Climate Change
Chief Executives Board

Additional papers attached for information	
1.1	Final Climate IEB BIM
1.2	Updated 'November paper' on CCRA architecture, including legal advice Note: the final version of this paper can be found in the 10-25 meeting pack
1.3	Updated sufficiency analysis

Climate Change
CHIEF EXECUTIVES BOARD

Briefing to incoming Ministers 2023

Climate Change Chief Executives Board

Te Kāwanatanga o Aotearoa
New Zealand Government

Ministry for the Environment
Manatū Mō Te Taiao

Te Tari Taiwhenua
Internal Affairs

TE MANATŪ WAKA
MINISTRY OF TRANSPORT

Ministry for Primary Industries
Manatū Ahu Matua

National Emergency Management Agency
Te Rākau Whakamarumaru

Department of Conservation
Te Papa Atawhai

TE TAI ŌHANGA
THE TREASURY

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Key messages

- The Climate Change Chief Executives Board (the Board) has been established to support the government to achieve its climate change goals. The Board represents the main agencies working on climate policy and implementation. Its establishment reflects the need for a collaborative and coordinated cross-agency approach to advise on the climate change challenge in New Zealand, and the need to integrate the climate response with broader economic strategy. In doing so, it contributes to improved quality of Government spending and delivery of outcomes.

- The Board can provide you with collective advice on critical climate change decisions, choices and trade-offs. It can develop and oversee the implementation of your climate change plans to build New Zealand's resilience to climate change and reduce emissions in order to ensure we deliver net zero by 2050.

- The Board can work with you to support the consideration of climate change implications in the delivery of your government's immediate priorities, including:
    - growing economic prosperity, lowering the cost of living and rebuilding the economy to ease pressure on households and businesses;
    - ensuring New Zealand maintains its competitive advantage and international reputation, including by working with farmers to support and incentivise the uptake of technology to reduce agricultural emissions, and to enable farmers and landowners to offset sequestration against their on-farm emissions;
    - ensuring certainty and confidence in New Zealand's Emissions Trading Scheme (NZ ETS), and progressing work to recognise other forms of carbon sequestration, including blue carbon;
    - ensuring security of energy supply, including by doubling renewable energy production through more efficient planning and consenting processes and addressing regulatory barriers;
    - supercharging EV charging infrastructure.

- Adapting to the impacts of climate change is an urgent priority, particularly as extreme weather events grow in scale and frequency. The Board sees the key strategic challenge being to develop a long-term, whole-of-government approach to managing the impacts of climate change, which is socially and economically sustainable. The Board therefore considers it important to ensure:
    - delivery of a framework for adaptation (including community-led retreat) to clarify roles and responsibilities and cost sharing. This will need to be developed with Māori/iwi, and stakeholders including local government, insurers, and communities;
    - the resource management and planning system builds long-term climate resilience into decision making processes, to reduce future exposure to the impacts of climate change;
    - recovery programmes from extreme weather events deliver long-term resilient infrastructure and housing solutions;

- the provision of high-quality data and information so property owners, insurers and other decision makers can understand risks and take appropriate action.

- For climate mitigation, the key strategic challenge for New Zealand is how to reduce greenhouse gas emissions and transition with pace to a low emissions economy and society. Projections based on policy settings at 1 July 2023 show New Zealand can land within the first emissions budget (the first 'stepping stone' reduction milestone to achieving the legislated 2050 emissions targets). These projections are 'snapshots in time' and are subject to uncertainty and change, including from external factors such as economic activity, the impacts of policy settings and the way emissions are measured. The Board can provide you with updates every six months on the progress towards meeting emissions budgets, taking account of new information on the impact and outcomes of New Zealand's climate policies, updated assumptions and changes to the way emissions are measured.

- Effective implementation of the first emissions reduction plan (ERP) is important to ensure the first emissions budget is met. The Board can support you to understand how any changes you wish to make to policies within the first plan align with the overall achievement of the first emissions budget.

- The emissions reduction ambition grows significantly for the second and third emissions budgets where deep cuts to emissions are required. To keep on track to meet New Zealand's emissions reductions targets, Ministers will need to make strategic choices about:

  - the combination or relative mix of the different levers available to reduce net emissions, such as pricing emissions, and pairing this with the use of investment, regulation and partnering with Māori/iwi, business and communities;

  - how delivering New Zealand's second ERP can support your economic strategy and contribute to the wider goals you have signalled, such as improving health, infrastructure, and housing;

    where effort falls across sectors (such as agriculture, energy and transport), and where costs fall across society and how to address the impacts on people and communities;

  - providing for a buffer of abatement to meet emissions budgets to account for the inherent uncertainty associated with projecting future emissions levels, economic conditions and policy effectiveness.

- There is also a need to ensure that climate policies, actions and impacts are well understood by the public, and that communities can take practical actions to adapt to and mitigate the effects of climate change. The perception of fairness is important in achieving public support for the transition to a low-emissions future.

- The Board will provide you with advice on these matters, as well as ongoing monitoring and reporting on the progress, opportunities and risks to the current plans to reduce emissions (the ERP) and to build resilience and address the risks posed by climate change (the National Adaptation Plan, or NAP).

New Zealand's climate change challenge

1. Climate change presents a challenge that requires a whole-of-economy and society response to address the impacts and achieve the emissions reductions necessary to limit the most severe adverse impacts on the nation's living standards and economic performance. Climate policy responses have considerable impacts on economic and fiscal policy, such as the fiscal costs of supporting communities to respond and adapt to the impacts of extreme weather. The way in which the economy transitions to lower emissions will also have considerable implications, and can create new opportunities, for economic policy now, and for the type of economy New Zealand has in 2050 and beyond.

2. The incoming government will need to make some critical choices now and in the near term to maintain options for the transition and not foreclose pathways too early, or lock in path dependencies that are difficult to adjust later. There are several areas the Board seeks your steer on to be able to best support you and your government to navigate these choices (see Appendix 1). Portfolio Ministers will also receive advice from their agencies with more sector-specific choices and directions needed.

3. In 2019, New Zealand legislated a domestic framework to develop and implement stable long-term climate change policies that contribute to global efforts to reduce emissions, and to allow New Zealand to prepare for, and adapt to the effects of climate change (see Appendix 2).

4. As well as the domestic framework, there are a range of international agreements, commitments and pledges seeking to improve the global efforts to reduce emissions and build resilience to the impacts of a warmer climate. New Zealand has made international commitments as part of the global effort required to tackle climate change (see Appendix 3 for examples).

A collective response to the climate challenge

The role of the interdepartmental executive board for climate change

5. Achieving New Zealand's climate change commitments and preparing the economy and society for a low-emissions, climate resilient future, requires coordinated work across government.

6. The Board has been established to provide you with strategic, cross-agency advice on the government's climate change response, the choices available, and the implications of the choices such as co-benefits, distributional impacts and trade-offs. The Board was established in 2022 as an interdepartmental executive board under the Public Service Act 2020. It comprises chief executives from eight government agencies critical to action on climate change, with Crown Law as an advisor.[1]

7. The creation of the Board reflects that no single portfolio area can address the climate challenge alone, with coordinated policy development and delivery being vital. The Board structure helps

[1] Chief executives from the Ministry for the Environment, Ministries of Transport, Primary Industries, and Business Innovation and Employment, Departments of Conservation and Internal Affairs, the Treasury, and the National Emergency Management Agency. Crown Law's Deputy Solicitor General is an advisor to the Board.

to streamline efforts and focus, which ensures the best value for New Zealand in undertaking the government's cross-department climate change programme and delivering outcomes.

8. The Board can provide collective advice to Ministers on:

    - progressing climate action in the context that the changing climate is coinciding with wider environmental challenges, such as the loss of biodiversity, and compounding economic and social challenges, such as the cost-of-living crisis, and housing crisis. These challenges are exacerbated by climate change, such as the impact of extreme weather events on food growing regions, on the movement of people and goods, and on risks to homes and communities;

    - potential pathways to achieve the 2050 emissions reductions targets (and to maintain reduced emissions thereafter), as well as key decision points by which some pathways may close, and options for the mix of tools and settings that can meet the climate goals;

    - progress and options to ensure domestic emissions budgets and climate adaptation goals are met in line with legislated requirements, and in the context of the government's broader economic and social agenda;

    - how coordinated action can be implemented across government, taking a cross-agency view that prioritises action and investment, and presents trade-offs, risks and opportunities across the economy and society in the near and longer-term, and on the impacts of policies and actions on firms, households, communities and Māori/iwi.

9. The Board has to date provided a report to Ministers every six months on progress across the first ERP and NAP. The Board can advise on the key risks to delivering on the first ERP and NAP, and actions the Board is taking / can take in response. The next report is due early in 2024 for the July-December 2023 period.

10. A recent Parliamentary Commissioner for the Environment (PCE) report outlined the value of the Board in helping to ensure that key agencies are collaborating effectively and negotiating a common view on key cross-sector issues and strategic choices, as well as being key to managing any tensions between agencies. [2]

11. Since its establishment the Board has reported directly to the Prime Minister as the 'appropriate Minister' for the Board on the performance of its functions. The PCE highlighted that top-down political leadership, and a 'neutral arbiter' was essential in driving the ERP process and the report recommended that the Prime Minister should continue to provide active political leadership over the current and future ERP.

Collective Ministerial direction and leadership

12. The response to climate change requires a long term, cross-sector and cross-economy view of issues that cut across and require compromise and trade-offs between different Ministerial portfolios. For example, reducing emissions from transport requires a joined-up response with coordinated and appropriately sequenced actions to improve urban form, land-use integration, public transport, and electrification. Work on climate change adaptation requires coordination of

[2] how-ministers-and-officials-developed-the-first-emissions-reduction-plan.pdf (pce.parliament.nz)

matters such as regional and urban planning (working with local government) and infrastructure funding tools.

13. Given this, a collective Ministerial group for climate change can drive the focus on a whole of economy, whole of society, long-term transition necessary to meet New Zealand's international and domestic commitments. Since late 2020, a Climate Response Ministerial Group comprising ~12 ministers with relevant portfolios has been utilised to provide this oversight and navigate the policy intersections prior to seeking Cabinet decision and direction.

14. The PCE report highlights the benefits of the establishment of a Ministerial group and the Board in the development of the first ERP to drive strategic issues and provide cross sector advice to decision makers. While the report notes where the approach could be strengthened, it states the continued need for 'clear, strong political leadership' and that this 'needs to be mirrored at the agency level and in cross-agency forums.'

15. The Board can advise you on options for effective terms of reference, scope, and functions of a similar ministerial group if this is something you would like to establish to deliver on your top climate priorities.

Improving resilience to climate change

The impacts of climate change are materialising faster and vulnerabilities are being exposed…

16. Global warming is already leading to weather and climate extremes across the globe, causing widespread impacts and damage to nature and people - unequally distributed across systems, regions and sectors. The world experienced its hottest day on record in July 2023 and the Antarctic sea-ice reached its record low.

