

Attachment A – Draft Advice Package Summary

This attachment is a summary of the consultation questions and core related information. For the full draft advice package, visit [He Pou a Rangi Climate Change Commission website](#).

This attachment is meant to support Elected Members to provide recommendations on changes to the submission. Recommended changes will be included as a KDC subpoint.

Category One – Budget Recommendations (Ch 2)

Question	1. Do you support the principles we have used to guide our analysis? Is there anything we should change, and why?
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We have developed a set of key principles to help guide our advice and the transition to a thriving, climate-resilient and low emissions Aotearoa. Our key principles are:

- **Principle 1: Align with the 2050 targets.** Aotearoa must adopt actions that set it on a path to meet the 2030 and 2050 emissions reduction targets, sustain those targets and set Aotearoa up for net negative emissions later, and contribute to the global effort to limit warming to 1.5°C. Meeting these targets requires a long-term view of investments and infrastructure developments. Assets and investments with long lifetimes will need to be transformed, and planning for and developing new low emissions infrastructure will take time. For these reasons, actions taken in the next five years will need to set Aotearoa up to deliver the deeper reductions required in subsequent emissions budgets and to meet and sustain the 2050 targets.
- **Principle 2: Focus on decarbonising the economy.** Aotearoa should prioritise actions that reduce gross emissions within our borders, as well as removing emissions by sequestering carbon dioxide in forests. Aotearoa should focus on decarbonising its industries rather than reducing production in a way that could increase emissions offshore. Forest sequestration should not displace making gross emissions reductions. Relying heavily on forestry before 2050 is likely to make maintaining net zero long-lived greenhouse gas emissions after 2050 challenging. It would delay action, lead to higher cumulative emissions and put the burden of addressing gross emissions on to future generations. This would require significantly more land to be converted to forestry in the future.
- **Principle 3: Create options.** There is much uncertainty in embarking on this decades-long transition. Uncertainty is not a reason for delay. There is value in creating options for meeting the targets and having the ability to adjust course as the transition proceeds. The decisions taken now should open up a wide range of future options and keep options open for as long as possible. This needs to be balanced with the need to take advantage of key windows of opportunity, where making significant investments in key technologies could ultimately make the transition to low emissions cheaper and faster.
- **Principle 4: Avoid unnecessary cost.** The actions Aotearoa takes to meet emissions budgets and targets should avoid unnecessary costs. This means using measures with lower costs and planning ahead so that technologies, assets and infrastructure can be replaced with low emissions choices on as natural a cycle as possible. This will help to avoid scrapping assets before the end of their useful lives or being left with stranded assets.
- **Principle 5: Transition in an equitable and inclusive way.** How Aotearoa responds to climate change should consider who will be most impacted, how those impacts can be mitigated and how existing inequities can be reduced. It should consider equity across different groups of society, regions and communities and generations. The climate transition should be well planned and signalled in advance to give communities, businesses and individuals time to innovate and adapt, build new markets and retrain. Aotearoa will need to build new markets, invest in peoples' skills, and provide opportunities for environmentally and socially sustainable work. It should not penalise early movers.
- **Principle 6: Increase resilience to climate impacts.** The actions Aotearoa takes to reduce emissions should avoid increasing the country's overall exposure to climate risks such as drought, flooding, forest fires and storms. Where possible, actions should increase the country's resilience to the impacts of climate change that are already being experienced and that will increase in the future.
- **Principle 7: Leverage co-benefits.** The actions Aotearoa takes to meet emissions budgets and targets should consider the wider benefits, including benefits to health, broader wellbeing and the environment. Co-benefits can provide further reason to take particular actions where the initial emissions reductions may be modest or appear relatively costly.

Note: See pages 29-20 of the draft advice package for more detail.

Question	2. Do you support budget recommendation 1? Is there anything we should change, and why?
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Budget recommendation 1

Emissions budget levels

We recommend the Government set and meet the emissions budgets as outlined in the table below. The Government should adopt emissions budgets expressed using GWP₁₀₀ values from the IPCC's fifth assessment report (AR5) for consistency with international obligations relating to Inventory reporting.

	2018	Emissions budget 1 (2022 – 2025)	Emissions budget 2 (2026 – 2030)	Emissions budget 3 (2031 – 2035)
All gases, net (AR4)		271 Mt CO ₂ e	286 Mt CO ₂ e	223 Mt CO ₂ e
Annual average	69.2 Mt CO ₂ e	67.7 Mt CO ₂ e/yr	57.3 Mt CO ₂ e/yr	44.6 Mt CO ₂ e/yr

Table ES1: Our proposed emissions budgets. All gases are combined as CO₂ equivalent

	2018	Emissions budget 1 (2022 – 2025)	Emissions budget 2 (2026 – 2030)	Emissions budget 3 (2031 – 2035)
All gases, net (AR4) (Mt CO ₂ e)		271	286	223
Annual average (Mt CO ₂ e/year)	69.2	67.7	57.3	44.6
Average reductions on 2018 levels		2%	17%	36%

Question	3. Do you support our proposed break down of emissions budgets between gross long-lived gases, biogenic methane and carbon removals from forestry? Is there anything we should change, and why?
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Budget 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.

	Emission budget 1 (2022 – 2025)	Emission budget 2 (2026 – 2030)	Emission budget 3 (2031 – 2035)
Total net emissions budget <i>Annual average</i>	271 Mt CO ₂ e 67.7 Mt CO ₂ e/yr	286 Mt CO ₂ e 57.3 Mt CO ₂ e/yr	223 Mt CO ₂ e 44.6 Mt CO ₂ e/yr
REMOVALS			
Forestry carbon removals <i>Annual average</i>	26 Mt CO ₂ e 6.5 Mt CO ₂ e/yr	49 Mt CO ₂ e 9.8 Mt CO ₂ e/yr	68 Mt CO ₂ e 13.6 Mt CO ₂ e/yr
EMISSIONS – LONG-LIVED GASES			
Gross long-lived gases	174 Mt CO ₂ e	190 Mt CO ₂ e	153 Mt CO ₂ e
<i>Carbon dioxide</i>	133.7 Mt CO ₂ e	143.2 Mt CO ₂ e	110.8 Mt CO ₂ e
<i>Nitrous oxide</i>	29.4 Mt CO ₂ e	35.3 Mt CO ₂ e	33.1 Mt CO ₂ e
<i>F-gases</i>	7.3 Mt CO ₂ e	8.1 Mt CO ₂ e	6.7 Mt CO ₂ e
<i>Non-biogenic methane</i>	3.4 Mt CO ₂ e	3.1 Mt CO ₂ e	2.2 Mt CO ₂ e
EMISSIONS – BIOGENIC METHANE			
Gross biogenic methane*	4.92 Mt CH ₄	5.83 Mt CH ₄	5.53 Mt CH ₄

