roll out of EV charging infrastructure to ensure greater coverage, including at marae, multiple points of access, mandatory smart charging, and fast charging. (See also

Recommendation 19, and Recommendation 20 in Chapter 15: Policy direction for energy, industry and buildings).

4. Determining how the tax system could be used to discourage the purchase of ICE vehicles and support the adoption of low-emissions vehicles. Note: Recommendation 19, part 2 would also deliver emissions reductions from the light vehicle fleet.

Recommendation 18 - Provisional progress indicators

1. Government to have, by 30 June 2022, implemented policy options to accelerate EV uptake.
2. Government to report at least annually, from 31 December 2022, on the emissions intensity of the whole light vehicle fleet, and the average emissions intensity of imported light vehicles. Imported light vehicles to average, by 31 December 2028, a maximum of 105 grams CO₂ per kilometre.
3. Government to report on additional indicators at least annually, from 31 December 2022, including the number of EVs being registered in Aotearoa, the percentage of EVs in the fleet, average forecourt cost of an EV by make/model.

Recommendation 19 - Create options to decarbonise heavy transport and freight by 2050

We recommend that, in the first emissions reduction plan, the Government commit to: Creating options to decarbonise heavy transport and freight by 2050. This should include:

1. Developing a national low-emissions freight strategy that establishes the investment settings and infrastructure required to deliver a low-emissions freight system. The strategy should:
 - a. Be developed in partnership with Iwi/Māori, give effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and align with the He Ara Waiora framework.
 - b. Be developed in collaboration with freight stakeholders, to leverage private-sector action and finance.
 - c. Enable opportunities to improve emissions efficiency and freight optimisation.
 - d. Set clear targets to increase the share of rail and coastal shipping.
 - e. Encourage fuel switching opportunities where appropriate. This should be aligned with Recommendation 19.2 below.
2. Developing low-carbon fuel markets through measures that include:
 - a. A low-carbon fuel standard or mandate to increase demand for low-carbon fuels.
 - b. Supporting demonstration and pilot projects for low-carbon heavy vehicles.
 - b. Offering targeted support for the uptake of low-carbon heavy vehicles. This could include broadening the exemption battery EVs have from paying road user charges to include other low-carbon technologies.
3. Undertaking a detailed study into the use of low-carbon fuels for aviation and shipping in Aotearoa. This should identify options for Aotearoa, their barriers to uptake and actions to address them.

These recommendations should be considered alongside the recommendations for a national energy strategy and a bioeconomy strategy.

Recommendation 19 - Provisional progress indicators

1. Government to have, by 30 June 2022, consulted on a national low-emissions freight strategy and on measures to support the development of low-carbon fuel markets.
2. Government to have, by 31 December 2022, introduced a national low-emissions freight strategy and made Cabinet decisions on preferred policy options to support the development of low-carbon fuel markets.

3. Government to report annually, by 30 June 2022, on the emissions intensity of the heavy vehicles fleet, and on additional indicators such as the mode share of freight distance by road, rail and coastal shipping.

Recommendation 20 - Decarbonise the energy system and ensure the electricity sector is ready to meet future needs

We recommend that, in the first emissions reduction plan, the Government commit to: Delivering a strategy to decarbonise the energy system and ensure the electricity sector is ready to meet future needs. This should include:

1. Developing and implementing a national energy strategy to decarbonise the system. The scope would need to cover:
 - a. Setting a target so that 50% of all energy consumed comes from renewable sources by 31 December 2035. Consideration should also be given to replacing the target for 100% renewable electricity with achieving 95% - 98% renewable electricity by 2030.
 - b. How to ensure access to affordable, secure, low-emissions electricity for residential, commercial, and industrial consumers. Regard needs to be given to the impacts on Iwi/Māori, those in regional/rural areas, and vulnerable groups.
 - c. Ensuring the use of coal for electricity generation is phased out as soon as possible.
 - d. Creating a plan for managing the diminishing role of fossil gas across the energy system, covering the associated consequences for network infrastructure and workforce during the transition. This recommendation should be considered
 - e. The strategy should be developed in:
 - I. Partnership with Iwi/Māori, give effect to the principles of Te Tiriti o Waitangi/ The Treaty of Waitangi, account for settlement commitments and obligations between energy-system stakeholders and Iwi/Māori, and align with the He Ara Waiora framework.
 - II. Collaboration with energy-system stakeholders.
2. Scaling up of investment in energy efficiency to reduce the amount of energy produced and improve energy affordability.
3. Supporting the evolution to a low-emissions electricity system fit for technology evolution. This should include work to increase the participation of distributed energy resources including demand response, and determining whether lines companies can integrate new technologies, platforms and business models by:
 - a. Assessing whether they have the necessary capacity and capabilities to support climate resilience and the transition.
 - b. Evaluating whether the current regulatory environment and ownership structures of lines companies are fit for future needs.
4. Designing regulatory settings that meet the needs of diverse communities, ensuring that they enable independent and distributed generation, especially for remote, rural and Māori communities.
5. Enabling a fast-paced and sustained build of low-emissions electricity generation and infrastructure by ensuring resource management processes, other national and local government instruments, and settings for transmission and distribution investment decisions are aligned to the required pace for build.
6. Assessing the consequences of significant changes to the balance of supply and demand of electricity (such as significant blocks of capacity), on the pace, equitable availability, and cost of electrification in Aotearoa.

