He Pou a Rangi
Climate Change Commission

Progress report:
National Adaptation Plan

Assessing progress on the implementation and effectiveness of the Government's first national adaptation plan

August 2024

2024 BIENNIAL PROGRESS REPORT

Haere mai – Welcome

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

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Te karere a te Tumu

Hau ana te rongo o ngāi Aotearoa i tōna kaha, i tōna manawaroa me tōna auaha. Engari i roto i ngā tau, kua whakamātauhia ngā tāngata e ngā pānga o te huringa ā-āhuarangi – e tino pērā ana mō ērā i te motu kua patua e te parawhenua, e te horopū, e ngā ahiniwha me te tauraki.

Nā te huringa ā-āhuarangi i nui ake ai, i kaha ake ai anō hoki ēnei tūāhuatanga. Hei tauira, i 2023, i whakapuaki ngā mana whakahaere i ngā tūohotata ā-huarere e 17, te mauhanga nui katoa.

Ahakoa he āwhina te whakahekenga o ngā tukunga waro ki te whakaiti i te whakamahanatanga e āki ana i ēnei tūāhuatanga, e kore e whakakore i ngā pānga katoa. E piki ana ngā moana, e mahana haere ana, ā, e kawa haere ana. Ka pā tonu mai ngā āwhā taikaha. E huri ana te āhua o ngā huarere.

Ka pā tonu aua huringa ki a ngāi Aotearoa me ō rātou ao. He tūraru nui ki ngā kāinga me ngā hapori o ngā tāngata; ki ngā marae me ngā urupā; ki ngā tūāhanga pēnei i ngā rori me ngā whakaratonga wai; ki ngā whānau, ngā kaimahi me ngā pakihi e mahi ana i te whenua; otirā ki te taiao māori.

Ko ngā pānga ka hōrapa, ka mauroa, ā, i te pikinga o te ngoto o ngā pānga ā-āhuarangi, ko ngā utu – ōhanga me ētahi atu – ka piki anō hoki. I tēnei wā, he anga 'utu i a koe e haere ana' tā te motu, e pīkau rā ngā kamupene inihua me ngā paremata kāwanatanga i ngā utu paremata. Heoi anō, he toitū-kore tēnā, i tohua rā e te whakapae a Te Tai Ōhanga ko te utu paremata tōpū mō ngā rawa ōkiko o te parawhenua i Te Rā Whakanui o Tāmaki Makaurau me te Huripari Kapariera, kei te takiwā o te $9-14.5 piriona – ka mutu, kāore i uru atu ngā utu e utua tonutia ana mō ēnei tūāhuatanga.

Ā-motu nei, me urutau tātou. Me whakapakari tātou i tō tātou āheitanga ki te koke tonu i roto i ngā pānga o te huringa ā-āhuarangi, te whakamauru i ngā tūraru, me te nanao atu ki ngā ara wātea.

Mō ngā tau e hia kē nei, kua whakaterea ngā mahi a te kāwanatanga e whakaū ana i tā Aotearoa urutau ki ngā pānga o te huringa ā-āhuarangi. He aha rā ngā kokenga?

Koinei te wāhi ki tēnei pūrongo. Ko tētahi o ngā mahi a te Kōmihana ko te āwhina i tā te tangata kite i ngā ahatanga me te mōhio hoki mēnā rānei e whai hua ana.

E titiro ana tēnei pūrongo ki te mahere urutau ā-motu tuatahi, i whakahaua rā e te Climate Change Response Act – i whakaputaina i 2022 – ki te aromatawai i ngā kokenga e pā ana ki tōna whakatinanatanga me tōna whai hua.

Ko te kitenga matua o tēnei pūrongo e mea ana i tēnei wā kāore te urutautanga e eke ana ki te nui, ki te wawetanga rānei e hiahiatia ana. Ka tohua ngā wāhanga e ono me mahi wawe rawa.

Ka uru atu ki tēnei ko ngā tūāpapa waiwai pēnei i te whakamārama i ngā tūranga, ngā haepapa me ngā hātepe whakamahere, whakaputa whakatau anō hoki; waihoki, te whakamārama i te tuaritanga me te utunga o ngā utu urutautanga, rironga huringa ā-āhuarangi anō hoki.

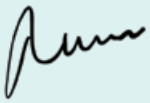
He kokenga pai te pakirehua kiri-hanumi o te wā a te Pāremata e pā ana ki tētahi angamahi urutautanga. Ka whakahokia ngā kitenga o te pakirehua a te Komiti Finance and Expenditure ā te Hepetema, ā, i tōna tikanga ka puta te ture ā te 2025.

Ka whai wāhi ki ngā tikanga whakamahi a te komiti ko ngā kaupapa e hāngai ana ki te hōkaitanga o tēnei pūrongo. Nā reira i tuari mātou i ā mātou kitenga tōmua hāngai ki te komiti i Hune, hei whakaū i tana āhei ki te whai whakaaro atu, ā, hei āwhina hoki i āna mahi hirahira.

Ehara tēnei puka i te kāri pūrongo noa e whakaatu ana i ngā raraunga me ngā aromatawai. Whakamahia ai ki te tautoko i te whanake tonutanga o ngā mahi whakamauru, urutau anō hoki; ki te āwhina i te Kāwanatanga o te wā ki te whakaputa i ngā whakatau mātau e pā ana ki te whakatutukitanga o ngā whāinga āhuarangi o Aotearoa; me te tautoko i ngā mahi a ngāi Aotearoa huri noa i te motu kia takatū ai mō te anamata.

Kei te pau haere te wā. Me wā roa e hanga ai i ngā tūāpapa me whai, ā, ki te tōnanawe ngā whakatau, ka iti iho ngā kōwhiringa e wātea ana ki a Aotearoa, waihoki, ka piki te utu. He nui ngā hua whakahoki o te urutautanga ki te haumitanga, ā, he mauroa.

Tērā te hiahia ki te tārewa i aua whakapaunga, e tino pērā ana nā runga i ngā utu noho tiketike me ētahi atu matea nonoi o te motu. Engari i te pae tata me te pae tawhiti, he āwhina te haumi atu ki te urutautanga ki te kaupare me te whakapai ake i ngā urupare ki ngā āhuatanga ā-huarere, te whakahohoro i te taumanutanga, me te whakaheke i ngā pānga ki ngā tāngata, ngā hapori, ngā papanoho, ngā pakihi me te taiao.



Dr Rod Carr, Chair, Tumu
2 o Akuhata 2024

Chair's message

New Zealanders have a reputation for being strong, resilient and innovative. But over the past several years, the impacts of climate change have tested people's mettle – particularly those around the motu who have borne the brunt of flooding, landslides, wildfires and droughts.

Climate change is making events like these more frequent and intense. For example, over the course of 2023, authorities declared a record 17 weather-related states of emergency.

While lowering greenhouse gas emissions will help reduce the warming that is driving these events, it will not eliminate all the impacts. Seas are rising, warming and becoming more acidic. Intense storms will keep coming. Weather patterns are altering.

Those changes will continue to affect New Zealanders' lives and livelihoods. They pose risks to people's homes and communities; to marae and urupā; to infrastructure like roads and water supplies; to families, workers and businesses who make a living off the land; and to the natural environment.

The impacts can be widespread and long lasting, and as the intensity of climate impacts rises, the costs – economic and otherwise – will rise too. Currently, the country largely has a 'pay as you go' model, where insurance and government compensation pick up the tab for damages. However, that is unsustainable, as highlighted by The Treasury's estimate that the total cost of damage to physical assets from the Auckland Anniversary weekend floods and Cyclone Gabrielle was in the range of $9–14.5 billion – and this figure does not include ongoing costs from these events.

As a country, we have to adapt. We have to strengthen our ability to cope with the effects of climate change, mitigate the risks, and make the most of the opportunities.

For several years now, government efforts to help ensure Aotearoa New Zealand adapts to the impacts of climate change have been underway. What progress is being made?

That is where this report comes in. One of the Commission's jobs is to help make sure people can see what is happening and know if it is working.

This report, as required by the Climate Change Response Act, looks at the first national adaptation plan – which was released in 2022 – to assess progress on its implementation and how effective it is.

The key finding of this report is that currently, adaptation is not happening on the scale, or at the pace, that is needed. It identifies six areas where action is urgently needed.

These include vital foundations like clarifying roles, responsibilities and processes for planning and decision-making; and providing clarity on how adaptation-related costs and climate-related losses will be shared and paid for.

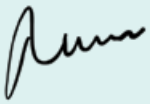
The Parliamentary cross-party inquiry that is underway on an adaptation framework is an encouraging development. The findings of the Finance and Expenditure Committee's inquiry are due in September, with potential legislation expected in 2025.

The committee's terms of reference includes topics that relate to the scope of this report. Therefore, we shared our relevant preliminary findings with the committee in June, to ensure it had the opportunity to consider them and to help inform its important work.

This document is not just a report card with data and assessments. It can be used to support ongoing improvement of mitigation and adaptation work; help the Government of the day make informed choices about how to meet Aotearoa New Zealand's climate goals; and support the efforts of New Zealanders across the motu to prepare for the future.

Time is of the essence. It takes time to build the foundations that are needed, and delaying decisions will leave Aotearoa New Zealand with fewer choices and higher costs. Adaptation can provide great returns on investment that last a long time.

It can be tempting to defer such spending, especially when the costs of living are high and the country has other pressing needs. But in both the short and long term, investing in adaptation will help avoid and improve responses to weather-related events, speed up recovery from them, and minimise ongoing impacts on people, communities, property, businesses and the environment.



Dr Rod Carr, Chair
2 August 2024

Te kupu a te Pou

Nōku ka tīmata ki te tuhi i tēnei karere i te hiku o Hune, e whakaaro ana ahau ki ngā tāngata o Wairoa me ētahi atu hapori i te rāwhiti o Te Ika a Māui, kua whakararuhia nuitia – anō – ō rātou ao, ō rātou kāinga me ō rātou pakihi e ngā huarere taikaha.

I peka atu ahau ki Wairoa i Noema 2023 i te taha o te tīma nā rātou tēnei pūrongo, e ako ai mātou, e kite ai mātou i tā ērā kei te aroākapa o ngā wero urutautanga.

Ā-motu nei, e mōhio kē ana tātou me aha e kauparehia ai, e heke ai anō hoki te whakatūroro me ngā whakararunga nā te huringa ā-āhuarangi.

I whakaatu mai te National Climate Change Risk Assessment i 2020 ngā tūraru, ā, i whakarārangihia e te mahere urutautanga ā-motu tutahi, i whakaputaina i 2022 ngā mahi me ngā kaupapahere e urupare atu ai.

Engari e kitea ana i roto i ngā āwhā o te takurua nei – i roto hoki i ngā kitenga o tēnei pūrongo – kāore te urutautanga e eke ana ki te nui, ki te wawetanga rānei e hiahiatia ana.

E rere ana ngā mahi. Huri i te motu e kitea ana te urutautanga i roto i ngā whakatau ā-rohe a ngā kaunihera, a ngā iwi/Māori, a ngā hapori, a ngā whare ahumoni, ngā rangatira o ngā papanoho me ngā tāngata e pā ana ki ngā wāhi noho me te āhua o te noho, me ngā mahi.

Engari arā tonu ētahi pātai, pēnei i te ara whakaū i te whai hua o ngā mahi urutau; mā wai e utu; me pēhea e utu; me pēhea e whakaheke i ngā tūraru ka pā nui ake ki ngā tāngata, ngā hapori, ngā rāngai me ngā rohe, tērā i ētahi atu; me te nanao atu ki ētahi ara wātea ka tūpono ara ake.

E whai ana tēnei pūrongo – tā mātou pūrongo kokenga mahere urutau ā-motu tuatahi – ki te whakautu i ētahi o aua pātai, me te tautoko i ngā mahi whānui ake ki te whakatika i ētahi atu take matua.

Ka tirohia te mahere urutautanga ā-motu tuatahi ki te aromatawai i ngā kokenga o tōna whakatinanatanga me tōna whai hua.

Koinei te tuatahi i roto i te terenga o ngā pūrongo aroturuki rua-tau ka whai hua ki ngā tāngata me ngā rōpū whakahaere huhua, kaua ko te kāwanatanga ā-motu anake.

Ka āwhina i ngā tāngata kia kitea ai he aha te aha, ā, mehemea e whai hua ana. Mā konei e kitea ai ngā kokenga, e tūtohua ai anō hoki ngā taupā ki te whakatika ake me ngā ara wātea hei nanao atu.

He āwhina tō mātou tūranga aroturuki kia mārama ai ngā mahi āhuarangi. Nā te Pāremata te mahi i tuku ki te Kōmihana kia rite tonu te tuku i ngā pūrongo e pā ana ki te urutautanga me ngā mahi whakaheke tukunga. Nā reira he manatōpū motuhake kei te mahi i ngā mahi aroturuki, e tuku ana i ngā pārongo whakapono me te whakawātea atu kia kitea ai e te katoa.

I tā mātou pūrongo tuatahi, kua aro mātou ki te whakatakoto i ngā tūāpapa pakari hei whakawhanake i roto i te wā. E tōmua ana tēnei pūrongo i roto i te whakatinanatanga o te mahere urutautanga ā-motu tuatahi, ko ana hua – i te nuinga o te wā – ka kitea i roto i ngā tau huhua.

Nā reira, kua hanga mātou i tētahi angamahi aroturuki e tautoko ana i te whakapaitanga o te kounga o te mahere, me te whakarite i a mātou ki te whakawhānui me te whakahōhonu i ā mātou aromatawai i ngā pūrongo anamata.

Kāti, kei te hia mihi ahau ki te katoa kua whai wāhi mai ki te whakatutukitanga o tēnei pūrongo. Koinei te hua o ngā mahi rangahau nui me ngā tātaritanga a ā mātou kaimahi; ngā whai wāhitanga motuhake rētō tae ana ki ngā kaunihera, ngā iwi/Māori, ngā rōpū ā-hapori, ngā rōpū rāngai, me ngā mātanga hangarau; waihoki ngā kupu ārahi me ngā whakaaro o tō mātou Poari me He Pou Herenga (he poari tohutohu Māori ki te Poari). Ka whai hua ō mahi ki te kokenga o ngā mahi koke i ngā whāinga āhuarangi o tō tātou motu.

Jo Hendy, Pou
2 o Akuhata 2024

Chief Executive's message

As I began writing this message in late June, my thoughts were with the people of Wairoa and other communities on the east coast of the North Island, who – yet again – have had their lives, homes and businesses majorly disrupted by a severe weather event.

I visited Wairoa in November 2023 along with the team behind this report, so that we could learn from and get the perspectives of people on the frontline of adaptation challenges.

As a country, we already have a pretty good idea of what needs to be done to avoid and minimise harm and damage from climate change.

The first National Climate Change Risk Assessment in 2020 spelled out the risks, and the first national adaptation plan released in 2022 set out actions and policies to deal with them.

But as this winter's storms have illustrated – and this report's findings show – adaptation is not happening at the scale or pace that is needed.

Things are happening. Around the motu, adaptation is playing out through decisions made locally by councils, iwi/Māori, communities, financial institutions, property owners and individuals about where and how to live and do business.

But big questions remain, such as how to ensure adaptation action is effective; who pays the costs; how the costs will be paid for; how to reduce the risk that some people, communities, sectors and regions will be impacted more than others; and how to leverage potential opportunities.

This report – our first national adaptation plan progress report – aims to answer some of those questions, and to support wider efforts to address other key issues.

It looks at the first national adaptation plan to assess progress of its implementation and how effective it is.

This is the first in an ongoing series of two-yearly monitoring reports that will be of value to a wide range of people and organisations, not just central government.

It helps people see what is happening and know if it is working. It makes progress visible, and helps identify barriers to address and new opportunities to seize.

Our monitoring role helps provide transparency about climate action. Parliament gave the Commission the job of regularly reporting on both adaptation and emissions reduction efforts. This means monitoring is done by an independent body, giving people information they can trust and making it publicly available for everyone to see.

In our first report, our focus has been on laying solid foundations to build on over time. The report comes early in the implementation of the first national adaptation plan, where the results of action will – in many cases – take years to play out.

Therefore, we have created a monitoring framework that supports improving the quality of the plan itself, while setting us up to broaden and deepen our assessment in future reports.

Finally, I'd like to express my thanks to everyone who's played a part in delivering this report. It is the result of detailed research and analysis by our staff; extensive targeted engagement including with local government, iwi/Māori, community groups, sector groups, and technical experts; and thoughtful guidance and input from our Board and He Pou Herenga (a Māori advisory body to the Board). Your work will make a valuable contribution to progressing efforts to meet our country's climate goals.

Jo Hendy, Chief Executive
2 August 2024

Mō He Pou a Rangi Climate Change Commission

He hinonga Karauna motuhake te Komihana nei a He Pou a Rangi i whakatūria e Te Ture Urupare Āhuarangi 2002 (te Ture) hei:

- whakarite i te kupu-akiaki motuhake, whai taunakitanga hoki mā ngā kāwanatanga hou, mō te whakamauru i te huringa āhuarangi (tae ana ki te whakaheke i te tuku haurehu kati mahana) me te urutau ki ngā whiunga o te āhuarangi
- aromatawai, hei arotake hoki i te anga whakamua o te whakaheke tukuwaro me te whakawhiti ki te rehu tika.

Kua ū ngā kāwanatanga hou ki te whakaheke i ngā haurehu whakapoke-āhuarangi o Aotearoa me te urutau ki ngā pānga o te huringa āhuarangi. Tukua ai e te Kōmihana ngā pārongo tapatahi e pā ana ki ngā kōwhiringa me urupare rā e te kāwanatanga o te rā. Mā tō mātou motuhaketanga e mōhio ai a Aotearoa – me te ao – ki te motuhenga o ngā mahi huringa āhuarangi o Aotearoa.

Ko te hōkaitanga me ngā angawā kua whakaritea mō ngā aroturukitanga me ngā kupu āwhina a te Komihana, kei roto tonu i te Ture. Kei te Minita Āhuarangi te tikanga rā kia tono motuhake ki te Kōmihana mō tētahi kupu akiaki motuhake.

Kei te Ture te mana ki te Komihana kia tō māi i te taunakitanga tika o te wā, te tātaritanga me te whakaaro whānui ki ngā whiunga a te āhuarangi, ka mutu, ki te pānga ki a Aotearoa ā-tairoa nei.

Kei te Ture hoki te tohutohu i a mātou kia whai whakaaro ki te hononga a te Karauna ki te Māori, ki te ao Māori me ōna tino pānga ki te iwi Māori, i ā mātou mahi. Tuia rā ko te whakawhanake i ētahi hononga pono ki te iwi Māori, te mahi kia mātau ki ngā whakaaro whānui, ki ngā hiahia me ngā awhero o te iwi Māori, te mōhio ki te mana me ngā tikanga o te iwi Māori, ka mutu, kia tika te rapa o te hononga e tika ai te urunga ki o mātou mahi.

Kāore mātou e whakatakoto kaupapahere, ehara hoki i te mea me whai te Kāwanatanga i ā mātou kōrero āwhina. Heoi anō, e ai ki te ture, me tāpae te Kāwanatanga i ā mātou pūrongo aroturuki ki te Pāremata, me te urupare tūmatanui mai mā te tuhi. Ka āwhina ēnei haepapa ki te whakaū i te āta arohia o ngā kōrero āwhina motuhake e pā ana ki te urupare huringa āhuarangi o te motu e ngā Kāwanatanga hou.

E aro ana ngā pūrongo aroturuki me ngā kōrero āwhina a te Kōmihana ki ngā hua ka taea mā ngā mahi, ngā kaupapahere hoki a te kāwanatanga, me ngā kōwhiringa e wātea ana ki te hunga whakatau – tae ana ki ngā ara me ngā tūraru ka tāpaetia e ia kōwhiringa. Ko te whāinga ko te tautoko i te Kāwanatanga ki te whakatutuki i tana tūranga i raro i te Ture, tae ana ki te whakatutuki i ngā tahua tukuwaro me te whāinga o 2050, me te tuku i a ngāi Aotearoa ki te whakarite, ki te urutau anō hoki ki ngā pānga o te huringa o te āhuarangi.

Ko tēnei te tūāpapa o tā mātou mahere mahi, e tuku ana i te kupu akiaki motuhake, i ngā aroturukitanga whai taunakitanga anō hoki, ki te Kāwanatanga mō tā Aotearoa whakamauru me te urutau ki ngā whiunga o te āhuarangi me te whakawhiti atu ki tētahi anamata tōnui, āhuarangi-pakari me te tukuwaro iti.

Kei tā mātou pae tukutuku ētahi pārongo anō e pā ana ki te hōtaka mahi a te Kōmihana, kei www.climatecommission.govt.nz

About He Pou a Rangi Climate Change Commission

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

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

Successive governments have committed to reducing Aotearoa New Zealand's climate-polluting gases and adapting to the impacts of climate change. The Commission provides impartial information about the choices the government of the day has to respond to climate change. Our independence provides assurance to New Zealanders – and internationally – about the credibility of Aotearoa New Zealand's action on climate change.

The scope and timeframes for the Commission's monitoring and advice are set out in the Act. In addition, the Minister of Climate Change may also make a specific request to the Commission for advice on any topic.

The Act requires the Commission to draw from the best available evidence and analysis and think broadly about the impacts of climate change and the implications for Aotearoa New Zealand over time.

The Act also directs us to consider the Crown–Māori relationship, te ao Māori, and specific effects on iwi/Māori in our work. This involves building meaningful and respectful relationships with iwi/Māori, working to understand the diverse perspectives, needs and aspirations of iwi/Māori, recognising Māori rights and interests, and enabling active partnership and participation in our work.

We do not set policy, and the Government does not have to take our advice. However, the Act does require the Government to present our monitoring reports to Parliament, and to respond publicly in writing. These obligations help ensure independent advice on the country's climate change response is given due consideration by successive Governments.

The Commission's monitoring reports and advice focus on the outcomes that can result from government action and policy, and the choices that decision-makers have – including the opportunities and risks presented by different options. The aim is to support the Government to fulfil its role under the Act, including achieving emissions budgets and the 2050 target, and allowing New Zealanders to prepare for, and adapt to, the effects of climate change.

This is the foundation of our programme of work providing the Government with independent, evidence-based monitoring and advice on how Aotearoa New Zealand can mitigate and adapt to the effects of climate change and transition to a thriving, climate-resilient, and low emissions future.

More information on the Commission's work programme can be found on our website, www.climatecommission.govt.nz

He mawhititanga: Te aromatawai i ngā kokenga urutau
At a glance: Assessing adaptation progress

He Pou a Rangi Climate Change Commission (the Commission) is tasked under the Climate Change Response Act 2002 (the Act) to independently report on the progress of the Government's national adaptation plan.

This 2024 report is the first in what will be a repeating series of two-yearly reports assessing adaptation progress. These independent assessments will build into a series of snapshots that will form a picture over time of how Aotearoa New Zealand is tracking towards its climate change adaptation goals. As required under the Act, these reports focus on evaluating the implementation and effectiveness of the first national adaptation plan.

Our first report comes at an early stage in the implementation of the first national adaptation plan, where results of action will, in many cases, take years to play out.

Our approach to this assessment acknowledges this, placing a particular focus on the quality of the plan itself and whether it has the potential to drive effective adaptation.[i] This is an important part of our assessment of the plan's effectiveness.

We also assess how implementation of the actions in the plan is progressing, and what early progress can be observed towards achieving the plan's 20 objectives. Our assessment also identifies barriers to the plan's implementation and effectiveness, and recommends how those might be overcome.

What we found

This summary provides an 'at a glance' view of the key findings from our assessment and lists the Commission's recommendations.

Chapter 3 sets out the findings and recommendations in full, while *Part B* of this report presents the supporting evidence.

Key findings from our assessment

Climate change risks are significant and rising, and remain insufficiently addressed by adaptation action in Aotearoa New Zealand. The Commission finds limited evidence that the first national adaptation plan is driving adaptation at the scale or pace needed.

The widespread impacts of climate change in Aotearoa New Zealand have increasing costs across the economy, the environment and society. Proactive action is needed to make communities safer and better places to live and work as the climate changes. However, there is limited evidence that the first national adaptation plan is driving adaptation to climate change at the scale or pace needed.

i. For a description of climate change adaptation, and an outline of what makes it effective, see **Box 1.1** in *Chapter 1: Introduction*.

High priority areas for urgent action to set foundations for effective adaptation

Clarifying roles, responsibilities and processes for planning and decision-making will help Aotearoa New Zealand appropriately respond to adaptation challenges and opportunities.

Existing legislative, planning, and decision-making frameworks are not well-suited to planning for and dealing with changing and uncertain risks from climate change.

The lack of a clear and coherent national framework for adaptation planning and implementation has significant and wide-ranging flow-on effects. The recent announcement of the Finance and Expenditure Committee's inquiry to develop an adaptation framework is an encouraging development.

Clearly setting out how the costs of adaptation and climate-related losses will be shared, and how they will be paid for, will help enable Aotearoa New Zealand to adapt in a more efficient, fair and equitable way.

There is currently no national funding framework for climate adaptation, and no clarity around how adaptation costs will be met. Adaptation in Aotearoa New Zealand is delayed because it is not clear how it will be paid for.

Progress in developing a national funding framework for adaptation has been slow, but recent developments are encouraging. For adaptation to be effective, there needs to be more focus on funding prevention and risk avoidance. New instruments for investing public funds and leveraging private investment in adaptation are also needed.

Ensuring iwi/Māori retain rangatiratanga and can adapt their communities in a way that is consistent with their tikanga, and aligned with their whakaaro tau (priorities) will make adaptation efforts more effective.

Rangatiratanga is important across all facets of climate change response, but it is particularly important in adaptation. Current legislative arrangements are impacting the ability of some iwi/Māori to exercise rangatiratanga and mana motuhake as they adapt and build resilience to climate change.

Data, information and decision-support tools that are high quality, readily accessible and underpinned by science and research are important for enabling decision makers to effectively understand and manage climate risks.

Data, information and decision-support tools are critical for understanding climate risks, what they mean for communities, sectors, or local businesses, and how to adapt to them.

There is progress under the first national adaptation plan on actions that could increase the availability and accessibility of data and information, and provide tools and guidance for supporting risk-informed decision-making. However, underlying issues with the science and research system need to be addressed.

For all New Zealanders to thrive as the country adapts to climate change, it will be important to consistently consider and address equity of impacts (including costs) so that they are not experienced unfairly by particular communities and groups.

The impacts from climate change will not be distributed evenly. At the same time, decisions around adaptation and dealing with loss are often being made in an ad hoc and reactive way.

The first national adaptation plan does not strongly focus on supporting equity or on addressing how impacts are spread across different regions, sectors, communities and generations. Without a clearer and more direct focus on issues of equity, it may fall through the cracks.

To support communities around Aotearoa New Zealand to adapt to the impacts of climate change, more people with the right knowledge, skills and expertise right across the adaptation planning and implementation process will be needed.

Having access to people with the necessary knowledge, skills and expertise is critical to support adaptation planning and action. The first national adaptation plan is driving some progress in addressing this issue. Some important gaps remain.

Important areas of focus for improving national adaptation planning

The first national adaptation plan does not present a clear and coherent plan of action to drive change at the scale and pace required. A more strategic approach to adaptation planning, and to the development of all national adaptation plans, is needed.

Clearer links are needed between climate change risk and impacts, long-term adaptation strategy, and actions in the plan. Timeliness and urgency need to be carefully considered in plans.

Our assessment has identified some improvements that can be made to national adaptation planning to support effective monitoring, transparency, and continual learning and improvement within a dynamic environment.

Some aspects of the first national adaptation plan support accountability and effective monitoring. There are several areas where future plans could be improved.

- The national adaptation plan can be made a living document.
- More precise and outcomes-focused goals and objectives can be identified.
- The delivery milestones for actions in the plan could be made clearer.
- Specific, measurable outcome targets and milestones could be included in the plan.

Our recommendations

Recommendation 1: Enable effective local adaptation planning and action

We recommend that, in the adaptation framework, the Government set out:

a) **a clear legislative mandate for adaptation planning and action at the local level.** The adaptation framework needs to include legal requirements and statutory backing that enables local government to make effective, risk-informed decisions around land use and the natural and built environment that can be implemented.

b) **clear roles and responsibilities at national and local levels.** This includes setting out the respective roles of central and local government, as well as others making decisions on climate adaptation including communities, iwi/Māori, private property owners, insurers and financial institutions.

c) **clear and inclusive processes and methods for adaptation planning and decision-making.** This includes setting out standard processes for key aspects of adaptation planning and action, and how decisions will be made with respect to those processes. This is important for ensuring that approaches across the country meet a consistent standard of robustness, while being appropriate within their local contexts.

We recommend that each of these elements be set out for the following specific processes and areas:

d) **local community adaptation planning.** This includes guidance on how to account for local values and risk thresholds to inform adaptation planning, and clarity around the respective roles and responsibilities of regional councils, territorial authorities, private property owners and iwi/Māori in local community adaptation planning processes and implementation.

e) **planning for managed retreat.** This includes specifying the circumstances under which managed retreat is considered as an adaptation option, how it should be planned for, and the powers for enabling retreat, such as the acquisition and retirement of land, and withdrawal of infrastructure services.

f) **the development, collection and communication of risk information.** This includes the factors set out in Recommendation 4.