17. Climate change presents a unique challenge to the Crown due to the combination of discrete, slowly developing risks, alongside other acute and fast-moving risks. The impact of increasing temperatures is being felt on New Zealand shores, and being felt more severely than anticipated by many estimates. Economic damage from climate change is impacting climate-exposed sectors, such as agriculture, forestry, fisheries, energy, and tourism. The physical impact of climate change will affect the economy and society for generations.[3] By the numbers:

    - It has been estimated that 30% of damages from the 12 worst flood events in New Zealand from 2007-2017 were directly attributable to climate change.[4]

    - Economic losses from droughts have been estimated to cost the New Zealand economy $720 million between mid-2017 and mid-2018 and climate models predict more droughts for parts of New Zealand.[5]

[3] Ngā Kōrero Āhuarangi Me Te Ōhanga Climate Economic and Fiscal Assessment 2023, Ngā Kōrero Āhuarangi Me Te Ōhanga: Climate Economic and Fiscal Assessment 2023 | The Treasury New Zealand
[4] Frame et al, 2020. The science linking extreme weather and climate change | Ministry for the Environment
[5] Frame, D, Rosier S et al, 2018. Estimating financial costs of climate change in New Zealand, New Zealand Climate Change Research Institute and NIWA

- About 11% of bank lending in New Zealand is directed to the agricultural sector, with increasing drought risk to rural sectors noted as a key source of physical risk exposure in their portfolios. For example, recent Reserve Bank analysis indicates in a one-year drought scenario, loan defaults are 8% ($2.3 billion) of dairy exposures and 7% ($0.8 billion) of sheep and beef exposures on aggregate, compared with a no-drought base case with only 3% of each type of exposures defaulting. In a two-year drought scenario (i.e. two years of drought back-to-back) loan defaults are around double that of the one-year drought.[6]

- Climate change modelling predicts that New Zealand will become hotter and drier, creating conditions that will increase both the frequency and severity of wildfire events. These events are expensive to respond to, and can be very disruptive locally.[7] What is harder to value is the avoided cost of damage that was prevented with the fire suppression effort. In many regions, the fire risk is expected to be much worse through the rest of the century, with devasting fires expected to occur every 3-20 years in areas of the Mackenzie Country, Central Otago and Marlborough.[8]

- 750,000 New Zealanders, and 500,000 buildings worth over $145 billion are near rivers and in coastal areas already exposed to extreme flooding.[9] 2022 set a record for extreme weather general insurance claims for a third consecutive year, with claims over $351 million (a figure already exceeded in 2023 by the North Island Weather Events).

- Sea level rise is expected to accelerate with further climate change[10] with the potential for at least a further 10cm by 2040.[11] [12] At present sea levels, $12.5 billion worth of buildings are exposed to flood risk. Modelling shows that sea-level rise of 30cm (expected to occur between 2045 and 2070) could expose an additional $6 billion worth of buildings to at least a 1% chance of flooding in a given year beyond the $12.5 billion exposed at the present sea level.

- 2022 set a record for extreme weather general insurance claims for a third consecutive year, with claims over $351 million (a figure already greatly exceeded in 2023 by the North Island Weather Events). Other modelling shows that around 10,000 houses could become uninsurable by 2050 because of coastal flooding hazards from sea-level rise.

18. There are a number of impacts that are harder to quantify but nonetheless contribute to the cumulative scale of loss. These include loss of cultural or natural heritage, risk to life safety or loss of life, impacts on mental stress and anxiety and incapacity/lost productivity of the injured.

… and New Zealand is building the frameworks and institutions to address the challenge and improve resilience

19. Adverse weather events are expected to continue to challenge the decision-making capacity of government. This requires an increasing focus on identifying and mitigating risks, and on building

[6] Reserve Bank of New Zealand RBNZ 2022 climate change risk assessment for agricultural lending
[7] The Pigeon Valley fire in 2019 affected 2,400 hectares, incurred $4 million of insured property loss, $13.5 million spent by FENZ, $1 million spent by DOC, and caused the evacuation of 3000 people.
[8] Lander, E.R., Wegnery S et al, 2021. Adapting and mitigation wildfire risk due to climate change: extending knowledge and best practice. Scion. https://www.ruralfireresearch.co.nz/?a=80922
[9] Community-led retreat. www.environment.govt.nz
[10] National Institute of Water and Atmospheric Research. https://niwa.co.nz/natural-hazards/hazards/sea-levels-and-sea-level-rise
[11] https://deepsouthchallenge.co.nz/wp-content/uploads/2021/01/Insurance-Retreat-December-2020-Final-Report.pdf
[12] Managed retreat: what it is and when it might be used | Ministry for the Environment

New Zealand's adaptive capacity and resilience to reduce or avoid harm. It requires institutional arrangements that are able to respond to events and shocks in a timely manner, while maintaining a focus on the longer-term policy agenda to continue to build resilience to future events.

20. New Zealand completed its first national climate change risk assessment (NCCRA) in 2020. The NCCRA identified 43 priority risks across five value domains, and from that, the 10 most significant risks (see Appendix 2). The risk assessment gives decision makers the best available evidence and assessment for a planned approach to climate change risks and opportunities.

21. The first NAP, published in 2022, provides the framework for taking action to address the identified climate risks by building resilience, reducing vulnerability to climate change and helping people and institutions to adjust to the changing climate and its effects. A key priority in the plan is establishing institutional, legislative and funding settings to support community-led managed retreat, particularly in the context of event recovery.

22. A Select Committee Inquiry into climate adaptation is underway, exploring how New Zealand could enable communities to relocate from areas at high risk from climate change impacts, including before a disaster happens. It is also looking at how the costs of adapting to climate change could be met. Public submissions to the Inquiry closed on 1 November 2023.

23. The Board's first assessment of progress across the NAP found that the climate risks are materialising now, and that there is a need to speed up some elements of the response. Fifty-two of the 127 actions in the first NAP have been identified as critical to its success. However, there are no formal indicators to assess whether the government is making enough progress to achieve its climate adaptation goals and what a 'sufficient' level of resilience is, or an acceptable level of risk. The Climate Change Commission are developing indicators to support their assessment of the effectiveness of the NAP.

Key upcoming decisions and priorities

24. The government will need to make some important choices in the coming 12 months on adaptation policies to preserve future options and avoid setting precedents that are not fiscally sustainable. Specifically, these include:

    - considering different risk tolerance thresholds and making decisions about what New Zealand cannot afford to lose;
    - ensuring resilience and climate adaptation is built into decisions on emergency management and recovery planning, infrastructure investment and resource management;
    - decisions about how costs will need to be shared, including any support for the most vulnerable;
    - how to incentivise preventative maintenance to protect properties and infrastructure from extreme weather.

25. The Board considers the key priorities are:

    - delivery of a framework for adaptation (including community-led retreat) to clarify roles and responsibilities and to guide how costs associated with a changing climate will be shared

between central and local government, property owners and insurers. This will need to be developed with Māori/iwi, and with stakeholders including local government, insurers, and communities;

- building long-term climate resilience into resource management and planning decisions, particularly in relation to land use and infrastructure provision, to reduce future exposure to the impacts of climate change;
- recovery programmes delivering long-term resilient infrastructure and housing solutions;
- provision of high-quality data and information so property owners, insurers, households, businesses and central and local government decision makers can understand risks, the progress being made and the actions required to reduce vulnerability and risk and build resilience.

Reducing New Zealand's greenhouse gas emissions

26. In New Zealand's Greenhouse Gas Inventory (the inventory), emissions and removals are categorised into six sectors, as outlined in table 1 below:

Agriculture	Energy	Industrial processes and product use	Waste	Land use, Land-use change and forestry	NZ 'other'
Livestock digestive systems, fertiliser and manure	Road transport and electricity production	Production of metals and chemicals, and use of refrigerants	Landfills and wastewater processing	Forests, crops and pasture. Has both emissions and removals of carbon dioxide	Tokelau

Table 1: NZ greenhouse gas inventory categories

27. New Zealand has a unique emissions profile in that agricultural emissions make up a higher proportion of total emissions than other developed nations. This creates abatement challenges, given there are fewer technical solutions currently available to reduce such emissions, coupled with the importance of agriculture to New Zealand's export economy.

28. New Zealand also has a relatively small energy and industry sector compared to most developed countries. While New Zealand has high per-capita transport emissions, the high proportion of renewable electricity generation has a significant impact on the country's emissions profile, and drives up the relative contribution of the agriculture sector to the overall profile (see figure 1).

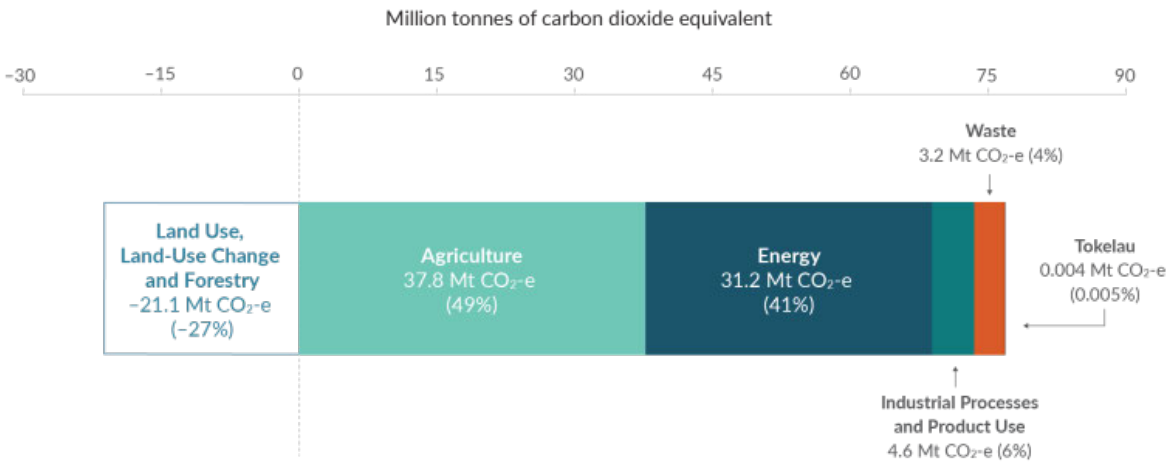


Figure 1: Breakdown of New Zealand's emissions (in million tonnes of carbon dioxide equivalent, Mt CO_2-e) by sector in 2021, Ministry for the Environment

29. The base year for reporting national emissions for the United Nations Framework Convention on Climate Change is 1990. While gross emissions peaked in 2006, and have since been relatively stable (and are currently tracking downwards since 2019), New Zealand's gross emissions at 2021 have increased by 19% since the base year of 1990.