7. Supporting development and deployment of low-emissions fuel options such as bioenergy and hydrogen. Māori-collectives should be enabled to participate in the associated business opportunities. This recommendation should be considered alongside Recommendation 26 for an equitable transition for Iwi/Māori, Recommendation 15 for the bioeconomy, and Recommendation 19 for transport.

8. Determining how to eliminate fossil gas use in residential, commercial and public buildings.

Actions should include:

- a. Setting a date to end the expansion of pipeline connections in order to safeguard consumers from the costs of locking in new fossil gas infrastructure.
- b. Evaluating the role of low-emission gases as an alternative use of pipeline infrastructure.
- c. Determining how to transition existing fossil gas users towards low-emissions alternatives.

Recommendation 20 - Provisional progress indicators

1. Government to undertake with urgency, and have published by 31 March 2022, an assessment of the consequences of significant changes in the balance of supply and demand of electricity (such as significant blocks of capacity) on the pace, equitable availability and cost of electrification in Aotearoa.
2. Government to have, by 30 June 2023, delivered a draft strategy to decarbonise the energy system for consultation. To have published the final strategy by 30 June 2024.
3. Government to have, by 30 June 2022, set a renewable energy target of at least 50% total final energy consumption, or equivalent – to be achieved by 31 December 2035.
4. Government to report, from 31 December 2022, on a suite of indicators annually including the emissions intensity of the electricity grid, annual investment in electricity infrastructure, average retail electricity prices for households, volume of low-carbon fuels produced.

Recommendation 21 - Reduce emissions from industry

We recommend that, in the first emissions reduction plan, the Government commit to: Outlining a plan for actions required to decarbonise the industrial sector.

This should include:

1. Acting in partnership. To be enduring the policy approach must be created in partnership with Iwi/Māori, give effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and align with the He Ara Waiora framework.
2. Developing the policy approach in collaboration with industrial and manufacturing stakeholders.
3. Accelerating industry switching to low-emissions fuels for process heat and uptake of energy efficiency measures. A high NZ ETS price signal is central to delivering this, along with policies that reduce barriers related to access to capital, behaviour change and infrastructure access (see also Recommendation 11 in Chapter 13: Policy direction that cuts across sectors, on the NZ ETS).
4. Ensuring no new coal boilers are installed and setting a timetable for the phase out of fossil fuels used in boilers (see also Recommendation 20, on energy).
5. Supporting innovation for decarbonising hard-to-abate industrial sectors. This will require accounting for sector-specific circumstances and their interdependencies and investigating the need for bespoke solutions requiring research, development and demonstration specific to Aotearoa. This recommendation should be considered alongside Recommendation 15, in

Chapter 13: Policy direction that cuts across sectors (bioeconomy strategy), and Recommendation 20 (national energy strategy).

Recommendation 22 - Upgrading existing buildings and constructing new buildings that are low emissions

We recommend that, in the first emissions reduction plan, the Government commit to: Developing a plan to transform buildings to be low emissions and climate resilient.

This should include Government:

1. Acting in partnership. To be enduring the policy approach must be created in partnership with Iwi/Māori, give effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and align with the He Ara Waiora framework.
2. Developing the policy approach in collaboration with the building and construction sector.
3. Upgrading existing buildings and constructing new buildings that are low emissions, healthier and climate resilient. Measures should include:
 - a. Continuous improvements to minimum Building Code requirements such as energy efficiency standards.
 - b. Encouraging construction based on low-emissions designs and practices to reduce building energy use and embodied emissions.
 - c. Scaling up energy efficiency assistance to low-income households to enable them to benefit from lower emissions, lower energy costs and healthier buildings.
 - d. Mandating participation in energy performance programmes for existing commercial and public buildings.