* Note that biogenic methane numbers are provided in megatonnes of methane (Mt CH₄). Megatonnes of methane do not equate to megatonnes of carbon dioxide equivalent (Mt CO₂e). As a result, the numbers in this table cannot be summed to give the total net emissions budget. However, the methane volume can be converted into a CO₂e amount by multiplying by 25, the IPCC AR4 GWP₁₀₀ value for methane.

Note: See pages 30-31 of the draft advice package for more detail.

Question	4. Do you support budget recommendation 4? Is there anything we should change, and why?
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Budget 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.**

Category Two – Enabling recommendations (Ch 2)

Question	5. Do you support enabling recommendation 1? Is there anything we should change, and why?
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Enabling recommendation 1

Cross-party support for emissions budgets

We recommend the Minister for Climate Change seek cross-party support on emissions budgets. We note that the Minister must consult representatives of political parties on emissions budgets before they are notified but, in addition to this, the Minister should also seek to ensure that the emissions budgets are debated in the House of Representatives so that the positions of each political party are on the parliamentary record.

Question	6. Coordinate efforts to address climate change across Government Do you support enabling recommendation 2? Is there anything we should change, and why?
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Enabling recommendation 2

Coordinate efforts to address climate change across Government

We recommend that the Government:

- c. In each emissions reduction plan, include policies and strategies for meeting both the next and future emissions budgets (as recommended but not required under the Climate Change Response Act).**
- d. In each emissions reduction plan, nominate specific Ministers and agencies with accountability for implementing policies and strategies in line with emissions budgets.**
- e. Assess and meet funding requirements for implementing each emissions reduction plan in line with emissions budgets.**
- f. Establish Vote Climate Change as a specific multi-agency appropriation which consolidates existing and future government funding for core climate change mitigation and adaptation activities.**

Progress indicators

- a. The Government to include in its first emissions reduction plan, due by 31 December 2021, policies and strategies that will set Aotearoa up to deliver the second and third emissions budgets and 2050 targets.**
- b. The Government to include in its first emissions reduction plan, due by 31 December 2021, the Government agency and Minister that will be responsible for delivering on each of the policies adopted.**
- c. The Government to establish, by no later than 31 March 2022, Vote Climate Change.**

Question	7. Do you support enabling recommendation 3? Is there anything we should change, and why?
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Enabling recommendation 3

Genuine, active and enduring partnership with iwi/Māori

We recommend that, in transitioning Aotearoa to a thriving, climate-resilient and low emissions future, central and local government take action to ensure genuine and enduring partnership with iwi/Māori that gives effect to:

- g. **Tiakitanga and manaakitanga by acting as good stewards and demonstrating equitable and mana enhancing behaviour within the Treaty Partnership. This requires real acknowledgement of rangatiratanga and enables iwi/Māori to exercise their role as kaitiaki.**
- h. **Tikanga and kotahitanga by working in partnership with iwi/Māori, through the right decision-makers and following the right process, to ensure Māori communities can prepare for and transition to a climate-resilient, low emissions Aotearoa. This is premised on iwi/Māori aspirations for intergenerational wellbeing; aspirations that are shared by many New Zealanders.**
- i. **Whanaungatanga by enhancing relationships within whānau and communities and with the whenua (land) or taiao (environment).**

Progress indicator

The Government to have published, by 31 December 2022, a plan to partner with iwi/Māori and local government to implement emissions reducing pathways and actions that:

- d. **Gives effect to the He Ara Waiora tikanga.**
- e. **Includes pathways and actions (which could include regional outcomes and actions frameworks) to remove barriers to participation for iwi/Māori.**
- f. **Enables iwi/Māori to exercise rangatiratanga and kaitiakitanga.**
- g. **Promotes equal access to new information, technology, employment and enterprise opportunities.**

Question	8. Do you support enabling recommendation 4? Is there anything we should change, and why?
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Enabling recommendation 4

Central and local government working in partnership

We recommend that, in transitioning Aotearoa to a thriving, climate-resilient and low emissions future, central and local government work together to:

- j. Align legislation and policy to enable local government to make effective decisions for climate change mitigation and adaptation, including aligning the Local Government Act, the Building Act and Code, national direction under the RMA, the proposed RMA reforms, implementation of the freshwater management framework and the 30-year infrastructure plan.**
- k. Implement funding and financing mechanisms to enable the emissions reduction plans to be implemented effectively and to address the distributional effects of policy change today and for future generations.**

Progress indicators

- h. Government to have, by 30 June 2022, outlined its progress on developing the necessary partnerships between central and local government.**
- i. 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.**

Question	9. Do you support enabling recommendation 5? Is there anything we should change, and why?
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Enabling recommendation 5

Establish processes for incorporating the views of all New Zealanders

We recommend that central and local government develop new and more effective mechanisms to incorporate the views of all New Zealanders when determining how to prioritise climate actions and policies to meet emissions budgets over the next 30 years, to create more inclusive policy development. One possible mechanism is funding and establishing an ongoing public forum for climate change to bring forward the views and perspectives of all New Zealanders.

Progress indicator

Government publishes a proposal, no later than 31 December 2022, on the mechanisms it will use to incorporate the views of all New Zealanders when determining how to prioritise climate actions and policies to meet emissions budgets over the next 30 years.