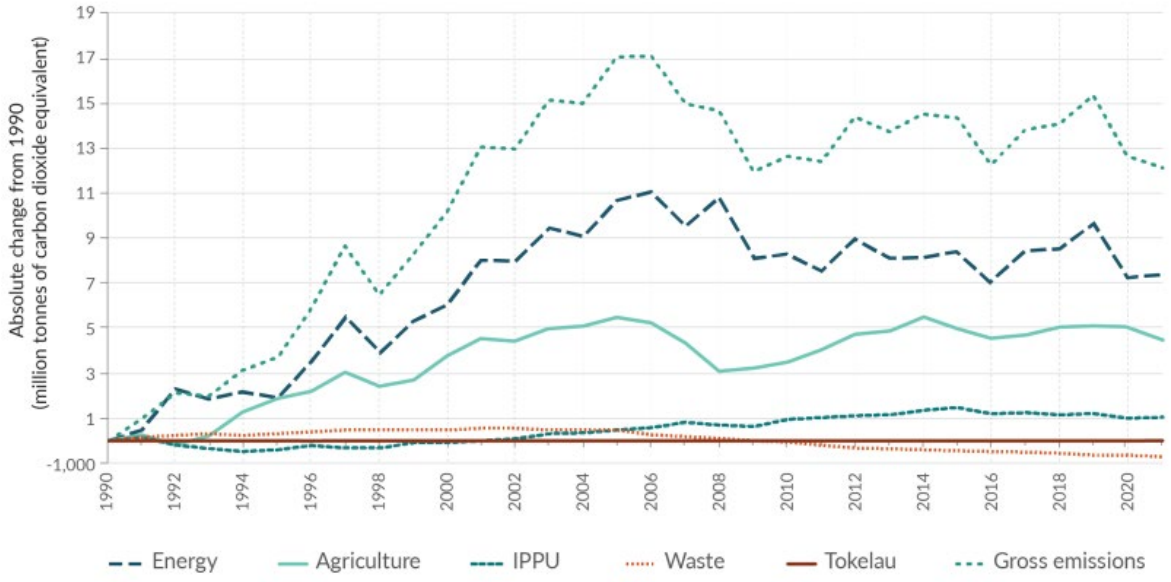


Figure 2: New Zealand's gross greenhouse gas emissions (in MtCO_2-e): Absolute change by sector from 1990 to 2021. Ministry for the Environment

The emissions targets and budgets require large reductions in greenhouse gases

30. New Zealand has a legislated emissions reduction target that requires:

- Biogenic methane emissions are 10% below 2017 levels by 2030; and 24-47% below 2017 levels by 2050 and each year thereafter; and
- Net zero all other greenhouse gases by 2050 and each year thereafter.

31. The first three domestic emissions budgets have been set, providing necessary stepping-stone reductions to be achieved out to 2035, in line with achieving the legislated domestic 2050 target.

	Emissions budget 1 (2022-2025)	Emissions budget 2 (2026-2030)	Emissions budget 3 (2031-2035)
All gases, net (AR5)	290 $MtCO_2$-e	305 $MtCO_2e$	240 $MtCO_2e$
Annual average	72.5 $MtCO_2$-e	61 $MtCO_2e$	48 $MtCO_2e$

Table 2: Levels of permittable emissions in the New Zealand's first three emissions budgets

32. As set out in the Climate Change Response Act 2002, emissions budgets are required to include all greenhouse gases, and are intended to be met, as far as possible, through domestic action. The Minister of Climate Change has a statutory duty – on behalf of the Executive – to ensure emissions budgets are met (that is that the net accounting emissions for the period do not exceed the emissions budget).

33. The 2050 target and emissions budgets are unenforceable in court, though if not met, a court may make a declaration to that effect, together with an award of costs. The Minister of Climate Change is required to have particular regard to how the emissions budgets may realistically be met, including the key opportunities and the principal risks and uncertainties for emissions reductions and removals. When working with emissions and removals projections, there is always inherent uncertainty and risk present. Planning for a buffer to achieve an emissions budget can help to account for some of this uncertainty.

34. Structural change is expected in the transitioning of the New Zealand economy, and some sectors will grow while others shrink, which will impact the mix of jobs between sectors. The Government's strategy for the economy and industry needs to address this reality at both nation-wide and regional levels. In addition, the perception of fairness is important in achieving and maintaining public support for the transition to a low emissions future.

Projections show we can land within the first emissions budget

35. The first emissions budget period was always acknowledged to be challenging. It is a shorter than a normal emissions budget period (four years rather than five years), it was set part way into its first year (as was the plan to meet it), and there was no established practice to guide development. It has also proven challenging to 'course correct' during the budget period, as there are very limited options to deliver additional abatement in the time remaining.

36. Updated projections based on policy settings at 1 July 2023 show that New Zealand can land within the first emissions budget. Emissions are projected to land within a range of 272 to 284 Mt CO_2e. This is below the limit of 290 Mt for the first budget, with a 'buffer' of 13 Mt (or around 4% of the budget) from the central estimate of the range. These projections are based on policy settings at 1 July 2023 and do not reflect any changes you may wish to make to policy settings.

37. Emissions projections make assumptions about the future and are based on current knowledge, so are subject to significant uncertainty. New Zealand could fall short of meeting emissions budgets if, for example:

- there are relatively small changes to economic conditions,
- policies are less effective than was anticipated or are discontinued, or
- there are improvements to how officials calculate emissions (methodology changes).

38. The methods used to calculate emissions are always being improved. Recent methodology improvements have led to a reduction in New Zealand's measured emissions. However, further changes in the 2024 inventory will potentially have the reverse effect, which would reduce the 'buffer' for the first emissions budget. The Board will provide you with updated estimates of our path to meeting emissions budgets twice a year. The development of the second emissions reductions plan is your key opportunity to set the path for achieving the second and subsequent emissions budgets.

39. The first ERP sets out actions to achieve the emissions reductions required for the first emissions budget. Agencies are working on the implementation of this plan. Delays and discontinuations of policies and actions, if not substituted, risk making it harder to meet the first emissions budget.

40. Actions taken within the current emissions budget can continue to contribute towards reductions in the second and third budgets. Additionally, some actions can require long lead-in times before emissions reductions are realised, such as new infrastructure or new sources of renewable electricity, or may require large scale policy work, and so will need to be planned and initiated ahead of when the reductions are required.

Achieving the next emissions budgets will be a greater challenge…

41. As can be seen in paragraph 31 above, emissions budgets 1, 2 and 3 get progressively more ambitious.[13] Average annual emissions in the third budget period need to be about a third lower than they are in the current budget. This increases the scale of change needed to achieve them and will require the second and third emissions reduction plans to set out how this increasing effort will be achieved.

42. It will be critical to prepare the second ERP in line with meeting the second emissions budget, and in a way that can account for the inherent uncertainty in projections, emissions calculations and planning out to 2030 and beyond.

43. The key levers available to deliver the necessary reductions in emissions are emissions pricing, investment and partnerships, regulation and education.

44. s 9(2)(f)(iv) As a market mechanism, relying on emissions pricing alone comes with inherent uncertainty about the type, level, and timing of emission reductions.[14] Where greater confidence about levels and timing of reductions is needed, regulation or direct investment may be used. Additionally, the use

[13] For example, based on our current methodology, to meet within the second emissions budget (2026-2030) and third emissions budget (2031-2035) will require a 15.9% reduction and 33.8% reduction in annual emissions from 2021 levels respectively.
[14] While a cap-and-trade ETS should guarantee a certain level of emissions reductions, in practice in New Zealand this is challenging presently, due to: a large stockpile of units, and the significant price increase that would be required to drive further abatement (and the consequential cost implications for firms and households that would drive).

of emissions pricing and regulation can impose costs onto emitting firms – which are often then passed down to consumers. This can disproportionately impact lower income households.

...and meeting the international targets will require even greater action.

45. A key international climate agreement is the Paris Agreement, a legally binding international treaty on climate change. The Agreement has an overarching goal to keep the global average temperature to well below 2^0C above pre-industrial levels, while pursuing efforts to limit the temperature increase to 1.5^0C.

46. New Zealand's headline target under the Paris Agreement (the nationally determined contribution, or NDC) is to lower net emissions levels by 2030, to 50% of New Zealand's gross emissions from 2005, and it covers all domestic sectors and all greenhouse gases.

47. Even with the progress so far, the NDC to 2030 is highly ambitious, is additional to the domestic targets and New Zealand is not currently on track to meet it (estimated to be between 88 and 143 Mt CO_2-e short[15]).

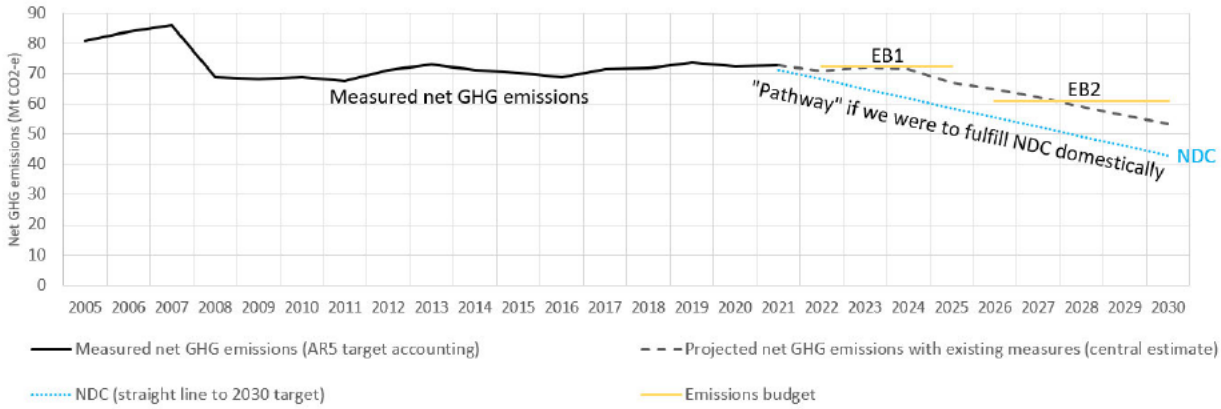


Figure 3: New Zealand's emissions (Mt CO_2-e), projected emissions, emissions budgets and nationally determined contribution. Source: CCIEB unit analysis using Ministry for the Environment net emissions data and projections, ERP emissions budgets and NDC provisional budget.

48. The NDC can be meet through a combination of domestic emissions reductions as well as international cooperation and purchasing of abatement via international carbon markets. It will require a mix of both to be able to meet the commitments. There are long lead in times to establish and implement international cooperation. s 9(2)(g)(i)

49. The size of the cost of meeting the NDC will depend on New Zealand's domestic emissions reduction efforts, and on what price New Zealand pays for any offshore mitigation. The future price of offshore mitigation is unknown and represents a significant fiscal risk for New Zealand.

[15] https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/latest-update-on-aotearoa-new-zealands-progress-towards-2030-international-target/

Key priorities and upcoming decisions

50. Implementation of the first ERP is a key near-term opportunity to meet the first emissions budget and establish building blocks for future reductions. This includes a focus on:

    - getting the settings right in the NZ ETS to drive down emissions (including preventing production moving offshore and forestry incentives);
    - working with farmers and making progress in reducing agricultural emissions;
    - providing investment certainty and enhancing the resilience of the energy sector to support access to affordable, renewable energy;
    - providing transport and infrastructure options to enable New Zealanders to shift to low emissions travel;
    - delivering the second ERP (for 2026 to 2030) that will further set the policy direction for the domestic response out to 2050.

51. The Board can support you by ensuring the highest impact initiatives are delivered. Sixty-two of the 301 actions in the first ERP have been identified as being critical to abatement success. The recent progress report to June 2023 shows the implementation status of 48% of those critical actions as either amber, red or discontinued. The Board can also advise whether any changes you wish to make to the first ERP may create heightened risks given the legal obligations of emissions budgets.

52. The development of the second ERP over the coming year (due end of 2024) is your key strategic opportunity to set the direction of emissions reduction policy for the next decade. There is an opportunity to create a plan with a smaller set of high impact actions and policies to guide the next stage of New Zealand's emissions reduction pathway.

53. New Zealand will submit its first Biennial Transparency Report under the Paris Agreement in 2024. This will report on progress towards meeting the first NDC, and on actions taken and progress in climate change mitigation and adaptation measures. New Zealand also needs to set its second NDC, due in 2025, to cover the period 2031-2035.

Appendix 1: Critical areas the Board seeks Ministers' early direction

The Board is ready to support the delivery of your climate priorities in your first 100 days and beyond. To best support you, the Board seeks your early direction on the following matters.