Recommendation 22 - Provisional progress indicators

1. Government to have, by 31 December 2022, implemented measures to improve the energy performance of existing buildings, such as mandating participation in energy performance programmes.
2. Government to have, by 30 June 2022, scaled up energy efficiency assistance to low-income households.
3. Government to report annually, from 31 December 2022, on a suite of indicators, including residential and commercial energy intensity.

Recommendation 23 - Revise the waste strategy so it will deliver emissions reductions in the waste sector

We recommend that, in the first emissions reduction plan, the Government commits to: Revising the New Zealand Waste Strategy so that it will deliver emissions reductions, and implement measures to reduce HFC emissions.

1. The revised New Zealand Waste Strategy should include:
 - a. Acting in partnership with Iwi/Māori, giving effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, and aligning with He Ara Waiora framework.
 - b. Acting in collaboration with local government, community groups and industry to leverage cross-sector action and finance.
 - c. Shaping plans in line with the 'waste hierarchy' to:
 - i. Significantly decrease waste generation and increase resource recovery across waste streams.
 - ii. Reduce emissions via specific, time-bound goals.

- iii. Identify and implement regulatory changes to assist people to take actions to reduce waste emissions.
 - d. Accelerating investment in:
 - i. Research, development, and demonstration to reduce waste through more efficient processes.
 - ii. Infrastructure for waste collection, processing, and resource recovery.
 - iii. Support for consumers to reduce waste emissions through switching to low-waste or low-emissions alternatives.
 - iv. Improved data collection across the waste sector, including farm dumps, non-municipal fills and wastewater treatment plants.
 - e. Setting a date by which high performance gas capture systems are mandated for all landfills that accept organic waste.
2. Measures to reduce HFCs should include:
- a. Expanding import restrictions where feasible.
 - b. Improving industry practice to reduce leakage.
 - c. Enabling businesses and consumers to switch to low climate impact alternatives.

Recommendation 23 - Provisional progress indicators

1. Government to have, by 31 December 2022, finalised the revised waste strategy with goals to:
 - a. reduce biogenic methane waste emissions to at least 40% below 2017 levels by 2035.
 - b. Ensure, by 31 December 2026, that all landfills (except farm fills) that accept organic waste have effective gas capture systems.
 - c. prioritise and fund ongoing data collection across the waste sector.
2. Government to publish, from 31 December 2023, annual waste statistics that track waste flows from generation to disposal across all landfill types.

Recommendation 24 - Reduce emissions from agriculture

We recommend that, in the first emissions reduction plan, the Government commit to: Accelerating reductions in agricultural emissions by rolling out policies, incentives and tools, and investing to create future emissions reduction options.

This should include the Government:

1. Following through on its legislated commitment to decide in 2022 on a pricing mechanism for agricultural emissions, to avoid ongoing uncertainty which will deter farmers and growers from reducing emissions in the short term. The design of this pricing mechanism:
 - a. Must be both suited to the characteristics of the sector and capable of driving emissions reductions in line with emissions budgets and targets.
 - b. Must not disproportionately disadvantage or compound historical grievances for Iwi/ Māori and must factor in the unique characteristics of Māori collectively-owned land and Māori-collectives. This is particularly important in the design of any methods for providing assistance to participants in the pricing mechanism.
2. Supporting farmers and growers to identify and implement changes on farm to reduce emissions by:
 - a. Collaborating with industry to further develop and fund effective advisory services.
 - b. Partnering with Iwi/Māori and Māori-collectives to further develop and fund Māori-focused advisory services targeting the specific needs of Māori-collective landowners.
 - c. Resourcing and prioritising rural digital connectivity.

3. Removing barriers to the deployment of new technologies to reduce emissions on farm by ensuring relevant regulatory regimes, such as the Agricultural Compounds and Veterinary Medicines Act, do not unnecessarily hinder their adoption.
4. Facilitating domestic and international market acceptability of proven low emissions food and fibre products, by working with the sector, including Māori agribusinesses, to demonstrate their environmental credentials to international customers.
5. Investing to create options for deeper emissions reductions in future by:
 - a. Developing a long-term plan for targeted research and development (and uptake/ deployment) of technologies and practices to reduce biogenic emissions from agriculture.
 - b. Supporting farmers, growers and local government to make well-informed land-use decisions by investing in nationwide land and climate information and decision-making tools, including information and tools relevant for Māori collectively-owned land.
 - c. Supporting deployment of the systems and infrastructure needed for alternative lower emissions farming systems and products, including enabling Māori-collectives to participate in these new opportunities.

Recommendation 24 - Provisional progress indicators

1. Government to have, by 31 December 2022, developed and published a long-term plan for funding research and development to support reductions in agricultural emissions. Note: The Commission will also be assessing the progress made towards the milestones of He Waka Eke Noa.
2. Government to annually, from 31 December 2022, report information on the total investment into research and development into reducing agricultural emissions.