Category Three - Policy Recommendations: How Aotearoa can meet proposed budgets (Ch 3)

Question	10. Do you support our approach to focus on decarbonising sources of long-lived gas emissions where possible? Is there anything we should change? 11. Do you support our approach to focus on growing new native forests to create a long-lived source of carbon removals? Is there anything we should change, and why?
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Emissions can be reduced through either adopting lower emissions technologies and practices, or through reducing production. Our approach has prioritised adopting lower-emission technologies and practices. We have only considered reducing production if there are no alternative ways to reduce emissions. For each potential emissions reduction opportunity, we have researched:

- the potential scale of the emissions reductions it could deliver
- how it is applicable for Aotearoa
- the costs, key risks and uncertainties over time that could affect its uptake.

Current policies do not put Aotearoa on the right track. Under current policies, long-lived gas emissions and biogenic methane emissions are both projected to fall. However, the level of emissions reductions would not be sufficient to meet the 2030 and 2050 emissions targets.

Our approach suggests a different, but important role for forestry. New exotic plantation forests absorb carbon quickly, but much of this is released when these are harvested. To keep adding to the amount of carbon stored in forestry, new land will need to be converted to forestry. We consider that the role of exotic plantation forestry should be to support net emissions reductions prior to 2050. However, these should not be at the expense of progress to reduce gross emissions of long-lived gases in those sectors where there are already clear decarbonisation pathways. Exotic forestry will also play an important role in providing biomass feedstock for the bioeconomy, allowing biomass to be used as a replacement for fossil fuels.

New permanent native forests absorb carbon more slowly but will continue to do so for centuries until they reach maturity. Because of this, we consider that carbon removals from new permanent native forests have a role to offset the remaining long-lived gas emissions in sectors with limited opportunities to reduce emissions from 2050. For instance, this could include offsetting nitrous oxide emissions from agriculture and residual industrial process emissions

We need to avoid pushing the burden to future generations. Decarbonise the sources of long-lived gas emissions wherever this is feasible. This means setting a path that would achieve near-complete decarbonisation in a number of areas. This includes low and medium temperature heat used in industry, electricity generation, energy use in buildings and land transport. For each of these sectors there are already available technologies that can be widely used to reduce or completely avoid gross emissions.

Build a long-term carbon sink large enough to offset residual long-lived gas emissions without ongoing land use conversion. This means starting now to grow new native forests on relatively less productive land so that carbon removals can be used to offset the remaining long-lived gas emissions from 2050 onwards. Establishing new native forests on less productive land offers a way for Aotearoa to build up an enduring carbon sink while delivering wider benefits for erosion, soil health, water quality and biodiversity.

Note: This is a snapshot of key points. For a complete explanation of approach, see pages 45-49 of the draft advice package.

Question	12. Do you support the overall path that we have proposed to meet the first three budgets? Is there anything we should change, and why?
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We have developed a range of scenarios to look at possible futures to 2050 and beyond to understand the changes that are possible and required. Our scenarios have been designed to look at how Aotearoa could meet the 2050 target if future conditions were more, or less, favourable. We present the **main scenarios** here:

- **Headwinds** is our least optimistic scenario. It examines a future where there are more barriers to adopting both technology and behaviour changes in the future.
- **Tailwinds** is our most optimistic scenario. It examines a future where there are fewer barriers to technology and behaviour changes.

Aotearoa could achieve net zero long-lived gases sometime in the 2040s through changes in technology and behaviour. Our Tailwinds scenario achieves this by 2040. Even in our Headwinds scenario net zero long-lived gases could still be achieved by 2048, with a greater reliance on carbon removals by forestry.

Key insights into emissions reductions from our scenario analysis include:

- Wider electrification of energy use is an essential part of the transition and will require a major expansion of the electricity system. Wind, geothermal and solar power can meet the expected growth in demand from electrifying transport and heat to 2050 while keeping electricity affordable. Despite this growth, the emissions from the generation of electricity can reduce considerably relative to today.
- Through switching to electric vehicles, road transport, including heavy vehicles, can be almost decarbonised by 2050. This requires a rapid increase in electric vehicle sales so that nearly all vehicles entering the country's fleet are electric by 2035. The switch to electric vehicles is expected to deliver significant cost savings while also reducing air and noise pollution and replacing imported fuels with local renewable electricity.
- Low and medium temperature heat in industry and buildings could be decarbonised by 2050 through a switch away from coal, diesel and gas to electricity and biomass. Our analysis indicates that these costs could range up to \$250 per tonne CO₂e reduced but would be less than this where heat pumps or biomass can be used.
- Energy efficiency and behaviour changes that reduce energy demand will play an important role in many areas. These can help to cut emissions sooner and in hard-to-abate sectors. They can also contribute cost reductions and co-benefits.
- Nitrous oxide emissions are difficult to reduce but will be addressed somewhat through supporting farmers to implement emissions reducing practices and by the development of technology such as inhibitors.
- New native forests can be established on steeper, less productive land to provide an enduring source of carbon removals. With a sustained high rate of planting through to 2050, new native forests could provide a long-term carbon sink of more than 4 MtCO₂ per year, helping to offset residual long-lived greenhouse gas emissions from hard-to-abate sources.
- Exotic plantation forestry continues to have a role to play in removing carbon dioxide, particularly until other more enduring sources of carbon removals, such as native forestry, can scale up. The deep reductions in gross emissions in our scenarios means the 2050 target could be met with a significantly smaller area of new exotic forestry than would occur under current policy settings.

Note: See pages 54-70 of the draft advice package for more detail.