- The approach to collective leadership to progress your climate change goals in the context of the Government's broader agenda:
    - establishing a cross-portfolio Ministerial group to navigate cross-system areas outside of the Cabinet committee setting;
    - confirming the Appropriate Minister for the Board;
    - confirming the role you want the Board to play to support you in delivering your climate and broader economic and social priorities.
- Meeting the first emissions budget and the first National Climate Change Risk Assessment:
    - adapting any policies and actions to reflect your priorities in line with meeting the first emissions budget (2022-2025);
    - adapting any polices and actions to address the risks identified in the first National Climate Change Risk Assessment (2020-2026);
    - direction for how you want the Board to monitor and report on progress of these plans and your climate change priorities;
    - direction on an adaptation framework to guide how costs are shared between central and local government, property owners and insurers (including direction on the how to progress with the existing Select Committee inquiry on the Climate Change Adaptation Bill).
- The approach to the second emissions budget (2031-2035) and its associated plan:
    - direction on levels of gross reductions to be sought domestically (vs net reductions, including forests);
    - direction whether to use the second ERP to close the gap to New Zealand's first NDC, reducing reliance on offshore mitigation.

The following table outlines some of the timeframes provided for in legislation or through international agreements over the coming term.

Upcoming legislated timeframes		
Meeting emissions budgets	• Delivering the second ERP	• Respond to the Climate Change Commission's advice on the second ERP (due to the Minister of Climate Change by end Dec '23, but expected to be delivered earlier)
		• Publish the second ERP before the end of 2024.
Monitoring progress	• Monitoring of Government plans	• Respond to the Climate Change Commission's first annual emissions reductions monitoring report (within 3 months of receiving – est. Sept '24)
		• Respond to the Climate Change Commission's first biennial national adaptation plan progress report (within 6 months of receiving – est. Feb '25)
International commitments	• Nationally determined contributions	• Submit the first Biennial Transparency Report on progress towards first NDC in 2024.
		• Set the second NDC (for the period 2031-2035) by the end of 2025
Tracking to the 2050 target	• First review of New Zealand's 2050 legislated target	• Respond to the Climate Change Commission's 2050 target review (within 12 months of receiving – est. end 2025)
		• Respond to the Climate Change Commission's advice on the inclusion of emissions from international aviation and shipping into the 2050 target (within 12 months of receiving – est. end 2025)
	• Setting emissions budgets levels	• Set allowable emissions level for the fourth emissions budget period (2036-2040) • Response to Climate Change Commission's advice on fourth emissions budget level and any recommendations to revise existing notified emissions budgets

Appendix 2: New Zealand's framework

Zero carbon framework in the Climate Change Response Act 2002

The Climate Change Response (Zero Carbon) Amendment Act 2019 establishes the framework for New Zealand to develop and implement clear and stable climate change policies that contribute to global efforts under the Paris Agreement, and to allow New Zealand to prepare for, and adapt to the effects of climate change. The components of this framework are now mostly in play.

Adaptation

The adaptation components of the Zero Carbon framework consist of:

- a National Climate Change Risk Assessment, every six years
- a national adaptation plan, produced two years after each risk assessment
- monitoring implementation of the national adaptation plan.

In 2020, New Zealand completed its first NCCRA, for the risks posed to the country by the warming global climate. The NCCRA identified 43 priority risks across five value domains, then the top two risks in each domain form the 10 most significant risks (see following table). The risk assessment gives decision-makers the best available evidence and assessment for a planned approach to climate change risks and opportunities.

Natural	Risks to coastal ecosystems, including the intertidal zone, estuaries, dunes, coastal lakes and wetlands, due to ongoing sea-level rise and extreme weather events	Risks to indigenous ecosystems and species from the enhanced spread from the enhanced spread, survival and establishment of invasive species due to climate change
Human	Risks to social cohesion and community wellbeing from displacement of individuals, families and communities due to climate change*	Risks of exacerbating existing inequities and creating new and additional inequities due to differential distribution of climate change impacts*
Economy	Risks to governments from economic costs associated with lost productivity, disaster relief expenditure and unfunded contingent liabilities due to extreme events and ongoing, gradual changes	Risks to the financial system from instability due to extreme weather events and ongoing, gradual changes
Built	Risks to potable water supplies (availability and quality) due to changes in rainfall, temperature, drought, extreme weather events and ongoing sea-level rise*	Risks to buildings due to extreme weather events, droughts, increased fire weather and ongoing sea-level rise*
Governance	Risks of maladaptation across all domains due to the application of practices, processes and tools that do not account for uncertainty and change over long timeframes	Risks that climate change impacts across all domains will be exacerbated because current institutional arrangements are not fit for climate change adaptation

** indicates the risk has disproportionate impacts on Māori*

The first NAP was published in 2022, with actions and policies to respond to the NCCRA. Although there are no formal indicators to assess progress towards adaptation 'goals' – the combination of delayed action and rapid, non-linear impacts, arriving faster than anticipated[16] are compounding the gap between the desired and current risk tolerances (i.e. the published NAP ambition), with the gap increasingly harder to close over time.

Emissions reductions

The emissions reductions components of the zero carbon framework consist of:

- A legislated target for 2050 and thereafter, reviewed every five years
- A series of 'sinking lid/stepping-stone' emissions budgets that limit total allowable emissions in each five-year period until 2050 (currently in the first emissions budget period),
- An emissions reduction plan produced for each emissions budget period (currently implementing the first plan to meet the first emissions budget and contribute to later budgets)
- Monitoring implementation of the emissions reduction plan and progress towards emissions budgets.

New Zealand has a legislated emissions reductions target that requires:

- Biogenic methane emissions are 10% below 2017 levels by 2030; and 24-47% below 2017 levels by 2050 and each year thereafter; and
- Net zero all other greenhouse gases by 2050 and each year thereafter.

The key sources of methane in New Zealand are biogenic (from agriculture and waste), and non-biogenic (from the energy and industry sectors). While biogenic methane represents a significant proportion of New Zealand's total emissions, non-biogenic methane does not.

The framework provides for a series of legally binding emissions budgets that step emissions down in five-year blocks towards the 2050 legislated targets. Emissions budgets state the total net emissions that will be permitted over the five-year period and must include all greenhouse gases. The first three emissions budgets have been set, providing necessary reductions to be achieved out to 2035 as follows:

	Emissions budget 1	Emissions budget 2	Emissions budget 3
All gases, net (AR5)	290 $MtCO_2e$	305 $MtCO_2e$	240 $MtCO_2e$
Annual average	72.5 $MtCO_2e$	61 $MtCO_2e$	48 $MtCO_2e$

Emissions reduction plans are then produced for each budget period, setting out the policies and strategies for meeting the relevant emissions budget, and can include contributions towards the two subsequent emissions budgets.

The first ERP was published in 2022 with a mix of policies and actions to meet the first emissions budget, and to contribute towards the second and third emissions budgets.

[16] The science linking extreme weather and climate change | Ministry for the Environment

The role of the Climate Change Commission

The Climate Change Commission is also established under the Climate Change Response (Zero Carbon) Amendment Act 2019 to provide independent, expert advice to the Government on mitigating climate change and adapting to the effects of climate change; and to monitor and review the Governments progress towards its emissions reduction and adaptation goals.

The Act provides for a regular series of advice from the Commission, and that the Commission undertake engagement and consultation to inform its advice. There is a requirement on the Government to respond to the Commission's advice, and to take it into consideration when making related decisions under the Climate Change Response Act.

The Commission consulted on its draft advice for the second ERP in April to June 2023 and is due to publish its final advice by the end of this year, though it is expected it will deliver it earlier.

Upcoming advice from the Climate Change Commission

2023	Due Dec	• Policy direction for the second emissions reduction plan
2024	Due March	• Annual recommendations on NZ ETS unit limits and price settings
	Due mid-year	• First annual emissions reduction monitoring report • First biennial national adaptation plan progress report
	Due Dec	• First review of the legislated 2050 target • Review the inclusion of international aviation and shipping emissions in the legislated 2050 target • Advice to set the fourth emissions budget (2036-2040), including any recommendation to revise any existing notified emissions budgets • Advice to inform setting New Zealand's second NDC
2025	Due March	• Annual recommendations on NZ ETS unit limits and price settings
	Due mid-year	• Annual emissions reduction monitoring report
2026	Due March	• Annual recommendations on NZ ETS unit limits and price settings
	Due mid-year	• Annual emissions reduction monitoring report • Biennial national adaptation plan progress report • Second National Climate Change Risk Assessment

Appendix 3: International commitments

The Paris Agreement

New Zealand is a signatory to the Paris Agreement, a legally binding international treaty on climate change that came into force in 2016. The Agreement has an overarching goal to keep the global average temperature to well below 2°C above pre-industrial levels, while pursuing efforts to limit the temperature increase to 1.5°C. It also seeks to strengthen the ability of countries to deal with the impacts of climate change, and make sure that financial flows support the development of low-carbon and climate-resilient economies. Emissions from international aviation and shipping were excluded from the Paris Agreement.

New Zealand has set an NDC for the 2021-2030 period under the Paris Agreement. The headline target is a 50% reduction of emissions (from 2005 levels) by 2030, and covers all domestic sectors and all greenhouse gases. This target will need to be met through a combination of domestic action to reduce emissions and international co-operation.

New Zealand will submit its first Biennial Transparency Report under the Paris Agreement in 2024. This will report on progress towards meeting the first NDC, and on actions taken and progress in climate change mitigation, adaptation measures and support provided or received.

The second NDC is due in 2025 to cover the period starting from 2031.

Global Research Alliance on Agricultural Greenhouse Gases

The GRA on Agricultural Greenhouse Gases was formed in 2009 to find ways to grow more food without growing greenhouse gas emissions. The GRA promotes international cooperation and investment in research to mitigate the effect of agricultural greenhouse gas emissions.

New Zealand engages extensively through the GRA. It gives New Zealand scientists the opportunity to work with world-renowned institutes and researchers. It also helps them to share knowledge and expertise with the global science community. New Zealand hosts and leads the GRA Secretariat and Special Representative, and co-chairs the Livestock Research Group, the Inventories and Nationally Determined Contributions Network, and the Indigenous Research Network.

Food and Agriculture for Sustainable Transformation

The FAST initiative was launched in November 2022. The FAST Partnership is supported by the UN's Food and Agriculture Organization, and can enhance international collaboration to support the implementation of more effective and efficient action in countries to mitigate emissions from agriculture while supporting adaptation efforts to create a sustainable and climate resilient agriculture sector.

Currently, New Zealand has no official commitments under the FAST Partnership, but has attended technical meetings to shape the initiative. This is key as there are a range of international initiatives that if were coordinated to work better together, could drive more sustainable agricultural action.

Agriculture Innovation Mission for Climate

The AIM for Climate is a global initiative to encourage investments in climate-smart agriculture and food systems innovation to accelerate climate action. New Zealand has invested into agricultural climate research, development and innovation through AIM for Climate 'Innovation Sprints' - research projects which are promoted to crowd-source funding from both public and private sector. Commitments include reporting on New Zealand's increased investment numbers annually to the AIM for Climate Initiative as a contribution to its headline targets for global investment.