Recommendation 25 - Manage forests to provide a long-term carbon sink

We recommend that, in the first emissions reduction plan, the Government commit to: Developing a framework of actions to deliver a mix of exotic and native forest sinks, and manage these and other carbon stocks, to provide flexibility to meet emissions budgets and targets.

This should include:

1. Establishing a long-term carbon sink through a comprehensive national programme to incentivise the reversion and planting of new native forests to maintain net zero long-lived greenhouse gas emissions beyond 2050.
2. Designing a package of policies to reduce reliance on forestry removals and manage the impacts of afforestation including:
 - a. Amendments to the NZ ETS to manage the amount of exotic forest planting driven by the scheme (see also Recommendation 11 on the NZ ETS).
 - b. A clear position on the role and desirability of different types of permanent exotic forests as carbon sinks, and amending the NZ ETS and other policies accordingly.
 - c. Land-use planning, direction and tools to help local government manage afforestation, mitigate localised impacts of afforestation and to achieve environmental co-benefits.
3. Managing pests in an integrated way, to ensure forests are successfully established and all forests are maintained long term.
4. Considering ways to allow more flexibility for Māori-collectives with pre-1990 forest on their whenua, to give them more scope to manage their whenua in alignment with the intergenerational aspirations of their members. This could include, for example, assisting capital-constrained Māori-collectives to offset deforestation on pre-1990 forest land.
5. Maintaining and increasing other carbon stocks through:

- a. Improving and enforcing measures to reduce deforestation of pre-1990 native forests.
- b. Noting that emissions and carbon dioxide removals may not currently be reliably quantifiable or accounted for in targets (see Recommendation 5 on rules for measuring progress), taking steps to:
 - i. Protect and increase the carbon stocks of pre-1990 forests through activities such as pest and fire control, and enrichment planting.
 - ii. Encourage carbon removals by new and additional small blocks of trees and vegetation.
 - iii. Preventing further loss of carbon from organic soils, particularly due to the degradation of drained peatlands and the destruction of wetlands.

Recommendation 25 - Provisional progress indicators

1. Government to have, by 31 December 2022, developed proposals for incentives for native forests and for managing the amount of exotic forest planting driven by the NZ ETS, with amendments to be effective by 31 December 2024.
2. Government to report, from 31 December 2022, on the hectares of exotic and native forest that are afforested and deforested at least annually.
3. Government to report at least annually, from 31 December 2022, on a suite of indicators including information on labour, nurseries, land purchases, pest eradication data (area to which 1080 has been applied or farm management plans).

Recommendation 26 - An equitable transition for Iwi/Māori

In the context of the transition to a low-emissions society, we recommend that central and local government work with Iwi/Māori to develop a mechanism to build authentic and enduring partnerships that results in:

1. Recognition and active protection of Iwi/Māori rights and interests.
2. Equitable decision-making with Iwi/Māori at all levels, through Māori representation on local, regional, and national bodies, and robust engagement and consultation process with Iwi/Māori.
3. Equitable access for Iwi/Māori to information, resources, services, and funding.
4. The development of climate change policy that draws on mātauranga Māori as well as western science.
5. Equitable outcomes for Iwi/Māori in alignment with Iwi/Māori aspirations for intergenerational wellbeing.
6. The embedding of the He Ara Waiora Framework throughout the development of climate change related policies.

Recommendation 27 - A Māori-led approach to an equitable transition for Iwi/Māori and the Māori economy

We recommend that the Government work with Iwi/Māori to develop a strategy to advance a Māori-led approach to an equitable transition for Iwi/Māori and the Māori economy. The strategy should focus on:

1. Removing existing barriers that disadvantage Iwi/Māori particularly where they undermine the principles of Te Tiriti o Waitangi/The Treaty of Waitangi, compound historic grievance, and/or prevent Iwi/Māori from an equitable transition.
2. Creating opportunities and mechanisms for Iwi/Māori to actively participate in co-decision making, co-design, investment in infrastructure and new clean technology, knowledge contribution, and leadership as Aotearoa takes action to address climate change.

3. Funding research and development in mātauranga Māori to enable developing policy, strategy, technology and innovation to be informed from an equitable knowledge base.
4. Making funding available to assist Iwi/Māori that are not economically enabled to transition equitably.
5. Including timebound measures for progress for each of the elements of the strategy.