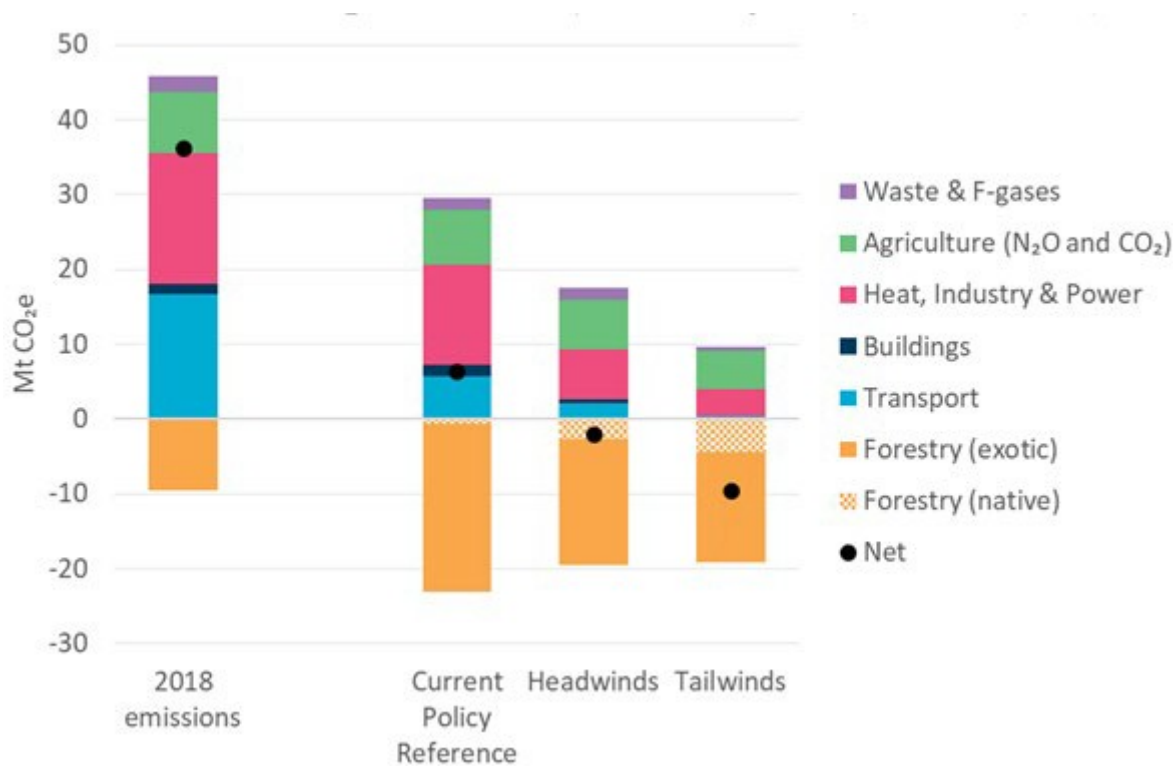


Figure 3.4: Long-lived gas emissions by sector in 2050 in the Headwinds and Tailwinds scenarios, compared with under current policies and with 2018 emissions.

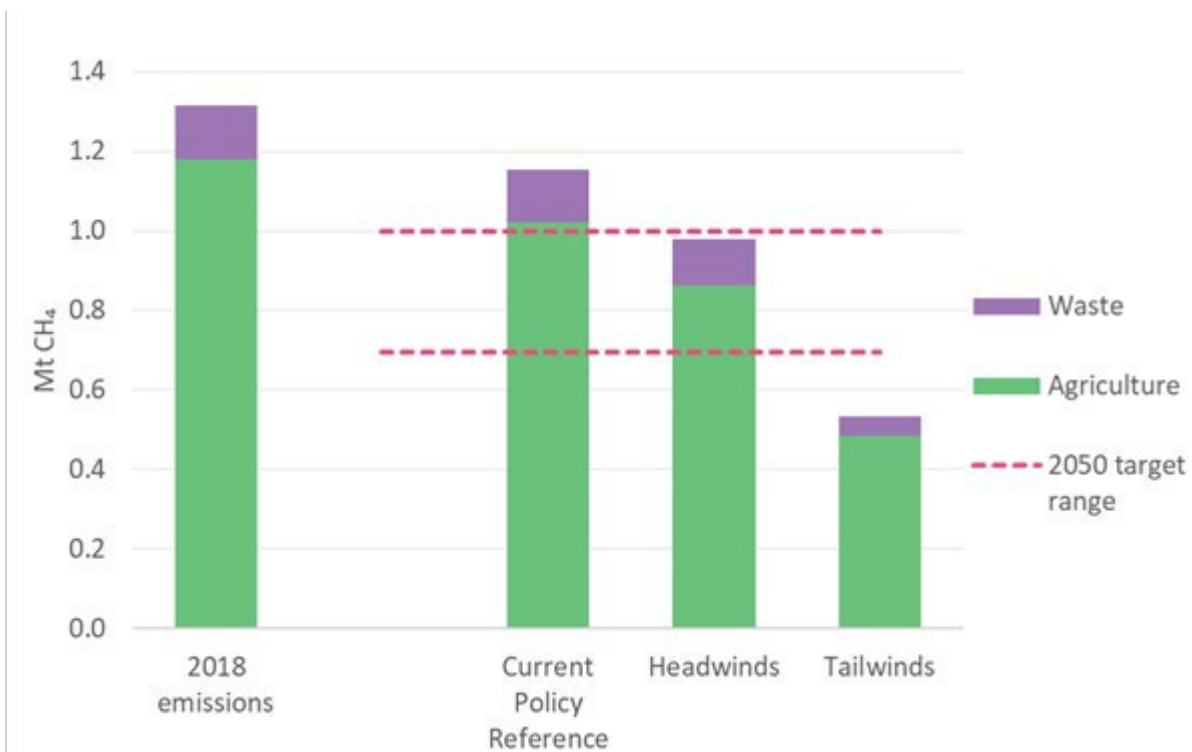


Figure 3.6: Biogenic methane emissions by sector in 2050 in the Headwinds and Tailwinds scenarios, compared with under current policies and with 2018 emissions.

Table 3.1: Key transitions along our path.

		Budget 1	Budget 2	Budget 3
Transport	Road transport	Accelerate EV uptake Improve average efficiency of new ICE vehicles		Phase out new light ICE vehicles Electrify medium and heavy trucks
	Reducing travel demand	Encourage remote working for those who can Encourage switching to walking, cycling and public transport		
	Non-road transport	Electrification of rail	Biofuel blending Start electrification of ferries and coastal shipping	
Heat, Industry and Power	Buildings	No new gas heating systems installed after 2025 Improve thermal efficiency		Start phase out of gas in buildings
	Electricity	Phase out fossil base-load generation	Transmission and distribution grid upgrades Reduce geothermal emissions	Expand renewable generation base Achieve ~95% renewable generation
	Industrial process heat	Replace coal with biomass and electricity		Replace gas with biomass and electricity
	Agriculture	Adopt low emissions practices on-farm	Adopt low emissions breeding for sheep	Encourage the adoption of new low methane technologies when available
Land	Native Forests	Ramp up establishing new native forests		Establish 25,000 hectares per year
	Exotic Forests	Average 25,000 hectares per year of new exotic plantation forests		Ramp down planting new exotic plantation forests for carbon storage
Waste and F-gases	Waste	Divert organic waste from landfill Improve and extend landfill gas capture		
	Hydrofluorocarbons (HFCs)	Reduce import of HFCs in second-hand products Increase end-of-life recovery		

Note: For more information on each sector, see pages 57-69.