Global methane pledge

New Zealand is a participant in the Global Methane Pledge – agreeing to take voluntary actions to contribute to a collective effort to reduce global methane emissions at least 30% from 2020 levels by 2030. The key sectors this targets is energy, waste and food and agriculture, recognising that the energy sector has the greatest potential for targeted mitigation by 2030. New Zealand has developed a Methane Emissions Reduction Action Plan to guide its actions, which include both domestic and international actions [refer - MFAT1787 - Methane Emissions Reduction Plan A3-v8.pdf]

International Civil Aviation Organisation

The ICAO, of which New Zealand is a member state, has adopted a long-term global aspirational goal for international aviation of net-zero carbon emissions by 2050. ICAO is pursuing a basket of measures including aircraft technology improvements, operational improvements, sustainable aviation fuels, and market-based measures. New Zealand has joined its Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

International Maritime Organization

The IMO, of which New Zealand is a member state, recently adopted its revised international strategy to reduce emissions from international shipping. The strategy keeps the international shipping sector on a 1.5C pathway to achieve net-zero by or close to 2050, with intermediate 2030 and 2040 checkpoints. A timeframe was agreed to develop measures to operationalise the strategy, with adoption by late-2025, and entry into force in 2027. Potential measures include a pricing mechanism to make zero carbon fuels price competitive with fossil fuels and a global fuel standard to reduce the GHG intensity of fuels. This will have implications on New Zealand as a remote exporting nation and will be important to plan ahead for this.

Clydebank Declaration for green shipping corridors

Complementary to the IMO, New Zealand joined this declaration under which countries collectively seek to establish zero-emissions shipping on six key trade routes by 2025, with more by 2030. New Zealand is collaborating with Australia and Singapore (as close trading partners and Clydebank Declaration signatories) on this initiative.

Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles

New Zealand is one of 27 countries to join this global MOU, under which countries commit to working together to enable 100% zero-emission new truck and bus sales by 2040 with an interim goal of 30% zero-emission vehicle sales by 2030.

Net-Zero Government Initiative

Through the NZGI, countries are leading by example to achieve net-zero emissions from national government operations by no later than 2050. NZGI members, including New Zealand, commit to take action in recognition of government sustainability's critical role in catalysing economy-wide shifts to reach country-level and global climate targets. Participating countries commit to:

- Achieving net-zero emissions from national government operations by no later than 2050;
- Developing a roadmap that outlines the pathway for achieving the net-zero commitment, considering the country's individual context, and identifying interim targets as appropriate; and
- Publishing a roadmap upon completion.

Paper 1.3

Climate
IEB UNIT

Updated emissions projections: Key findings for the Board

November 2023

Draft at 27/11/23

These projections are produced through the following process:

- MPI, MBIE, MfE and MoT provide updated projections to MfE for each of their sectors (transport, agriculture, forestry, energy and f-gases, and waste).
- Agencies verify the accuracy of this data within their own sectors and sign it out before providing it to MfE. MfE then combines this information to create the aggregate projections used in these slides.
- This analysis is undertaken by MfE and is then peer reviewed by a cross agency working group, and by a separate staff member to confirm the accuracy of the aggregate information.

Purpose and context

Context:

Updated projections were last provided to the Board and Ministers in May 2023. Since then, the CCIEB Unit and MfE have led work with agencies to improve our modelling approach, including; better alignment of modelling assumptions across sectors, improved impact assessments of policies, and assessing a wider range of policies.

Agencies have also been able to make initial estimates of the impact on emissions of the incoming government's plans to discontinue three specific actions included in the first ERP. The impact of the broader commitments of the incoming government's plan to reduce emissions (e.g. investment in renewable energy and EV charging) will be included in projections once sufficient policy detail is available.

Purpose: This slide pack sets out for the Board the updated projections of emissions and an assessment of our ability to meet the first three emissions budgets.

These slides aim to:

- ***Inform the Board*** of the latest emissions projections and their limitations, which are particularly significant for the second and third emissions budgets.
- ***Provide the basis for agencies' initial advice to Ministers*** addressing our position on EB1.
- ***Set out our approach to build more robust*** projections for emissions budgets 2 and 3 before advising Ministers on this position.

This slide pack covers:

- The key assumptions and limitations of emissions projections.
- Updated projections for EB1 and EB2 under policy settings at 1 July 2023, the potential impact of some incoming government policies (from National's *Blueprint*) and potential measurement changes expected for the agricultural sector as part of the 2024 inventory.
- Projections for EB3 and the significant limitations they face.

Limitations to these projections

Emissions projections are always 'snapshots in time' and are subject to uncertainty and change over time. Models are simplified versions of the real world and are therefore limited in their ability to make future predictions. There are three main factors that affect projections, not all of which can be modelled:

a) ***external factors*** (e.g., economic activity, oil prices, hydro lake inflows etc). There is inherent uncertainty in forecasting these factors, including economic activity especially in high emissions intensity industries, energy and commodity export prices, and technology development and uptake.

b) ***policies to reduce emissions*** (e.g., those in our first emissions reduction plan) which are subject to assumptions over their timing and effectiveness.

c) ***how we measure emissions*** (methodology). Updates are made annually to improve the way emissions are measured, following UNFCC and IPCC guidelines.

Despite these limitations, projections and abatement estimates are a key tool for assessing whether policies are likely to be sufficient to meet emissions budgets.

This update, as of November 2023, sets out a range of projections with low and high emissions scenarios, to better reflect the uncertainty around projections. The upper and lower bounds of these ranges do not represent the lowest and highest possible future emissions levels, but represent a range of different modelling assumptions.

The projections for EB3 are highly uncertain because the transport and energy projections **assume a rising ETS price path.** A continuously rising price pathway does not reflect current policy settings. NZ ETS prices are expected to peak and then fall, driven by the supply of NZUs into the NZ ETS (due to forestry). This **means projections are likely to overstate emissions reductions for EB3.** The projection ranges provided do not account for this issue.

The sufficiency progress **analysis has had considerable improvements since May 2023, affecting the overall assessment of our ability to meet emissions budgets**. Rather than a separate 'adding up' exercise of individual policy impact, policies have been modelled through greenhouse gas emission projections which better accounts for how they interact. Agencies have also reviewed and updated their modelling input assumptions.

Process for providing updated and improved emissions projections

Emissions projections are updated annually, with a mid-year 'sufficiency' update to inform the Board's reporting to Ministers:

- New Zealand's official greenhouse gas inventory is updated annually in April. This incorporates methodological improvements in line with the UNFCCC best practice.
- MfE and agencies then work to update emissions ***projections and sufficiency analysis reflecting this latest inventory by January***. These projections are used in the Board's February six-monthly report on the ERP and NAP.
- Alongside this annual process, agencies provide a ***mid-year update of sufficiency analysis*** for the Board's mid-year (August) six-monthly report, to test if there have been material changes to policy settings.

Projections and sufficiency analysis are not updated more frequently because the underlying data informing the models e.g., population growth, GDP, and policy effectiveness do not change substantively over short periods of time, and because of the resourcing required.

Methodological improvements can have a significant impact on our ability to meet emissions budgets and are hard to predict. s 9(2)(f)(iv)

A range of work is underway to provide more robust projections

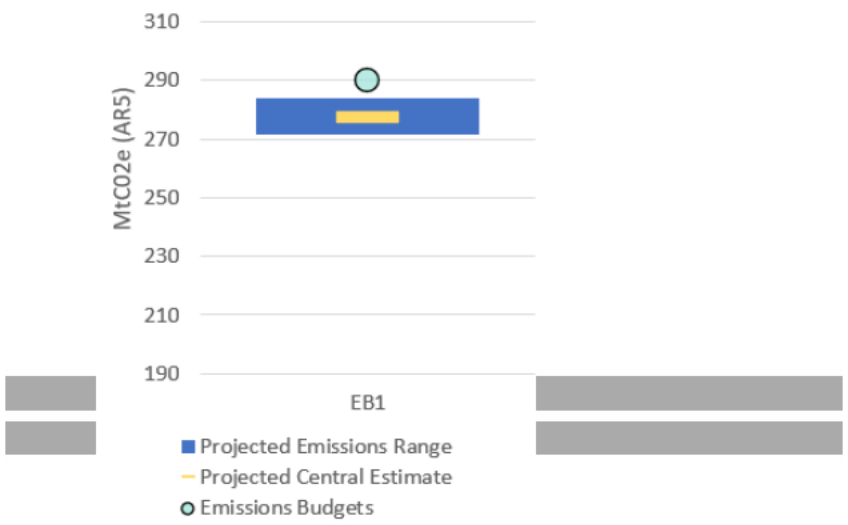
- **Agencies have agreed a 'rising then falling' NZ ETS price pathway should be used in future projections and initial ERP2 modelling.** Current projections are likely to over-estimate emissions reductions in EB3. Further work needs to be done to integrate this price pathway into updated projections (the following slides do not yet represent this).
- **Modelling the Government's preferred policy options for the second ERP.** These projections only estimate the impact of removing some policies signalled by the incoming Government (GIDI, CCD, delayed agricultural emissions pricing).
- Agencies have not yet been able to assess the impact of the new government's wider policy changes to reduce emissions. These include an EV charging network, boosting the supply of renewable energy, and restrictions on whole farm conversions to forestry. These new policies are unlikely to affect EB1, given the time required to establish new programmes and deliver abatement, but are expected to have an impact on EB2 & EB3.
- Through the ERP2 process, agencies will work with the Government on options to achieve future emissions budgets and **provide updated modelling that includes a broader range of the incoming government's policies**.

Projections show we can land within emissions budget 1

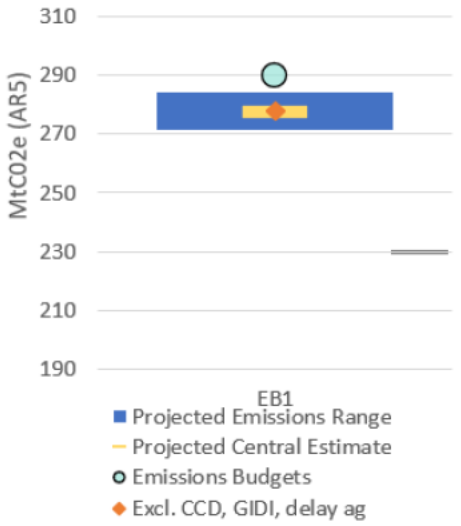
The latest projections find we can land within EB1 (2022-2025), even with risks coming from the impacts of policy and methodological change.

- **Graph 1a** shows that with policy settings at July 2023 we are ***expected to land within EB1.*** Emissions are projected to be within a range of 272 to 284 Mt CO_2e. This is below the EB1 limit of 290 Mt CO_2e, with a 'buffer' of 13 Mt CO_2e (or 4.2%) from the central estimate of the range.
- **Graph 1b** estimates the impact of removing the Clean Car Discount (CCD) and GIDI fund, and delaying agricultural emissions pricing no later than to 2030[1]. The impact of making these ***policy changes is negligible for EB1*** with the central emissions estimate expected to increase by less than 1 Mt CO_2e.
- **Graph 1c** shows the potential impact of 2024 methodological changes in the agricultural sector in EB1 (these are still subject to sign off from MPI). The potential changes to the 2024 inventory will make emissions budgets harder to achieve. The impact of this change is that there will be ***minimal to no 'buffer' between our projected emissions and EB1***. Central projections estimate is 285 Mt CO_2e, with a remaining 'buffer' of 5 Mt CO_2e (or 1.5%) from the EB1 limit.
- We have highlighted these potential agricultural methodological changes because we anticipate the impact on measured emissions to be substantial. The overall impact of methodological changes in 2024 will also depend on changes in other sectors, but these are expected to be smaller scale.