Recommendation 2: Provide clarity on how adaptation costs will be shared and met

We recommend that the adaptation framework set out clearly:

a) **how the costs of local adaptation planning and implementation will be shared.** This includes between central government, regional councils and territorial authorities, as well as private property owners. This must include clarity around how costs will be shared for:
   i) adaptation *planning* (including community planning processes)
   ii) the *implementation and monitoring* of adaptation actions, including pre-emptive actions and post-event responses.

b) **how costs of climate-related losses will be addressed and met.** This includes clarity around how both public and private losses will be addressed, and the principles that will guide decisions around compensation. This should include clarity around the costs associated with managed retreat.

To meet future adaptation costs, we recommend that the adaptation framework also set out:

c) **new targeted funding and financing instruments (public and private)** to enable and drive pre-emptive adaptation at the scale needed

d) **how targeted financial instruments could support adaptation**

e) **how private investments can effectively account for risks arising from climate change while supporting inclusive and equitable processes and outcomes**.

Recommendation 3: Ensure iwi/Māori can plan for and carry out adaptation action

We recommend that the legislative framework and institutional arrangements for adaptation include a range of decision-making and funding models, established by central and local government in partnership with iwi/Māori, so that iwi/Māori can plan, carry out and participate in adaptation processes in line with their tikanga and whakaaro tau (priorities).

Recommendation 4: Improve the science and research system to support good adaptation outcomes

We recommend that the Government develop a research strategy for climate adaptation and its data and information needs, and set out a plan for enabling the science and research system to deliver high-quality data and information for public benefit, and to support good climate adaptation outcomes. This includes:

a) investing in increasing the availability and accessibility of high-quality data, information and decision-support tools relevant to climate adaptation

b) reviewing the revenue model for publicly funded science and research to better support public benefit

c) exploring how best to provide continuity in funding for important climate change research and ongoing data and monitoring needs

d) reviewing how public-good science and research funded by the Government is made publicly available.

Recommendation 5: Consider and address the distributional costs and impacts of climate change so that they do not fall unfairly on particular communities and groups

We recommend that the Government put in place tools and measures to consistently consider and address distributional impacts and inequities in all adaptation measures. This includes:

a) developing tools for assessing and understanding the impacts of adaptation policies and measures across different communities and groups

b) implementing targeted measures and ongoing processes to address distributional impacts and inequities resulting from climate impacts and adaptation.

Recommendation 6: Prepare a strategy and plan to develop the climate adaptation workforce

We recommend that the Government prepare a strategy and plan to develop workforce needs related to climate adaptation, and identify the skills and capacity to be developed through the education system, across key professional bodies, and within the science and research system. This should include the needs for:

a) iwi/Māori involvement in adaptation design, planning and implementation

b) local community adaptation planning and engagement

c) emergency preparedness and response.

Recommendation 7: Facilitate access, availability and sharing of resources, expertise and information

We recommend that the Government investigate options to pool and coordinate information and resources to facilitate access, availability, and sharing of expertise and information to support local adaptation planning and action.

Recommendation 8: Make the direction, scale and pace of change required clear

We recommend that, in all national adaptation plans, the Government:

a) identify measurable, time-bound and outcomes-focused targets for adaptation, to make the direction, pace and scale of change needed clear, and help to drive action needed – this should include targets for the short, medium and long term, and cover all outcome areas of the national adaptation plan

b) clearly communicate how and to what extent the package of actions in the plan will address the risks identified through the national climate change risk assessment

c) describe how the package of actions in the plan aligns with adaptation principles, and will avoid maladaptation.

Recommendation 9: Make improvements to support monitoring, and continual learning and improvement within a dynamic environment

We recommend that the Government:

a) **update the table of actions from the national adaptation plan every two years**, recognising that climate impacts, and Aotearoa New Zealand's adaptation response, need to be dynamic
   i) The updated table of actions should reflect updated milestones for when actions will be delivered, as well as discontinued actions.
   ii) Delivery milestones for adaptation actions should be clear and specific. This is important for providing clarity and transparency around when these actions will be delivered.

b) **establish a transparent process for updating the table of actions**, which may require enabling changes to legislation

c) **make national adaptation plan goals and objectives specific, measurable, timebound and outcomes-focused** so they can be effectively monitored against. Goals and objectives should have associated outcomes-focused targets for different timeframes – short, medium and long term.

For more information, see the following sections of the report

***Part A* provides an overview and summary,** including the report's purpose and context (*Chapter 1*); the approach taken to this assessment (*Chapter 2*); and a step-by-step presentation of our findings with related recommendations (*Chapter 3*).

***Part B* provides the evidence for our findings,** including *Chapter 4*: *Te pae tawhiti, te pae tata*, which collates our analysis from a te ao Māori perspective; the review of quality of the plan (*Chapters 5–7*); assessment of progress on implementation (*Chapter 8*); and progress towards delivering the plan's objectives (*Chapter 9*).

Wehenga A:
Te tirohanga whānui
Part A:
The overview

He whakatakinga | Introduction

This is the first report by He Pou a Rangi Climate Change Commission (the Commission) monitoring the progress Aotearoa New Zealand is making on adaptation to climate change. Our task under the Climate Change Response Act 2002 (the Act) is to assess the implementation and effectiveness of the national adaptation plan.

This chapter provides an overview of the purpose of this monitoring report, and context about climate change impacts in Aotearoa New Zealand and the adaptation response that requires. It sets out the Commission's role in monitoring, and how this assessment ties into other parts of the country's climate change response, including to reduce greenhouse gas emissions.

Purpose of the report

The focus of this assessment

This is the first of what will be two-yearly monitoring reports on national adaptation planning. The focus is on assessing the implementation and effectiveness of Aotearoa New Zealand's first national adaptation plan, as required under the Act.

Urutau, ka taurikura: Kia tū pakari a Aotearoa I ngā huringa āhuarangi | Adapt and thrive: Building a climate-resilient New Zealand – New Zealand's first national adaptation plan was delivered in 2022.[1] It is the Government's plan, prepared in response to the climate risks identified in the country's first National Climate Change Risk Assessment in 2020.[2]

This progress report by the Commission is a point-in-time evaluation of that plan. As specified in section 5ZU of the Act, it is focused on evaluating the implementation and effectiveness of the plan, including:

- assessing progress in implementing strategies, policies and proposals in the adaptation plan
- assessing progress on achieving the plan's objectives
- assessing how well the plan responds to the most significant climate risks
- identifying barriers to the plan's implementation and effectiveness – and recommending how those might be overcome.

To be clear about our focus, Box 1.1 provides a description of what adaptation is, and outlines the developing international understanding of the principles of good climate change adaptation. This underlies our assessment of how well the plan sets Aotearoa New Zealand up for effective adaptation over the long term.

Monitoring the first stage of long-term efforts: concentrating on quality and process

This is the first work by the Commission focused on climate change adaptation, and our second monitoring report under the Act (following the July 2024 delivery of our first monitoring report on emissions reduction).

We have set up this 2024 progress assessment as a foundation report. It comes at an early stage in the implementation of the country's first national adaptation plan, where results of action will – in many cases – take years to play out. This means our initial assessment of the plan's effectiveness needs to place a strong focus on the quality of the plan itself, and in particular on understanding the potential for the plan to drive effective adaptation (as defined in Box 1.1).

We have created a monitoring framework that supports this focus, while setting us up to broaden and deepen our assessment in future reports, to bring more focus over time on the delivery of results. See *Chapter 2: Our approach* for more about the framework.

Our aim in this report is to provide independent, evidence-based analysis to support the development of Aotearoa New Zealand's adaptation planning. This report provides information for decision-makers at all levels across the country and transparency about the progress of central government action, and contributes to efforts to continually improve adaptation measures.

Box 1.1: What is adaptation, and what does effective adaptation look like?

These definitions provide clarity about the focus of this assessment. They are based on how adaptation is defined in the global climate change response, and on developing international understanding around the principles of effective climate change adaptation.

Adaptation

Adaptation is the process of adjusting to the actual or expected changes brought about by climate change.

For people, and the systems people create, this means making changes to try to *avoid or minimise* the harm or damage from climate change and its effects – or to *benefit* from opportunities climate change might provide. These could be changes, for example, to laws, policies, practices, processes, as well as to physical structures and the built environment.

In nature, and within natural systems, adaptation can happen by itself through ecological and evolutionary processes, or with human assistance, by helping those systems adjust to climate change and its effects (see also *The value of a proactive approach to adaptation* section below).[3]

The adaptation process has a number of steps, including understanding climate hazards and risks, identifying and evaluating options, developing and implementing an adaptive planning strategy, and monitoring and reviewing progress and adjusting the plan as necessary.

Effective adaptation and good adaptation outcomes

People around the world are looking closely at what is needed to make adaptation to climate change effective, recognising that what makes adaptation work well for everyone in one place will vary depending on circumstances. Two important elements of effective adaptation are that it focuses on reducing climate risks and maintaining flexibility in the face of considerable change and uncertainty.

Much of the recent research focuses on the importance of minimising the potential for adaptation to create (or worsen) inequities and/or different results from what was intended (perverse outcomes).[4] When negative outcomes result from adaptation, it is referred to as 'maladaptation'.

Within Aotearoa New Zealand, different regions, communities, groups, systems and sectors will face different risks from climate change. The challenges can be of many kinds (for instance physical, social, financial or spiritual). There will also be differences in how much harm might come from particular climate-related hazards and risks, because of complex interactions and cascading effects. For example, climate change impacts on transport networks can affect people's access to essential services, social connections, and workplaces, in ways that can in turn lead to significant impacts on their health, welfare and livelihoods.

There is also potential for the effects of climate change to be experienced unevenly across different timeframes. For example, action that may reduce harm in the short term could lead to more significant costs or impacts in the long term. Likewise, action that reduces harm to one group or system could impose greater costs/impacts on to another group.

Our review of international research demonstrates that adaptation has to balance four key elements to be effective. Effective adaptation:

1. reduces climate risk
2. anticipates and accounts for complexities
3. anticipates and accounts for the uncertain nature of climate change risks and impacts
4. aims to avoid maladaptation.

With those points in mind, good adaptation would have these results:

- minimising different forms of harm – including physical, financial, social, ecological, welfare
- minimising harm across different timeframes, including the short and long term, and across generations
- maintaining flexibility in the face of uncertain risks and impacts
- avoiding creating inequities or making existing inequities worse.

See also *Chapter 5: The plan's overall architecture, goals and objectives*.

The context of this report

This section provides an overview of the different ways climate change is affecting Aotearoa New Zealand, including through progressive and ongoing shifts and extreme weather events, as context for this progress assessment. It presents evidence on the increasing cost of impacts, and the need to act with urgency on adaptation. It finishes with an outline of the country's existing commitments to increasing resilience, including the framework around the first national adaptation plan.

Climate change – global system and local impacts

Globally, understanding of climate change impacts is increasing. The Intergovernmental Panel on Climate Change (IPCC) has highlighted the widespread and pervasive impacts climate change is having now on people, ecosystems, communities and infrastructure.[5] The effects on people and communities in the short term will depend mostly on how exposed and vulnerable they are to climate-related hazards. The IPCC notes, however, that over the medium to long term, the scale of the damage will depend strongly on the action the world takes to reduce emissions, and to adapt.[6]

Annual average global temperatures are *on the verge* of exceeding 1.5°C above pre-industrial levels, bringing more extreme, widespread and potentially irreversible impacts.[7] It is in this context that the IPCC notes that adaptation is increasingly urgent – alongside efforts to reduce emissions globally as quickly as possible – because there is a 'rapidly narrowing window of opportunity', with the range of adaptation options becoming more limited as temperatures increase.[8]

Climate change is bringing ongoing changes to Aotearoa New Zealand

Aotearoa New Zealand is already experiencing the impacts of a changing climate. The physical shifts are far reaching, affecting the natural environment and people alike. They include increased frequency and severity of extreme weather events, and also progressive and ongoing changes such as rising average temperatures and sea levels, and ocean acidification. This section provides an overview of some of the key changes now and into the future, and how they can impact natural and human systems.

The country has warmed by just over 1°C since 1909. Eight out of the ten warmest years on record have happened within the last decade, with record-breaking heatwaves becoming four to five times more likely over that time. The country is also seeing less snow and ice and having fewer frost days.[9]

Rising sea levels are important to a country with a large amount of coastline and many coastal communities. Globally sea levels have risen by about 20 centimetres since the early twentieth century – driven by thermal expansion as oceans get warmer, and by melting icesheets and glaciers. Sea levels are continuing to rise on average about 3.5 millimetres each year. The scale and pace of that change is likely to increase.[10]

Sea levels around Aotearoa New Zealand are expected to rise by around 5–10% more than the global average.[11] Local geology, natural features and changes that people have made to the landscape will affect the rate of change in specific locations. For example, in some places where land is subsiding the annual rate of sea-level rise could be double the national average.[12]

The scale of potential impacts on ecosystems, people, livelihoods and infrastructure will also vary as rising sea levels interact with and amplify other risks and hazards, including coastal flooding, coastal erosion, and rising groundwater.[13] Parts of the country with lots of people and built assets in low-lying and coastal areas – such as parts of Waikato, Bay of Plenty, Hawke's Bay, Wellington, Canterbury and Otago – are likely to be particularly affected as they face increasing exposure to risk as sea levels rise.[14] In some places, coastal transport networks are more exposed than the properties they serve. This means that some people could become cut off from essential services and their communities many years before their properties themselves are affected.[15]

Climate change will also have major impacts on oceans, and on the wider natural environment – including on Aotearoa New Zealand's indigenous ecosystems. This will lead to significant effects on the diverse range of species these environments are home to. It will also affect the many sectors that depend on Aotearoa New Zealand's natural environment, including tourism, agriculture, forestry and fisheries.

Ocean acidification is another ongoing process driven by climate change that will have – along with marine heatwaves – major effects across the whole marine ecosystem. As concentrations of carbon dioxide in the atmosphere increase, more is absorbed into oceans, making them more acidic. A more acidic environment can have significant effects on marine ecosystems. It can make it difficult for organisms with carbonate shells to grow and maintain those shells, and will likely have impacts on plankton – which play an important role in ocean ecosystems and processes.[16] If the health of marine ecosystems declines as oceans become more acidic, this will have significant impacts on communities that depend on kai moana, as well as on the productivity and viability of sectors that depend on marine ecosystems, such as fisheries and aquaculture. A recent NIWA study showed that the ocean acidity of sub-Antarctic waters near Aotearoa New Zealand increased by an average of almost 9% between 1998-2020 – which is in line with the global average.[17]

Climate change is bringing more frequent and extreme weather events to this country

The frequency and severity of extreme weather events will increase in Aotearoa New Zealand with climate change. The country is expected to get more storms and periods of extreme rainfall, as well as more droughts and heatwaves. These events make other hazards more likely, including flooding, landslides and wildfires.

The last year provided examples of what the country is likely to face as average temperatures continue to increase. In January 2023, central Auckland received almost half its usual annual rainfall in a single month. On 27 January parts of Auckland experienced 280 millimetres of rain in less than 24 hours, with 211 millimetres falling in less than six hours – leading to widespread flooding, landslides, and devastation.[18] Less than one month later, Cyclone Gabrielle brought torrential rain and flooding to many parts of the North Island. Parts of Hawke's Bay recorded around a quarter of their usual annual rainfall over the course of the storm, with more than 500 millimetres of rain falling in some areas.[19]

For some regions, such as Tairāwhiti/Gisborne on the east coast of the North Island, Cyclone Gabrielle was just one of many heavy rainfall events in close succession. The frequency of such events can affect the severity of impacts. For example, the amount and intensity of rainfall, and how waterlogged the ground is, will affect the distribution and intensity of landslides.[20] Also, if communities do not have time to recover in between events, the capacity to cope may be severely affected.

The warming the world has already experienced has made extreme rainfall events more likely and more intense.[21] Researchers estimate the extreme rainfall experienced during Cyclone Gabrielle was up to 20–30% more intense and up to four times more likely because of climate change.[22] Global analysis indicates that extreme rainfall events that may once have been expected to occur once every 100 years in Aotearoa New Zealand are projected to happen on average every 72–80 years by about 2025, and every 45–76 years by 2050 – depending on how quickly the world reduces emissions.[ii,23] Extreme wind speeds around the country are also expected to increase with climate change.[24]

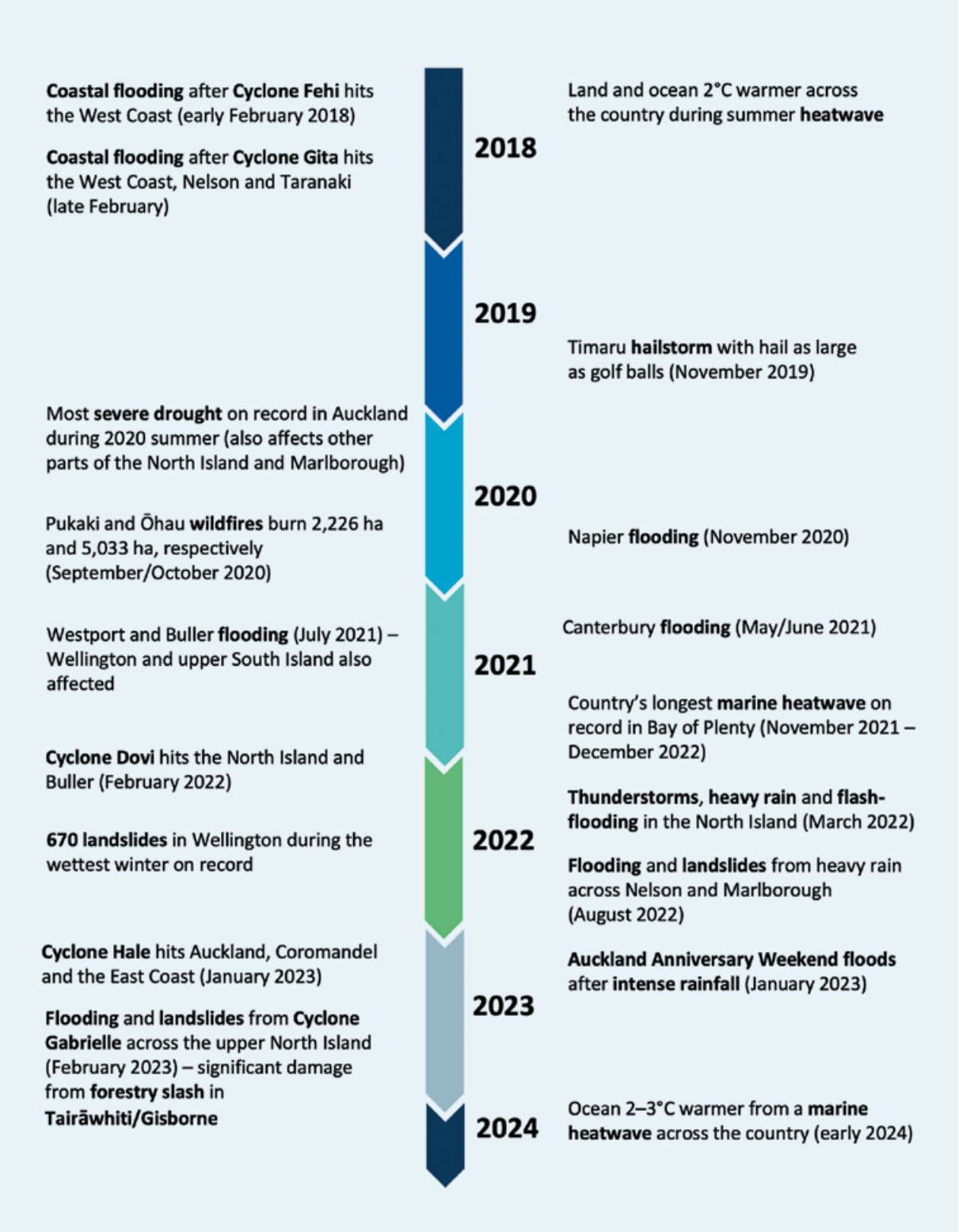
Figure 1.1 provides a timeline of some of the extreme weather events Aotearoa New Zealand has experienced since 2018. It includes storms, flooding, severe droughts, wildfires, landslides, and marine heatwaves. Climate change is affecting the frequency and severity of these types of events.

Climate change will exacerbate existing natural hazards, and complex interactions will lead to cascading and compounding risks and impacts. For example, more frequent higher-intensity rainfall in increasingly dense urban areas increases the risk of stormwater systems being overwhelmed, which would lead to impacts including localised flooding, damage to property and infrastructure, intrusion of stormwater into wastewater systems, and risks to public health.[25]

The impacts from climate change, including cascading impacts, will not be distributed evenly. Different regions, communities, sectors and groups will face different risks, and the impacts of those risks will play out differently in different contexts. For example, climate change will have distinct and wide-reaching impacts on iwi/Māori. Many coastal communities, marae and urupā are exposed to rising sea levels and more frequent and extreme storms. It will also threaten the unique relationship iwi/Māori have to whenua and te taiao in other ways, including through its impact on ecosystem health and biodiversity.

ii. Based on global analysis from the Coupled Model Intercomparison Project Phase 6 projects. Not based on regional downscaled data.

Figure 1.1: Timeline of some of the extreme weather events Aotearoa New Zealand has experienced since 2018



Source: Commission analysis

The costs from climate change impacts are already significant, and are likely to increase

Climate change impacts have significant costs. How those costs fall on people and communities varies, depending on what is at stake for them: individual property, collectively owned whenua, food-growing areas, community assets, businesses and places of employment, or places that people value for other reasons that they want to protect or restore – such as marae and churches.

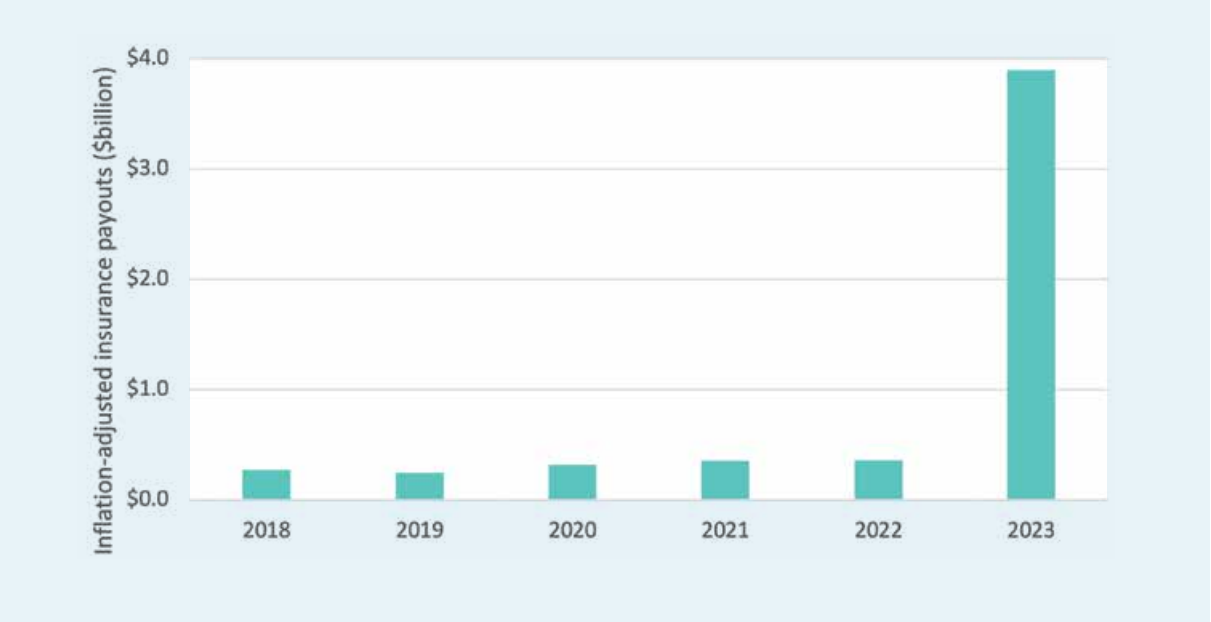
The economic costs of climate change can arise from climate-related hazards (e.g. damage to homes, infrastructure and other assets) and from lost revenue and reduced productivity (e.g. through impacts on supply chains, or impacts on health). Such economic impacts can endure for a long time. As the intensity and frequency of climate impacts rise, the associated costs and economic impacts will rise as well.

One area of climate change impacts where cost is well documented is drought. This economic cost is often lost revenue rather than direct damages. The Treasury has estimated that two major nation-wide droughts in 2007/08 and 2012/13 led to total losses to the economy of about NZ$4.8 billion, including indirect losses.[26] The effects of human-induced climate change on the severity of the drought increased the economic losses by an estimated NZ$720 million.[27] The real costs are greater than just economic. For example, droughts can have significant impacts on the health and wellbeing of farmers and rural communities struggling with loss of income and livelihoods.[28]

Another recent example of estimated costs for a climate-related event is Treasury estimates of costs of the Auckland Anniversary weekend floods and Cyclone Gabrielle extreme weather events in early 2023. The Treasury found the total cost of damage to physical assets was in the range of NZ$9–14.5 billion – with more than half relating to damage to public infrastructure. The primary industries also faced significant losses from these two events; the Treasury estimated output loss of NZ$400–600 million in the first half of 2023 alone.[29] The associated social and psychological costs are recognised as significant but are largely unquantifiable. The extent to which climate change increased these costs has not been quantified. However, as noted above researchers estimate the extreme rainfall experienced during Cyclone Gabrielle was more intense and more likely because of climate change.[30]

Insurance payments provide another view of the cost of these events. Since 2018 the Insurance Council of New Zealand has published annual totals of costs to the insurance industry of paying claims for damage resulting from natural disasters. These 'insured losses' include money paid out by insurance companies to cover damage to insured buildings, homes and belongings. In the 12 months between July 2022 and June 2023, extreme weather events led to almost NZ$4 billion in insured losses, most of this from the Auckland Anniversary weekend floods and Cyclone Gabrielle (see **Figure 1.2**).[31]

Figure 1.2: Cost to Aotearoa New Zealand insurance industry from extreme weather events between 2018–2023



Source: Insurance Council of New Zealand, 2024.[32]

The investment and financial support needed following an extreme weather event is both extensive and diverse. The Government has allocated NZ$4.7 billion to the Cyclone Gabrielle and Auckland flood response, as of early 2024. This includes funding to clean up, support local communities with temporary accommodation, mental health services, and food security, as well as funding to rebuild and aid long-term recovery.[33] As these kinds of events become more frequent and extreme, the costs are expected to increase for local and central government, for the economy, and for all who live and do business in the country.

The value of a proactive approach to adaptation

This section provides context about Aotearoa New Zealand's adaptation policy challenge. It outlines how adaptation is an ongoing process that takes time, and that urgent action is needed now despite underlying uncertainties. This section also sets out the roles in adaptation of different parts of government and society.

Adapting to the impacts of climate change takes time, so action is urgent

Adaptation is a complex process of adjusting to climate change and its effects. It requires many different kinds of actions to reduce the impacts of climate change on different human and natural systems. It is a process that takes time, and the types of actions needed will vary depending on the system or sector, and on the nature of climate risks (see Box 1.1).

It is also an area where uncertainty is a constant. Some of the ongoing shifts brought on by climate change can be foreseen, such as the continued rise in sea levels. While the exact amount of sea-level rise will vary from place to place, it can in general be anticipated. There is much more uncertainty when it comes to extreme weather events. While it is clear those events will become more frequent and severe, it is not at all certain when and where they will happen, or quite what impact they will have in combination with other hazards. Scientific understanding is growing about many of the hazards the country faces, and can over time guide effective adaptation, but there will always be uncertainty.[34]

It is important that uncertainty does not prevent action or obscure the urgency of acting. Enough is already known about the changes Aotearoa New Zealand will face over the coming decades to put the country in a good position to prepare for those impacts.[35]

Because adaptation is a process that takes time, proactive action is needed now to help reduce the social and economic toll of climate change over the coming years and decades. Investing early in adaptation delivers good value for money and is in the country's long-term economic self-interest. Some international evidence suggests that many adaptation actions have high rates of return on investment, and benefit–cost ratios in the range of 2:1 to 10:1.[36]

Adaptation creates economic benefits in several ways. These include reducing future losses; creating other economic benefits through reducing climate risk, and increasing productivity and adaptation-driven innovation; and generating broader social and environmental benefits.[37] The value of adaptation efforts was highlighted in 2023 by the Treasury, which reported that "[a]sset damage and lost productivity from physical climate impacts are expected to have a net negative macroeconomic impact… New Zealand's adaptation response could have a great influence on the long-run economic impacts arising from physical risks".[38]

For adaptation to be effective, it needs an enabling environment. Central government has an important role in helping to create an environment where climate risks are well understood, accounted and planned for, and making sure that adaptation action is not crowded out by short-term priorities. Adaptation then plays out through the decisions made locally by councils, iwi/Māori, communities, financial institutions, businesses, property owners and individuals about where and how to live and do business.

It takes time to build the kind of foundations that are needed. For example, significant legislative reforms and changes to institutional arrangements – such as those relating to how land use is regulated, or how adaptation is paid for – can take many years to develop and implement. Locally led processes also take time, where at-risk communities develop plans for adapting to anticipated changes.

Adaptation takes time and can create great returns on investment over a long period. The decisions to invest, to lessen future damage and costs, can be difficult when other needs are pressing. But the time needed to build a response to climate change demands that action is started with urgency, with a focus on creating a strong foundation for ongoing adaptation.

Taking an integrated approach that considers future climate pressures in current initiatives will also pay dividends.

The foundations laid for resilience

This section outlines Aotearoa New Zealand's climate change adaptation policy cycle, as established by the Climate Change Response Act 2002 (the Act). This makes clear the central contribution of national adaptation planning for creating an enabling environment for effective adaptation. A proactive system that anticipates – and plans for – the impacts of a changing climate allows New Zealanders to prepare for, and adapt to, the effects of climate change.