Recommendations: Necessary Actions to Manage Impacts (Ch 5)

Question	13. Do you support the package of recommendations and actions we have proposed to increase the likelihood of an equitable, inclusive and well-planned climate transition? Is there anything we should change, and why?
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Time-critical necessary action 1

An equitable, inclusive and well-planned climate transition

The transition to a low emissions society needs to be well-signalled, equitable, and inclusive in order to maximise the opportunities, minimise disruption and inequalities, and be enduring as a result.

We recommend that in the first emissions budget period the Government develop an Equitable Transitions Strategy that is linked to the Government's Economic Plan and outlines:

- a. How the Government will build the evidence base for assessing the distributional impacts of climate change policy decisions that align with tikanga values
- b. A process for factoring distributional impacts into climate policy and designing social, economic and tax policy in a way that minimises or mitigates the negative impacts
- c. Guidance for developing localised transition plans that are customised for and co- developed with local government and affected communities.
- d. How the Government will support affected workers to transition into new work

Progress indicator

Government to have, by 31 December 2023, drafted an Equitable Transitions Strategy linked to their Economic Plan.

Necessary action 1

An equitable, inclusive and well-planned climate transition

We recommend that, in the first budget period the Government progress the following steps to meet emissions budgets:

- a. Identify communities and regions that may be particularly affected by climate change and the transition to a low emissions society, and initiating processes for localised transition planning in these areas. This would require the Government to work in partnership with local government and regional economic development agencies, iwi/Māori, local communities, businesses, civil society groups and stakeholders.**
- b. Develop policies for creating a workforce with the skills needed for accelerating the low emissions transition, including:**
 - **Assessing how the education system sets all New Zealanders up for the low emissions jobs of the future, with skillsets that enable workers to adapt and lifelong learning.**
 - **Upskilling and redeploying workers transitioning from high emissions sectors.**
 - **Developing skills and training into low emissions industries by Māori, for Māori.**
- c. Investigate the specific impacts of the climate transition on small businesses, and develop a plan for how to support them through the transition.**
- d. Assess the Government's current standards and funding programmes for insulation and efficient heating to determine whether they are delivering at an appropriate pace and scale, and how they could impact housing and energy affordability. The Government should give particular consideration to potential flow through costs to tenants, and to government owned housing stock.**
- e. Improve the evidence base and approach for factoring in co-benefits into climate policy, planning and investment decisions, including to health, transport accessibility, the environment.**

Recommendations – Sector-specific strategies (Ch 6)

Transport

Question	14. Do you support the package of recommendations and actions for the transport sector? Is there anything we should change, and why?
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Necessary action 2

Develop an integrated national transport network to reduce travel by private vehicles and increase walking, cycling, low emissions public and shared transport

We recommend that, in the first budget period the Government progress the following steps to meet emissions budgets:

- a. Deliver specific and timebound targets to increase low emissions public and shared transport and walking and cycling, and supporting infrastructure through strengthening the direction of the Government Policy Statement on Land Transport.**
- b. Significantly increase the share of central government funding available for these types of transport investment, and link funding with achieving our emissions budgets.**
- c. Improve mobility outcomes through measures including supporting public transport uptake nationally and locally by reducing fares for targeted groups (such as for those under 25 years of age), and improving the quality and integration of services.**
- d. Encourage Councils to implement first and last kilometre travel solutions in their transport networks, such as increased on-demand and shared vehicle and bike services, secure park and ride solutions at public transport, and encouraging micro-mobility options.**
- e. Further government encouragement for working from home arrangements.**

Time-critical necessary action 2

Accelerate light electric vehicle uptake

Light electric vehicle uptake needs to be accelerated as fast as possible. To meet our proposed emissions budgets and be on track for 2050, at least 50% of all light vehicle (cars, SUVs, vans and utes) and motorbike imports should be electric by 2027 (both battery EV and plug-in hybrid EV). To achieve this, we recommend in the first budget period the Government:

- f. Place a time limit on light vehicles with internal combustion engines entering, being manufactured, or assembled in Aotearoa, other than in specified exceptional circumstances. The limit should be no later than 2035 and, if possible, as early as 2030.**
- g. Introduce a package of measures to ensure there are enough EVs entering Aotearoa, and to reduce the upfront cost of purchasing light electric vehicles until such time as they are cost competitive with the equivalent ICE vehicle.**
- h. Improve the efficiency of the light vehicle fleet and stop Aotearoa receiving inefficient vehicles by introducing an emissions target for light vehicles new to Aotearoa of 105 grams CO₂ per kilometre by 2028.**
- i. Develop a charging infrastructure plan for the rapid uptake of EVs to ensure greater coverage, multiple points of access and rapid charging, and continue to support the practical roll out of charging infrastructure.**

Progress indicators

- j. Government to have consulted, no later than 30 June 2022, on preferred policy options for accelerating EV uptake (including a date for placing a time limit on the import of ICEs).**
- k. Cabinet decisions on preferred policy options to be made, as soon as possible but no later than 31 December 2022, on accelerating EV uptake.**
- l. Government to have implemented regulations on improving the fuel efficiency by 30 June 2022.**

Necessary action 3

Accelerate light electric vehicle uptake

We recommend that, in the first budget period the Government make progress on the following:

- a. As part of a policy package introduce a fiscal incentive, such as a feebate or subsidy, to reduce the upfront cost of EVs until such time as there is price parity with ICEs.**
- b. As part of an equitable transition, evaluate and support interventions such as leasing, hire and sharing schemes to remove barriers and address some of the upfront capital costs of EVs.**
- c. Investigate ways to bulk procure and ensure the supply of EVs into Aotearoa and work with the private sector to do so.**
- d. Evaluate how to use the tax system to incentivise EV uptake and discourage the purchase and continued operation of ICE vehicles.**
- e. Work with the private sector to roll out EV battery refurbishment, collection and recycling systems to support sustainable electrification of light vehicle fleet.**
- f. Evaluate the role of other pricing mechanisms beyond the NZ ETS, such as road pricing, can play in supporting the change to a low emissions and equitable transport system.**
- g. In setting these policies the Government needs to mitigate impacts for low-income households and people with disabilities, regional and remote access, and with limited access to electricity.**

Necessary action 4

Increase the use of low carbon fuels for trains, ships, heavy trucks and planes

We recommend that, in the first budget period the Government take the following steps to support the use of low carbon fuels for heavy vehicles such as trucks, planes, ships, and off-road vehicles to meet emissions budgets:

- a. Set a target and introduce policies so that at least 140 million litres of low carbon liquid fuels are sold in Aotearoa by 31 December 2035.**
- b. Introduce low carbon fuel standards or mandates to increase demand for low carbon fuels, with specific consideration given to aviation.**
- c. Introduce incentives to establish low emissions fuel plants, such as biofuel sustainable aviation fuel, and make those fuels more competitive with traditional fossil fuels.**
- d. Place further emphasis on decarbonising the rail system, and establish an investment strategy and clear targets to increase the share of rail and coastal shipping.**

Heat, industry and power

Question	15. Do you support the package of recommendations and actions for the heat, industry and power sectors? Is there anything we should change, and why?
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Time-critical necessary action 3

Target 60% renewable energy no later than 2035

Setting a target for renewable energy enables the Government to signal the required emissions reductions across the full energy system. Within that context, the 100% renewable electricity target should be treated as aspirational and considered in the broader context of the energy system that includes electricity, process and building heat and transport. We recommend the Government:

- e. Develop a long-term national energy strategy that provides clear objectives and a predictable pathway away from fossil fuels and towards low emissions fuels, and the infrastructure to support delivery.
- f. Under the framework of the national energy strategy, set a renewable energy target to increase renewable energy to at least 60% by 31 December 2035.

Progress indicator

- m. The Government to have, by 30 June 2023, set a renewable energy target of at least 60% by 31 December 2035, set milestones for 2025 and 2030, and released an energy strategy to deliver this target.

Necessary action 5

Maximise the use of electricity as a low emissions fuel

We recommend that, in the first budget period the Government take steps to ensure a low emissions, reliable and affordable electricity system to support electrifying transport and industry through progress on the following:

- a. Under the framework of a national energy strategy, set a date by which coal electricity generation assets must be retired.
- b. Under the framework of a national energy strategy, decide how to progress solutions to the dry year problem, when this should happen, and at what cost.
- c. Introduce measures, such as a disclosure regime, to reduce wholesale electricity market uncertainty over Emissions Budgets 1 and 2, to encourage investment in new renewable generation.
- d. Assess whether electricity distributors are equipped, resourced and incentivised to innovate and support the adoption on their networks of new technologies, platforms and business models, including the successful integration of EVs.
- e. Enable more independent generation and distributed generation, especially for remote rural and Māori communities, and ensure access to capital for this purpose.
- f. Monitor and review to ensure electricity remains affordable and accessible, and measures are in place to keep system costs down, such as demand response management.

Necessary action 6

Scale up provision of low emissions energy sources

We recommend that, in the first budget period the Government make progress in scaling up the provision of new low emissions fuels by:

- a. Developing a plan for the bioeconomy alongside the new national energy strategy, across transport, buildings, energy, waste, land use and industry.**
- b. Assessing the place that hydrogen has in the new national energy strategy.**

Necessary action 7

Reduce emissions from process heat

We recommend that, in the first budget period the Government take steps to reduce carbon emissions from fossil fuelled boilers by:

- a. Urgently introducing regulation to ensure no new coal boilers are installed.**
- b. Introducing measures to help reduce process heat emissions from boilers by 1.4 Mt CO₂e over 2018 levels by 2030 and by 2 Mt CO₂e by 2035.**
- c. Increasing support for identifying and reporting on emissions reduction opportunities in industry, including energy efficiency, process optimisation, and fuel switching.**
- d. Helping people to access capital to reduce barriers to the uptake of technology or infrastructure upgrades such as boiler conversions, energy efficiency technologies, and electricity network upgrades.**

Necessary action 8

Support innovation to reduce emissions from industrial processes

We recommend that, in the first budget period the Government take steps to support innovation in hard-to-abate industrial processes, including by:

- a. Developing a long-term strategy for the future of hard-to-abate industries, including iron, steel making, cement and lime production and petrochemical production. This strategy should be developed alongside the national energy strategy, future Economic Plans and strategies for an equitable transition (see time-critical necessary actions 1 and 3).**
- b. Based on the outcome of the strategy, investigating whether bespoke solutions requiring research and development specific to Aotearoa will be required.**

Necessary action 9

Increase energy efficiency in buildings

We recommend that, in the first budget period the Government introduce measures to transform, transition and reduce energy use in buildings. Measures should include:

- a. Continuing to improve energy efficiency standards for all buildings, new and existing stock, through measures like improving insulation requirements. Expand assistance which targets low-income households.**
- b. Introducing mandatory measures to improve the operational energy performance of commercial and public buildings.**
- c. Setting a date by when no new natural gas connections are permitted, and where feasible, all new or replacement heating systems installed are electric or bioenergy. This should be no later than 2025 and earlier if possible.**

Necessary action 10

Reduce emissions from urban form

We recommend that, in the first budget period the Government promote the evolution of urban form to enable low emissions transport and buildings through ongoing legislative reform:

- a. Develop a consistent approach to estimate the long-term emissions impacts of urban development decisions and continually improve the way emissions consequences are integrated into decision making on land use, transport and infrastructure investments.**
- b. Ensure a coordinated approach to decision making is used across Government agencies and local councils to embed a strong relationship between urban planning, design, and transport so that communities are well designed, supported by integrated, accessible transport options, including safe cycleways between home, work and education.**