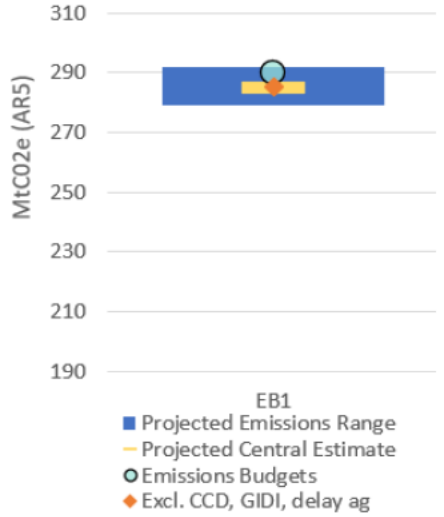
Graph 1a: Projections as of 1 July, based on 2023 inventory



Graph 1b: Projections with 2023 Inventory and showing manifesto policy changes



Graph 1c: Projections with manifesto changes and expected 2024 agriculture methodological changes (subject to signoff from MPI)



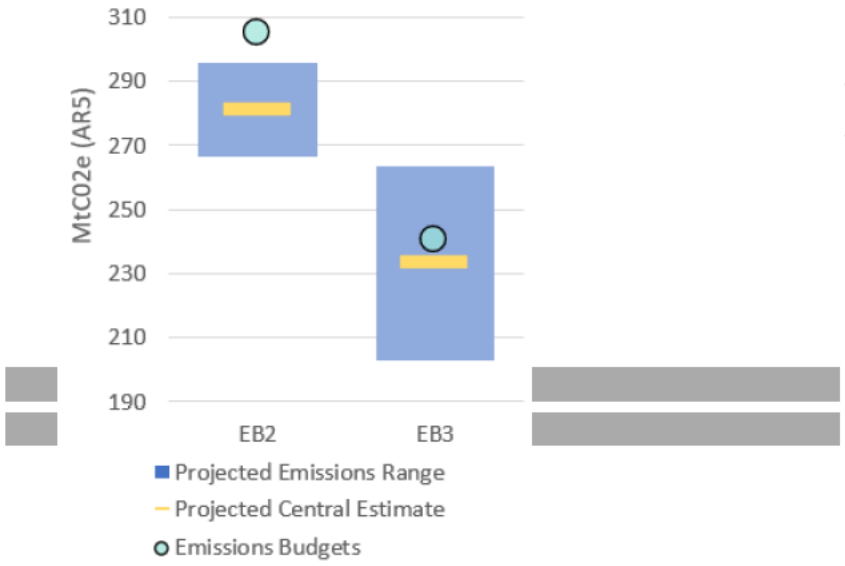
[1]Graphs 1b and 1c assume agricultural pricing from 2029

Projections show we can land within EB2, but EB3 carries considerable uncertainty

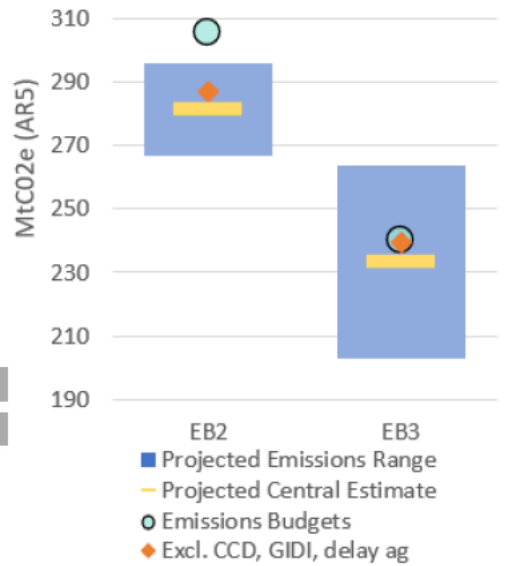
The latest projections find we can land within EB2, although this is highly contingent on policy direction and the impact of methodological updates under current settings. The EB3 chart below is also likely to overstate emissions reductions due to NZ ETS price pathway assumptions and other modelling limitations noted earlier.

- **Graph 2a** shows that with policy settings at July 2023, emissions are ***projected to land within EB2 and EB3 limits***. For EB2, emissions are projected to be below EB2 limit of 305 Mt CO_2e, with a 'buffer' of 24 Mt CO_2e (or 7.8%) from the central estimate. For EB3, the budget of 240 Mt CO_2e is within the projected range, with a buffer of 7 Mt CO_2e (or 2.8%) from the central estimate.
- **Graph 2b** shows that with the impact of removing the Clean Car Discount (CCD) and GIDI fund, and delaying agricultural emissions pricing no later than to 2030, ***EB2 and EB3 are more challenging to achieve***. For EB2, central emissions estimate is 287 Mt CO_2e, leaving an 18 Mt CO_2e (or 6%) 'buffer' from EB2 limits. For EB3, the central emissions estimate is 239 Mt CO_2e, leaving a 1 Mt CO_2e 'buffer' from EB3 limits.
- **Graph 2c** shows that with the potential impact of the 2024 agricultural sector methodology changes, there is ***minimal to no buffer between our projected emissions and the EB2-3 limits***. *For EB2,* central emissions estimate is 296 Mt CO_2e, leaving a 9 Mt CO_2e (or 3%) 'buffer' from EB2 limits. For EB3, the central estimate ***exceeds the emissions budget limit of 240Mt CO_2e by 8 Mt CO_2e (or 3%).***

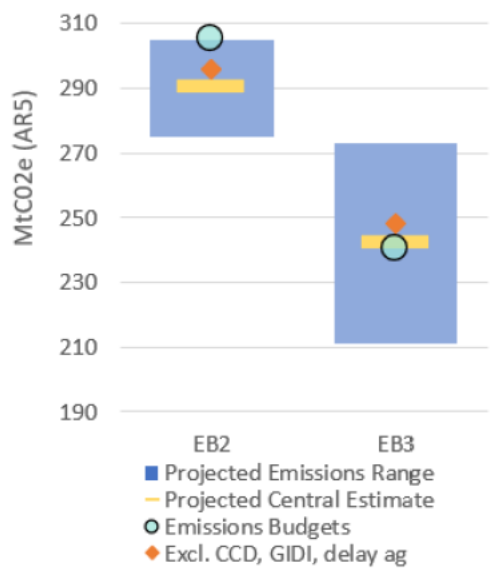
Graph 2a: Projections as of 1 July, based on 2023 inventory



Graph 2b: Projections with 2023 Inventory and manifesto changes

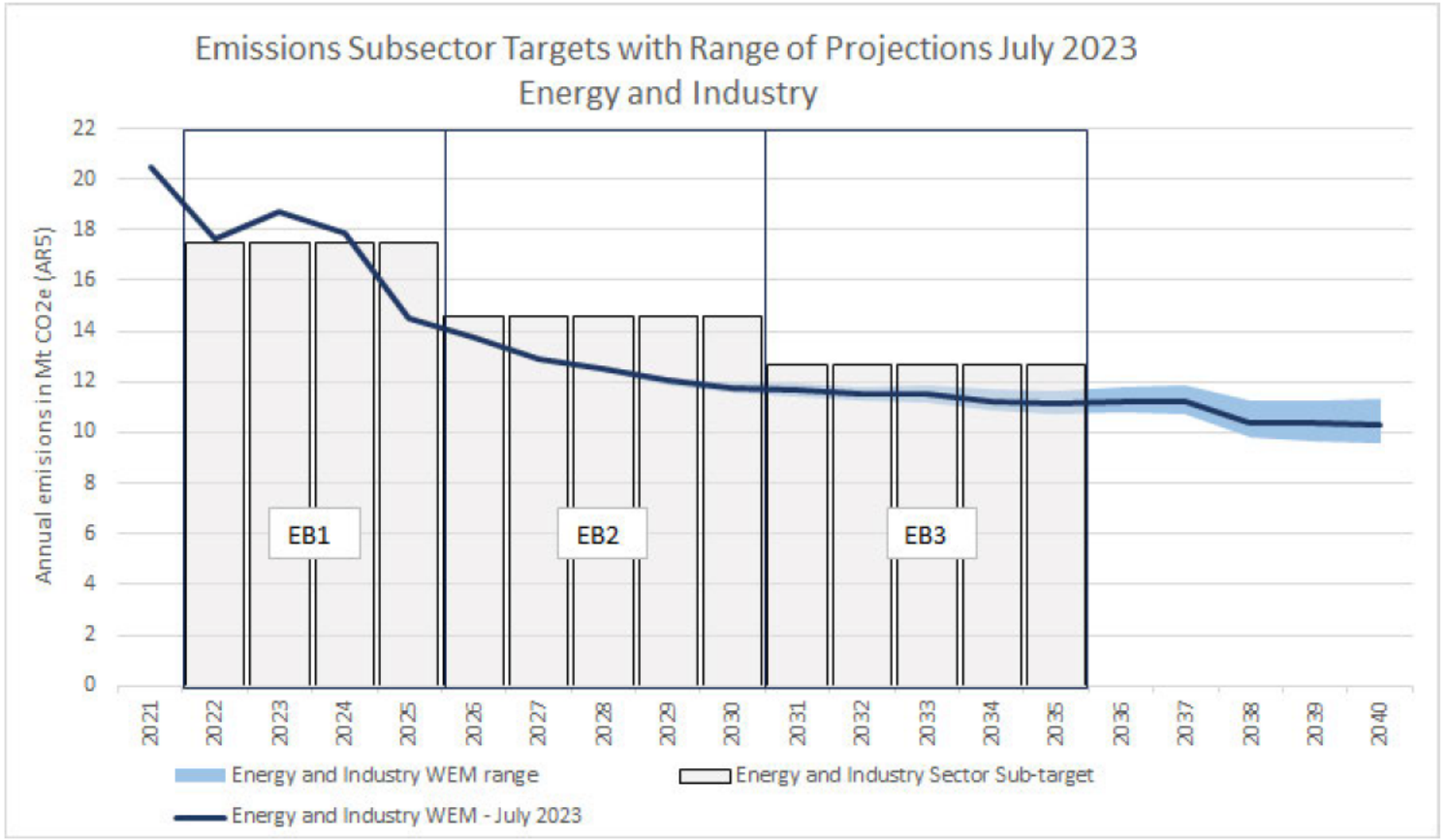


Graph 2c: Projections with manifesto changes and incorporating expected agriculture methodological changes (2024)



Sub-sector projections (as of 1 July)