Aotearoa New Zealand's international commitments require a planned approach

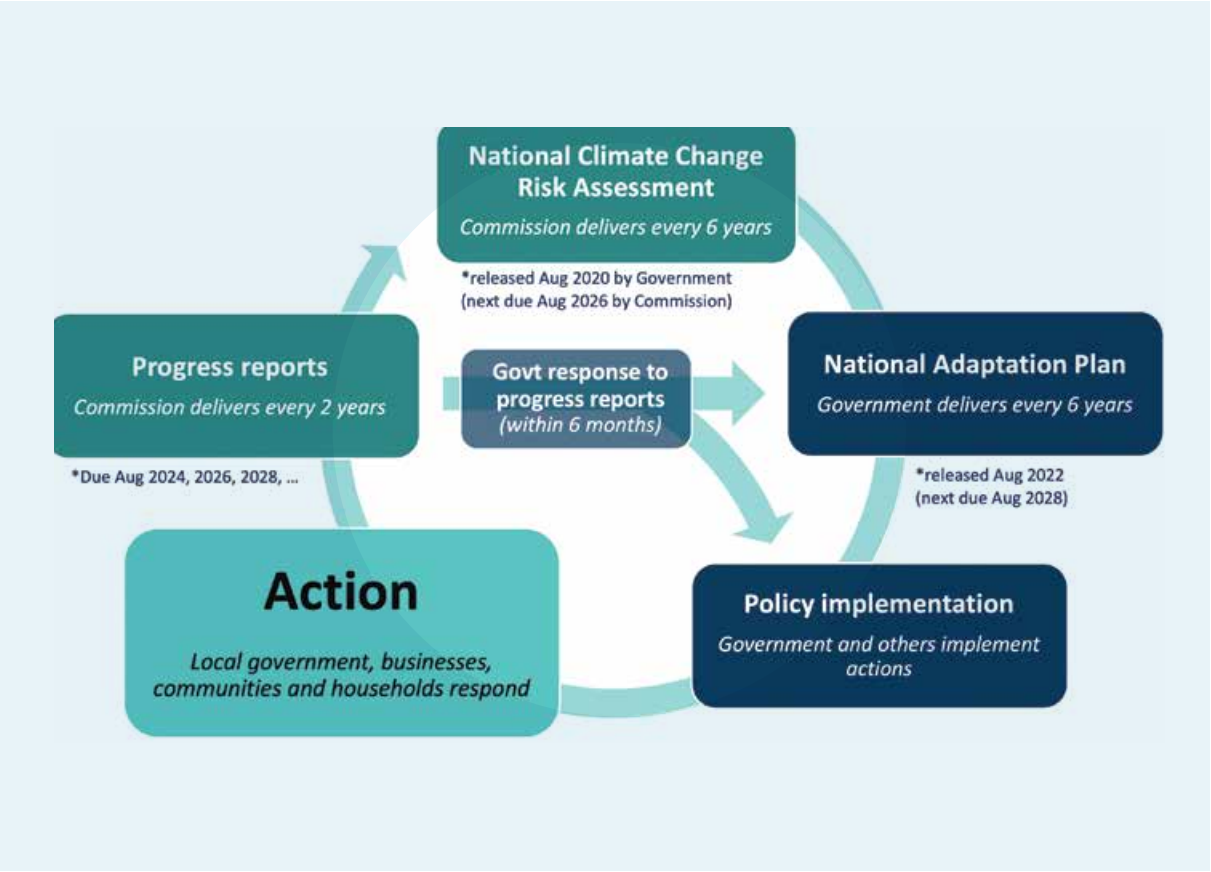
Aotearoa New Zealand has international obligations that require evidence of a planned approach to adaptation. This includes the commitments through the United Nations Framework Convention on Climate Change (UNFCCC) and the Sendai Framework for Disaster Risk Reduction. Aotearoa New Zealand is also a signatory to the Paris Agreement under the UNFCCC, which aims to limit the increase in global average temperatures, and to increase the ability to adapt to the adverse impacts of climate change and foster climate resilience. Article 7 of the Paris Agreement commits countries to take action on adaptation, and to track the progress of that action.

The country's adaptation policy cycle provides key building blocks

The adaptation policy cycle established through the Act sets Aotearoa New Zealand up to deliver on the country's international obligations while developing an integrated, nationwide approach to adaptation (see Figure 1.3). The intent in establishing this cycle was to drive coordinated and efficient adaptation action, and to improve transparency and accountability around adaptation.[39]

The Act mandates the regular preparation of a national climate change risk assessment that identifies priority climate change risks to Aotearoa New Zealand, the preparation of national adaptation plans for addressing those risks, and a process for monitoring those plans.[40]

Figure 1.3: The climate adaptation policy cycle set out in the Climate Change Response Act 2002



Source: Commission analysis

The first national climate change risk assessment was prepared by the Ministry for the Environment and released in 2020 as *National Climate Change Risk Assessment for New Zealand: Arotakenga Tūraru mō te Huringa Āhuarangi o Aotearoa*.[41] The Commission will take over the role of preparing national climate change risk assessments, with the next due in 2026.

The place of national adaptation plans in this cycle

The Government must release a national adaptation plan in response to each national climate change risk assessment. The first national adaptation plan was released by the Government in 2022.

Section 5ZS of the Act requires that each national adaptation plan set out:

- the Government's objectives for adapting to the effects of climate change
- strategies, policies and proposals for meeting those objectives
- timeframes for implementing the strategies, policies and proposals
- how these matters address the most significant risks from the latest national climate change risk assessment.

The release of the first national adaptation plan was a significant step. It signalled the Government's commitment to building a climate-resilient Aotearoa New Zealand and set out the direction of travel for how it planned to do this.

Our monitoring task

One of the specific tasks allocated under the Act to the Commission is to monitor adaptation progress at the national level, by assessing the implementation and effectiveness of the national adaptation plan. The Act requires progress reports every two years, starting in 2024 with this assessment.

Other related functions of the Commission under the Act are to prepare updated versions of the national climate change risk assessment (as above) and to monitor progress towards the country's goals for emissions reduction (see **Box 1.2: The Commission's monitoring role**).

Monitoring is an important part of the climate change response framework set out in the Act. Independent assessment helps make progress visible and can identify where there are opportunities and challenges to act on. Independent monitoring can also identify where things are happening in ways that are different from what was anticipated when policies were developed.

This assessment of the implementation and effectiveness of the first national adaptation plan supports government agencies to develop future plans. It provides information for decision-makers at all levels across the country, supports transparency about the progress of central government action, and contributes to efforts to continually improve adaptation measures.

Assessing adaptation progress supports transparency

The Commission's analysis and reporting of progress on adaptation at a national level is one element of a wider process. Other organisations also play important roles.

Government agencies are responsible for carrying out monitoring and evaluation of their programmes or policies. A group of agency leaders, the Climate Change Chief Executives Board (the Board), is responsible for monitoring the implementation of actions in the national adaptation plan; this includes the preparation of quarterly progress reports.

Local government, iwi/Māori, community groups, businesses and other organisations and individuals are also important contributors to the monitoring of adaptation progress, particularly to build understanding of how implementation is being rolled out, and the impacts that policies and other measures are having on the ground.

The Commission has an important role supporting this wider contribution, by providing transparency on progress made, through independent, expert analysis that looks across the wider system and economy. This is available to Parliament and the public, which enables scrutiny, and supports accountability and trust building.

Box 1.2: The Commission's monitoring role – emissions reduction and adaptation

Under section 5B of the Climate Change Response Act 2002, the Commission has responsibility for monitoring and reporting progress on the Government's goals for emissions reduction[iii] and progress on the Government's national adaptation plan. This is further set out in sections 5ZJ, 5ZK, 5ZL, and 5ZU.

This evidence-based monitoring provides information to support decision-making across central and local government and through all sectors and communities in Aotearoa New Zealand. It makes progress visible, and helps identify where there are adjustments needed to plans, barriers to address, or new opportunities. It can help in the best use of limited resources, by directing resources towards activities that are most likely to achieve the named goals.

Our independent assessments draw on information from a wide range of sources, including central and local government. We also use information collated by the Climate Change Chief Executives Board, which is the interdepartmental executive board (IEB) that coordinates implementation of the emissions reduction plan and the national adaptation plan.

The reports are provided to the Minister of Climate Change and published by the Commission. The Minister must provide a response to each progress report on the national adaptation plan within six months.[iv]

We are required to deliver three kinds of monitoring report

EVERY YEAR

***Annual emissions reduction monitoring reports* – the first was delivered in July 2024**
These reports track progress against the emissions budgets the Government sets in five-year intervals, working towards the country's 2050 target for emissions reduction (as set in the Act).

They also assess the adequacy of the current emissions reduction plan, and its implementation.

2-YEARLY

***National adaptation plan progress reports* – starting with this 2024 report**
These reports evaluate the implementation and effectiveness of the national adaptation plan.

5-YEARLY

***End of emissions budget reports* – the first is due at the end of 2027**
These 'end of budget' reports are due two years after the end of the period. The first emissions budget covers 2022–2025.

These reports look backwards only, providing a close evaluation of progress made in the period.

iii. The Commission monitors progress on domestic emissions budgets and the 2050 target set under the Act.
iv. The Act sets three months for the Minister's response to our separate report on progress towards emissions reduction goals.

Focus of this report

The evaluation required by the legislation

Under section 5ZU of the Act, the Commission's two-yearly monitoring reports on adaptation must evaluate the implementation and effectiveness of the national adaptation plan.

These national adaptation plan progress reports assess the degree to which the objectives in the plan have been achieved, and how well the plan responds to the most significant risks posed by climate change. They also assess progress of implementation of the plan, identify barriers to the implementation and effectiveness of the plan, and make recommendations for how those barriers might be addressed.

The Commission is also required to consider the matters listed in section 5M of the Act, where relevant. This includes consideration of the Crown-Māori relationship, te ao Māori, and specific effects on iwi/Māori. It also includes consideration of current scientific knowledge; likely economic effects; social, cultural, environmental, and ecological circumstances, including differences between sectors and regions; and the distribution of benefits, costs, and risks between generations.

These are important issues to consider in the context of adapting to the impacts of climate change. As discussed earlier in this chapter (see Box 1.1 and *Climate change – global system and local impacts*) the costs and impacts of climate change will not be experienced evenly across regions and communities, sectors, or even generations. It is also possible for adaptation actions that aim to reduce harm for one group to impose greater costs on others. There is potential for inequities to occur, and for existing inequities to be made worse as climate change progresses.

The structure of this report

This report provides an overview of our adaptation monitoring task and what we found in the assessment. That is followed by the detailed evidence for our findings and recommendations.

PART A: The overview

PART B: The supporting evidence

Tā mātou kokenga | Our approach

This chapter sets out the approach the Commission has taken to evaluate the implementation and effectiveness of the first national adaptation plan.

He Pou a Rangi Climate Change Commission (the Commission) is required under the Climate Change Response Act 2002 (the Act) to report progress on Aotearoa New Zealand's national adaptation plan every two years. The first plan was published in 2022. This report is the Commission's first assessment of its implementation and effectiveness.

For this report we have developed a framework for evaluation, drawing on emerging international best practice and research. This chapter outlines our approach, and how it has been applied to provide our independent assessment.

Drawing connections is key to our monitoring work. Our analysis considers the many links between government policies, economy, industry, people and the environment. Taking this kind of 'systems view' means we also consider action on emissions reduction alongside adaptation.[v] This recognises that work in one area can benefit the other, and that making the links between different approaches can reduce the cost of action and avoid working at cross purposes.

The previous chapter outlined the Commission's task under the Act to assess the implementation and effectiveness of the national adaptation plan.

Our aim in this report is to support development in the country's adaptation planning, and to lay effective foundations for the Commission's ongoing monitoring role. Our independent, evidence-based analysis can provide information for decision-makers at all levels across the country and transparency about the progress of central government action, and contribute to efforts to continually improve adaptation measures.

v. The Commission provided a separate assessment of progress on emissions reduction to the Minister of Climate Change in July 2024.

Working from evidence: research, engagement and analysis

As an independent Crown entity, our assessment is based on research, evidence and analysis, and draws on the expertise of our Board of Commissioners, He Pou Herenga (a Māori advisory body to the Board), and staff.

As part of our preparation of this report we have reviewed international research, with particular focus on methods for measuring adaptation effectiveness. Direct engagement with international counterparts involved in monitoring adaptation in other countries allowed us to learn from emerging international best practice and to appropriately focus our first assessment. This is an area of interest and activity around the world, and we will continue to learn from, and work with, our international counterparts to inform the future development of our monitoring approach.

Engagement with people who are actively working on climate change adaptation in Aotearoa New Zealand has informed all areas of our assessment. In the early stages of developing our approach we worked with technical experts to test and shape our work. This included academics, researchers, subject experts involved in the first national climate change risk assessment, local government adaptation practitioners and international experts.

As our analysis developed, we continued to test our approach and gather evidence and perspectives from a wide range of people, including local government staff, researchers, non-governmental organisations and community groups, and businesses and industry groups. We engaged with government agencies involved in implementing the national adaptation plan, to understand progress within particular sectors, and on particular actions in the plan. We have also engaged regularly with the Climate Change Chief Executives Board, in its role coordinating cross-agency monitoring and reporting from government agencies on delivery of actions in the plan.

To support our first assessment of progress, we commissioned several pieces of research. This includes a report by B&A Urban and Environmental on barriers to adaptation at the local government level, based on interviews with local government adaptation practitioners and academics.[42]

We also commissioned three national-level metrics, which support a view of progress across different systems, and across the country. Two of these – the extent of buildings and infrastructure exposed to climate-related hazards and share of people at risk of isolation – were delivered by Urban Intelligence.[43] The third focuses on dimensions of social vulnerability to climate-related hazards, by Environmental Health Intelligence New Zealand (EHINZ).[44] These reports are available on our website.

A te ao Māori perspective informs all areas of assessment

Our engagement and analysis has included a focus on te ao Māori. This analysis focused on exploring what effective adaptation would look like for iwi/Māori. It has provided a te ao Māori perspective on the adaptation that will be required to live with climate change. This analysis is included in *Chapter 4: Te pae tawhiti, te pae tata*, while the insight gathered from this analysis supports all areas of assessment. This work has been informed by wānanga, engagement, desk-based research, as well as conversations with Māori climate experts and community members.

Case studies provide real-world insights

The Commission also undertook two case studies to provide additional insights, information and perspectives. These were focused on Wairoa in Hawke's Bay and on South Dunedin in the South Island. These two communities face different risks from climate change, and they are dealing with different issues as they seek to address those risks.

The case studies provided opportunity for a more detailed look into the real-world context and experience of climate change impacts within particular communities, and to understand barriers to and drivers of adaptation. They bring together information and insights from conversations, documents and our direct observations. They provide important insights into our assessment, reflecting that climate impacts and adaptation are inherently local – even while our monitoring role is at a national level. A short summary of the two case studies is included in Box 7.1 and Box 7.2 in *Chapter 7: Barriers to the plan's effectiveness*, but insights gathered through the two case studies have informed all areas of our assessment.

Our monitoring framework and tools

The monitoring framework developed for this assessment of the implementation and effectiveness of Aotearoa New Zealand's first national adaptation plan is framed around three key pillars (see Figure 2.1):

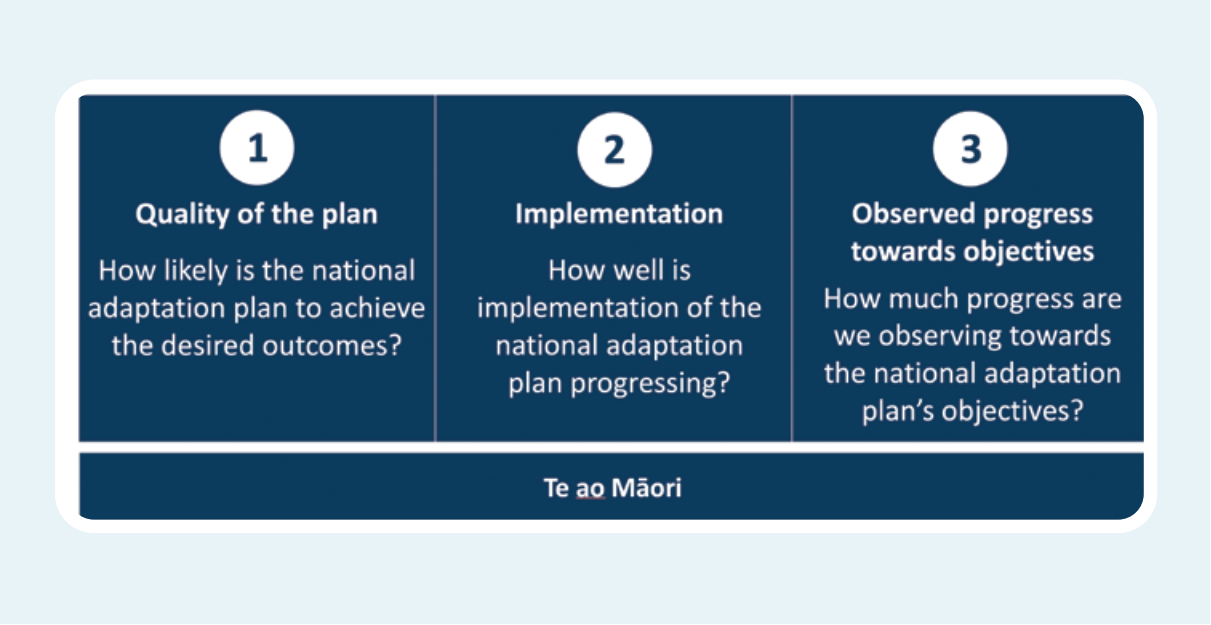
1. **Quality of the plan**: focused on understanding how likely the national adaptation plan is to achieve desired outcomes.
2. **Implementation**: focused on understanding how well implementation of the plan is progressing.
3. **Observed progress towards objectives**: focused on understanding how much progress we are observing towards the plan's objectives.

These questions are not intended to be mutually exclusive. For example, how well the plan is being implemented is relevant for understanding both how likely the plan is to achieve desired outcomes, and how much progress is happening on the ground. This interaction is reflected in our assessment. Answering each question provides insights on different aspects of the national adaptation plan, and progress being made.

In shaping up the approach to this assessment, the Commission has ensured that it reflects the requirements of the Act, and the Commission's role within the wider policy system, as well as considering the wide range of potential users of this report and where the Commission can best add value.

This assessment is focused on assessing the Government's first national adaptation plan, which responds to the country's first national climate change risk assessment. Therefore, a key concern for the Commission with this first monitoring report is to focus on how well the plan sets Aotearoa New Zealand up for good adaptation outcomes, to identify any important gaps and learning opportunities that strengthen the wider system to support effective adaptation action.

Figure 2.1: Framework for assessing the overall effectiveness of the first national adaptation plan



Source: Commission analysis

Quality of the plan

This part of the Commission's assessment is a key area for our first report.

This section focuses on whether the first national adaptation plan is likely to put Aotearoa New Zealand on track to address the challenges posed by climate change. An important goal of this analysis is to understand whether there are any significant gaps in the plan that could undermine good adaptation outcomes. This part of our assessment looks forward, guided by the question – *how likely is the national adaptation plan to achieve the desired outcomes?*

We have focused on three key areas to guide our assessment of the quality of the plan:

1. **The overall architecture, goals and objectives of the plan**
   The focus of this section is on understanding how well the plan aligns with emerging international best practice for national adaptation planning, and the link between the plan's goals, objectives and actions. It also assesses how well the plan aligns with important adaptation principles that support effective adaptation over different timeframes.

2. **Assessing how well the plan addresses the most significant risks from climate change**
   The first national adaptation plan must set out how the government plans to address the most significant risks identified through the first national climate change risk assessment. The focus of this section is on assessing how well the range of risks have been addressed.

3. **Identifying barriers to effectiveness**
   This section looks at the most significant challenges to New Zealanders being able to prepare for and adapt to the impacts of climate change and assesses how well the first national adaptation plan addresses those challenges. The focus here is on identifying key barriers to the effectiveness of the plan.

Implementation

This part of our assessment is both forward and backward looking, guided by the question – *how well is implementation progressing?* The assessment considers whether important enablers of effective implementation are in place and looks at the progress made towards implementing the actions in the plan – including whether past milestones have been met. This section also identifies barriers to implementation. Our assessment of implementation draws on the Climate Change Chief Executives Board's regular reports collating implementation information from government agencies.

Observed progress towards objectives

In this section the Commission has assessed whether observed results are in line with goals, needs and expectations. This part of our assessment looks backwards, guided by the question – *how much progress are we observing towards desired outcomes?* We provide a qualitative assessment of progress towards the 20 objectives in the first national adaptation plan. Only two years have passed since the plan was released and it takes time for action to flow through to on-the-ground adaptation outcomes, so the focus of this first assessment is on identifying early signs of progress.

How timeframes are considered in our analysis

We have defined what is covered by 'the first national adaptation plan', to account for developments since its release in 2022.

We included information provided by the Climate Change Chief Executives Board, which is the interdepartmental executive board that coordinates implementation of the national adaptation plan. This covered the implementation status of the cross-agency actions and strategies in that plan up until December 2023. We also considered other relevant central government-led initiatives introduced since the publication of the first national adaptation plan in 2022. We included in our analysis actions and policies that were implemented or announced, and that we were aware of through our research and engagement, as at 31 May 2024. We acknowledge that our assessment is unlikely to have captured all of the work programmes underway that contribute to progress.

Where to find different parts of our assessment

Table 2.1 outlines where different parts of our assessment can be found in this report, and what sections of the Act our assessment in each chapter relates to. *Chapter 3: Our key findings and recommendations* outlines the findings and recommendations from across all parts of our assessment.

Future development

The Commission will deliver its next adaptation monitoring report in 2026. In the interim we will continue to build our assessment approach, to put increased focus on measuring outcomes. That means we will put increased focus on assessing whether climate risk is reducing and resilience improving, and whether adaptation action is driving that change.

We will continue with work already underway to develop a suite of key national metrics that make sense in the Aotearoa New Zealand context – with a view to using these alongside qualitative approaches in future progress reports. We will build on initial work to develop key national-level metrics discussed in *Chapter 10: Developing key national metrics*.

While there are efforts around the world to develop methods for measuring adaptation effectiveness, there is no shared set of quantitative indicators. Measuring the impacts of adaptation actions is difficult, and climate risks are dynamic and require context-specific responses.

We will continue to engage with iwi/Māori, communities, local government, businesses, non-governmental organisations and community groups to inform the development of these indicators, as well as continuing to learn from our international colleagues' work to develop other approaches to assessing adaptation progress.

Table 2.1: Where to find different parts of our assessment in this report

Framework	Chapter of this report	Act requirements
Te ao Māori	*Chapter 4: Te pae tawhiti, te pae tata*	Section 5M(f) Section 5ZU(2)(d)
Quality of the plan	*Chapter 5: The plan's overall architecture, goals and objectives*	Section 5ZU(1) Section 5ZU(2)(d)
	Chapter 6: How well the plan addresses climate risks	Section 5ZU(2)(b)
	Chapter 7: Barriers to the plan's effectiveness	Section 5ZU(2)(c)
Implementation	*Chapter 8: Progress towards implementing the plan*	Section 5ZU(1) Section 5ZU(2)(c)
Observed progress towards objectives	*Chapter 9: Observed progress towards the plan's objectives*	Section 5ZU(2)(b)
	Chapter 10: Developing key national metrics	Section 5ZU(2)(b)
Recommendations across all parts of the framework	*Chapter 3: Our key findings and recommendations*	Section 5ZU(2)(c)

WĀHANGA 3 | CHAPTER 3

Ngā huranga matua | Our key findings and recommendations

This chapter sets out the key findings and recommendations from our progress report on the first national adaptation plan, including our assessment of its implementation and effectiveness.

This first progress report is being delivered two years after the release of the Government's first national adaptation plan. That plan was in turn developed in response to the first national climate change risk assessment. This report is therefore the latest in an important chain of 'firsts' for Aotearoa New Zealand when it comes to adapting to the impacts of climate change.

Our assessment supports a broad view of progress. We have focused on understanding how well effective adaptation to the impacts of climate change is being delivered. This includes, where possible, considering changes that have occurred as context and priorities have shifted over the last two years.

This chapter summarises the results of our assessment. The findings and recommendations set out in this chapter draw on a wide range of detailed research, engagement and analysis. More detail on the analysis that underpins these findings can be found in *Part B: The supporting evidence.*

Climate change risks are significant and rising, and remain insufficiently addressed by adaptation action in Aotearoa New Zealand. The Commission finds limited evidence that the first national adaptation plan is driving adaptation at the scale or pace needed.

Climate change is already having widespread and substantial impacts, globally and in Aotearoa New Zealand

Ongoing and progressive changes (such as increases to annual average temperatures, sea-level rise, marine heatwaves, and ocean acidification), as well as more frequent and extreme weather events, are impacting people, ecosystems, communities, infrastructure, and the economy.

Some ongoing changes occurring due to climate change are foreseeable

For example, globally, sea levels are continuing to rise – currently by an average of about 3.5mm each year. The scale and pace of this change is likely to increase. Research has shown that sea levels around Aotearoa New Zealand will rise by around 5–10% more than the global average, and that this rate could be double in some places where land is subsiding.

Weather events will continue to become more frequent and extreme. However, there is more uncertainty around where or when they will occur

For example, researchers estimate that the extreme rainfall experienced during Cyclone Gabrielle was up to 20–30% more intense and up to four times more likely because of climate change.

The costs from climate change are already significant

For example, in the 12 months between July 2022 and June 2023, extreme weather events led to almost $4 billion in insured losses in Aotearoa New Zealand. The Treasury estimates the total cost of damage to physical assets from Cyclone Gabrielle and the Auckland Anniversary Floods in early 2023 to be between $9 billion and $14.5 billion. The primary industries also faced significant losses, with the Treasury estimating output loss at around $400 – $600 million in the first half of 2023 alone. Total economic costs have not been estimated.

The impacts and costs from climate change do not fall evenly. Some people and communities are more likely to experience harm from climate-related hazards because of factors outside of their control – such as geographic location, socio-demographic characteristics, personal circumstances, or the sectors they work in.

Proactive action is needed to make Aotearoa New Zealand's communities safer and better places to live and work as the climate changes

Investing early in adaptation delivers good value for money and is in the country's long-term economic self-interest. Adaptation creates economic benefits in several ways, including by reducing future damage and losses, increasing productivity, and generating broader social and environmental benefits. Some international evidence suggests that many adaptation actions have benefit-cost ratios in the range of 2:1 to 10:1. Alongside this, an efficient and effective emergency management system is important to help the country prepare for, and respond to, residual risk.

Our assessment shows signs of progress in some important areas, with many of these improvements supported by the first national adaptation plan

For example, around 40% of companies listed on the New Zealand Stock Exchange (NZX) are now disclosing climate- related risks in their financial statements, which has the potential to influence investment decisions. A range of information, tools and guidance around climate risk is also being developed and shared, which is increasing awareness and understanding of risks. The recently announced Finance and Expenditure Committee inquiry into climate adaptation is also a major step forward, and has the potential to enable and support good adaptation outcomes over the long term.

Our assessment of the first national adaptation plan has highlighted some significant gaps, where urgent action is needed to lay foundations

Currently, adaptation action is not adequately preparing Aotearoa New Zealand for the climate-related risks the country is facing. The first national adaptation plan provides the opportunity for central government to support a shift from a costly reactive approach to a more proactive approach that anticipates and plans for the impacts of a changing climate.

This is important for laying the foundations for reducing climate risk, including avoiding further development in locations at risk from climate-related hazards. It takes time to build the kind of foundations that are needed. For example, significant legislative reforms and changes to institutional arrangements – such as those relating to how land use is regulated – can take many years to develop and implement. So too can locally-led processes to develop plans for how specific at-risk communities will adapt to anticipated changes.

Through our assessment of the first national adaptation plan we have identified some high-priority areas where action is urgently needed to set the foundations for effective climate adaptation.

Clarifying roles, responsibilities and processes for planning and decision-making will help Aotearoa New Zealand appropriately respond to adaptation challenges and opportunities.

Existing legislative, planning and decision-making frameworks are not well-suited to planning for and dealing with changing and uncertain risks from climate change

For example, the Resource Management Act (RMA) – which is the key piece of legislation regulating land use and the environment – does not currently include explicit obligations for planning for or adapting to climate change. It does not have requirements for collecting and communicating information about climate-related risks. Furthermore, the institutions and laws that set rules and assign responsibilities on issues relevant to planning and implementing adaptation are not well linked, leading to some significant gaps and misalignments. The first national adaptation plan included some actions to help address this gap, but these actions have not been implemented.

The lack of a clear and coherent national framework for adaptation planning and implementation has significant and wide-ranging flow-on effects

Our assessment shows this gap is a barrier for local government in particular, affecting councils' ability to access resources, their capacity and capability, and their ability and willingness to take action. For example, a fear of litigation can lead to lack of action or poor decision-making. These effects can also extend much more broadly. In some regions, the lack of a clear mandate and decision-making processes has led to delays, or brought adaptation planning and action to a standstill. It has also led to ad hoc or reactive decision-making (e.g., following the extreme weather events in the North Island in 2023), and differing approaches around the country.

Clear and consistent processes, and clarity around how decisions will be made, is important for transparency, and to avoid poor outcomes – including inefficiencies, setting unsustainable precedents, and creating or reinforcing inequities.