Question	16. Do you support the package of recommendations and actions for the agriculture sector? Is there anything we should change, and why?
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Time-critical necessary action 4

Reduce biogenic agricultural emissions through on-farm efficiency and technologies

Currently available changes to management practices have the potential to meet the 2030 biogenic methane target. New technologies would provide greater flexibility and the ability to meet the more ambitious end of the 2050 biogenic methane target range without reducing output. We recommend that in the first budget period that the Government:

- c. Ensure that effective mechanisms are in place so that the plans, advisory and guidance tools developed by He Waka Eke Noa will endure beyond 2025 and can support achievement of the emissions budgets and targets.
- d. Drawing on the work of He Waka Eke Noa, decide in 2022 on a pricing mechanism for agricultural emissions as is required by legislation that is suited to the characteristics of the sector and capable of supporting achievement of the emissions budgets and targets.
- e. Ensure the Rural Broadband Initiative is resourced and prioritised to achieve its 2023 target, so that farmers have access to data and information to support decision making and the ability to practice precision agriculture.
- f. Review current arrangements and develop a long-term plan for targeted research and development of technologies (including evaluating the role of emerging technologies such as genetic engineering) and practices to reduce biogenic emissions from agriculture.
- g. Review and update processes and regulatory regimes to ensure that new emissions reducing technologies and practices can be rapidly deployed as and when they are developed.

Progress indicators

- n. Government to have, by 31 December 2022, developed a long-term plan for funding research and development to support reductions in biological emissions from agriculture.
- o. Government to have, by 31 December 2022, reviewed and amended processes and regulatory regimes for new emissions reducing technologies and practices.

Necessary action 11

Create options for alternative farming systems and practices

We recommend that, in the first budget period the Government support alternative farming systems to reduce emissions by:

- a. Accelerating investment in high resolution, consistent, publicly available nationwide land and climate information, and decision-making tools and processes, to better inform local and national land use decisions.**
- b. Supporting deployment of the systems and infrastructure needed for alternative farming systems and products.**
- c. Prioritising initiatives to reduce barriers and enable international market access for proven low emissions food and fibre products.**

Question	17. Do you support the package of recommendations and actions for the forestry sector? Is there anything we should change, and why?
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Time-critical necessary action 5

Manage forests to provide a long-term carbon sink

Production forests will play an important role in meeting the first three emissions budgets, and new permanent native forests will also balance emissions from hard-to-abate sectors in the long term. The Government should enable afforestation to provide a carbon sink over the long-term by:

- d. Implementing measures to incentivise establishing and maintaining at least 16,000 hectares of new permanent native forests per year by 2025, increasing to at least 25,000 hectares per year by 2030 and continued until at least 2050.
- e. Requiring an appropriate forest management plan for all forests over 50 hectares defined as permanent to monitor the forest's permanence and limit exposure to risks such as climate change impacts, governance failure, and community impacts.
- f. Designing a package of policies that must include amendments to the NZ ETS and land use planning rules, to deliver the amount and type of afforestation needed over time to align with our advice on the proportion of emissions reductions and removals and addressing intergenerational equity.

Progress indicators

- p. Government to have put in place incentives, by 31 December 2022, to deliver the afforestation of new permanent native forests to help meet the emissions budgets.
- q. Government to have published, by 31 December 2022, a plan for the broader package of forestry policies, and to have implemented the policies by 31 December 2024 at the latest.

Necessary action 12

Manage forests to provide a long-term carbon sink

We recommend that, in the first budget period the Government make progress in maintaining and increasing the amount carbon stored in forests by:

- a. Improving and enforcing measures to reduce deforestation of pre-1990 native forests.
- b. Encouraging storage of additional carbon and maintaining carbon stocks in pre-1990 forests through activities such as pest control, noting that these removals may be outside of current emissions accounting approaches.
- c. Evaluating approaches for storage of new and additional carbon through small blocks of trees and vegetation, noting that these removals may be outside of current emissions accounting approaches.

Waste

Question	18. Do you support the package of recommendations and actions for the waste sector? Is there anything we should change, and why?
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Necessary action 13 Reduce emissions from waste

We recommend that, in the first budget period the Government take steps to support the reduction of waste at source, increase the circularity of resources in Aotearoa and reduce waste emissions by:

- a. Setting ambitious targets in the New Zealand Waste Strategy for waste reduction, resource recovery and landfill gas capture to reduce waste emissions in Aotearoa by at least 15% by 2035.
- b. Investing the waste levy revenue in reducing waste emissions through resource recovery, promotion of reuse and recycling, and research and development on waste reduction.
- c. Measuring and increasing the circularity of the economy by 2025.
- d. Extending product stewardship schemes to a wider range of products, prioritising products with high emissions potential.
- e. Legislating for and funding coordinated data collection across the waste industry before 31 December 2022.

Necessary action 14 Manage the transition from hydrofluorocarbons

Consistent with the Kigali Amendment to the Montreal protocol, we recommend that, in the first budget period the Government supports reducing emissions of hydrofluorocarbons (HFCs) used as refrigerants by:

- a. Extending HFC import restrictions, where feasible, to include finished products and recycled bulk HFCs by 2025.
- b. Reducing leakage and improper disposal of HFCs through mandating good practice from business and technicians.

Multisector Strategy

Question

19. Do you support the package of recommendations and actions to create a multisector strategy? Is there anything we should change, and why?