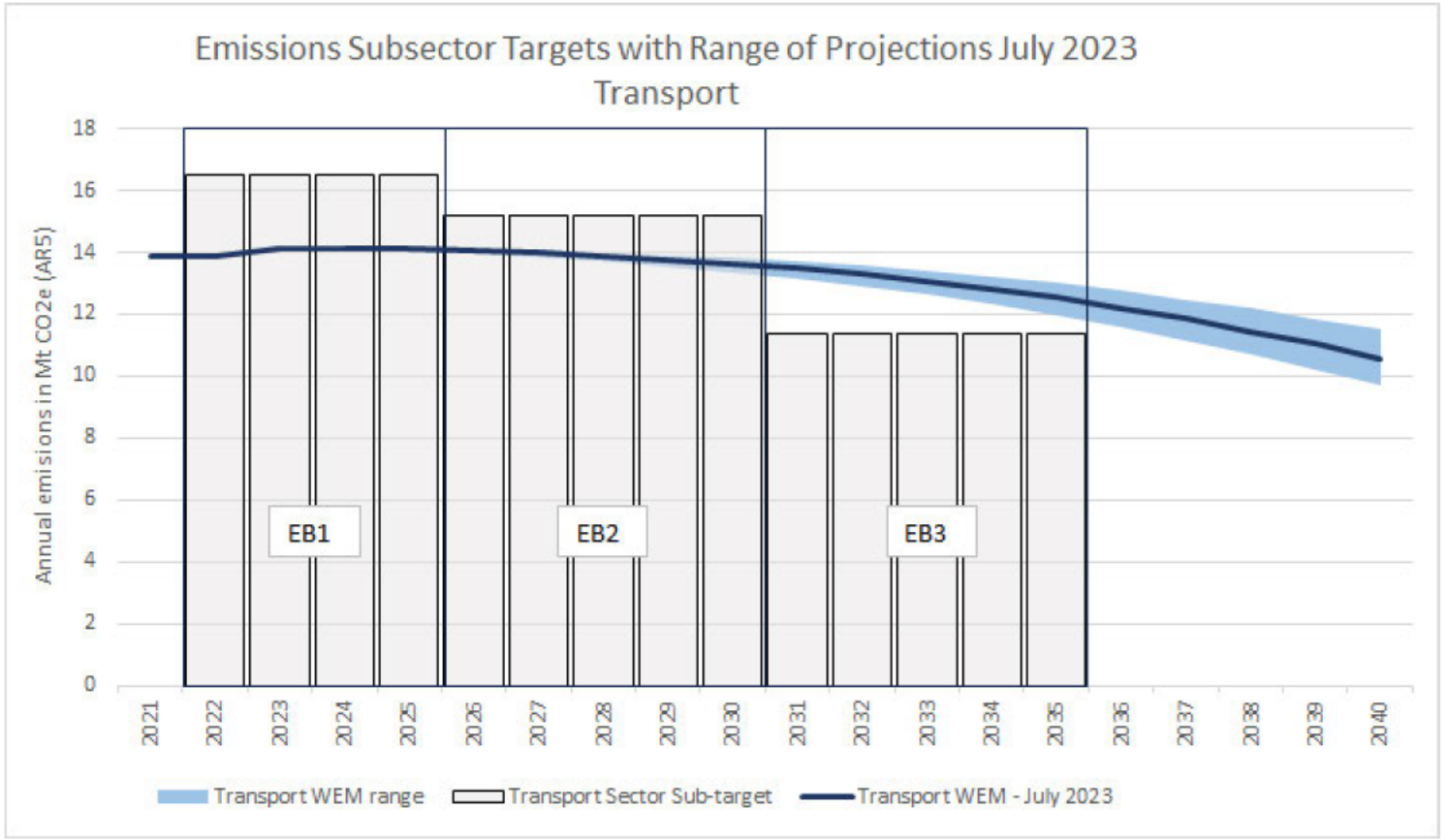
Energy and Industry



Emissions in Mt CO2e (AR5)	Emissions Budget and Period			
Energy and Industry	EB1 2022-2025	EB2 2026-2030	EB3 2031-2035	EB4* 2036-2040
Sector Sub-target	70.1	72.8	63.3	not set
Projections 2023 - existing measures	68.7	62.9	57.0	53.6
Projections range	68.7 to 68.7	62.4 to 63.4	55.4 to 59.0	50.5 to 57.5
Difference to Target -ve is below; red and highlight is above	-1.4	-9.9	-6.3	
Difference to Target range	-1.4 to -1.4	-10.4 to -9.4	-7.9 to -4.3	

Note: Figures have been rounded, and discrepancies may occur between sums of component items and totals. All calculations are done using unrounded figures.

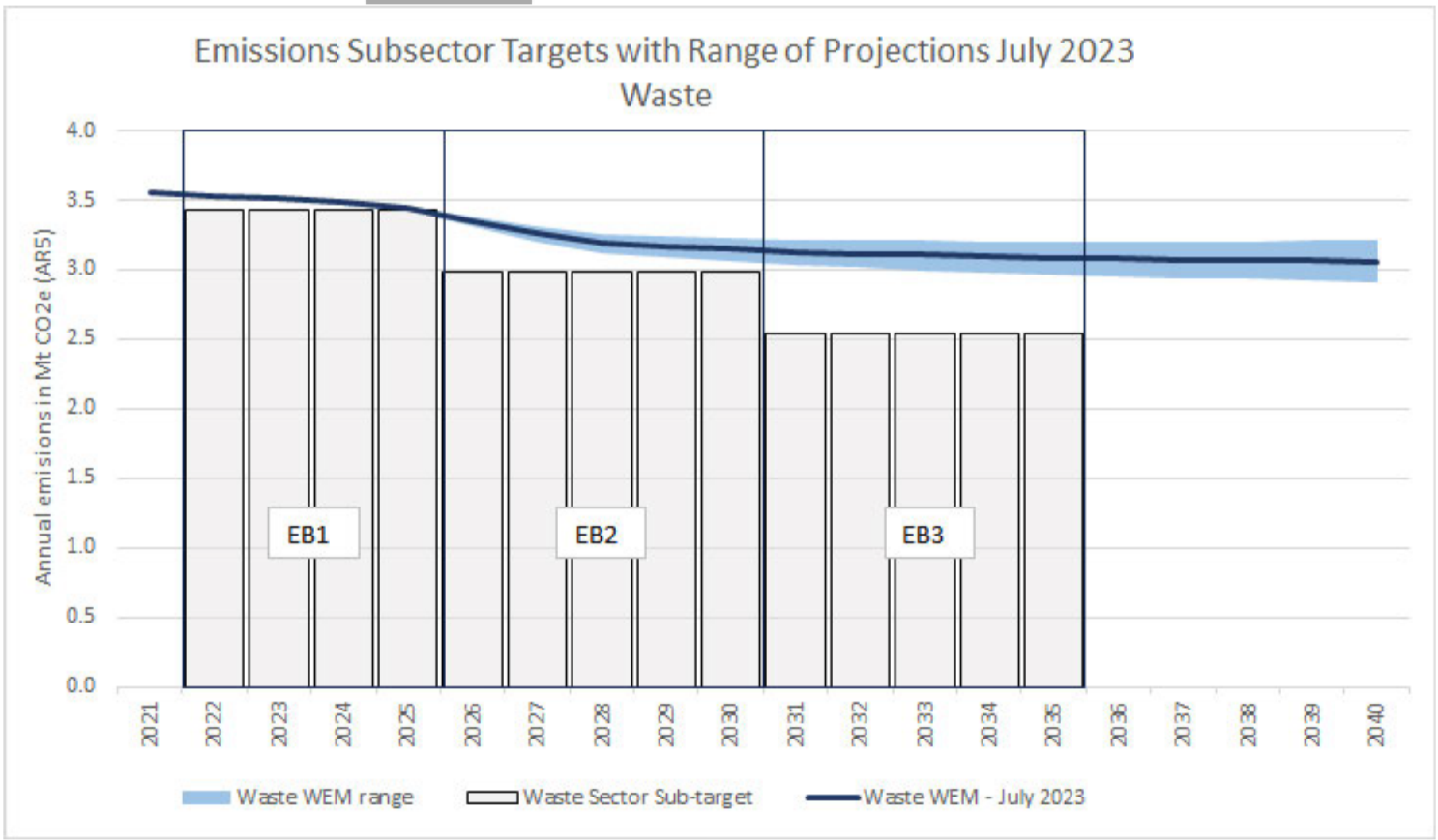
Transport



Emissions in Mt CO2e (AR5)	Emissions Budget and Period			
Transport	EB1 2022-2025	EB2 2026-2030	EB3 2031-2035	EB4* 2036-2040
Sector Sub-target	65.9	76.0	56.8	not set
Projections 2023 - existing measures	56.3	69.3	65.2	57.1
Projections range	56.2 to 56.3	68.4 to 69.9	63.0 to 67.0	53.3 to 60.8
Difference to Target -ve is below; red and highlight is above	-9.6	-6.7	8.4	
Difference to Target range	-9.7 to -9.6	-7.6 to -6.1	6.2 to 10.2	

Note: Figures have been rounded, and discrepancies may occur between sums of component items and totals. All calculations are done using unrounded figures.

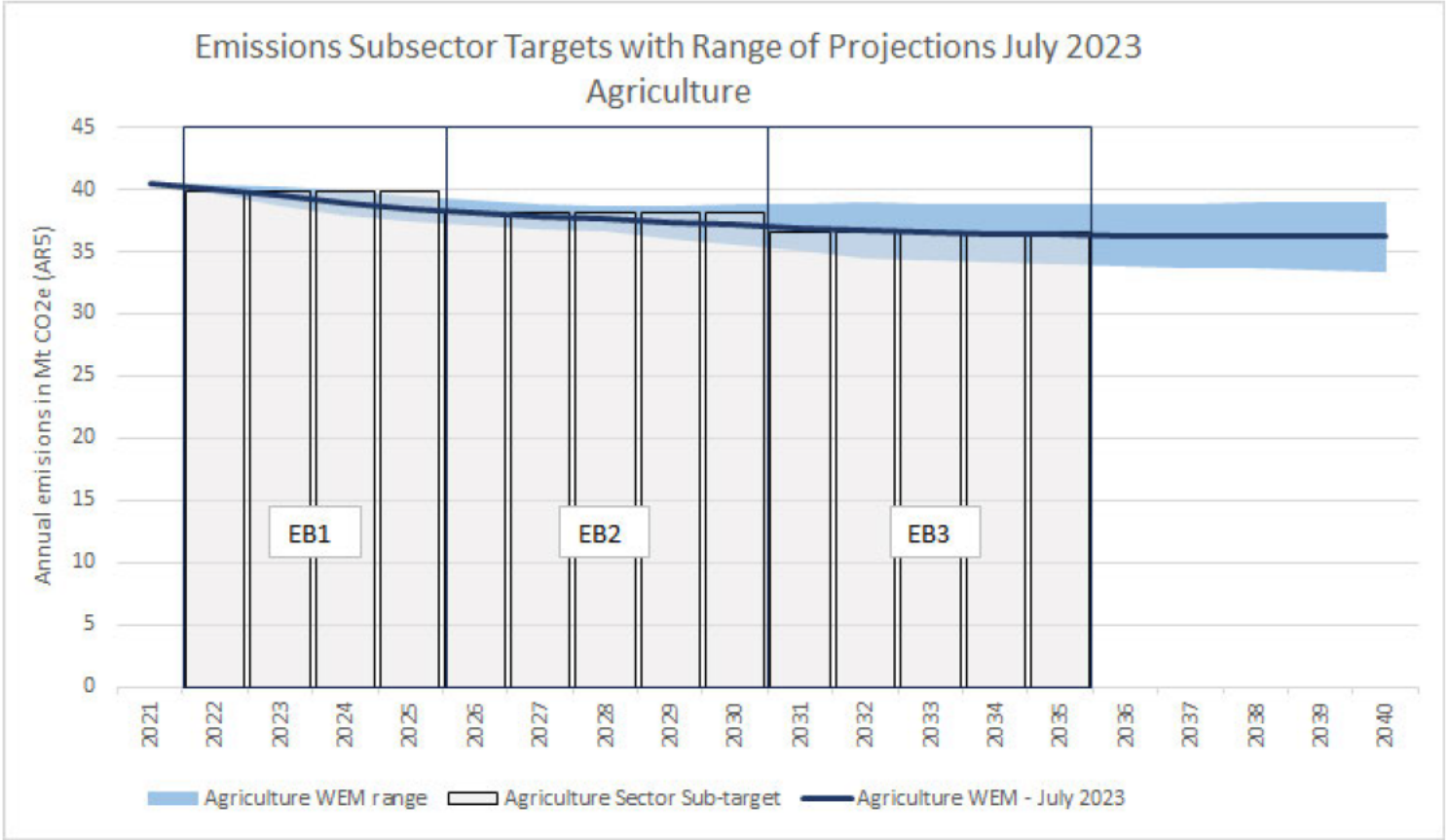
Waste



Emissions in Mt CO2e (AR5)	Emissions Budget and Period			
Waste	EB1 2022-2025	EB2 2026-2030	EB3 2031-2035	EB4* 2036-2040
Sector Sub-target	13.7	14.9	12.7	not set
Projections 2023 - existing measures	14.0	16.1	15.5	15.3
Projections range	13.9 to 14.0	15.8 to 16.4	15.0 to 16.1	14.7 to 16.0
Difference to Target -ve is below; red and highlight is above	0.3	1.2	2.8	
Difference to Target range	0.2 to 0.3	0.9 to 1.6	2.3 to 3.3	

Note: Figures have been rounded, and discrepancies may occur between sums of component items and totals. All calculations are done using unrounded figures.