The lack of a coherent framework or arrangements has also played out in some specific areas, including different infrastructure sectors, services sectors, and the Māori economy

Some examples include:

- **the water sector:** the current lack of a systematic approach to planning and implementing water infrastructure and associated land uses makes it difficult for planners, water providers and asset managers to make decisions in a way that aligns with adaptation outcomes that anticipate and reduce climate risk.
- **the health sector:** there is currently no joined-up approach to adaptation across regions and between different parts of the health system – including hospitals, primary health organisations, community health providers, Māori health providers, and aged care facilities.
- **rangatiratanga:** current legislative arrangements are impacting the ability of some iwi/Māori to exercise control over how to adapt and build resilience, which can have a detrimental effect for the whole of Aotearoa New Zealand.

The recent announcement of a Finance and Expenditure Committee inquiry to develop an adaptation framework is an encouraging development

On 10 May 2024 the Government announced that Parliament's Finance and Expenditure Committee will conduct a cross-party inquiry to develop an adaptation framework. The terms of reference for this inquiry include roles and responsibilities, and risk and response information sharing (alongside investment and cost-sharing frameworks discussed below).[vi] The findings of this inquiry are expected in September 2024, with potential legislation expected in 2025.

vi. Cabinet paper: progressing an adaptation framework: https://environment.govt.nz/assets/publications/CAB-400-and-CAB-minute-redacted-for-publishing.pdf

While progress is slower than set out in the first national adaptation plan, the Finance and Expenditure Committee's inquiry represents an important step forward, and is an important opportunity for building cross-party consensus on adaptation. The continuation of this cross-party approach will be critical as the Government moves towards potentially introducing legislation in 2025.

Ensuring the emergency management system is fit-for-purpose is critical, with Aotearoa New Zealand facing more frequent and extreme weather events as the climate changes

Our assessment shows there have been delays in implementing emergency management actions in the first national adaptation plan. The report of the Government inquiry into the response to the North Island severe weather events highlights important areas where change is needed to make sure the system can better meet local needs. This includes focusing more funding and effort towards reducing long-term exposure and vulnerability and supporting community preparedness, alongside response and recovery.

Recommendation 1: Enable effective local adaptation planning and action

We recommend that, in the adaptation framework, the Government set out:

a) **a clear legislative mandate for adaptation planning and action at the local level.** The adaptation framework needs to include legal requirements and statutory backing that enables local government to make effective, risk-informed decisions around land use and the natural and built environment that can be implemented.

b) **clear roles and responsibilities at national and local levels.** This includes setting out the respective roles of central and local government, as well as others making decisions on climate adaptation including communities, iwi/Māori, private property owners, insurers and financial institutions.

c) **clear and inclusive processes and methods for adaptation planning and decision-making.** This includes setting out standard processes for key aspects of adaptation planning and action, and how decisions will be made with respect to those processes. This is important for ensuring that approaches across the country meet a consistent standard of robustness, while being appropriate within their local contexts.

We recommend that each of these elements be set out for the following specific processes and areas:

d) **local community adaptation planning**. This includes guidance on how to account for local values and risk thresholds to inform adaptation planning, and clarity around the respective roles and responsibilities of regional councils, territorial authorities, private property owners and iwi/Māori in local community adaptation planning processes and implementation.

e) **planning for managed retreat.** This includes specifying the circumstances under which managed retreat is considered as an adaptation option, how it should be planned for, and the powers for enabling retreat – such as the acquisition and retirement of land, and withdrawal of infrastructure services.

f) **the development, collection and communication of risk information.** This includes the factors set out in Recommendation 4.

Clearly setting out how the costs of adaptation and climate-related losses will be shared, and how they will be paid for, will help enable Aotearoa New Zealand to adapt in a more efficient, fair and equitable way.

There is currently no national funding framework for climate adaptation, and no clarity around how adaptation costs will be met

The costs of adaptation will be large and ongoing, and will not fall evenly. A national funding framework is needed that identifies how the costs of various adaptation-related actions and processes will be shared (including adaptation planning, implementation and dealing with issues of loss), and where that money will come from. Some actions included in the first national adaptation plan could have helped to address this gap, but are no longer being implemented – for example, passing legislation to support managed retreat.

For adaptation to be effective, there needs to be more focus on funding prevention and risk avoidance

The current funding system has a strong focus on response and recovery. For example, under the national civil defence and emergency management plan, central government covers 60% of the costs of repair for some essential council infrastructure after a natural disaster, as well as funding to support response and recovery. There is no provision for co-funding for council (or other) investments to reduce risks before an event.

Decisions about dealing with private property losses are often made in a reactive way following extreme events

For example, following the extreme weather events in the North Island in early 2023, the Government announced co-funding for voluntary buyouts for owners of residential properties designated as no longer safe, and additional funding to protect some other affected properties. These commitments, made in the aftermath of extreme weather events and without a clear framework for decision-making, can have a material impact on future risk. People may make future decisions about where and how to live with the expectation that the Government will compensate them to the same extent for climate change-related losses.

Adaptation is currently being delayed because it is not clear how it will be paid for

Our assessment shows that lack of clarity around funding is a particular barrier to the effectiveness of the first national adaptation plan. For example, local councils can struggle to access funding to support adaptation planning and implementation through Long Term Planning processes due to competing demands and priorities. They can find it challenging to use other tools (such as targeted rates) to fund adaptation planning and action without a clear mandate to do so.

Without a clear and consistent framework for who pays, approaches will vary between communities and regions, and action could be delayed and/or halted if an agreement cannot be reached on how to fund it. We are already seeing both scenarios playing out.

Progress in developing a national funding framework for adaptation has been slow, but recent developments are encouraging

The terms of reference for Parliament's Finance and Expenditure Committee's inquiry to develop an adaptation framework – announced on 10 May 2024 – includes frameworks for investment and cost-sharing. The Government has indicated that the inquiry may also identify principles for investment in risk response, and for cost-sharing pre- and post-event.[vii] The findings of this inquiry are expected in September 2024, with potential legislation expected in 2025. Progress is slower than set out in the first national adaptation plan, but the Parliament's Finance and Expenditure Committee's inquiry to develop a framework represents an important step forward.

New instruments for investing public funds and leveraging private investment in adaptation are needed

The costs of adaptation will be large, and will not fall evenly. Existing sources of money will need to be expanded to help bridge the gap. There is a need to develop new instruments to invest public funds and leverage private investment to enable and drive pre-emptive adaptation on the scale needed.

Recommendation 2: Provide clarity on how adaptation costs will be shared and met

We recommend that the adaptation framework set out clearly:

a) **how the costs of local adaptation planning and implementation will be shared**. This includes between central government, regional councils and territorial authorities, as well as private property owners. This must include clarity around how costs will be shared for:
   i) adaptation planning (including community planning processes)
   ii) the implementation and monitoring of adaptation actions, including pre-emptive actions and post-event responses.

b) **how costs of climate-related losses will be addressed and met**. This includes clarity around how both public and private losses will be addressed, and the principles that will guide decisions around compensation. This should include clarity around the costs associated with managed retreat.

To meet future adaptation costs, we recommend that the adaptation framework also set out:

c) **new targeted funding and financing instruments (public and private)** to enable and drive pre-emptive adaptation at the scale needed

d) **how targeted financial instruments could support adaptation**

e) **how private investments can effectively account for risks arising from climate change while supporting inclusive and equitable processes and outcomes**.

vii. Cabinet paper: progressing an adaptation framework: https://environment.govt.nz/assets/publications/CAB-400-and-CAB-minute-redacted-for-publishing.pdf

Ensuring iwi/Māori retain rangatiratanga and can adapt their communities in a way that is consistent with their tikanga, and aligned with their whakaaro tau (priorities) will make adaptation efforts more effective.

Rangatiratanga is important across all facets of climate change response, but it is particularly important in adaptation

Adaptation involves decision-making with significant impacts on communities and whenua. As the impacts of climate change increase in frequency and severity, and as responses to extreme weather events continue, it is important that iwi/Māori retain their rangatiratanga and can adapt in a way that is consistent with Te Tiriti o Waitangi/The Treaty of Waitangi obligations and aligned with their tikanga and whakaaro tau (priorities, as defined in *Chapter 4: Te pae tawhiti, te pae tata*).

Current legislative arrangements are impacting the ability of some iwi/Māori to exercise rangatiratanga and mana motuhake as they adapt and build resilience to climate change

There is a lack of a nationally consistent approach that ensures iwi/Māori retain rangatiratanga over decision-making. This gap relates closely to the lack of a clear and coherent legislative framework for adaptation, and the lack of a funding framework. Noting the size of the Māori economy and the considerable resources and extensive adaptation plans some iwi/Māori have, there needs to be a nationally consistent approach that works harmoniously with iwi/Māori adaptation initiatives.

Some iwi are calling for a greater sense of clarity around the functions of Government in relation to climate change and how iwi/Māori will interact with Government, and legislative frameworks to progress adaptation initiatives.

The first national adaptation plan does not provide sufficient resourcing of iwi/Māori adaptation initiatives, impacting the ability of iwi/Māori to exercise rangatiratanga

There has been some advancement of iwi/Māori priorities through the establishment of the Māori Climate Platform, but the future of this initiative is unclear. The plan does not currently outline any other specific approaches to resourcing iwi/Māori adaptation initiatives. The framework for funding adaptation planning and action, and how this will lead to adaptation initiatives, and how iwi/Māori interact with that framework needs to be clear.

Recommendation 3: Ensure iwi/Māori can plan for and carry out adaptation action

We recommend that the legislative framework and institutional arrangements for adaptation include a range of decision-making and funding models, established by central and local government in partnership with iwi/Māori, so that iwi/Māori can plan, carry out and participate in adaptation processes in line with their tikanga and whakaaro tau (priorities).

Data, information and decision-support tools that are high quality, readily accessible and underpinned by science and research are important for enabling decision-makers to effectively understand and manage climate risks.

Data, information and decision-support tools are critical for understanding climate risks, what they mean for communities, sectors, or local businesses, and how to adapt to them

Data and information, tools and guidance support risk-informed decision-making for a wide range of users with different needs, including government, community groups, iwi/Māori, businesses, and property owners.

Users face challenges accessing data and information and using it appropriately to support effective adaptation decisions

These challenges are wide ranging and include users not knowing where to look for reliable and high-quality data; information not being made available in a format that is useful for different user needs; users not knowing how best to use data and information to support effective decision-making; and prohibitive costs to obtain some important climate data and research, including information generated through publicly funded research.

Actions in the first national adaptation plan have the potential to increase the availability and accessibility of data and information, and provide tools and guidance for supporting risk-informed decision-making

The plan includes, for example, actions to provide local climate projections data, develop a climate adaptation portal, and provide guidance and information to local government and certain sectors to support planning and decision-making. Work on many of these actions appears to be progressing well. The Climate Data Infrastructure initiative, an additional Government action that is not included in the first national adaptation plan, also has the potential to improve accessibility of important climate data for a range of users and decision-makers.

Underlying issues with the science and research system need to be addressed

The action in the first national adaptation plan to develop Te Ara Paerangi – Future Pathways programme for the research, science and innovation system has been discontinued. The new Science System Advisory Group will provide advice to the Government on how to improve the effectiveness and impact of the science sector, which may help to address this gap.

The way the science and research system is currently structured, operated and funded can lead to research gaps, lack of coordination and collaboration, and unequal access to information. In particular, the current system monetises the production of public good information and data – which has flow-on impacts, creates inefficiencies, and can lead to inequities. Ongoing uncertainty concerning the future of the science and research system could also lead to lost expertise, an inability to attract prospective/new researchers to Aotearoa New Zealand, and reduced research in key areas for adaptation.

Recommendation 4: Improve the science and research system to support good adaptation outcomes

We recommend that the Government develop a research strategy for climate adaptation and its data and information needs, and set out a plan for enabling the science and research system to deliver high-quality data and information for public benefit, and to support good climate adaptation outcomes. This includes:

a) investing in increasing the availability and accessibility of high-quality data, information and decision-support tools relevant to climate adaptation
b) reviewing the revenue model for publicly funded science and research to better support public benefit
c) exploring how best to provide continuity in funding for important climate change research and ongoing data and monitoring needs
d) reviewing how public-good science and research funded by the Government is made publicly available.

For all New Zealanders to thrive as the country adapts to climate change, it will be important to consistently consider and address equity of impacts (including costs) so that they are not experienced unfairly by particular communities and groups.

The impacts from climate change will not be distributed evenly

Different individuals, families, communities and groups will face different risks, and the impacts of those risks will play out differently in different contexts. For example, climate change will have distinct and wide-reaching impacts on iwi/Māori. Many coastal communities, marae and urupā are exposed to rising sea levels and more frequent and extreme storms. It will also affect the unique relationship iwi/Māori have to whenua and te taiao in other ways, including through its impact on ecosystem health and biodiversity.

Decisions around adaptation and dealing with loss are often being made in an ad hoc and reactive way

For example, following the North Island extreme weather events in 2023, public funding was provided to buy out properties no longer considered safe, and to protect other properties at-risk from climate-related hazards. This approach differs from what has happened in some other contexts following an extreme event. Taking different approaches for funding adaptation and dealing with loss in different places and contexts can set unsustainable precedents, and can lead to considerable inequity between individuals, communities, regions and across generations.

Communities do not have equal access to support for preparing for and recovering from an extreme event

For example, individuals and families who are on low incomes, rent their homes, and are not insured often have limited options if their home is damaged in an extreme event. Sometimes this can mean that they have no choice but to return to a damaged home or move into accommodation with friends and whānau. People who rent do not usually benefit from government property buyouts to address loss. The recent inquiry into the response to the North Island severe weather events also highlighted the lack of investment in readiness planning in many communities.

The first national adaptation plan does not strongly focus on supporting equity and addressing distributional impacts

While some actions do refer to the need to consider the impacts on different groups of society, these are limited. There is a significant gap in terms of action to address the risks of exacerbating inequities, and a lack of actions that support reducing risk for a diverse range of communities. For example, the plan has limited actions focused directly on reducing some of the specific risks for Māori identified in the national climate change risk assessment, and all actions mapped against those risks are proposed actions, and therefore yet to be confirmed.

Without a clearer and more direct focus on issues of equity, it may fall through the cracks

Inequity and distributional impacts are hard to define and look different across different issues and areas. It is important that the Government take measures to help assess and avoid exacerbating these as the adaptation framework is developed, and as climate impacts are increasingly felt.

Recommendation 5: Consider and address the distributional costs and impacts of climate change so that they do not fall unfairly on particular communities and groups

We recommend that the Government put in place tools and measures to consistently consider and address distributional impacts and inequities in all adaptation measures. This includes:

a) developing tools for assessing and understanding the impacts of adaptation policies and measures across different communities and groups

b) implementing targeted measures and ongoing processes to address distributional impacts and inequities resulting from climate impacts and adaptation.

To support communities around Aotearoa New Zealand to adapt to the impacts of climate change, more people with the right knowledge, skills and expertise right across the adaptation planning and implementation process will be needed.

Having access to people with the necessary knowledge, skills and expertise is critical to support adaptation planning and action

Adaptation is a process that requires councils, planners, the construction sector, infrastructure providers and others to plan, do business, build and manage assets, and make decisions in new ways. Councils and other organisations require access to people with skills and technical expertise to create complex climate-related data and information, translate that information into effective planning and action, and work effectively with communities to adapt. Without a focus on developing the range of skills and expertise needed, Aotearoa New Zealand will not be able to deliver good adaptation outcomes.

Our assessment found that lack of access to necessary capacity and capability is often a barrier to progressing adaptation

In our assessment of the first national adaptation plan, many organisations reported challenges accessing necessary resources and capability – including by local government. This can stem from systemic issues. For example, the availability of funding to fill roles required, lack of skills or technical knowledge in the current workforce to undertake the action needed, or staff not having enough time to do adaptation focused work due to other workload pressures and competing priorities. Many councils reported through a recent survey from the Ministry for the Environment that they often do not have the staff or skills to make effective use of available adaptation planning tools and guidance.[45]

Local community adaptation processes require particular skills and expertise that can be hard to come by – including specialist expertise engaging with local communities and communicating technical information about climate risks and adaptation options. There is currently no way to pool and coordinate resource to help councils address knowledge, capability and capacity gaps.

The first national adaptation plan is driving some progress in addressing this issue

Some actions underway will help address capacity and capablity issues, including the generation and availability of information. The first national adaptation plan also contains actions focused on guidance related to adaptation that could help build necessary knowledge and skills for understanding risk and building resilience. Some of this guidance is progressing well, and some has been delayed.

Despite this progress, our assessment has found that some important gaps remain

The need for a systematic approach that better aligns the tertiary education system and future adaptation needs is not addressed by the first national adaptation plan. To make sure the education system is prepared to develop and provide the skills that will be required for adaptation across a range of sectors, more action will be needed. There is also no direct focus on capacity and capability to support local community adaptation processes, including iwi/Māori-led processes, which could have flow-on impacts in terms of enabling participation.

The recent inquiry into the North Island extreme weather event response highlighted the need for Aoteaora New Zealand to build the capacity and capability in the emergency management system to ensure that people and communities can be at the centre of planning and delivery of preparedness and response.

Recommendation 6: Prepare a strategy and plan to develop the climate adaptation workforce

We recommend that the Government prepare a strategy and plan to develop workforce needs related to climate adaptation, and identify the skills and capacity to be developed through the education system, across key professional bodies, and within the science and research system.

This should include the needs for:

a) iwi/Māori involvement in adaptation design, planning and implementation
b) local community adaptation planning and engagement
c) emergency preparedness and response.

Recommendation 7: Facilitate access, availability and sharing of resources, expertise and information

We recommend that the Government investigate options to pool and coordinate information and resources to facilitate access, availability, and sharing of expertise and information to support local adaptation planning and action.

Our assessment has identified some important areas of focus for improving national adaptation planning.

The first national adaptation plan does not present a clear and coherent plan of action to drive change at the scale and pace required. A more strategic approach to adaptation planning, and to the development of all national adaptation plans, is needed.

The adaptation policy cycle established through the Climate Change Response Act 2002 sets Aotearoa New Zealand up to develop an integrated, nationwide approach to adaptation, and drive coordinated and efficient adaptation action

The release of the first national adaptation plan signalled the Government's commitment to building a climate-resilient Aotearoa New Zealand, and set out the direction of travel for how it planned to do this.

The links between climate change risk and impacts, long-term adaptation strategy, and the actions in the first national adaptation plan are unclear

The plan is based on Aotearoa New Zealand's first national climate change risk assessment and is intended to address the risks in the risk assessment, with consideration for the significance of the risk. However, the links between the first risk assessment, the long-term adaptation strategy, and the first national adaptation plan's framing and actions are unclear.

There is no direct explanation of how the goals in the long-term strategy align with the risks identified in the national climate change risk assessment, nor how the actions in the first national adaptation plan contribute to the long-term goals. There is also no indication of whether or how the principles in the long-term strategy have been applied in the development of the first national adaptation plan and its actions.

The plan also includes high-level and overlapping goals, priorities and objectives, with no clear hierarchy or flow between them explained or reflected in the way the plan is developed and structured, which means they do not provide an effective basis for a clear, long-term plan of action.

It is not clear that issues of timeliness and urgency have been adequately considered in developing the plan

The urgency of actions and their timeliness are key issues to consider in balancing the actions in the plan across different time horizons. It takes time to build the kind of foundations needed to support good adaptation outcomes. For example, significant legislative reforms and changes to institutional arrangements (such as those relating to how land use is regulated, or how adaptation is paid for) can take many years to develop and implement. So too can locally-led processes to develop plans for how specific communities will adapt to anticipated changes.

These long timeframes for change mean it is important that action to lay effective foundations happens as soon as possible. It will be important to carefully consider and prioritise the timeliness and urgency of action required as plans are developed.

A clear intervention logic and timely delivery of adaptation actions are important for effective and responsive adaptation planning

This can be achieved through several actions, including:

- **identifying and setting outcomes-focused targets across the short, medium and long term**. Doing this requires careful consideration of the direction and speed of change required, and will help to ensure that actions are prioritised appropriately. Work to develop such targets should begin as soon as practicable in advance of the next national adaptation plan, as such targets will help make clear the scale and pace of change required.
- **making sure that it is clearly considered and communicated how and to what extent each action in the plan will reduce risks identified in the national climate change risk assessment**, and ensuring that all risks have carefully targeted actions to address them.
- **making sure that that all actions align with principles of good adaptation, and showing how this is the case**. This is important to ensure that the planned approach and actions do not lead to maladaptation and that different actions in the plan fit together to support good adaptation outcomes.

Recommendation 8: Make the direction, scale and pace of change required clear

We recommend that, in all national adaptation plans, the Government:

a) identify measurable, time-bound and outcomes-focused targets for adaptation, to make the direction, pace and scale of change needed clear, and help to drive action needed – this should include targets for the short, medium and long term, and cover all outcome areas of the national adaptation plan

b) clearly communicate how and to what extent the package of actions in the plan will address the risks identified through the national climate change risk assessment

c) describe how the package of actions in the plan aligns with adaptation principles, and will avoid maladaptation.

Our assessment has identified some improvements that can be made to national adaptation planning to support effective monitoring, transparency, and continual learning and improvement within a dynamic environment.

Monitoring is an important part of the adaptation policy cycle set out in the Climate Change Response Act 2002, and is important for transparency and supporting a cycle of continual learning and improvement

It is important to help identify where there are opportunities and barriers to progress, or where progress might be happening in a way that is different from what was anticipated when policies were developed. It will support government agencies and others to adjust future plans and make course-corrections where necessary.

Implementation of the first national adaptation plan is happening within a rapidly evolving policy environment

There are some important areas where actions in the plan are delayed against delivery milestones – including many actions related to the natural environment, and the emergency management system. Barriers to implementation include funding and resource constraints, and delays in light of shifting Government priorities. Assessing implementation of the actions in the first national adaptation plan has been challenging within the current dynamic environment.

Some aspects of the first national adaptation plan support accountability and effective monitoring

This includes, for example, clear identification of lead agencies for each action. The Climate Change Chief Executives Board also plays an important role coordinating tracking of progress across implementing agencies.

However, there are several areas where future plans could be improved to support more effective monitoring and greater accountability

The national adaptation plan can be made a living document.

The national adaptation plan is being implemented in a dynamic environment. Under the Climate Change Response Act 2002, national adaptation plans must be released every six years, in response to each new national climate change risk assessment. Much can change over the course of six years. For example, since the first national adaptation plan was released just two years ago, there have been significant developments – including the North Island extreme weather events in 2023 and a general election.

Regularly updating the 'table of actions' for the plan would help to make sure that changes in the status of actions in the plan are transparent and can be viewed in the context of the package of actions in the plan. This would support public transparency and effective monitoring. The table of actions could be updated every two years, and be timed to coincide with the Government's response to the Commission's two-yearly assessment of progress of the national adaptation plan and the Commission's associated policy recommendations. The Government would need to consider how this could be achieved, whether such changes would be considered "minor and technical" under section 5ZT of the Act, or whether any legislative changes would be needed to enable this.

More precise and outcomes-focused goals and objectives can be identified.

Currently, the three goals in the long-term strategy part of the plan focus on important areas and are broadly aligned with international adaptation goals. However, they are phrased as actions rather than a desired end state that can be achieved, or towards which progress can be measured. Similarly, the 20 objectives in the plan are not framed in a consistent way – they are made up of a mixture of actions, outcomes and statements, many of which are high-level. This makes them difficult to monitor progress towards.

The delivery milestones for actions in the plan could be made clearer.

The national adaptation plan would benefit from consistent milestone terminology and clear delivery dates. This clarity is important for transparency and when implementation of one action depends upon a prior action. In some cases, the milestones given in the first national adaptation plan are outcomes being sought by certain dates. While it is important and useful to know what goal an action is seeking to achieve, the specific delivery milestones for achieving this should also be given.

Specific, measurable outcome targets and milestones could be included in the plan.

The plan lacks specific, measurable outcomes, goals and targets. No goal and outcome elements of the plan have timeframes attached to them, including the long-term goals and the objectives. This makes measuring progress, and the direction and speed of change, challenging. Including clear timeframes, alongside clearer and more outcomes-focused goals and objectives, will support more effective monitoring and continual learning and improvement.

Recommendation 9: Make improvements to support monitoring, and continual learning and improvement within a dynamic environment

We recommend that the Government:

a) **update the table of actions from the national adaptation plan every two years**, recognising that climate impacts, and Aotearoa New Zealand's adaptation response, need to be dynamic.
   i) The updated table of actions should reflect updated milestones for when actions will be delivered, as well as discontinued actions.
   ii) Delivery milestones for adaptation actions should be clear and specific. This is important for providing clarity and transparency around when these actions will be delivered.

b) **establish a transparent process for updating the table of actions**, which may require enabling changes to legislation

c) **make national adaptation plan goals and objectives specific, measurable, timebound and outcomes-focused** so they can be effectively monitored against. Goals and objectives should have associated outcomes-focused targets for different timeframes – short, medium and long term.

Wehenga B:
Ngā taunakitanga
Part B:
The supporting evidence

Te pae tawhiti, te pae tata

Ko te pae tawhiti whāia kia tata, ko te pae tata whakamaua kia tina (draw distant horizons closer and maintain that which is already close)

This chapter looks at how the first national adaptation plan considers iwi/Māori and te ao Māori, identifies key challenges to adaptation progress for iwi/Māori, and identifies areas where the Commission's monitoring should focus when it comes to developing indicators of adaptation progress.

The name of this chapter – te pae tawhiti, te pae tata – comes from the whakataukī quoted above. This whakataukī speaks to the short- and long-term nature of adaptation in Aotearoa New Zealand, a specific theme from wānanga that has shaped the approach to and whakaaro within this chapter. A glossary of te reo Māori terms is provided at the end of this chapter.

Setting the scene

In providing independent and impartial advice to the Government, He Pou a Rangi Climate Change Commission (the Commission) considers the Crown-Māori relationship, te ao Māori, and specific effects on iwi/Māori.[46] An effective Crown-Māori relationship is critical for equitable and effective adaptation outcomes that benefit all New Zealanders.

In this chapter, we set out the Commission's approach to our monitoring work and how it will evolve over time, as informed by whakaaro from iwi/Māori. We provide a broad assessment of the adequacy of the first national adaptation plan in relation to iwi/Māori and te ao Māori, as well as commentary on where Government action could enable iwi/Māori to overcome challenges to adaptation more broadly. The assessments in this chapter are in addition to findings in *Chapter 6: How well the plan addresses climate risks, Chapter 7: Barriers to the plan's effectiveness* and *Chapter 9: Observed progress towards the plan's objectives.*

There are a wide range of iwi/Māori communities across Aotearoa New Zealand, including rūnanga, hapū, urban Māori entities, and whenua Māori based entities such as Ahu Whenua trusts (as defined in Te Ture Whenua Māori Act 1993). The needs of these different hapori Māori (Māori communities), the unique challenges they face, and the distinct climate impacts involved are diverse, and specific to each community and rohe.[47] The consideration of iwi/Māori needs, whakaaro tau (priorities) and aspirations is a critical part of adapting to the impacts of climate change in Aotearoa New Zealand, and has therefore provided the foundation for the approach to our assessment. An effective Crown-Māori relationship will complement action at hapori level while enhancing the Government's ability to enable climate-resilient communities.[48]

Adapting to climate change is critical for iwi/Māori

Climate change will impact iwi/Māori communities differently

The impacts of climate change are being experienced differently in different regions, by different communities. The first national climate change risk assessment illustrated that some regions are experiencing floods and slips, while others face record-breaking heatwaves. *He huringa āhuarangi, he huringa ao: a changing climate, a changing world* – prepared using a kaupapa Māori risk assessment approach – emphasised that te reo and tikanga are deeply connected with the natural environment. This means that the pressure climate change is placing on the natural environment also poses risks to the maintenance and transfer of traditional skills (e.g., around mahinga kai), as well as for tribal identity, wellbeing, and language.[49]

Our research and wānanga with iwi/Māori highlighted that the ability for some marae to manaaki manuhiri is being impacted by the loss of species in their mahinga kai, while other rohe face the erosion of their urupā and other culturally significant sites.[50] Many hapori Māori are preparing to deal with climatic weather events as they increase in frequency and severity.[51] Government has a key role in ensuring all communities are supported to adapt to the unique climate-related challenges they face, and has specific obligations to iwi/Māori under Te Tiriti o Waitangi/The Treaty of Waitangi.