Recommendation 27 - Provisional progress indicators

1. Government to start working with mandated representatives for Iwi and other relevant Māori collectives to determine an approach to support Iwi/Māori collectives to build an emissions profile within their respective takiwā that quantifies total Iwi/Māori contribution to national emissions and emissions reductions, including hapū lands that were taken for conservation purposes and allocated to SNAs (Significant Natural Areas), by no later than 30 June 2022.

Recommendation 28 - A fair, inclusive and equitable transition

We recommend that, in the first emissions reduction plan, the Government commit to: Developing an Equitable Transitions Strategy that aims to deliver a well-signalled and inclusive transition, so it maximises opportunities, and minimises disruption and inequities.

Objectives of the strategy should include:

1. Acting in partnership with Iwi/Māori, giving effect to the principles of Te Tiriti o Waitangi/ The Treaty of Waitangi, aligning with the He Ara Waiora framework to align with Iwi/Māori perspectives on wellbeing, and co-designing climate policies and strategies with Iwi/Māori.
2. Undertaking proactive transition planning that aligns with tikanga values and is co-designed with Iwi/Māori, local government, regional economic development agencies, workers, unions, businesses, and community groups with particular regard to those most disadvantaged.
3. Strengthening efforts to support a nimble and responsive education system with equitable access that sets New Zealanders up with skills needed for a low emissions future. This should include putting in place strategies for identifying and building the skillsets needed to support sectors key to move to a low-emissions economy over the next decade, and education pathways by Māori, for Māori.
4. Supporting workers to transition from high-emissions sectors to low-emissions sectors, including redeploying and upskilling workers. This will need to be developed in conjunction with workers, unions, education providers and businesses.
5. Factoring distributional impacts into how climate strategies and policies are designed and implemented so that they minimise negative impacts, maximise co-benefits and take opportunities to reduce inequities. This will need to include a plan for improving the evidence base and tools for quantitatively assessing the distributional impacts and benefits in line with Treasury's Living Standards Framework and He Ara Waiora.
6. Clarifying how the Government is going to prioritise and fund the work laid out under the Strategy.

Recommendation 28 - Provisional progress indicators

1. Government to have, by 31 December 2021, outlined in their emissions reduction plan how they will prioritise and fund work on a fair, inclusive and equitable climate transition.

2. Government to have, by 30 June 2024, delivered a draft for consultation, and, prior to June 2023, published an Equitable Transitions Strategy linked to the Iwi/Maori strategy, economic plan, and national energy strategy.

Recommendation 29 - Compatibility of the NDC with contributing to the global 1.5°C effort

We advise that the first NDC is not compatible with Aotearoa making a contribution to global efforts under the Paris Agreement to limit the increase in global average temperature to 1.5°C above pre-industrial levels.

Recommendation 30 - Making the NDC compatible with contributing to the global 1.5°C effort

1. We recommend that to make the NDC more likely to be compatible with contributing to global efforts under the Paris Agreement to limit warming to 1.5°C above pre-industrial levels, the contribution Aotearoa makes over the NDC period should reflect a reduction to net emissions of much more than 36% below 2005 gross levels by 2030, with the likelihood of compatibility increasing as the NDC is strengthened further.
2. How much the NDC is strengthened beyond 36% should reflect the tolerance for climate and reputational risk and economic impact, and principles for effort sharing, which require political decisions. Any changes to the NDC should be developed in partnership with Iwi/Māori, to give effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi and align with the He Ara Waiora framework.

Recommendation 31 - Planning and reporting on the NDC

We recommend that the Government should:

1. In making its decisions, continue to enable the NDC to be met through a combination of domestic emission reductions, domestic removals, and use of international carbon markets.
2. Report annually on how it plans to meet the NDC, including the balance of planned domestic emission reductions, removals, and offshore purchasing.
3. Clearly communicate its strategy for purchasing offshore mitigation to meet the NDC and how it will identify and manage fiscal and other risks and their consequences.

Recommendation 32 - Form of the NDC

1. We recommend that the Government should continue to define the NDC on the basis of all greenhouse gases using the most recent IPCC global warming potentials adopted by the Parties to the UNFCCC. If the NDC is updated, the Government should express it on a basis that is consistent with how emissions will be reported in the national greenhouse gas inventory from 2021-2030.
2. We recommend that the Government should continue to contribute to further global mitigation beyond the NDC through the provision of climate finance to developing countries and active participation in mitigation mechanisms, including for international aviation and shipping.

Recommendation 33 - Reductions in biogenic methane that might be required of Aotearoa in the future as part of a global 1.5°C effort

We advise that the reductions in emissions of biogenic methane that Aotearoa may eventually need to make as part of a global effort to limit the global average temperature increase to 1.5°C above pre-industrial levels could be between 49% and 60% below 2017 levels by 2100.