Necessary action 15

Integrate Government policy making across climate change and other domains

We recommend that, in the first budget period the Government make progress on integrating policy making across climate change and other domains by:

- a. Providing consistent signaling across investments, policy statements, direction to officials, internal policies and directives to ensure that all regulatory and policy frameworks are aligned with low emissions and climate resilience objectives.**
- b. Investigating emissions reduction potentials and interdependencies amongst multi- sector activities, such as food production and distribution, tourism, construction and international education.**
- c. Ensuring that central and local government considers climate change alongside other environmental, social, economic and cultural aspects by including requirements in new resource management legislation, such as the proposed Natural and Built Environments Act, the Strategic Planning Act and the Managed Retreat and Adaptation Act.**
- d. Requiring government procurement policies to include climate change considerations, in order to leverage purchasing power to support low emissions products and practices, particularly with regard to third party funding and financing transactions.**
- e. Facilitating opportunities for iwi/Māori to participate in ownership of infrastructure or involvement in projects that align with iwi/Māori aspirations and climate positive outcomes.**

Necessary action 16

Support behaviour change

We recommend that, in the first budget period the Government embed behaviour change as a desired outcome in its climate change policies and programmes in order to enable New Zealanders to make choices that support low emissions outcomes.

Necessary action 17

Require entities with large investments to disclose climate related risks

We recommend that, in the first budget period the Government:

- a. Implement the proposed mandatory financial disclosures regime and explore the creation of a similar regime that covers public entities at the national and local level.**
- b. Evaluate the potential benefits of mandatory disclosure by financial institutions of the emissions enabled by loans over a specified threshold.**

Time-critical necessary action 6

Align investments for climate outcomes

To meet emissions budgets and achieve the 2050 target, it is important that policy decisions and investments made now do not lock Aotearoa into a high emissions development pathway.

Safeguards and signals will be needed to prevent this, including a specific focus on ensuring long-lived assets such as infrastructure are net-zero compatible. To achieve this, we recommend in the first budget period the Government:

- a. Immediately start to factor target-consistent long-term abatement cost values into policy and investment analysis in central government. These values should be informed by the Commission's analysis which suggests values of at least \$140 per tonne by 2030 and \$250 by 2050 in real prices.
- b. Encourage local government and the private sector to also use these values in policy and investment analysis.
- c. Ensure that economic stimulus to support post-COVID-19 recovery helps to bring forward the transformational investment that needs to happen anyway to reach our joint climate and economic goals.
- d. Investigate and develop a plan for potential incentives for businesses to retire emissions intensive assets early.
- e. Require the Infrastructure Commission to include climate change as part of its decision- and investment-making framework, including embedded emissions and climate resilience
- f. Investigate and develop plans to mobilise private sector finance for low emissions and climate-resilient investments.

Progress indicators

- c. Government to start, as soon as possible and by no later than 31 March 2022, factoring target-consistent long-term abatement cost values into policy and investment analysis.
- d. Government to publish, as soon as possible and by no later than 31 March 2022, how the COVID-19 economic stimulus is helping to accelerate the climate transition.

Necessary action 18

Building a Māori emissions profile

We recommend that, in the first budget period the Government facilitate a programme and direct funding to support Māori-collectives (particularly at an iwi level) to capture and record their own emissions profile within their respective takiwā. This will give effect to rangatiratanga by enabling iwi/Māori-collectives to effectively manage and monitor their emissions and enhance intergenerational planning.

Time-critical necessary action 7

Driving low emissions choices through the NZ ETS

The Emissions Trading Scheme (NZ ETS) needs to drive low emissions choices consistent with emissions reduction targets in Aotearoa, including a focus on gross emissions reductions. In the first budget period the Government should:

g. In the next annual update to NZ ETS settings:

- Align unit volumes with emissions budgets, taking into account the need to reduce the NZU stockpile.
- Increase the cost containment reserve trigger price to \$70 as soon as practical and then every year by at least 10% plus inflation.
- To maintain continuity with recent prices, immediately increase the auction reserve trigger price to \$30 as soon as practical, followed by annual increases of 5% plus inflation per year.

These changes are needed because maintaining current settings will lead to failure to meet emissions budgets.

- h. Amend the NZ ETS so that it contributes, as part of a package of policies (see time- critical necessary action 5), to delivering the amount of afforestation aligned with our advice on the proportion of emissions reductions and removals, consistent with budget recommendation 2.
- i. Establish a sound market governance regime for the NZ ETS as soon as possible to mitigate risks to market function, as some of these risks are potentially catastrophic for the scheme's effectiveness. This work should be advanced through an interagency team including MBIE for its financial markets expertise.

Progress indicators

- r. Government ensure that, in the next annual update to the NZ ETS settings, unit volumes are aligned with emissions budgets and price control settings are increased.
- s. Government to develop proposals as soon as possible to establish a sound market governance regime for the NZ ETS, and to have legislated to address the most significant risks by no later than 30 June 2023.

Necessary action 19

Continued ETS improvements

We recommend that, in the first budget period the Government make progress on:

- a. Developing options and implementing a plan for recycling some or all of the proceeds from NZ ETS unit auctions into emissions reductions, adaptation, equitable transitions and meeting international climate change obligations.**
- b. Undertaking a first principles review of industrial allocation policy.**
- c. Continuing to phase out industrial allocation.**
- d. Exploring alternative policy instruments that could address the risk of emissions leakage.**
- e. Providing more information to reduce uncertainty about adjustments to NZ ETS settings, particularly how it intends to manage unit volumes in light of the split-gas 2050 target.**
- f. Clarifying the role and avenues for voluntary mitigation in Aotearoa.**

Rules for Measuring Progress (Ch 7)

Question	20. Do you agree with Budget recommendation 5? Is there anything we should change, any why?
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Budget recommendation 5

The rules for measuring progress towards emissions budgets and the 2050 target

We recommend the following package of rules for measuring progress:

- a. To use the production-based approach from the national Greenhouse Gas Inventory as the basis for accounting for emissions budgets and the 2050 target.
- b. To use a 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 first NDC.
- c. Within the modified activity-based land emissions accounting framework, to:
 - Include the land areas and uses corresponding to afforestation, reforestation, and deforestation, as confirmed for the first NDC.
 - Exclude forest management, the activity relating to the impact of management practices on pre-1990 forest carbon stocks, 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.
 - 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.
 - 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.
 - Encourage the Government to develop methods for tracking emissions and removals by sources and sinks not yet included in the country's domestic or international target accounting, such as organic soils and biomass (including small lots of trees and regenerating vegetation), with a view to allowing them to be included in future target accounting.
- d. From 2021, if the Government allows voluntary offsetting for carbon neutral claims to take place in Aotearoa through cancelling 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 NZ ETS cap.