Some New Zealanders are more likely to experience harm than others from climate-related hazards. There are a range of factors that mean iwi/Māori can be more likely to experience the adverse impacts of climate change – for example, existing socioeconomic inequities may mean some iwi/Māori communities cannot afford to relocate away from hazard areas.[52] Climate change will also have distinct and wide-reaching impacts on iwi/Māori, from threatening the unique relationship iwi/Māori have to whenua and te taiao, to the intensification of Māori health inequities.[53]

Research shows iwi, hapū and Māori at a local level are very resilient, however many Māori experience barriers at the individual and household level that make them more likely to be impacted by climate-related hazards. For example, a higher proportion of Māori households are at risk of poverty, health disparities, and living in poor quality or crowded housing.[54]

Research also shows that a relatively large share of the Māori population live in rural and small urban areas, and work in industries that are exposed to climate-related hazards.[55] Many Māori live in communities that are exposed to climate risk, and at risk of being cut off from important services if transport networks are damaged. A large number of marae around the country are also exposed to climate-related risk, and at risk of being cut off. This has implications for wellbeing, resilience, and also highlights the potential for damage to surrounding sites of significance, such as urupā and mahinga kai.[56]

Analysis by Te Puni Kōkiri shows that around 24% of Māori-owned businesses are in construction, and 18% in agriculture, forestry and fishing. Māori-owned agriculture, forestry and fishing businesses play a significant role in certain regions with large amounts of agricultural land,[viii] and are exposed to a range of climate hazards, with extreme rainfall and wet spells posing significant risks.[57]

Iwi/Māori are already taking action

In the face of recent events, we have seen that many iwi/Māori are already helping lead the response to climate change.[58] Resilience through collaboration and leadership is a skill innate to many Māori; iwi/Māori have an established history of nurturing social prosperity while protecting te taiao through kaitiakitanga.[59] Through our wānanga we heard that resilience to natural hazards is often built into mātauranga Māori, for example, through pūrākau.[60] We consistently heard that mātauranga Māori is unique to each rohe and offers insights distinct to that area, however devolution of resources to local hapori is often required to unlock the full value of this mātauranga.[61]

Appropriate action from central Government, to help address these challenges for example, can support iwi/Māori to continue to take action on climate change. We have seen that an approach that targets Māori can provide benefits for all New Zealanders.[62] At the same time, tangible adaptation actions are often inherently integrated and can promote wider benefits. For example, backing marae to provide support in times of extreme weather events strengthens the wider emergency management system for everyone. To see how some communities are already overcoming challenges, see **Box 7.1: South Dunedin case study** and see **Box 7.2: Wairoa case study** in *Chapter 7: Barriers to the plan's effectiveness*.

Our approach

This part of our assessment has been informed by multiple pieces of analysis undertaken by the Commission, which are discussed in more detail in the sections that follow. These include:

- two wānanga – the first with Māori climate researchers looking at potential frameworks for understanding progress from an ao Māori perspective, and the second focused on gathering broader themes from hapori working on climate adaptation at a flax roots level.
- two place-based case studies in South Dunedin and Wairoa (see **Box 7.1** and **Box 7.2** in *Chapter 7: Barriers to the plan's effectiveness*).
- drawing on the Maui.tech case-studies and related work previously undertaken by the Commission.
- desktop research, including a review of Māori adaptation work taking place in Aotearoa New Zealand.
- an international literature review of indigenous approaches to monitoring climate impacts and adaptation.
- various other conversations and engagements with iwi, hapū and Māori.

Through our work we have heard about the many and diverse ways iwi/Māori are responding to climate change as tangata whenua, rangatira and kaitiaki, in line with their tikanga and kawa. In the past we have heard how iwi/Māori have expressed climate leadership through intergenerational taiao strategies grounded in mātauranga.[63] These strategies are intrinsically taiao centric and long-term focused. Because of this, mātauranga Māori and te ao Māori can cross over with all aspects of adaptation planning.

viii. For example, about 32% of Māori-owned businesses in Taranaki, Whanganui and the West Coast are in these sectors, 31% in Otago and Southland, 29% in Northland, 27% in Tairāwhiti/Gisborne and Hawke's Bay, and 26% in Waikato.

Local responses to climate change, and the aspirations of communities, are specific to each rohe. Support for iwi/Māori can provide valuable and diverse approaches to climate change adaptation. Mātauranga Māori is inherently rohe and hapū specific, and the responses led by iwi/Māori in their communities reflect the regionality of mātauranga. Te ao Māori cuts across all aspects of adaptation and accelerating a general understanding of mātauranga Māori through collaboration with local iwi and hapū can build more locally relevant and enduring climate change solutions.

In preparing this report we have focused on the existing role iwi/Māori play in their communities to drive adaptation planning for the benefits of their communities, as well as how this approach can better enable the whole of Aotearoa New Zealand to adapt to climate change.

Understanding what is important to iwi/Māori

Through our research and engagement, we spent time exploring what good adaptation outcomes would look like for iwi/Māori and their communities as climate impacts increase. As part of this work, we considered what indigenous groups were doing overseas, the lessons they learned and whether similar approaches might be undertaken in Aotearoa New Zealand. Of note, we looked at a number of Native American communities, including the Swinomish Indian Tribal Community, Sicangu Lakota (Rosebud Sioux), and the Karuk. We also looked at adaptation plans from communities in Canada, including the Inuvialuit, the National Inuit Climate Change Strategy, and the Assembly of First Nations National Climate Strategy. We also looked at indigenous communities in South America, Australia, and Finland. We also looked at other approaches to the development of indicators in Aotearoa New Zealand, including Ngā Tohu Waiora which uses the He Ara Waiora framework, and the Rauora framework from the first national adaptation plan.[64]

The case studies we carried out in Wairoa and South Dunedin have informed our approach to this report and have been critical in highlighting what is important to iwi/Māori. Through our case studies we met with iwi, hapū and other Māori organisations and individuals to discuss the challenges they face in adapting their communities to climate change, their experiences dealing with climate impacts and the crucial role their leadership plays in enabling communities to recover and adapt. Information from the case studies are outlined in **Box 7.1** and **Box 7.2**.

Our focus on iwi/Māori whakaaro from a hapori level has and will continue to inform our understanding of the challenges for iwi/Māori. By having this as our initial focus we will begin to understand how the first national adaptation plan affects, either positively or negatively, the ability of iwi/Māori communities to adapt.

Our approach will evolve over time

Whakaaro Māori on the design, framing, and focus of our monitoring work – in a way that is genuine, and which provides tangible results for iwi/Māori – is crucial to ensuring our monitoring mahi can fully inform Government of the effectiveness and adequacy of national adaptation plans. We have heard clearly that iwi/Māori must be able to see themselves in the monitoring work the Commission is doing; layering and building trust over time with a focus on ongoing input from iwi/Māori will therefore be critical to support effective monitoring.[65]

In this first report we are focused on creating a firm tūāpapa for our adaptation monitoring work. This report focuses on a broader approach to ngā tohu Māori and challenges, allowing key areas of focus to come through over time without restricting future monitoring work. A strong foundation will enable the Commission to build an enduring approach to monitoring. We will continue to refine the approach we take to allow our monitoring work to evolve over time.

Building trust with iwi/Māori communities over future cycles of adaptation monitoring work is crucial to having a comprehensive assessment of national adaptation plans, which have authentic, Māori-specific, measures of progress.[66] It is also critical we do not drive conversations with iwi/Māori with a particular outcome in mind. We need to ensure our processes allow iwi/Māori to establish a clear idea of what is important for them and what 'good' looks like for Māori in their respective communities.[67]

By building indicators over time, and informing them with whakaaro that comes from iwi/Māori in ongoing engagement, we reduce the risk of focusing on the wrong areas and limiting the direction of our monitoring work in the future and its potential impacts.

This approach also allows us to take stock of the significant work already underway across iwi/Māori communities, the public service, and overseas in designing and assembling indicators for adaptation. It ensures that we increase capability alongside building specificity into our monitoring work.

At the same time, we are balancing this with the need to progress our assessment and monitoring, where there is clear evidence that there are gaps in the first national adaptation plan. This is the case with some of our advice on the challenges in the first national adaptation plan and the effects this has on iwi/Māori adaptation.

Ngā tohu

As part of building our understanding of how to measure progress towards effective adaptation, and how the monitoring work may be adjusted and evolve in the future, we held two wānanga with mātanga Māori. The outcomes from the wānanga were used alongside our research work on indigenous indicators overseas, our case study work summarised in *Chapter 7: Barriers to the plan's effectiveness* (see Box 7.1 and Box 7.2 in particular), and Maui.Tech case studies.

The purpose of these wānanga was to discuss the framework that forms the foundation for ngā tohu Māori with a particular focus on ngā whāinga me ngā mea pai for iwi/Māori in the use of indicators. Considering the desire for hapori Māori to see themselves in our monitoring work is crucial to our mahi now and into the future.

Two key tohu have emerged

The themes that emerged from our analysis have provided us with an initial indication of how to structure our ngā tohu Māori work with an intention to develop a suite of quantitative indicators over time. Ongoing engagement and kōrero with iwi/Māori will help to make sure that the focus of the indicators in our monitoring work will be of relevance to the communities most impacted by climate change and climate change adaptation, and that our engagement works for those we engage with and is not solely driven by our internal deadlines.

Two key themes emerged which form the tūāpapa of ngā tohu Māori work both now and for future monitoring work: **rangatiratanga** and **te taiao**.

Both themes reflect a clear desire to have genuine input from hapori into national adaptation plans over time to generate tangible changes for Māori communities. We are aware of the inherent difficulty that results from the monitoring of a national-level adaptation plan and hapori wanting to see their local-level experiences and priorities reflected in national adaptation plans and subsequent monitoring work. These two tohu are intentionally broad to allow future monitoring to include indicators that may flow from these themes as we continue to reconcile monitoring a national-level plan with local-level aspirations.

Rangatiratanga

Whakaaro around rangatiratanga and mana motuhake came through strongly in the wānanga sessions that we held, and as a theme in our broader work. Rangatiratanga is important across all facets of climate change response, but it is particularly important in the adaptation space as it involves decision-making that has significant impacts on communities. As the impacts of climate change increase and as responses to events continue, it is important that iwi/Māori retain their rangatiratanga in adapting their communities in a way that is aligned with their wawata and moemoeā. In the context of this monitoring report, rangatiratanga is about community-led decision-making, regardless of the current political environment or outside pressures. It is important to understand the extent to which the first national adaptation plan ensures iwi/Māori have the resources and capability to effectively design and implement adaptation initiatives.[68]

The first national adaptation plan fails to acknowledge rangatiratanga through sufficient resourcing of iwi/Māori adaptation initiatives. Although there has been some advancement of iwi/Māori priorities through *action 3.3: Establish a platform for Māori climate action*, it remains unclear how this will lead to funding for iwi/Māori communities and specific adaptation actions. Based on announcements in Budget 2024, we also note that the future of the Māori climate action platform remains unclear, and the first national adaptation plan does not outline any other specific ways to resource iwi/Māori adaptation initiatives. There needs to be greater clarity on how the national adaptation plan will ensure adaptation initiatives from iwi/Māori will receive the appropriate resourcing from Government.

Self-determination was highlighted as a strong theme in international indigenous climate indicators,[69] and is supported by what we have heard previously through Maui.Tech case studies.[70]

Rangatiratanga is a guiding value for many local adaptation plans and processes – for example, the Maketu climate adaptation plan, and the Ngāi Te Ruahikihiki ki Taumutu climate change strategy.[71]

As a focus area, rangatiratanga highlights some of the inherent issues that result from the monitoring of a national-level adaptation plan and the need for hapori Māori to see themselves in the plan, and in the Commission's subsequent monitoring work. It also highlights a desire for whakaaro from hapori to have genuine impact and input into national adaptation plans over time. This is a crucial step to seek ongoing participation from Māori communities, and to improve national adaptation plans and bring about tangible changes for Aotearoa New Zealand.

Having an initial focus on rangatiratanga within our monitoring work is consistent with previous advice the Commission has provided, and it also allows us to focus on other indicators which can be added to future monitoring work.[72] As a theme, rangatiratanga will ensure that the tūāpapa for all future monitoring work has a sound base so iwi/Māori can be confident that our monitoring of national adaptation plans, and their involvement in that work, will be treated appropriately. This theme is broad enough to capture the wide range of adaptation focuses and needs of the many different iwi/Māori groups throughout Aotearoa New Zealand without limiting our monitoring focus to particular adaptation initiatives or regions.

As time goes on there may be the opportunity, through ongoing engagement, to identify specific adaptation initiatives and measures of progress for our monitoring work, bringing greater distinction and precision to the indicators we use to monitor national adaptation plans.

Te taiao

Our research and wānanga highlighted areas of focus for iwi/Māori within te taiao, such as wai Māori, rākau Māori, and te moana. The importance of monitoring the wider impacts that are felt by hapori Māori – including health, social, cultural and economic impacts that are exacerbated by climate change – emerged as an important theme. During the wānanga, it was stressed to us that the Commission's approach to monitoring needs to account for the holistic impacts that climate change has on entire communities, not just the biophysical effects of climate change. The interconnections between te taiao and broader wellbeing and Māori identity are also highlighted in *He huringa āhuarangi, he huringa ao: a changing climate, a changing world*.[73]

Taiao indicators are rohe-specific and are often positioned within the mātauranga of hapū and the pūkenga of kaitiaki within communities. The impacts of climate change and physical adaptation needs will differ from rohe to rohe and hapori to hapori. It is therefore important to have a tohu that covers both the hōhonutanga (depth) of climate change impacts and the whānuitanga (breadth) of the effects on te taiao for the many diverse Māori communities across the motu. As our monitoring approach develops and becomes more established and mature, we will look at adding measures of progress that have greater rohe relevance. However, doing this will require greater engagement and further consideration of what capability is required.

For these reasons we have opted for a broader taiao-based tohu in this report. This will ensure that tohu that may have greater regional relevance for different iwi/Māori and their hapori can be added over time, fitting beneath the maru, or the cloak, of this overarching thematic tohu. Taking this approach will also reduce the risk that we make pre-emptive decisions that mean we focus on areas that we later learn are not of as much relevance to hapori as we had initially thought.

Te ara ki mua – where to from here

Assessing the progress of the first national adaptation plan towards matters of significance for iwi/Māori and their communities could lead to broader benefits for the rest of Aotearoa New Zealand. Iwi/Māori have consistently demonstrated the ability to respond during times of crisis such as the climatic weather events of 2023 or during the COVID-19 pandemic. In both of these examples the benefits of leadership by iwi/Māori were felt by all members of respective communities, not just iwi/Māori who provided resourcing and leadership during these times.

It is crucial for our monitoring that we understand how these benefits will impact all of Aotearoa New Zealand. This can only be done if we first understand what key focuses there are for iwi/Māori communities and how this should form part of our monitoring work.

For our monitoring work to have the most impact it will need to have qualitative aspects to it. This will be layered into our work over time, with a focus on national-level monitoring, climate change impacts and how these play out at a local level. However, there is an inherently difficult balance between national-level monitoring and local-level impacts and indicators, which we are still considering. We are taking a considered, long-term approach to this process to avoid unintentionally restricting future monitoring work. Specificity in our indicators will come with time as our approach becomes clearer and this divergence between national adaptation plans and local aspirations is less pronounced.

At the same time, we highlight that quantitative and qualitative data and approaches are not mutually exclusive and where it is appropriate, even in these early stages, we will monitor and make recommendations based on a qualitative approach. The themes that we have identified and focused on in this chapter are designed to provide context for our qualitative work, drawing on themes and work happening elsewhere to contextualise this advice. As time goes on, we will whakapapa, or layer our advice. This will develop our ability to clearly inform the Government in our monitoring assessment of future national adaptation plans.

How the first national adaptation plan considers te ao Māori

The strategic layers of the first national adaptation plan

The first national adaptation plan states that upholding the principles of Te Tiriti o Waitangi are a central aspect of the Government's long-term adaptation strategy. However, the various elements of the long-term strategy, including adapting in partnership with Māori, do not clearly flow through into the rest of the plan and its actions. As highlighted in *Chapter 5: The plan's overall architecture, goals and objectives*, a clear rationale is critical for understanding how the actions in the first national adaptation plan will be effective at supporting progress towards the strategic elements of the plan. As part of the first national adaptation plan, the Government commissioned Ihirangi – a group of Māori climate and environmental experts supported by the Iwi Chairs Forum – to provide an indigenous worldview of the plan.[74] As a result, Ihirangi produced the Rauora framework, which was developed to sit alongside the plan's strategic narrative.[75] The Rauora framework is a lens through which the strategic narrative and future national adaptation plans will be progressed.

The first national adaptation plan is clear that *action 3.3: Establish a platform for Māori climate action* will be used to determine how the Rauora framework will inform Aotearoa New Zealand's adaptation journey. The Māori Climate Action Platform is under development, in partnership with tangata whenua. A Ministerial advisory committee has been appointed to engage with Māori and lead the design phase. Following Budget 2024, the future of the Māori climate action platform remains unclear.

Assessing the actions in the first national adaptation plan

All actions in the first national adaptation plan are linked to at least one 'objective' (**Figure 5.1** in *Chapter 5: The plan's overall architecture, goals and objectives* sets out the first national adaptation plan's strategic layers). The objectives sit across the five outcome areas of the plan, and system-wide issues, and are a critical aspect of the plan's framework. Of the 20 objectives in the plan only one – found in the homes, buildings and places outcome area – explicitly references iwi/Māori: "Māori connections to whenua and places of cultural value are strengthened through partnerships". There are also two objectives that highlight their relevance to iwi/Māori in their explanatory bullet points: the second system-wide objective relating to data and information, and the fourth homes, buildings and places objective relating to cultural heritage. The remaining 17 objectives make no reference to iwi/Māori.

The first national adaptation plan includes one overarching action, *action 3.3: Establish a platform for Māori climate action*, that is exclusively focused on a climate response in partnership with Māori. As noted above, the Māori Climate Action Platform is under development, however the future of the Māori climate action platform remains unclear as at 31 May 2024.

Consideration of te ao Māori and iwi/Māori can be foundational to the development of adaptation actions that enable positive outcomes for all New Zealanders. It is clear that inconsistent efforts were made in applying a te ao Māori lens over different areas of the first national adaptation plan. If some adaptation action is developed devoid of ao Māori framing and consideration for iwi/Māori, it will constrain the Government's ability to appropriately support iwi/Māori to develop proactive adaptation solutions. There are other workstreams underway relevant to iwi/Māori, which can be found in *Chapter 6: How well the plan addresses climate risks*, *Chapter 7: Barriers to the plan's effectiveness* and *Chapter 9: Observed progress towards the plan's objectives*.

Challenges to the implementation and effectiveness of the first national adaptation plan

As part of our monitoring work, we have considered some of the challenges to the implementation and effectiveness of the first national adaptation plan. The focus has been on key challenges and enablers for adaptation progress under the first national adaptation plan. When considering the specific impacts of challenges on ao Māori, we undertook desk research, relied on Maui.Tech, the two wānanga (for the tohu), and also our case study work. From that, we have had a very focused look at key challenges for iwi/Māori, focusing on areas where central Government policy is needed to address some of these issues and where immediate change can be made to increase the efficacy and adequacy of the first national adaptation plan.

Chapter 3: Our key findings and recommendations identifies immediate changes the Government can make to the national adaptation plan to immediately improve the ability for iwi/Māori to adapt their communities. As well as the challenges identified in *Chapter 7: Barriers to the plan's effectiveness*, there are three specific challenges for iwi/Māori we have identified. In *Chapter 7* we utilised a scorecard system to highlight and discuss these challenges. In preparing this chapter and discussions on challenges specific to iwi/Māori, we opted not to use this approach to align with our focus of building specificity over time and ensuring that the whakaaro of iwi/Māori will come through clearly in future monitoring reports.

Challenge 1: A clear legislative framework could support iwi/Māori to exercise rangatiratanga in adaptation

Aotearoa New Zealand does not currently have a clear legislative framework with institutional arrangements that support iwi/Māori to exercise rangatiratanga in adapting to climate change.

Aotearoa New Zealand currently lacks a clear and coherent framework for adaptation planning and implementation. This gap has significant and wide-ranging flow-on effects – for example, making it difficult for councils that try to act to get adaptation prioritised, and to secure funding to support local adaptation processes. This challenge is described in more detail under *Challenge 1: A coherent legislative framework and clear institutional arrangements enable effective adaptation* in *Chapter 7: Barriers to the plan's effectiveness.*

This current lack of a clear legislative framework and institutional arrangements affects the ability of iwi/Māori to carry out and participate in adaptation processes. This gap adds difficulty for iwi/Māori in implementing adaptation initiatives in their rohe, especially as the relationship between local government, central government, and iwi/Māori lacks a clear distinction of roles and responsibilities. This affects the adaptive ability of the whole community.

As discussed in *Chapter 7: Barriers to the plan's effectiveness*, the first national adaptation plan goes some way towards addressing this by highlighting several ways this challenge could be addressed. However, it does not directly address this issue in relation to iwi/Māori, rather it focuses on Aotearoa New Zealand as a whole. Changes to legislation and different initiatives would provide the opportunity to outline how this relationship could work to give greater clarity and assurance to all parties in the Crown-Māori relationship.

There are examples of iwi and other groups such as whenua Māori entities, who have considerable resources to leverage, and extensive adaptation plans, but feel frustrated by the lack of a nationally-consistent approach to planning that works harmoniously with their work.[76]

They are seeking clarity on the functions of Government in relation to climate change and how iwi/Māori will interact with Government and legislative frameworks to progress adaptation initiatives. Any legislative framework should include a clear decision-making model where iwi/Māori are able to meaningfully plan, carry out and participate in collaborative adaptation processes which are aligned with their assessments and priorities.

Challenge 2: Acknowledging and addressing historic inequities can better enable iwi/Māori to participate in adaptation

Historic inequities limit the choices iwi/Māori have when adapting their communities to climate change. The second iwi/Māori-specific challenge we have identified relates to whenua Māori and the compounding historic impacts. The nature of the location of Māori land can also mean that iwi/Māori are more exposed to climate-related hazards. Raupatu, compulsory acquisition, and other forms of land alienation have resulted in a considerable portion of the Māori land estate being in isolated areas, low-lying or coastal areas, or areas with limited options for economic use.[77] These limitations can further exacerbate other socioeconomic issues, and therefore constrain the ability of iwi/Māori to adapt to the impacts of climate change.

Within the first national adaptation plan there is a lack of specific actions to address current issues around Māori land. There are no specific actions within the first national adaptation plan that address historic issues, or their ongoing effects, and there is a lack of direct input into the flow on socioeconomic effects.

We have also identified that iwi/Māori are likely to be over-represented in groups that will face significant challenges in adapting to climate change due to a current prevalence of underlying conditions where Māori are over-represented such as health, higher proportion of renters, and other socioeconomic characteristics that effectively limit choice. Immediate changes can be made to the first national adaptation plan to bring about specific focus to these challenges.

Challenge 3: Adequately resourcing iwi/Māori can create effective adaptation action

In general, **the first national adaptation plan lacks specific actions to resource iwi/Māori to increase capability and capacity across general areas of the plan**. In Challenge 1 we highlighted that many iwi/Māori collectives have considerable resources at their disposal. However, there are also iwi/Māori collectives that require more resourcing to undertake adaptation initiatives.

Some actions describe partnering with Māori to increase resilience on Māori-owned land, homes and cultural sites, and partnering to support adaptation planning. However, there is a lack of detail as to what the partnership would look like or how this partnership would be resourced. Outlining these steps is key for hapori Māori to build capacity, and a failure to provide this detail means that the Crown-Māori partnership may continue to be underfunded.

This in turn could mean that the Crown is not adequately working to ensure iwi/Māori can meaningfully and consistently participate in national adaptation plans, one of the core principles of Te Tiriti o Waitangi. In addition to the specific Treaty risk this may present for the Crown, it could generate a wider risk that inequities, which have not been adequately identified throughout the first national adaptation plan, will fail to receive the direct focus required. This could further exacerbate inequities. By outlining clearly how the Crown-Māori relationship will be funded to partner on adaptation planning, the Crown can focus on funding groups in communities that are best placed to understand and address their needs.

Broader challenges to adaptation have also been identified

We also touch on other challenges which either partially or directly relate to iwi/Māori and communities. These can be found in *Chapter 7: Barriers to the plan's effectiveness*.

Te reo Māori glossary

Kupu/rerenga kupu Māori
English contextual translation

Ahu Whenua trusts Ahu Whenua trusts as defined in Te Ture Whenua Māori Act 1993

hapori Māori Māori communities

hōhonutanga depth

kaitiaki(tanga) guardianship, stewardship, trusteeship

kawa protocols, practices

mahi work

mahinga kai garden

mana motuhake *mana* through self-government and self-determination, control over one's own destiny

manaaki manuhiri hospitality shown towards guests

mātauranga knowledge, wisdom, understanding, skill

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

mauri the essential quality and vitality of a being or entity

moana ocean

moemoeā dream, vision

ngā whāinga me ngā mea pai objectives and success

pūkenga expertise

pūrākau story

rākau tree

rākau Māori native trees/plants

rangatira chief, chiefly, noble

rangatiratanga right to exercise authority and autonomy, self-determination, self-management – in the context of this report rangatiratanga specifically refers to communities having autonomy over decision-making

raupatu confiscation, often used in the context of land

rohe boundary, district, region, territory, often interchangeable with *takiwā*, can be made up of multiple *takiwā*

rūnanga in this context this refers to an iwi entity, which is often the recognised iwi settlement entity

takiwā boundary, district, region, territory, often interchangeable with *rohe*

tangata whenua people born of the whenua – people of the land where their ancestors have lived

te ara ki mua the path ahead, used to refer to next steps

te taiao the world, Earth, the natural world, the environment

tikanga correct procedure, custom, habit, lore

tohu indicator, sign – *ngā tohu Māori* are Māori-specific indicators

tūāpapa foundation

urupā burial ground

wai māori freshwater

wānanga workshops, discussions

wawata dream, used to speak broadly around the guiding hopes and aspirations of communities

whakaaro thought, opinion, idea, understanding

whakaaro tau priorities

whānuitanga breadth

whenua land

WĀHANGA 5 | CHAPTER 5

Ngā whāinga hoahoa o te mahere | The plan's overall architecture, goals and objectives

In this part of our review of the quality of the first national adaptation plan, we look across the plan as a whole and assess its architecture, and its goals and objectives.

The Government's first national plan of action to address climate risk

The adaptation policy cycle established through the Climate Change Response Act 2002 (the Act) sets Aotearoa New Zealand up to develop an integrated, nationwide approach to adaptation planning and action. This cycle is intended to drive coordinated and efficient adaptation action, and to improve accountability. The process, established through the Act, mandates the regular preparation of a national climate change risk assessment (NCCRA) that identifies priority climate change risks, the preparation of national adaptation plans for addressing those risks, and a process for monitoring those plans.

Aotearoa New Zealand's first national adaptation plan was prepared by the Ministry for the Environment (MfE), with collaboration across many government agencies. The Act requires that, in each national adaptation plan, the Government must set out:

- its objectives for adapting to the effects of climate change
- strategies, policies and proposals for meeting those objectives
- timeframes for implementing the strategies, policies and proposals
- how these matters address the most significant risks from the national climate change risk assessment
- the measures and indicators that will enable regular monitoring of and reporting on the implementation of the strategies, policies, and proposals.

The development and release of the first national adaptation plan represents a significant step for adaptation policy and planning. Preparing and releasing such a plan is a major task, particularly given the wide-ranging nature of climate impacts, and the role that many different parts of government (at the central and local levels), iwi/Māori, communities, businesses, asset owners and operators, individuals and other groups have in adaptation action.

Our approach to assessing the plan's potential to be effective

Under section 5ZU(1) of the Act, He Pou a Rangi Climate Change Commission (the Commission) is required to "provide the Minister with a progress report that evaluates the implementation of the adaptation plan and its *effectiveness*".

In this assessment, we have looked at how well the plan sets the country up to achieve the scale, pace and direction of change required. This part of our assessment focuses, in particular, on identifying whether the plan has the potential to deliver effective adaptation. It is largely forward-looking and is an important part of our overall assessment of the plan's effectiveness.

In order to inform this assessment, we have considered the overall architecture of the plan, and the strategic elements it contains – including its goals, priorities and objectives. We have also considered the links between these elements and the actions in the plan.

To support this assessment, we have drawn on international literature, research and experience of adaptation practitioners and others to identify key themes in emerging international best practice on adaptation planning. We used these themes to assess the plan.

We have also drawn on this international literature review to identify important adaptation principles for guiding effective adaptation over the long term. We then assessed how well the actions in the plan align with these adaptation principles (see *Chapter 1: Introduction*, Box 1.1: What is adaptation, and what does effective adaptation look like?).

Overall assessment

The Commission's assessment finds that there are some important areas for improvement, that would help to make sure national adaptation plans can drive action at the scale and pace of change required. This includes providing a clearer intervention logic, and making sure timeliness and urgency of different actions are adequately considered when developing the plan.

We have also identified some important elements that would support greater accountability and allow more effective monitoring of progress. This includes setting out clear outcomes-focused milestones and targets over different timeframes (short, medium and long term). The process of identifying and setting outcomes-focused targets would also ensure that careful consideration is given to the direction and speed of change required and help to make sure the plan can drive the action needed.

Our assessment of the plan against important principles of effective adaptation has also identified some gaps that will be important to address. This includes the lack of clear focus on issues of equity and treating adaptation like a co-benefit rather than a core consideration in every policy, action and investment decision. Addressing these gaps is important for avoiding maladaptation, and making sure that adaptation action does not create inequities, or lead to maladaptation (as defined in *Chapter 1: Introduction*, Box 1.1: What is adaptation, and what does effective adaptation look like?).

Understanding the architecture of Aotearoa New Zealand's first national adaptation plan

This section sets out the structure of the first national adaptation plan, with a focus on elements of the plan that are relevant to assessing whether it has the potential to deliver effective adaptation. As illustrated in Figure 5.1, the first national adaptation plan contains many different strategic elements and layers.

The national adaptation plan is broadly divided into two parts – a long-term strategy, and the plan of action.

Chapter 1 of the first national adaptation plan sets out a 'long-term adaptation strategy', including:

- a vision
- three goals
- ten principles
- seven separate considerations about ensuring equitable transition.

Chapters 2–11 contain the actions of the first national adaptation plan, and the following strategic elements.