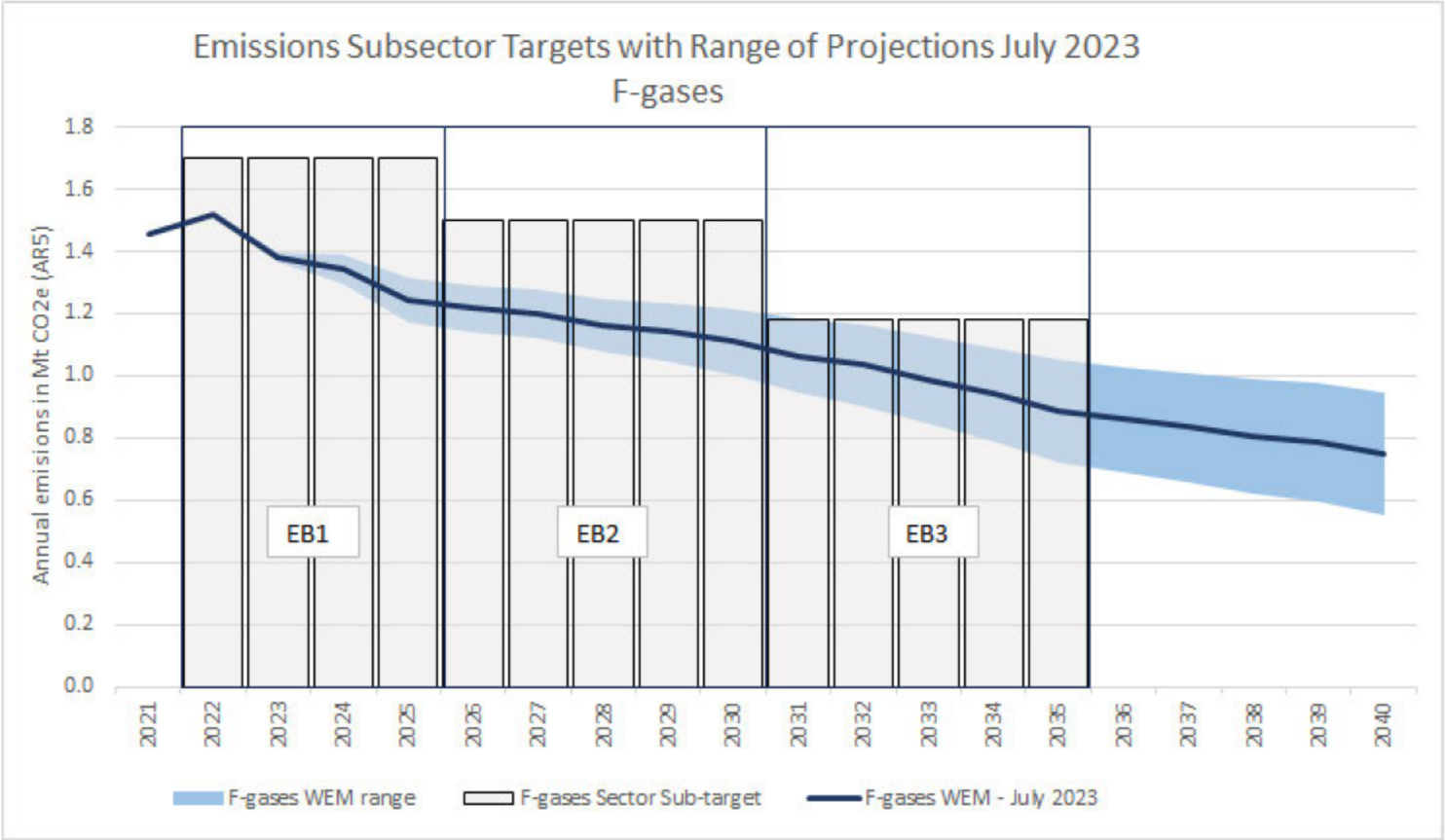
Agriculture (initial)



Emissions in Mt CO2e (AR5)	Emissions Budget and Period			
Agriculture	EB1 2022-2025	EB2 2026-2030	EB3 2031-2035	EB4* 2036-2040
Sector Sub-target	159.4	191.0	183.0	not set
Projections 2023 - existing measures	156.8	188.1	183.0	181.3
Projections range	153.5 to 160.1	182.1 to 194.2	171.8 to 194.1	168.0 to 194.6
Difference to Target -ve is below; red and highlight is above	-2.6	-2.9	0.0	
Difference to Target range	-5.9 to 0.7	-8.9 to 3.2	-11.2 to 11.1	

Note: Figures have been rounded, and discrepancies may occur between sums of component items and totals. All calculations are done using unrounded figures.

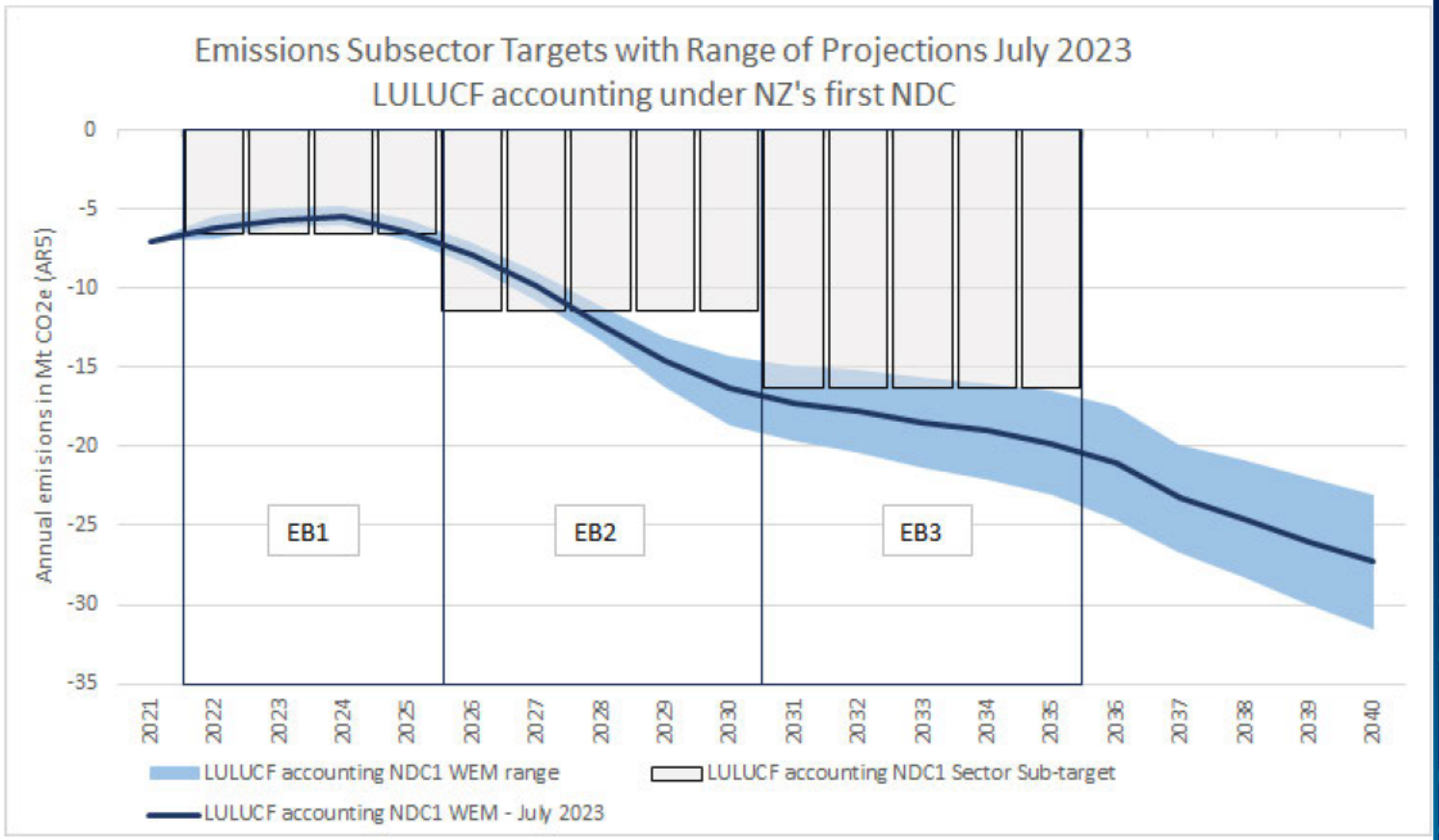
F-gases



Emissions in Mt CO2e (AR5)	Emissions Budget and Period			
F-gases	EB1 2022-2025	EB2 2026-2030	EB3 2031-2035	EB4* 2036-2040
Sector Sub-target	6.8	7.5	5.9	not set
Projections 2023 - existing measures	5.5	5.8	4.9	4.0
Projections range	5.4 to 5.6	5.4 to 6.3	4.2 to 5.6	3.1 to 5.0
Difference to Target -ve is below; red and highlight is above	-1.3	-1.7	-1.0	
Difference to Target range	-1.4 to -1.2	-2.1 to -1.2	-1.7 to -0.3	

Note: Figures have been rounded, and discrepancies may occur between sums of component items and totals. All calculations are done using unrounded figures.

LULUCF



Emissions in Mt CO2e (AR5)	Emissions Budget and Period			
LULUCF accounting used for NDC1	EB1 2022-2025	EB2 2026-2030	EB3 2031-2035	EB4* 2036-2040
Sector Sub-target	-26.4	-57.2	-81.6	not set
Projections 2023 - existing measures	-23.8	-60.9	-92.3	-122.2
Projections range	-26.0 to -20.8	-67.5 to -54.6	-106.4 to -78.2	-141.3 to -103.3
Difference to Target -ve is below; red and highlight is above	2.6	-3.7	-10.7	
Difference to Target range	0.4 to 5.6	-10.3 to 2.6	-24.8 to 3.4	

Note: For the first four-five years soil emissions associated with planting exceed the carbon sequestered by seedling growth, which means that the sequestration associated with afforestation is primarily realised in EB2+. [This also means that the EB1 sector sub target is not a good indicator for the progress of LULUCF removals]

Note: Figures have been rounded, and discrepancies may occur between sums of component items and totals. All calculations are done using unrounded figures.