- Four priorities for addressing risks identified in the first national climate change risk assessment for Aotearoa New Zealand.
- Five 'outcome areas' where targeted action is needed (natural environment; homes, buildings and places; infrastructure; communities; and economy and financial system).
- Twenty objectives to address the risks in the first risk assessment. Each objective relates to one of the five outcome areas, or to system-wide issues.
- Three levels of actions (critical, supporting or proposed) listed against the objectives; with some actions supporting more than one objective. The plan includes a total of 127 actions and sub-actions. The plan's 'table of actions' includes some implementation delivery milestones for these actions.

The actions in the plan are framed around four priorities

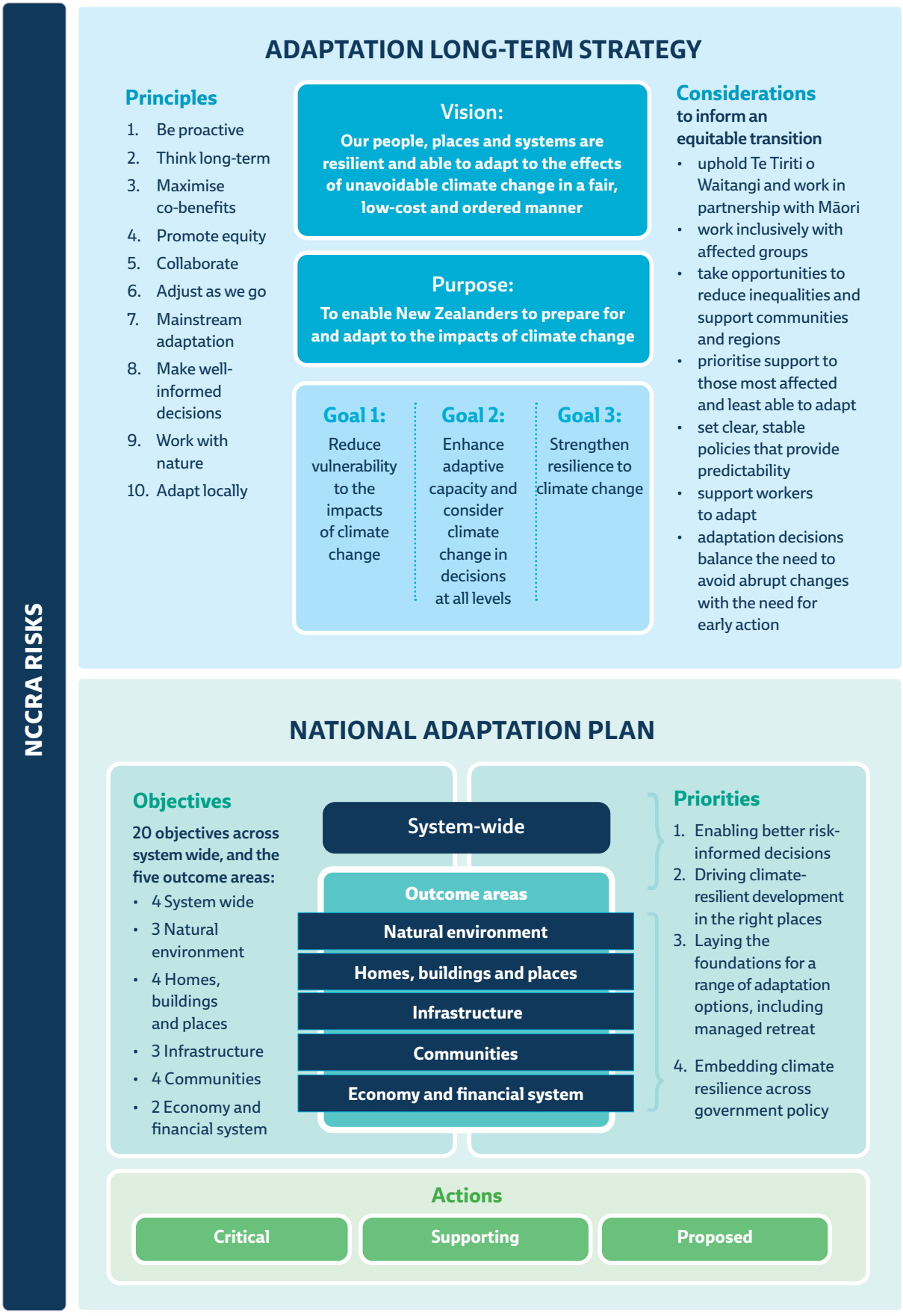
There are four priorities identified in *Chapter 2* of the first national adaptation plan. The plan notes that these are the Government's priorities for action to address the 43 risks set out in the first national climate change risk assessment, and the additional risk to the telecommunications network.

The four priorities are:

1. Enabling better risk-informed decisions
2. Ensuring our planning and infrastructure investment decisions drive climate resilient development in the right locations
3. Adaptation options including managed retreat
4. Embedding climate resilience in all government strategies and policies

Chapters 3–5 focus on 'system wide' issues and are each framed around one of these priorities: *Chapter 3* is framed around enabling better risk-informed decisions; *Chapter 4* is framed around driving climate-resilient development in the right places; and *Chapter 5* is framed around adaptation options including managed retreat. *Chapters 6–10* are each framed around priority 4 – with each chapter focusing on a specific outcome area.

Figure 5.1: The strategic elements and layers of the first national adaptation plan



Source: Commission analysis

Does the plan align with emerging international best practice for adaptation planning?

The Commission has looked across the first national adaptation plan as a whole, including the overall architecture of the plan, and its priorities, goals and objectives. This part of our assessment draws on a review and discussion of emerging international best practice for national adaptation planning.

Emerging international best practice for adaptation planning

As part of our assessment of Aotearoa New Zealand's first national adaptation plan, we looked at lessons learned internationally, and emerging international best practice for adaptation planning. This included drawing on international examples of national adaptation plans and strategies, monitoring of those documents, conversations with international experts, as well as on a range of relevant literature – including international national adaptation plan guidance and multilateral reviews, as well as some academic review studies.[78]

Internationally, national adaptation planning is still at a relatively early stage of maturity. The number of countries that have developed national adaptation plans continues to grow, though approaches vary in terms of how these plans are developed and communicated.

The development, scope and maturity of monitoring and evaluation of national adaptation plans also varies.[79] Most countries still have evolving approaches to developing, communicating, and monitoring national adaptation strategies and plans, and assessing progress.

Developing and setting clear goals and objectives for adaptation is difficult, and a challenge that many are grappling with around the world. While there is no one 'right' approach to adaptation planning, there are some important themes related to setting adaptation goals, objectives and priority actions. Examining these themes has helped the Commission to assess where the relative strengths of Aotearoa New Zealand's first national adaptation plan lie, and where there are areas for future improvement over time in this complex area.

Key themes relevant for effective national adaptation planning

We have identified key themes that we consider are important for adaptation planning, based on our review of emerging international best practice. Drawing on this information, we have identified five themes that are key to effective national adaptation planning:

- **Goals and priorities based on a clear understanding of climate risks**. It is important that national adaptation planning is built on a clear understanding of climate risks, and focuses on the consequence and urgency of those risks.
- **Goals and objectives provide specific and measurable visions of success**. Quantitative and time-bound outcome targets are important and help to paint a picture of the scale and direction of progress required. Specific, measurable, attainable, relevant and timebound (SMART) objectives are important, because imprecise and high-level goals and objectives do not provide a clear vision of success and are hard to measure progress towards.
- **Clear linkages between a plan's actions and its goals, objectives and priorities**. Clearly linking the actions in the plan with the stated goals, outcomes and objectives is important. A clear rationale is needed, explaining why the actions included in the plan are important and how they will lead to the achievement of the goals and objectives.

- **Goals and objectives at different levels, over different timeframes, to support tracking of progress**. Adaptation plans need a long-term vision, but medium-term and short-term goals and/or outcomes are also important because they set trackable steps towards the longer-term goal. Tracking of progress will be better enabled by medium-term and short-term goals that describe what must be accomplished over different timeframes, to work towards the longer-term vision.
- **Clarity around how progress towards goals and objectives will be monitored**. Making clear, in the plan itself, how progress will be assessed is important for transparency. Clarifying how progress will be assessed also helps to ensure that consideration has been given to necessary milestones towards achieving adaptation goals, it is also important for making sure that adjustments can be made over time to ensure effectiveness.

Several of these key themes are reflected in the architecture of Canada's national adaptation strategy and plan (see Box 5.1: Canada's National Adaptation Strategy and Plan), which was released in 2023 while the Commission was preparing this assessment. The Commission has been involved in many international discussions on this topic, and the Canadian National Adaptation Strategy and Plan is one of the few examples we have found to-date that takes steps towards incorporating outcomes focused goals and targets over different timeframes. We acknowledge that identifying such targets is difficult. This example may be useful for considering how these different themes may be reflected in national adaptation planning.

Box 5.1: Canada's National Adaptation Strategy and Plan

We found that several of the key themes for effective adaptation planning were also highlighted in advice provided to the Canadian Federal Government by the Canadian Climate Institute, prior to the release of Canada's final National Adaptation Strategy (NAS). Canada's NAS and its associated national adaptation action plan was released in 2023 and provides an example of a strategy that addresses some (but not all) of the themes identified above.

The NAS contains an overarching vision for Canada and builds on the country's national climate change risk assessment, and local risk assessments. Within each of the five 'systems' the Strategy covers, there is a long-term goal (2050), medium term objectives (2030) and specific, measurable, relevant and timebound targets. For example, for the "Health and Wellbeing" system, the strategy lays out these items.

Goal:	The health of all people in Canada is safeguarded and supported by a climate-resilient and adaptive health sector that has robust and agile systems and services that account for and support the diverse components of well-being.
Objectives:	1. Health systems have the expertise, knowledge, and resources needed to identify climate change-related risks and take equitable, evidence-based action to protect health. 2. Health authorities have identified the extent to which climate change is impacting health and have established methods for tracking future health impacts and evaluating progress towards protecting health and reducing risks. 3. People are protected from urgent climate-related health risks such as extreme heat, infectious diseases, wildfire smoke, foodborne hazards and impacts to traditional foods, poor mental health outcomes, and others. 4. Climate action across all sectors promotes good health and prioritizes measures that have multiple benefits (e.g., protecting health and improving environmental sustainability).
Targets:	• By 2030, health systems have identified risks, developed adaptation plans, and are measuring progress towards climate-resilience • By 2026, 80% of health regions will have implemented evidence-based adaptation measures to protect health from extreme heat • By 2040, deaths due to extreme heatwaves have been eliminated • By 2030, consideration of health impacts and benefits are integrated into key climate change tools, guidelines and standards

These quantified and timebound targets provide concrete goals to measure progress against. However, the NAS does not include a clear explanation of why these targets were chosen, including why they are the most appropriate targets for tracking progress towards the objectives and goal, and why some objectives do not appear to have targets directly associated with them.

Assessment of the first national adaptation plan against international best practice

Aotearoa New Zealand has made significant steps in developing an integrated, cross-party, national approach to adaptation. While the number of countries that have developed national adaptation plans continues to grow, Aotearoa New Zealand is relatively well advanced, with a clear cycle of risk assessment, adaptation planning and monitoring and evaluation set out in the Act.

Preparing a national adaptation plan is a major task, and the approach to developing and communicating these plans will continue to evolve over time. To support a cycle of learning and improvement, we assessed Aotearoa New Zealand's first national adaptation plan against the five themes that came out of our review of international best practice. The following three areas emerged as important to focus on for improvement going forward.

- **Clear link between risks, goals and actions**. Developing the first national adaptation plan based on a national climate change risk assessment aligns with international best practice. However, the next national adaptation plan could be improved by setting out clear explanations for how the actions will effectively address the risks identified through the first national climate change risks assessment, or why they are the best actions to do so. This would ensure that the plan addresses the risks in a comprehensive way.
- **Clear goals and objectives**. The plan contains different strategic elements, including goals, priorities and objectives. These are important for making clear the direction, scale and pace of change needed. The next national adaptation plan could be improved by making sure it provides a more effective basis for a clear, long-term plan of action – including greater specificity, and reducing overlap.
- **Specific, measurable outcome targets or milestones**. The plan contains implementation delivery milestones for individual actions, which are important for tracking progress. However, the next national adaptation plan could be improved by including measurable outcome-focused milestones across different timeframes. This would make it clearer what the plan is seeking to achieve and easier to monitor progress against.

Clear link between climate risks, goals and actions

The first national adaptation plan is based on Aotearoa New Zealand's first national climate change risk assessment and is intended to address the risks in the risk assessment, with consideration for the significance of the risk. This approach matches international best practice.

Drawing on emerging international best practice, we note that strengthening the link between the first risk assessment, the long-term adaptation strategy in the plan, and the plan's architecture and actions, would help to ensure that the plan addresses the most significant climate change risks in a comprehensive way.

This includes, for example, clearly setting out how the goals in the long-term strategy align with the risks identified in the national climate change risk assessment, and how the actions in the first national adaptation plan contribute to achieving long-term goals. Setting out how the principles in the long-term strategy have been applied in the development of the national adaptation plan and its actions would also help to make these links clearer.

In the first national adaptation plan connections between climate risks and actions are noted or suggested, but they are often not explained and justified at a sufficient level of detail for us to be sure that a systematic approach has been taken.

Future plans could be strengthened by making it clearer how the individual actions in the plan, and the combined package of actions, will address the climate risks they are mapped against, and explaining why these are the best actions to ensure that the climate risks are adequately addressed (for more discussion of this, see *Chapter 6: How well the plan addresses climate risks*).

Without a clear explanation of how and why actions are mapped to risks, it is possible that there could be significant gaps in the plan, in terms of actions to address the most significant risks and to support achievement of the goals and objectives.

Clear goals and objectives

The plan contains different strategic elements, including goals, priorities and objectives. The long-term strategy is important for making clear the direction, scale and pace of change needed to adapt to the impacts of climate change.

Drawing on emerging international best practice, we note that setting out a clearer hierarchy or flow between the different elements, including between the objectives in the plan and the goals and vision in the long-term strategy, would provide greater clarity about what the plan is seeking to achieve, and how the package of actions will support this. For example, future plans could be strengthened by making it clear how meeting the objectives in the plan would support achieving the long-term goals.

Making the goals and objectives in the plan more specific, and reducing overlap, would also support more effective tracking of progress. For example, the three goals in the long-term strategy are phrased as actions rather than a desired end state that can ultimately be achieved, and against which progress can be measured. Similarly, the 20 objectives in the first national adaptation plan are made up of a mixture of actions, outcomes and statements. The additional explanation points provided for each objective within the plan provide some additional clarity as to what each objective is intended to cover, but these also often cover multiple distinct issues within a single point.

Specific, measurable outcome targets or milestones

The table of actions in the first national adaptation plan contains implementation delivery milestones, which provide useful detail to support the tracking of implementation progress. These have been important for the Commission's assessment of progress towards implementing the plan (see *Chapter 8: Progress towards implementing the plan*).

Our review of emerging international best practice highlights the importance of outcomes-focused targets alongside implementation delivery milestones, to clearly set out the what the plan is seeking to achieve, and by when.

Identifying outcomes-focused targets is challenging. For example, our international review shows that most national adaptation monitoring currently focuses on planning and implementation, because these are generally easier to quantify than outcomes and impact. Nevertheless, outcomes-focused targets are important for understanding the changes that result from the implementation of adaptation actions.

Future national adaptation plans could be improved by identifying specific, measurable outcome-focused goals and targets, across the short, medium and long term – with clear associated timeframes. Identifying outcomes-focused targets would require careful consideration of the direction and speed of change required, and would help to make sure that actions in the plan are prioritised appropriately. Including clear timeframes for these targets would also support more effective monitoring, and continual learning and improvement.

Does the plan align with important adaptation principles?

This section looks at how well the actions in the plan align with key adaptation principles.

In shaping up strategies, plans and policies to adapt to the impacts of climate change, there are a range of different elements to consider, to ensure these are effective. Identifying principles to guide action is a useful way to ensure that these elements are reflected in national adaptation planning, and in how actions are implemented.

The first national adaptation plan identifies 10 principles for adaptation action, and notes that these principles guide the Government's adaptation strategy. However, these principles are not referred to in the plan of action. Future plans would be strengthened by setting out how actions align with key adaptation principles.

The Commission has looked across the first national adaptation plan, and the package of actions contained in the plan. This part of our assessment is focused on understanding how well the package of actions in the plan reflects important principles to support effective adaptation over the long term.

Guiding principles to support effective adaptation over the long term

Drawing on the literature, research, and experience of adaptation practitioners and others within Aotearoa New Zealand and overseas, we have identified some important principles to guide the development of a plan of action that will support effective adaptation action – action that can set Aotearoa New Zealand up for effective adaptation over the long term.[80]

Identifying key principles is useful to support an assessment of the first national adaptation plan, to reflect on how well it sets the country up for good adaptation outcomes.

Identifying principles for assessing the first national adaptation plan

Consistent themes and considerations emerged from our review, including: the importance of considering long time horizons and equity within and across generations, a focus on anticipatory planning, and prioritising action that supports additional benefits alongside adaptation.

These themes largely align with the eight principles identified by the Climate Change Adaptation Technical Working Group in 2018.[81] They are also largely aligned with the 10 principles included in the long-term adaptation strategy of the first national adaptation plan.

Some of these are about things to consider when implementing actions or policies. While this is important, we focused in on principles or considerations to guide the choice about which actions are the right ones in order to avoid maladaptation and support good adaptation outcomes over the long term. Therefore, we distilled the themes that emerged from our review down to four guiding principles – one overarching principle, and three supporting.

Table 5.1: Principles from emerging international best practice used for assessing the first national adaptation plan

Principle	Description
Overarching principle: Considering different time horizons	Action on adaptation spans political, planning and financial cycles. Decisions made now respond to immediate needs while also taking a long-term perspective. The approach considers equity across generations, provides certainty where possible, and does not restrict Aotearoa New Zealand's ability to make future decisions about how to act.
Balancing the need for proactive and reactive action	Action anticipates future climate risks and impacts, and focuses on reducing and preventing future damage. The approach focuses on enhancing resilience and reducing long-run costs and impacts.
Maximising co-benefits	Adaptation action creates additional benefits wherever possible, while reducing impacts and losses. This includes benefits for climate mitigation, health and wellbeing, and the environment.
Supporting equity	Action prioritises the people, places and infrastructure that are most vulnerable to climate impacts and builds adaptive capacity and capability. Actions consider equity within and across generations.

Aligning adaptation actions with these principles is important to ensure that the planned approach and actions do not lead to maladaptation. Supporting this alignment helps ensure that actions support effective adaptation, including not creating inequities or exacerbating existing inequities.

The development and implementation of specific actions and approaches can be guided by other important matters, including that Te Tiriti o Waitangi principles are upheld, that affected groups and communities have input and agency, and that actions reflect the best available evidence and account for differing local circumstances. Consideration of these matters can enable the development of enduring, collaborative adaptation actions.

How the first national adaptation plan aligns with important guiding principles

To help us understand how well the actions in the first national adaptation plan are likely to support good adaptation outcomes over the long term, and avoid maladaptation, we looked at all the actions included in the plan and assessed how well, as a package, they align with the four guiding principles we identified.

Considering different time horizons

The first national adaptation plan contains a range of actions that consider different time horizons. The first three chapters of the document are largely framed around three priorities that are intended to support adaptation outcomes over the long term: *Enabling better risk informed decisions; Driving climate-resilient development in the right places*; and *Laying the foundations for a range of adaptation options including managed retreat*. Many of the actions included in these chapters of the plan focus on issues such as improving the quality and availability of data and information, raising awareness around climate risk, and large-scale legislative reforms.

At the same time, other actions in the plan are more focused on immediate needs. This includes actions focused on improving how support is provided during and following extreme events, improving biosecurity, and actions to address more immediate sector-specific needs. Some immediate needs are not addressed well in the plan, for example, there are no actions focused on clarifying how to prevent development in areas at risk from climate-related hazards over the short and medium term.

The urgency of actions and their 'timeliness' are key issues to consider in balancing the actions in the plan across different time horizons. Some actions focused on long-term issues and impacts still need to get underway with urgency, even if developing and implementing those actions may take many years. For example, developing a clear legislative framework and coherent institutional arrangements for adaptation, clarifying how the costs of adaptation are distributed, and proactively communicating the long-term direction of change is important. Providing signals now will help to minimise the risk of moral hazard behaviour and ensure that decisions made now do not lock in additional climate risk and increase long-term damage, loss and costs.

Overall, future national adaptation plans could be improved by making clear how the different actions in the plan fit together to support effective adaptation across the short, medium and long term. They would also benefit from clear justification for why certain actions have been prioritised as critical over others. The inclusion of specific and measurable outcomes-focused goals over different timeframes would help to make clear what the plan aims to achieve, and provide clear milestones of success to measure progress against. The act of setting out such goals over different timeframes would also require careful and consistent consideration of the relative urgency of actions with impacts across different time horizons.

Balancing proactive and reactive action

The first national adaptation plan includes many actions that are focused on proactive action, which is important. For example, the plan's focus on making data and information more accessible to different users, raising awareness of climate risks, and developing a wide range of guidance around different aspects of adaptation are important for improving adaptive capacity and ensuring decisions at different levels are grounded in a clear understanding of climate risks.

The development and use of tools to ensure that the future risks and costs of climate change are better accounted for in planning and investment decisions (including in infrastructure) are also important within this context, as they can help to ensure that decisions made now consider risk over the long term. These are all actions that align with the need to be proactive.

The development and implementation of sector-specific adaptation plans is also important to proactively prepare different parts of the economy for climate impacts. The development, delivery and/or implementation of several of these plans are included as actions in the first national adaptation plan, though some of these do not have adaptation as a primary focus. This includes, for example, *action 8.2: Develop the National Energy Strategy*, and *action 10.1: Deliver the New Zealand Freight and Supply Chain strategy*. The inclusion of sector-specific plans and strategies in the first national adaptation plan is appropriate, because climate adaptation needs to be systematically integrated throughout sector and organisational strategic planning and operations. It will be important to ensure that climate risk, impacts and the minimisation of long-run costs are core considerations of any sector plan.

There are fewer actions included in the plan focused on being prepared for reactive adaptation. The forward-focused nature of the plan is likely to have resulted in this. However, there are a number of actions in the plan that relate to the emergency management system, and following the 2023 North Island extreme weather events, additional focus has been put on recovery. For example, significant public funds were provided to support recovery, and for property buy-outs. This type of reactionary policy clearly responds to urgent needs and issues, but can also set precedents about what those affected by extreme events in the future might be in line to receive.

Through our engagement, we heard that in some instances funding may have been redirected from planned proactive action to improve long-term resilience to deal with extreme events. We also heard that efforts to build back following extreme events have also often failed to focus on 'building back better' to improve resilience to future events. This can happen for a number of reasons, for example due to insurance payouts and issues accessing the additional capital needed to make improvements. As an approach this does not align with the principle of balancing proactive and reactive costs, especially if long-term actions to improve resilience are delayed to address more immediate needs post event.

If less proactive action is taken to improve resilience, the impacts of both ongoing progressive climatic changes and more frequent and extreme events are likely to be larger and more costly over time, with costs of recovery increasing alongside other economic costs such as lost productivity. Importantly, this means that the financial capacity of governments to fund adaptation may decline at the same time as climate change impacts are increasingly felt.[82] Funding for proactive actions continuing alongside important reactive action to respond to extreme events is critical.

Maximising co-benefits

A range of actions in the plan are likely to have co-benefits beyond adaptation outcomes and improving resilience. Many actions to improve the resilience of the natural environment to climate impacts, for example, are likely to support broader biodiversity, freshwater and other environmental outcomes.[83] Likewise, actions that focus on supporting those most vulnerable to the impacts of climate change and improving community resilience are likely to have flow-on benefits for broader health and wellbeing, and social cohesion.

Aligning with this principle requires that consistent consideration be given to co-benefits as actions are developed and implemented. If the potential for co-benefits is not explicitly considered and assessed as actions are developed and implemented, relatively easy opportunities for additional gains may be missed, and the potential for maladaptation will increase. For example, consistent assessment of emissions reduction benefits alongside resilience in planning and building infrastructure will support approaches to improving resilience that avoid increasing emissions.

In some cases, adaptation is not the primary focus but is itself a potential co-benefit of actions in the first national adaptation plan. For example, *action 9.8: Continue to overhaul the welfare system, action 3.14: Deliver the Integrated Farm Planning Programme*, and *action 6.3: Implement Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020* are not primarily adaptation actions. Rather, they are actions that were already planned or underway at the time the first national adaptation plan was developed, and which may also support adaptation outcomes. It will be important to ensure that adaptation is indeed a key focus of these actions as they are progressed.

It is important that adaptation is treated as a fundamental consideration of all planning and policy making, and of all decisions around public investment and spending.

Supporting equity

Aligning with this principle requires that consistent consideration be given to issues of equity, and avoiding inequities, across all outcome areas and the whole package of actions.

Our review finds that there is currently limited focus across the first national adaptation plan on ensuring that equity is supported. While some actions do refer to the need to consider vulnerable groups, these are largely limited to a small number of actions in the communities and homes, buildings and places outcome areas. There is also no description of how this will be done. A key gap is that there are no actions in the plan specifically focused on addressing inequity and avoiding new inequities.

If issues of equity are not considered as part of the development and implementation of every action in the plan, then there will be heightened potential for adverse impacts, reinforcing existing inequities, and maladaptation.

There are some other gaps in the plan with implications for equity which will be important to address in future adaptation planning. This includes addressing the needs of specific communities. For example, there are no actions aimed at supporting renters living in areas exposed to climate-related risks, and limited actions focused directly on reducing risks for Māori (see *Chapter 6: How well the plan addresses climate risks*).

Tā te mahere urupare ki ngā tūraru āhuarangi | How well the plan addresses climate risks

In this part of our review of the quality of the first national adaptation plan, we look at how well the plan addresses the country's most significant risks from climate change.

These are the risks identified in the first national climate change risk assessment (NCCRA), completed in 2020. This chapter starts with an introduction to what these risks are, and outlines the approach we have taken to assessing how well the first national adaptation plan addresses 'the most significant risks posed by climate change'. Our assessment of how well those risks are addressed by Aotearoa New Zealand's first national adaptation plan is set out under five headings. These are the domains used in the first NCCRA: natural environment, human, built environment, economy, and governance.

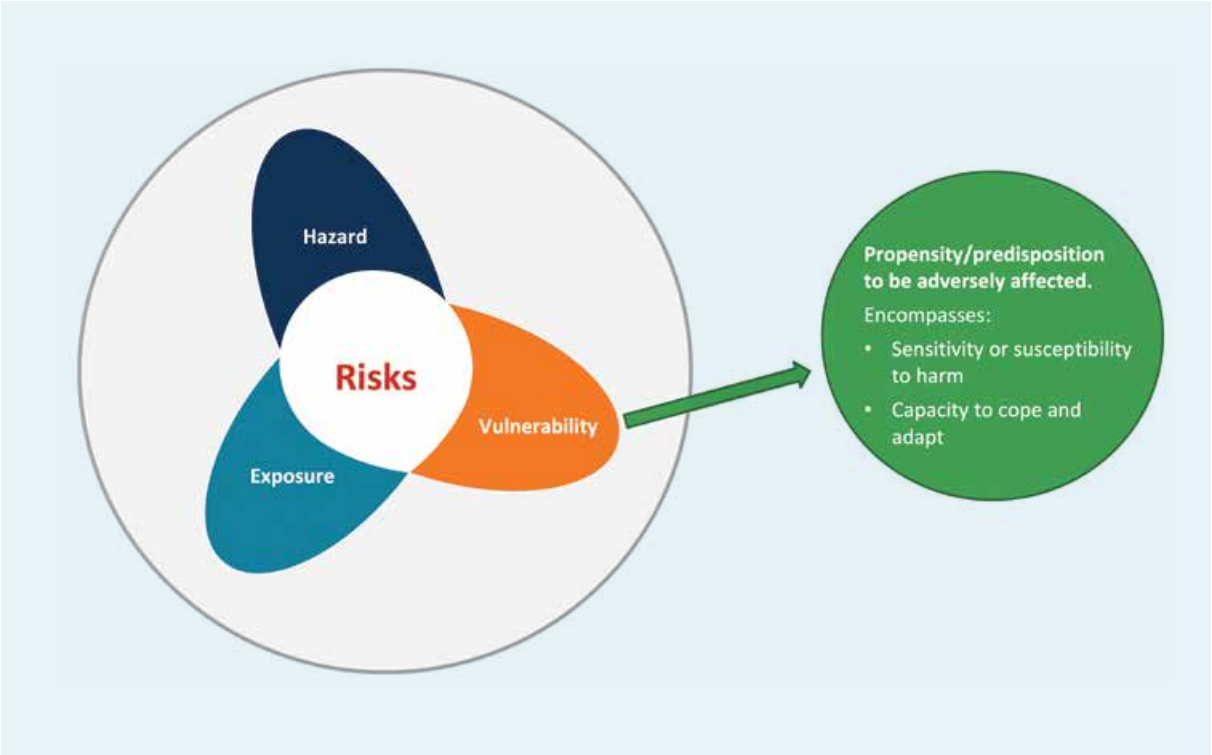
The findings we have made in this chapter relate to all of the risks identified in the first NCCRA. Our findings are set out at the end of each section. Where we use the term 'risk' in this chapter we are referring to the risks identified in the first NCCRA.

Understanding climate change risk

Effective adaptation planning is essential to reduce climate change risk. Emerging international best practice demonstrates that an effective national adaptation plan needs to be built on a clear understanding of national climate change risks, with a focus on addressing the risks – particularly those identified as the highest priority.[84] Aotearoa New Zealand's adaptation policy cycle, which is set out in the Climate Change Response Act 2002 (the Act), supports this approach by setting up a repeating process involving regular national climate change risk assessments, national adaptation plans, and monitoring of the plans.

The Intergovernmental Panel on Climate Change (IPCC) defines climate change risk as the interactions between climate-related hazards and the exposure and vulnerability that affected human or ecological systems have to those hazards. The elements of risk may change over time due to socioeconomic factors and human decision-making.[85]

Figure 6.1: The Intergovernmental Panel on Climate Change's risk propeller diagram shows how climate risk is the interaction between hazard, exposure, and vulnerability



Source: Adapted from the Intergovernmental Panel on Climate Change AR6 WGII Summary for Policymakers.[86]

Figure 6.1 shows that risks are the interaction of the climate-related hazard (such as flooding) with the system's exposure to that hazard, and the system's vulnerability to the hazard. These concepts are outlined below, in a way that sets up our assessment of how well climate change risks are addressed in Aotearoa New Zealand's first national adaptation plan.

Climate hazards are the potential physical events or gradual trends caused naturally or induced by humans that may impact on people through loss of life, injury or other health impacts and also to systems through damage and loss of property, infrastructure, livelihoods, services, ecosystems and environmental resources.[87]

Exposure reflects how much of value is present in the face of a particular hazard – the people, livelihoods and systems that could be adversely affected.[88] For example, a community with buildings and infrastructure located on a flood plain is exposed to flood risk if the river were to breach its banks during extreme rainfall.

Adaptation that reduces exposure to climate hazards reduces the frequency or magnitude of the impacts on people, livelihoods and systems.[89] An example of reducing exposure is moving infrastructure or assets away from at-risk areas, such as areas prone to flooding. Locating new developments in areas that are safe from flooding would also help to avoid future exposure to flood risk.

Vulnerability refers to the conditions that determine how climate change impacts may affect an area, system or community. It includes sensitivity to harm, and the ability to cope and adapt (adaptive capacity):[90]

- *Sensitivity* is defined as the degree to which people, livelihoods and systems are affected by climate variability or change.[91] Adaptation that reduces sensitivity to a hazard would mean impacts of climate change on people, livelihoods and systems were less than if the intervention did not take place.[92] An example is raising the floor height of a building in a flood-prone area so less is damaged by raised water levels.
- *Adaptive capacity* is the ability of people, institutions and systems to adjust to potential damage, take advantage of opportunities, or respond to consequences from climate impacts.[93] Adaptation that increases adaptive capacity will enhance the ability of people, institutions, and systems to respond to or manage the impacts of climate change. It is likely that action that increases adaptive capacity will also reduce exposure and/or sensitivity.[94] An example is providing people and communities with education and information about flooding risks to their homes so they are more informed for making decisions about managing risk.

Climate risks do not occur in isolation and some risks can develop as a result of others. This can lead to *cascading impacts*, where climate-related hazards and the resulting risks have a cascading impact on people, livelihoods and systems. For example, when a road is washed out by flooding from an extreme weather event it affects people's ability to access their homes or services such as hospitals, supermarkets and schools. Cascading impacts are complex and multidimensional, and are associated with the existing vulnerability of a system rather than the size of the original hazard.[95]

Our focus in assessing how the plan responds to climate risk

The first NCCRA published in 2020 identified the risks and opportunities that Aotearoa New Zealand is facing from climate change. It identified 43 priority risks and four opportunities. A list of the 10 'most significant' risks was agreed by experts using the two most urgent risks from each of the NCCRA's five domains.

Under section 5ZS of the Act, the national adaptation plan must set out the Government's objectives, strategies, policies and proposals, and timeframes for addressing the "most significant risks identified in the most recent national climate change risk assessment".

Under section 5ZU of the Act, we are required to assess "how well the plan responds to the most significant risks posed by climate change".

In carrying out our assessment of how well the plan responds to the most significant risks, we determined that a broader assessment based on all the risks in each NCCRA domain would provide a more useful and fulsome picture of how Aotearoa New Zealand is tracking in addressing the risks from climate change, compared to focusing on just the most significant risks.

Identifying risks not included in the first National Climate Change Risk Assessment

We also considered if there are new risks that should be included in our assessment. Our check for potential new risks included looking at what was added to the first national adaptation plan and a review of the latest science of climate risk.

The first national adaptation plan identified 'risks to the telecommunications network' as an additional climate risk not included in the first NCCRA. We have included this risk in the built environment domain of our assessment.

Our review of the latest science of climate risk did not identify new climate risks to include in our assessment, though there have been advances in science that improve understanding of some risks. This includes findings about risk included in the Sixth Assessment report from the IPCC's Working Group Two on Impacts, Adaptation and Vulnerability (known as AR6 WGII).[96] Our review shows that advances in science have improved the understanding of climate risks and their impacts on Aotearoa New Zealand. For example, there have been improvements in the understanding of marine heatwaves and what they might mean for marine ecosystems,[97] as well as improvements in the understanding of extreme weather events and the impact of human-influenced climate change on them, known as climate attribution.[98]

As we highlighted in our discussion document on the Review of the 2050 emissions reduction target, impacts from climate risk on human and natural systems will become more frequent and more severe and will occur at lower temperatures than previously expected.[99] Such advances may change the relative importance and urgency of action to address climate risks, and are likely to inform the next national climate change risk assessment due in 2026. However, these advances do not change the risks considered for this assessment of the first national adaptation plan.

Considerations in our assessment

The structure of the first National Climate Change Risk Assessment

There are key differences between the structures of the first NCCRA and the first national adaptation plan. Our review of how well the plan addresses climate risks is based on the structure of the first NCCRA.

The first NCCRA was framed around five 'value domains'. These are groupings of tangible and intangible values, assets and taonga that are important to Aotearoa New Zealand. The five domains are: natural environment, human, built environment, economy, and governance.

The risk assessment process developed a long list of climate risks and opportunities across these five domains. This list was then narrowed down to 43 priority risks and 4 opportunities. An urgency score was then applied to each risk. This score was based on the degree of different types of action required to address each risk. The categories of action reflected in the urgency score were:

- *More action needed*: new action over and above anything already planned is needed in the next five years to reduce long-term vulnerability to climate change.
- *Research priority*: significant research gaps need to be filled to increase current level of understanding and better assess the need for more action.
- *Sustain current action*: planned or current levels of action are good if implemented accordingly.
- *Watching brief*: the evidence should be monitored to ensure anticipatory action can be taken if necessary.

Actions that had higher ratings of 'more action needed' or 'research priority' were deemed to be more urgent. Actions that had higher ratings of 'sustain current action' or 'watching brief' were rated less urgent. The two risks with the top urgency score from each domain were categorised as the 'most significant' risks.

The structure of the first national adaptation plan

The first national adaptation plan is structured differently from the first NCCRA. The plan sets out 119 actions (or 127 actions and sub-actions), which are grouped by five 'outcome areas' as well as system-wide issues. The key differences between the structure of the first NCCRA and the first national adaptation plan are:

- Risks from the first NCCRA's built environment and human domains are predominately split across three outcome areas in the plan: homes, buildings and places; communities; and infrastructure.
- Risks from the first NCCRA's governance domain are split across all of the plan's outcome areas.
- The system-wide outcome area in the first national adaptation plan focuses on risks from across all the first NCCRA's domains. This area of the plan is organised around four priorities.
  - Enabling better risk-informed decisions.
  - Ensuring planning and infrastructure investment decisions drive climate resilient development in the right locations.
  - Adaptation options including managed retreat.
  - Embedding climate resilience in all government strategies and policies.

These differences in structure create some challenges for our assessment. Actions within the first national adaptation plan are often mapped against multiple NCCRA risks, and across multiple domains. At the same time, the plan notes that a particular risk is addressed within an outcome area, but many of the actions mapped against that risk will draw from other outcome areas.

For example, *action 5.9: Prioritise nature-based solutions* is mapped to risks in every NCCRA domain. It is also mapped to objective *NE3: Support working with nature to build resilience* within the natural environment outcome area, but the action itself is found in one of the system-wide chapters, *Chapter 5: Adaptation options including managed retreat*, of the first national adaptation plan. These differences make it difficult to link actions to NCCRA risks and to track progress.

For ease of reading our report, and for completeness of our assessment, we have chosen to follow the five-domain structure of the first NCCRA. This allows us to more easily assess whether the first national adaptation plan addresses all of the risks, including the 'most significant' risks, and how well the plan addresses them.

How we carried out our assessment

Our assessment focuses on understanding how well the risks within each domain of the first NCCRA are addressed by the actions in the first national adaptation plan – including the most significant risks. To do this, we have looked at the actions in the plan mapped against each risk. We have completed our assessment in four steps.

Step 1: Understanding the nature of the risks

The first step in our assessment was to gain an understanding of the nature of the risks within each domain, including the specificity and scope of each risk. To do this we looked at the description of the risks and the evidence provided in the first NCCRA technical report.

Risks within the first NCCRA vary in terms of scope and how specific they are. They range from broad and wide ranging across society or the economy (such as risk *H1 – Risks to social cohesion and community wellbeing from displacement of individuals, families and communities due to climate change impacts*) to risks that are narrow in scope and focused on a specific confined system (such as risk *B6 – Risks to linear transport networks, due to changes in temperature, extreme weather events and ongoing sea-level rise*).

The first NCCRA also includes risks that are indirect, and which emerge from the interaction with other risks. An example is risk *G1 – Risk of maladaptation across all domains due to practices, processes and tools that do not account for uncertainty and change over long timeframes*.

Step 2: Identifying how the plan covers these risks

Next, we focused on identifying how well the plan covers the risks in the first NCCRA. To do this, we looked at the following.

- Whether the plan includes actions mapped against all the risks in each domain, and how many.
- How well the risks in each domain are covered. We did this by looking at the type of actions mapped to each risk, based on the three types of action in the first national adaptation plan:
  - *Critical actions* are deemed by the Government to be the actions that will "make the most difference and we must start on now".
  - *Supporting actions* are either "less urgent or are dependent on the critical actions".
  - *Proposed actions* "reflect current thinking about what will be needed in the future".

Step 3: Assessing how well the risks are addressed and identifying any gaps

We then looked at how well the actions address the climate risks and whether there are any significant gaps.

How well are the risks addressed?

We assessed how well the actions in the plan address the risks for each domain. To do this we considered:

- how well-targeted the actions are. To do this we considered if actions were:
  - *direct* – will or have the potential to have a direct effect on reducing climate risk(s)
  - *indirect* – will or have the potential to have an indirect effect on reducing a climate risk(s) or provide associated effects that are also beneficial
  - *enabling* – these actions will or have to the potential to enable a reduction in or have benefits for reducing climate risk(s).

- whether the actions mapped against each risk are likely to have benefits across the elements of risk (as described in the *Understanding climate change risk* section above):
  - exposure
  - ensitivity
  - adaptive capacity
- where actions have been removed, added or delayed, and the consequences that may have for reducing risk. See *Chapter 8: Progress towards implementing the plan* for more information on the status of actions being delivered.

Are there are any gaps in addressing the risks?

Based on this assessment of how well the risks are addressed, we identified areas where there are gaps that could have consequences for reducing risk, or for our monitoring of how well risk is being addressed.

Step 4: Assessing how well the plan responds to the risks

Drawing on the analysis carried out in steps 1–3, we made a series of assessments for each domain of the first NCCRA:

- Most significant risks: an assessment of how well the first national adaptation plan responds to the two most significant risks for this domain (using the scorecard in Figure 6.2).
- Other risks: an assessment of how well the plan responds to all other risks within this domain (using the scorecard in Figure 6.3).
- Overall assessment: a combined assessment of how well the plan responds overall to all NCCRA risks for this domain (using the scorecard in Figure 6.3).

Figure 6.2: Criteria for assessing how well the plan responds to the most significant NCCRA risks

Score	Criteria for the most significant NCCRA risks
No significant gaps	This significant risk is well covered and no significant gaps in action remain. The first national adaptation plan has responded well to this significant risk.
Moderate gaps	Aspects of this significant risk are covered, but some gaps in action remain. The first national adaptation plan has only partially responded to this significant risk.
Significant gaps	Some important aspects of this significant risk are not well covered, and gaps in action remain. The first national adaptation plan has not responded well to some important aspects of this significant risk.
Insufficient	This significant risk is not well covered, and very significant gaps in action remain. The first national adaptation plan has not responded to this significant risk.

Source: Commission analysis

Figure 6.3: Criteria for assessing how well the plan responds to other risks (aside from the most significant risks) and all NCCRA risks in each domain

Score	Criteria for all NCCRA risks in each domain
No significant gaps	The climate change risks for this domain are well covered and no significant gaps in action remain. The first national adaptation plan has responded well to the risks in this domain.
Moderate gaps	Some of the climate change risks for this domain are well covered, but some gaps in action remain. The first national adaptation plan has only partially responded to the risks in this domain.
Significant gaps	Some of the climate change risks for this domain are not covered, and significant gaps in action remain. The first national adaptation plan has not responded well to some of the risks in this domain.
Insufficient	The climate change risks in this domain are not covered, and very significant gaps in action remain. The first national adaptation plan has not responded well to the risks in this domain.

Source: Commission analysis

Key observations across all the domains

There are common themes and observations that cut across our assessment of how well the first national adaptation plan addresses the risks in the first NCCRA.

The broad approach taken to developing the first national adaptation plan looks to address the range of risks set out in the first NCCRA. This aligns with emerging international best practice for adaptation planning (as set out in *Chapter 5: The plan's overall architecture, goals and objectives*).

The first national adaptation plan represents a significant milestone for adaptation planning in Aotearoa New Zealand and it covers a range of important areas for reducing risk and contributing to adaptation efforts. The plan sets out a range of actions mapped against all of the risks identified in the first NCCRA, plus the additional risk to the telecommunications network. This includes some actions that are foundational for addressing the risks and impacts faced from climate change.

The adaptation policy cycle for Aotearoa New Zealand set out in the Act sets up a continual cycle of risk assessment, national adaptation planning, and monitoring of those plans. Through this assessment of how well the first national adaptation plan addresses the risks set out in the first NCCRA, we have also identified areas where the Commission may be able to build on and improve the risk assessment process. One of these areas is in the way risks are prioritised within future risk assessments. This in turn can be used to inform the development of future adaptation plans, and therefore improve the way those plans are developed to address risk.

The plan does not clearly communicate how the actions will address the risks

Under the Act, a national adaptation plan is required to address the most significant risks identified in the most recent NCCRA. The first national adaptation plan states that the actions in the plan also aim to address all 43 risks identified within the first NCCRA, plus one additional risk. However, the plan does not clearly set out or explain how actions in the plan will contribute to addressing the relevant risks. Connections between risks and actions are noted or suggested, but they are often not explained and justified at a sufficient level of detail. In *Chapter 5: The plan's overall architecture, goals and objectives*, we explain that without this clarity, it is possible there are significant gaps in the plan in terms of actions to address the most significant risks.

Many actions within the plan are mapped to multiple risks across different domain areas. This in itself is not an issue with the plan as many risks impact across systems. However, it is not clear why particular actions are mapped to particular risks and how groups of actions mapped to particular risks will contribute to reducing risk. Without this explanation, it is difficult to assess how actions will collectively contribute to reducing risk.

The plan also does not set out how risks are addressed when they also impact risks in other domains. An example of this is the governance risk *G2 – Risk that climate change impacts across all domains will be exacerbated because current institutional arrangements are not fit for adaptation*. Institutional arrangements include legislative and decision-making frameworks, coordination within and across levels of government, and funding mechanisms – these will impact risks in all other domains. Because the plan does not set out what fit-for-purpose institutional arrangements look like within different domains and sectors, it is difficult to assess whether the risk has been fully addressed.

The plan relies on broad sector-specific plans and strategies and actions to address risks

The first national adaptation plan includes a range of sector-specific adaptation plans, such as the Department of Conservation Climate Change Adaptation Action Plan, the NZ Transport Agency Waka Kotahi Climate Adaptation Plan, and the Transpower Adaptation Plan.

There are also many actions within the first national adaptation plan that relate to broader sector plans and strategies, such as the National Energy Strategy and the National Freight and Supply Chain strategy. These are mapped to risks across all of the first NCCRA's domains.

While many of these plans and strategies are not specifically focused on adaptation, they present opportunities for addressing risk by broadening their scope and including specific adaptation outcomes.

Some key considerations are missing from the plan's approach to addressing risks

The first national adaptation plan includes many enabling actions and actions that may increase adaptive capacity, but has fewer actions directly focused on reducing exposure or sensitivity across most of the NCCRA risks. While actions like providing data and information about climate risk and the impacts of climate change will have indirect benefits for exposure and sensitivity, future plans could be strengthened by ensuring they include actions that are directly aimed at addressing all the elements of risk.

There is a lack of focus on equity within the first national adaptation plan, including what the equity implications will be for a diverse range of communities. This includes equity implications of both the impacts of climate risk being realised, and of the impacts of adaptation actions set out within the plan. There are few actions that explicitly address how people that are more likely to experience harm from climate change will be supported to adapt. In *Chapter 5: The plan's overall architecture, goals and objectives* we highlight the importance of considering equity to avoid maladaptation and to support good adaptation outcomes.

The sections that follow step through our assessment of how well the first national adaptation plan addresses risk to each domain in the first NCCRA. They are:

- Natural environment domain
- Human domain
- Economy domain
- Built environment domain
- Governance domain.

Assessing how well the plan responds to the risks

Natural environment domain

Step 1: Understanding the nature of the risks

Why address climate risks in the natural environment domain

The natural environment plays an integral part in the lives and livelihoods of people and communities across Aotearoa New Zealand. Many businesses and livelihoods in the primary and tourism sectors depend on the natural environment. The natural environment is important for providing clean air and water, health and wellbeing. The natural environment underpins all aspects of life, which means that climate risks to the natural environment will also flow through to other domains.

Aotearoa New Zealand has many species that are not found anywhere else in the world. Indigenous species and ecosystems are highly vulnerable to changes in climate due to their limited ability to adapt to changing environmental conditions.[100]

The natural environment is already facing impacts from pressures such as human activity, land use and introduced invasive species. Climate change is likely to accelerate and exacerbate these threats, as well as bring new challenges. The Department of Conservation projects significant changes to Aotearoa New Zealand's landscape and biodiversity as a result of climate change. For example, some species on the mainland are projected to become extinct, native coastal habitats will be increasingly squeezed, food web disruptions will increase, road access to popular visitor destinations may be permanently cut off in some places, the viability of some coastal recreation areas will reduce, and populations of fish species in Aotearoa New Zealand waters will change.[101]

Risks in the natural environment domain

The first NCCRA identifies 12 climate risks in the natural environment domain. These cover marine, terrestrial, and freshwater ecosystems, indigenous and non-indigenous species within these environments, and ecosystem services.[ix]

Figure 6.4 shows the risks from the first NCCRA's natural environment domain and the type of action identified in the first national adaptation plan to address these risks. The top 7 NCCRA natural environment risks were identified as requiring more action.

The first NCCRA highlights that it was difficult to assess climate risk for the natural environment, due to the limited availability of evidence. During our engagement we heard that this may have led to lower urgency scores applied to natural environment risks, and therefore lower prioritisation of these risks compared to those in other domains. This is evidenced in the relatively high score for 'research priority' for risks in the natural environment domain.

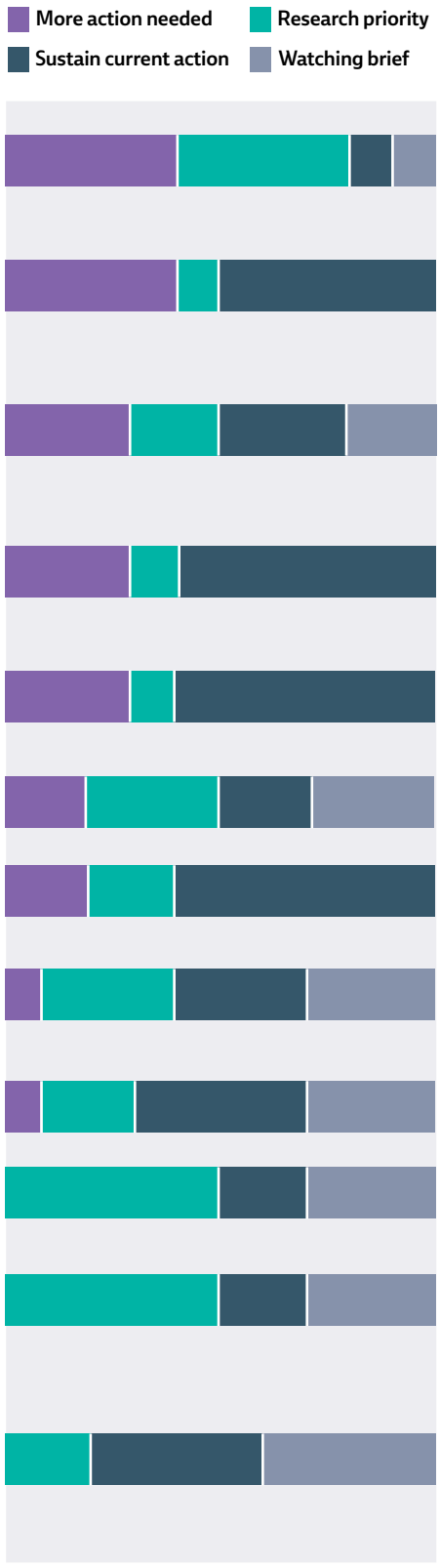
The nature of risks in the natural environment domain

The climate risks identified in the natural environment domain generally focus on risk to specific ecosystems and/or species from different climate-related hazards, including extreme weather events and ongoing changes in climatic trends.

Another challenge for assessing risk in the natural environment, and the effectiveness of planned adaptation action in this area, is the complex interactions between the natural environment and other domains.

ix. Ecosystems services refer to the range of services that nature and its many ecosystems provide. This includes, for example, clean air and water, flood protection, carbon sequestration, climate regulation, and plant pollination, as well as recreation opportunities.

Figure 6.4: Climate risks for the natural environment domain, and degree of different types of action required to address each risk (as identified by the first NCCRA)



N1. Risks to coastal ecosystems, including the intertidal zone, estuaries, dunes, coastal lakes and wetlands, due to ongoing sea-level rise and extreme weather events.

N2. Risks to indigenous ecosystems and species from the enhanced spread, survival and establishment of invasive species due to climate change.

N3. Risks to riverine ecosystems and species from alterations in the volume and variability of water flow, increased water temperatures, and more dynamic morphology (erosion and deposition), due to changes in rainfall and temperature.

N4. Risks to wetland ecosystems and species, particularly in eastern and northern parts of New Zealand, from reduced moisture status due to reduced rainfall.

N5. Risks to migratory and/or coastal and river-bed nesting birds due to reduced ocean productivity, ongoing sea-level rise and altered river flows.

N6. Risks to lake ecosystems due to changes in temperature, lake-water residence time, and thermal stratification and mixing.

N7. Risks to terrestrial, freshwater and marine ecosystems, due to increased extreme weather events, drought, and fire weather.

N8. Risks to oceanic ecosystem productivity and functioning, due to changes in sea-surface temperature, ocean mixing, nutrient availability, chemical composition and vertical particle flux.

N9. Risks to sub-alpine ecosystems, due to changes in temperature and a reduction in snow cover.

N10. Risks to carbonate-based, hard-shelled species from ocean acidification, due to increased atmospheric concentrations of CO_2.

N11. Risks to the long-term composition and stability of indigenous forest ecosystems due to changes in temperature, rainfall, wind and drought.

N12. Risks to the diverse range of threatened and endangered species that are dependent on NZ's offshore islands for their continued survival due to ongoing sea-level rise, changes in terrestrial climates, and changes in ocean chemistry and productivity.

Source: Adapted from the *National climate change risk assessment for New Zealand: Main report* (2020)

Table 6.1: The number and type of actions from the first national adaptation plan mapped to the risks from the first NCCRA's natural environment domain

Total actions	Critical	Supporting	Proposed
31	20	9	2

Step 2: Identifying how the plan covers the natural environment risks

Relevant actions from the first national adaptation plan

The first national adaptation plan predominately addresses the NCCRA natural environment domain risks within the natural environment outcome area (in *Chapter 6: Natural environment* of the plan). However, some actions in other outcome areas of the plan also address natural environment risks (mainly the system-wide and infrastructure outcome areas). Table 6.1 shows the total number, and type, of actions mapped to the natural environment risks. A full list of actions from the first national adaptation plan mapped against each natural environment domain risk can be found in *Tables of national adaptation plan actions mapped to NCCRA risks* – which is available at: https://www.climatecommission.govt.nz/our-work/adaptation/nappa/nappa-2024#supporting-material.

Step 3: Assessing how well the natural environment risks are addressed and identifying any gaps

How well are the natural environment risks addressed?

The first national adaptation plan includes actions mapped against all the risks in the NCCRA natural environment domain, but there is variation in the number of actions mapped against different risks.

The 'most significant' natural environment domain risk *N1 – Risks to coastal ecosystems, including the intertidal zone, estuaries, dunes, coastal lakes and wetlands, due to ongoing sea-level rise and extreme weather events* has 22 actions mapped to it in the first national adaptation plan. These range from resource management system reforms through to implementing the coastal policy statement and marine protection initiatives. Some of these actions have the potential to enable adaptation while others may specifically target reducing risk to coastal ecosystems.

The other 'most significant' natural environment domain climate risk *N2 – Risks to indigenous species from establishment of invasive species due to changing climate* has 17 actions mapped against it, including a series of actions that are specifically focused on targeting biosecurity, which could contribute directly to addressing this risk.

However, there are other climate risks that only have a few actions mapped to them. For example, *N9 – Risks to sub-alpine ecosystems, due to changes in temperature and a reduction in snow cover* has two actions mapped against it. These are broad, wide-ranging actions – *action 6.1: Implement the Department of Conservation Climate Change Adaptation Action Plan* and *action 6.3: Implement Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020* that are not specifically targeted at this risk. This makes it difficult to assess the specific impact those actions will have on reducing these risks.

The risks that are specific to the marine environment and marine ecosystems are also examples of risks with only a few actions mapped to them. Risk *N10 – Risks to carbonate-based, hard-shelled species from ocean acidification, due to increased atmospheric concentrations of CO_2* has four actions mapped to it. Two of these are broad actions that are not specifically targeted at this risk. The other two actions – *action 6.1: Implement Revitalising the Gulf: Government action on the Sea Change Plan* and *action 6.11: Implement the South-east Marine Protection Initiative* – are specific to particular geographic locations so unlikely to reduce this risk at a national level.

Action 6.1: Implement the Department of Conservation Climate Change Adaptation Action Plan is an action that is mapped against both of the 'most significant' risks to the natural environment, and against all other natural environment risks. It is a key enabling action for addressing these risks. While the *Department of Conservation Adaptation Action Plan* is comprehensive and covers the wide range of risks, progress implementing it has been slow (see *Chapter 8: Progress towards implementing the plan*).

Other key enablers for reducing risk within the natural environment domain that are mapped to natural environment risks include actions around legislation changes, such as *action 4.1: Reform the resource management system*, and the actions to implement major policy such as *action 6.3: Implement Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020* and *action 6.4: Implement the proposed National Policy Statement on Indigenous Biodiversity*.

There are a range of actions in the first national adaptation plan that are likely to have benefits across the different elements of risk in the natural environment domain. Actions like providing advisory services for forestry and farming will be likely to have benefits that support building adaptive capacity, by enabling farmers and foresters to have a better understanding of climate risk and adaptation options. There are various initiatives and programmes for biosecurity and biodiversity, actions for landfill remediation, the sustainable hill country erosion programme, and water security and availability programme that may provide some benefits toward reducing exposure to natural environment risks. Sensitivity benefits could be realised through actions such as landfill remediation to reduce the risk of contamination from landfills, the actions that cover various biosecurity and biodiversity initiatives, and funding provided for erosion prone land.

We do note that many of these actions are programmes of work or initiatives that are focused on broader environmental outcomes (such as biosecurity or pest control), rather than having a specific focus on adaptation to climate change. These actions could be strengthened by having adaptation outcomes explicitly included.

Are there are any gaps in addressing the natural environment risks?

The first national adaptation plan does not set out how the actions mapped against the natural environment domain risks will contribute to reducing risk, or why they are the best actions for doing so. The plan could be improved by setting out clear justification and reasoning for how the package of actions it sets out will reduce natural environment risks, and over what timeframes.

National adaptation planning could be further improved by ensuring there is coherence across the different system and legislative reforms being undertaken, to ensure they contribute to a reduction of climate risk in the natural environment.

The first national adaptation plan does not set out how the risks to the natural environment domain are addressed in relation to risks in other domains. For example, there is a risk identified in the economy domain as *E4 – Risks to tourism from changes to landscapes and ecosystems and impacts on lifeline infrastructure, due to extreme weather events and ongoing, gradual changes*. While this risk is said to be addressed through the *Department of Conservation Adaptation Action Plan* action, the first national adaptation plan itself does not clearly set out the interrelationship between this and the natural environment risks.

In line with the first NCCRA, the *Department of Conservation Adaptation Action Plan* also highlights the challenge of limited research and evidence on natural environment climate risks.[102] The vulnerability assessments within the *Department of Conservation Adaptation Action Plan* will contribute to the evidence base. However, there is also the need for a strong pipeline of research and science from the wider system to improve the understanding of risks to the natural environment from climate change.

The plan does not set out actions to address these gaps or challenges to reduce risk for the natural environment.

The *Department of Conservation Adaptation Action Plan* was released in June 2020 prior to the release of the first NCCRA in August 2020 and the first national adaptation plan in August 2022. The *Department of Conservation Adaptation Action Plan* itself states it could be improved by being informed by a risk assessment process similar to the NCCRA.

As a key action for reducing risks to the natural environment, the next iteration of the *Department of Conservation Adaptation Action Plan* presents an opportunity to clearly set out how the risks in the first NCCRA will be addressed, and to ensure alignment through to relevant actions in the first national adaptation plan. It will be important that this plan is resourced and implemented in a timely way, as it is a critical action across all the natural environment risks.

Step 4: Assessing how well the plan responds to natural environment risks

Figure 6.5 shows our assessment of how well the first national adaptation plan addresses the first NCCRA natural environment risks. The overall rating for this assessment shows that some of the risks for the natural environment domain are well addressed, but some gaps in action remain.

The first national adaptation plan has partially responded to the risks in the NCCRA natural environment domain. This reflects that the *Department of Conservation Adaptation Action Plan* is comprehensive in covering the range of risks, but that gaps remain – particularly relating to improving science and research on climate risks to the natural environment.

Figure 6.5: How well the plan addresses the first NCCRA natural environment domain risks

Overall assessment: All natural environment domain risks	
Moderate gaps	Some of the climate change risks for this domain are well covered, but some gaps in action remain. The first national adaptation plan has only partially responded to the risks in this domain.

Assessment: Most significant risk N1 – Risks to coastal ecosystems, including the intertidal zone, estuaries, dunes, coastal lakes and wetlands, due to ongoing sea-level rise and extreme weather events	
Moderate gaps	Aspects of this significant risk are covered, but some gaps in action remain. The first national adaptation plan has only partially responded to this significant risk.

Assessment: Most significant risk N2 – Risks to indigenous ecosystems and species from the enhanced spread, survival and establishment of invasive species due to climate change	
Moderate gaps	Aspects of this significant risk are covered, but some gaps in action remain. The first national adaptation plan has only partially responded to this significant risk.

Assessment: All other natural environment risks	
Moderate gaps	Some of the climate change risks for this domain are well covered, but some gaps in action remain. The first national adaptation plan has only partially responded to the risks in this domain.

Source: Commission analysis

Human domain

Step 1: Understanding the nature of the risks

Why address climate risks in the human domain

Climate change will directly impact people, their livelihoods, and their wellbeing. For example, when people live in housing that is flooded in an extreme weather event, their belongings may be damaged and they may be left financially out of pocket. Climate change will also have indirect impacts, as climate-related hazards have flow-on impacts on the systems that people rely on. For example, a farm that has its production impacted due to drought may impact the wellbeing of the farmer due to loss of income and livelihood.[103]

Climate risks in the other domains will also lead to impacts on the human domain, and these will not be felt equally across society. For example, if businesses and supply chains are affected by extreme weather events this will impact people's ability to access supplies such as food or medicines. Where people face existing inequities, such as if they are a lower income household, they could be more affected by supply chain issues because they are less likely to have reserve supplies of food or medicines at home. Climate change is also expected to create new inequities as particular regions, communities, and sectors face different risks and impacts.[104]

Climate risks can lead to more significant impacts on people depending on where they live. For example, people who live in low-lying areas are more exposed to flooding risk. Those who live in communities with a single access road connecting them to essential services may face greater harm when climate-related hazards occur, as they may lose access to services such as supermarkets and education. Other characteristics can also make people and communities more *sensitive* to harm – for example people on lower incomes may be less able to pay for measures that could reduce their risk, and therefore have fewer choices for how to adapt.

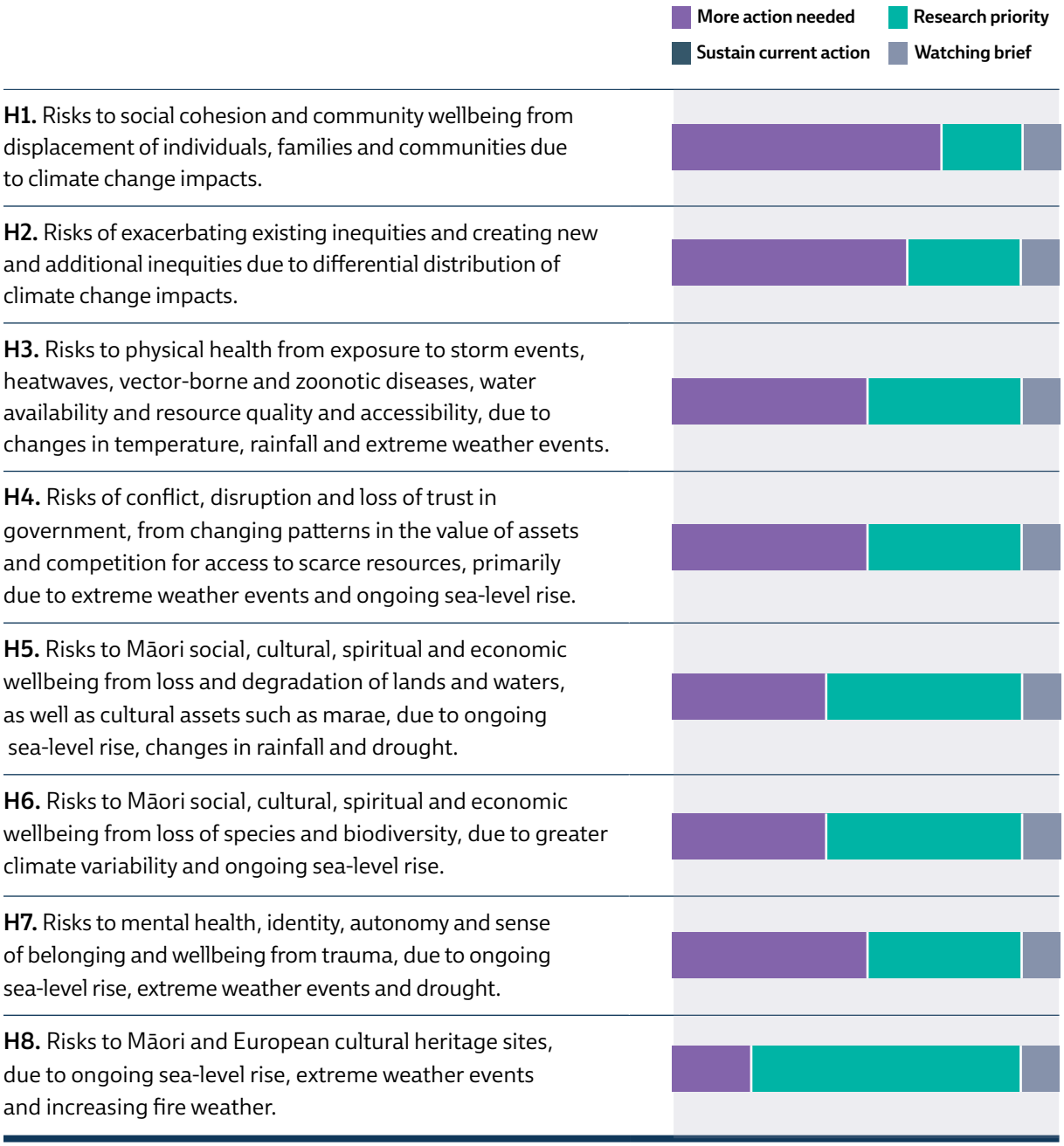
Climate risk can have significant impacts on Māori. There are examples of iwi/Māori showing collective resilience to climate impacts. However, some Māori experience barriers at the individual and household level that make them more likely to be impacted by climate-related hazards. For example, a higher proportion of Māori households are at risk of poverty, health disparities and living in poor quality or crowded housing. Climate impacts are expected to further exacerbate these disparities. Other communities that may be at greater risk of harm from climate impacts include those experiencing poverty, Pacific people, refugee and migrant communities, women, older people, disabled people and people living with existing health conditions (see *Chapter 10: Developing key national metrics*).[105]

Risks in the human domain

The first NCCRA identifies ten risks in the human domain. These cover the physical and mental health and wellbeing of people, and the skills and knowledge they hold. These risks also cover the norms, rules and social institutions of society as well as the knowledge, heritage, beliefs, arts, morals, laws, and customs that infuse society.

Figure 6.6 shows the NCCRA human domain risks and the type of action identified as necessary to address the risks. The urgency scores for every NCCRA human domain risks are heavily based on both more action required and more research being needed.

Figure 6.6: Climate risks for the human domain, and degree of different types of action required to address each risk (as identified by the first NCCRA)



Source: Adapted from the *National climate change risk assessment for New Zealand: Main report* (2020)

Table 6.2: The number and type of actions from the first national adaptation plan mapped to risks from the first NCCRA's human domain

Total actions	Critical	Supporting	Proposed
60	21	27	12

The nature of risks in the human domain

Some of the risks in the first NCCRA's human domain are broad, while others focus on specific issues for specific systems. The two 'most significant' climate risks from this domain are broad and relate to social cohesion and community wellbeing caused by displacement and exacerbating existing inequities.

The more specific risks highlight issues associated with physical and mental health, as well as risk to cultural sites (including for iwi/Māori). There are two risks that highlight specific climate risks for iwi/Māori, including the place-based connections iwi/Māori have with land, water, and to the wider natural environment.

Step 2: Identifying how the plan covers the human domain risks

Relevant actions from the first national adaptation plan

As previously noted, the first national adaptation plan and the first NCCRA are not completely aligned. There is no human domain outcome area of the plan, rather there is a communities outcome area and a homes, buildings and places outcome area. Both of these outcome areas have actions that address risks in the human domain. There are also actions mapped from all the other outcome areas, including system-wide, to address the human domain risks. Table 6.2 shows the number and type of actions mapped to human domain risks. A full list of actions mapped to human domain risks can be found in *Tables of national adaptation plan actions mapped to NCCRA risks* – which is available at: https://www.climatecommission.govt.nz/our-work/adaptation/nappa/nappa-2024#supporting-material.

Step 3: Assessing how well the human domain risks are addressed and identifying any gaps

How well are the human domain risks addressed?

The first national adaptation plan includes actions mapped against all risks in the first NCCRA's human domain. The plan maps 60 actions to these risks – this is almost half of the actions included in the plan.

The actions mapped against the human domain climate risks come from all of the different outcome areas of the plan. However, there is no clear logic set out for why particular actions have been mapped to certain climate risks, or how the actions could help reduce those risks.

The 'most significant' human domain risk *H1 – Risks to social cohesion and community wellbeing from displacement of individuals, families and communities due to climate change impacts* has 22 actions mapped to it. There are critical actions mapped to this risk that may indirectly have benefits for reducing this risk by maintaining access to services (such as *action 3.8: Develop guidance for assessing risk and impact on physical assets and the services they provide* or *action 4.7: Integrate adaptation into Waka Kotahi decision-making*). These actions are important for helping to prevent displacement. Alongside this it will be important to undertake targeted actions that support communities that become displaced. We have identified some examples of action – such as the network of community connectors that supported individuals and whānau after the Auckland Anniversary floods and Cyclone Gabrielle – that could be beneficial to reducing risks to communities that face displacement (see *Chapter 7: Barriers to the plan's effectiveness*).

The other 'most significant' human domain risk *H2 – Risks of exacerbating existing inequities and creating new and additional inequities due to differential distribution of climate change impacts* has 24 actions mapped to it. However, none of the actions are specifically targeted at addressing this risk. Rather, the actions mapped against this risk are broad with critical actions such as *action 4.6: Integrate adaptation into Treasury decisions on infrastructure* and *action 8.1: Develop and implement the Waka Kotahi Climate Adaptation Plan* that are focused on infrastructure and do not have a specific focus on addressing inequities. We discuss addressing inequities further in the *Are there any gaps in addressing human domain risks?* section below.

Looking across the other risks in the human domain, actions mapped to them are generally not specifically targeted at addressing the risk. Where actions are specifically targeted at the risk, the actions are often 'proposed' actions, meaning that they were future work programmes that reflected current thinking about what would be needed at the time the first national adaptation plan was released in 2022.

An example of this is the actions mapped against the two human domain risks specific to iwi/Māori *H5 – Risks to Māori social, cultural, spiritual and economic wellbeing from loss and degradation of lands and waters, as well as cultural assets such as marae, due to ongoing sea-level rise, changes in rainfall and drought* and *H6 – Risks to Māori social, cultural, spiritual and economic wellbeing from loss of species and biodiversity, due to greater climate variability and ongoing sea-level rise*. The actions mapped to these risks that are specifically targeted at iwi/Māori are proposed actions. This means that there is uncertainty around whether they will go ahead. If these actions do not go ahead, these risks will be left unaddressed.

The first national adaptation plan has many actions mapped against the human domain risks that may provide benefits for building adaptive capacity, but it is not clear how relevant they are for adaptation or reducing risk. For example, the description in the plan of *action 9.6: Build community resilience through social cohesion* does not provide any detail on what the action will involve, how it will be carried out, and how it may help address the two human domain risks it is mapped against. Likewise, *action 9.8: Continue to overhaul the welfare system* is broad and it is not clear how this action may help address the four human domain risks it is mapped against.

Action 9.2: Develop the Health National Adaptation Plan is a key enabling action for reducing human domain risks. It will be important that, as the health national adaptation plan is developed, it specifically addresses the two health related risks *H3 – Risks to physical health from exposure to storm events, heatwaves, vector-borne and zoonotic diseases, water availability and resource quality and accessibility, due to changes in temperature, rainfall and extreme weather events* and *H7 – Risks to mental health, identity, autonomy and sense of belonging and wellbeing from trauma, due to ongoing sea-level rise, extreme weather events and drought* – as well as broader risks in the human domain.

Are there are any gaps in addressing human domain risks?

The first national adaptation plan would benefit from a clearer and more direct focus on reducing climate risks and an explanation of how specific actions will contribute to reducing climate risks in the human domain.

There are limited actions that are focused directly on reducing the human domain risks for iwi/Māori. These risks warrant targeted actions so that inequities faced by iwi/Māori are not exacerbated by climate change and the Crown is meeting its obligations to iwi/Māori under Te Tiriti o Waitangi/The Treaty of Waitangi. There are no actions focused on reducing risk for other communities that are also likely to be more adversely affected by climate impacts.

A key gap is that there are no actions specifically targeted at addressing inequity and avoiding new inequities. Risk *H2 – Risks of exacerbating existing inequities and creating new and additional inequities due to differential distribution of climate change impacts* was identified in the first NCCRA as one of the two most significant risks for the human domain. Because the actions included in the plan that relate to this risk are all indirect, it is likely that this risk will not be addressed adequately. It will be important that actions are developed to ensure that this risk is explicitly considered and addressed.

Issues around inequity and the distribution of climate impacts are hard to define. They are closely linked with other issues, including wider socioeconomic issues, with climate change just one driver of inequity. That makes this a challenging area to address. To address this risk, it will be important to provide tools and guidance for assessing and working through how to avoid inequities and reduce climate impacts on people, communities and groups that are more likely to be affected by, and less able to recover from, climate impacts. The plan would benefit from a broader range of tools that consider how climate impacts fall and how to address equity implications.

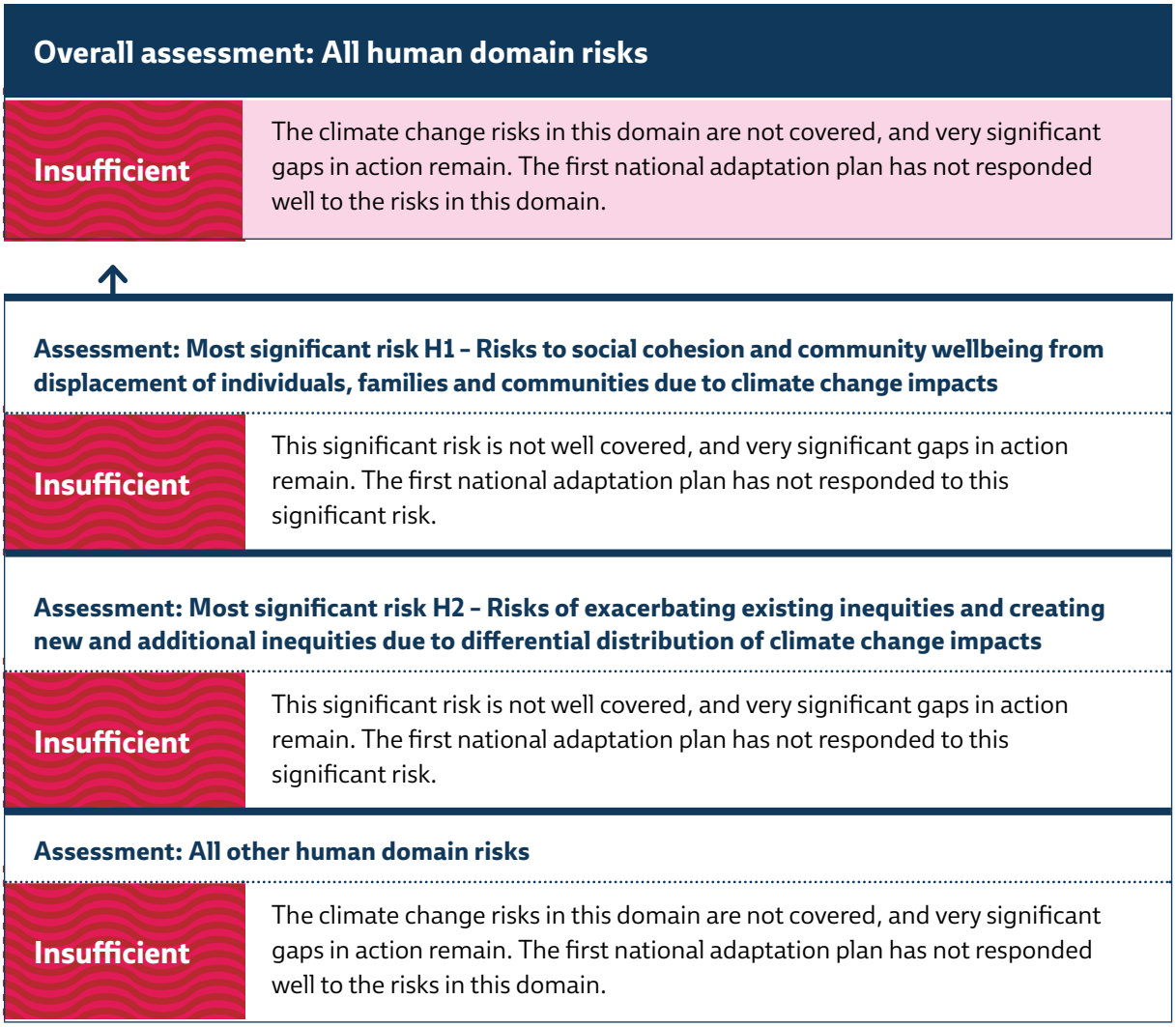
The development of the health national adaptation plan is an enabling action for reducing risk in some human domain risks, but it is still in development. It will be important that it addresses health-related risks and broader human domain risks identified in the first NCCRA.

Step 4: Assessing how well the plan responds to the human domain risks

Figure 6.7 shows our assessment of how well the first national adaptation plan addresses the NCCRA human domain risks. We have assessed that the climate change risks in this domain are insufficiently covered, and very significant gaps in action remain.

This assessment reflects the very significant gaps in terms of actions specifically targeted at addressing risks in the human domain, including the specific risks to iwi/Māori and other communities or groups that may be more likely to face harm from climate change. Overall, the first national adaptation plan has not responded well to the risks in the NCCRA human domain.

Figure 6.7: How well the plan addresses the NCCRA human domain risks



Source: Commission analysis

Economy domain

Step 1: Understanding the nature of the risks

Why address climate risks in the economy domain

The impacts and costs of climate change on businesses, on the economy, and on the Government's fiscal position, are already being felt, and will increase over time. As highlighted in previous sections of our assessment, the economic impacts and costs of ongoing climate change and extreme weather events range from financial losses due to lost productivity, supply chain disruptions, and disaster relief expenditure. Impacts on the economy domain also lead to wider societal losses on human health and wellbeing.[106] We discuss this further in *Chapter 1: Introduction*.

Some sectors of the economy will be more severely affected by climate change. For example, agriculture, forestry, fisheries and tourism are particularly exposed to climate impacts because they rely on climate-sensitive natural resources. The transport, telecommunications and energy sectors are also exposed to climate risk as they rely on extensive physical infrastructure networks, including in areas at-risk from climate-related hazards.[107]

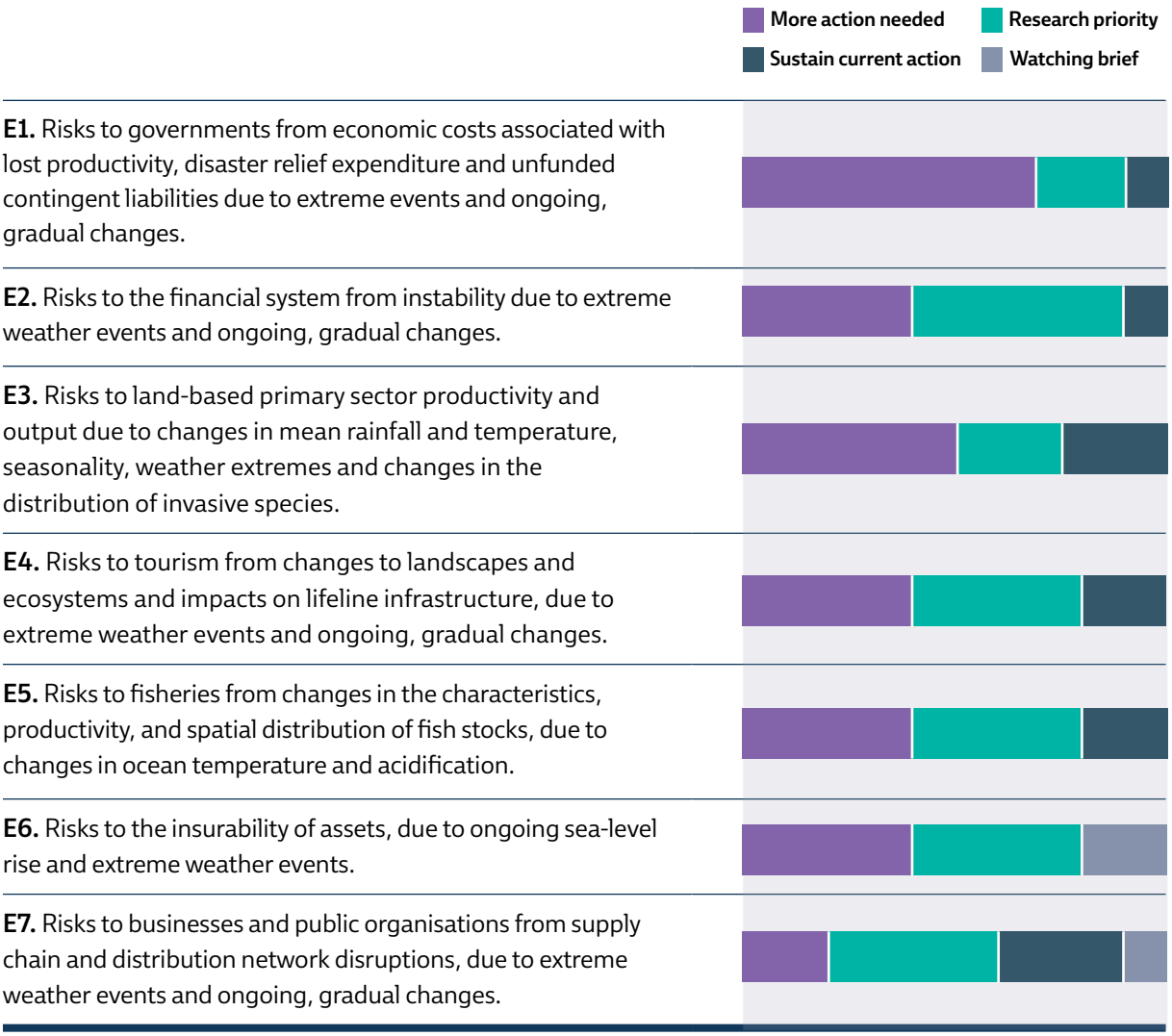
The Māori economy could experience significant impacts due to the high representation of Māori businesses and workers in climate-sensitive industries like agriculture, forestry and fisheries. For example, Māori collectively-owned land is over-represented in marginal quality land[108] which leaves less options for adaptation and therefore to reduce risks to Māori economic interests in primary industry sector. This is the same for many local economies that also rely on climate-sensitive industries.[109]

Risks in the economy domain

The economy domain in the first NCCRA covers risks to primary industries (forestry, agriculture, horticulture, arable land, viticulture, fisheries, aquaculture, marine farming), land use, tourism, technology and business, Māori enterprise, as well as insurance and banking.

Figure 6.8 shows the risks from the first NCCRA's economy domain and the type of action identified in the first national adaptation plan to address these risks. The urgency scores for all the economy domain risks are based on a high level of 'more action needed' and 'research priority'.

Figure 6.8: Climate risks for the economy domain, and degree of different types of action required to address each risk (as identified by the first NCCRA)



Source: Adapted from the *National climate change risk assessment for New Zealand: Main report* (2020)

Table 6.3: The number and type of actions from the first national adaptation plan mapped to the risks from the first NCCRA's economy domain

Total actions	Critical	Supporting	Proposed
64	26	31	7

The nature of risks in the economy domain

The risks identified in the NCCRA economy domain include both broad risks that will have impacts right across Aotearoa New Zealand's economy and society, as well as some risks that are specific to key sectors of the economy (in particular, land-based primary sector, tourism, and fisheries).

Other risks and impacts will also have significant flow-on effects on the economy domain risks, due to the cascading and interconnected nature of impacts.[110] For example, if flooding cuts off road access to a major tourist destination such as Franz Josef this will have flow-on impacts to the local economy.

Step 2: Identifying how the plan covers the economy domain risks

Relevant actions from the first national adaptation plan

The first national adaptation plan has a specific economy and financial system outcome area (located in *Chapter 10: Economy and financial system* of the plan), and around a third of the actions mapped to the risks in the economy domain are addressed in this section.

The rest of the actions mapped against the economy domain risks in the first NCCRA come from the other outcome areas across the plan – including many in the system-wide areas.

Table 6.3 shows the total number and type of actions mapped to these risks. A full list of actions from the first national adaptation plan mapped to each economy domain risk can be found in *Tables of national adaptation plan actions mapped to NCCRA risks* – which is available at: https://www.climatecommission.govt.nz/our-work/adaptation/nappa/nappa-2024#supporting-material.

Step 3: Assessing how well the economy domain risks are addressed and identifying any gaps

How well are the economy domain risks addressed?

The first national adaptation plan includes actions mapped against all of the risks in the NCCRA economy domain. However, there is variation in the amount and specificity of actions set out to address these risks. Some of this reflects the variability in the breadth of the risks outlined in the first NCCRA.

The 'most significant' economy domain risk *E1 – 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* has 32 actions mapped to it. These range from broad economy-wide actions, like *action 10.11: Consider climate risk in economic and fiscal monitoring and forecasting,* to system reforms, like *action 4.1: Reform the resource management system*, through to actions targeted at specific sectors, like *action 8.2: Develop the National Energy Strategy*. Some of these actions could enable adaptation, while other actions may contribute to building adaptive capacity for specific areas of the economy.

The other 'most significant' economy domain risk *E2 – Risks to the financial system from instability due to extreme weather events and ongoing, gradual changes* has four actions mapped against it. These are broad actions such as *action 5.5: Publish the programme of work on how Aotearoa meets the costs of climate change and invests in resilience*. While knowing about this work programme is important, the action itself will not lead directly to reducing this risk. All climate risks will have financial impacts, and so the extent of this risk will be dependent on how well actions target all risks set out in the first NCCRA.

Risk *E3 – Risks to land-based primary sector productivity and output due to changes in mean rainfall and temperature, seasonality, weather extremes and changes in the distribution of invasive species* has 20 actions mapped against it.

Many of these actions are directly targeted at reducing risks to specific parts of the land-based primary sector – for example, *action 3.14: Deliver the Integrated Farm Planning Programme*, *action 6.8.1: Implement an on-farm biosecurity programme*, and *action 10.5: Deliver the Māori agribusiness extension programme* are targeted at the agricultural sector. Due to the broad nature of this risk, there are some parts of the land-based primary sector that do not have actions directly targeted at them. For example, there do not appear to be actions specifically targeted at horticulture.

The other specific sector risks highlighted in the first NCCRA's economy domain are risk *E4 – Risks to tourism from changes to landscapes and ecosystems and impacts on lifeline infrastructure, due to extreme weather events and ongoing, gradual changes*, and *risk E5 – Risks to fisheries from changes in the characteristics, productivity, and spatial distribution of fish stocks, due to changes in ocean temperature and acidification*. These both have actions mapped to them, but in general the actions are less direct and many of the actions are supporting or proposed actions. There is also uncertainty relating to some of these actions due to shifting government priorities, in particular for the actions mapped to the risks for tourism. For example, *action 10.14: Deliver the Tourism Industry Transformation Plan* is no longer progressing (see *Chapter 8: Progress towards implementing the plan*).

The plan has a strong focus on enabling actions, and on actions that will improve adaptive capacity for the risks to the economy domain. Some of the key enablers include *action 4.1: Reform the resource management system* and *action 5.1: Pass legislation to support managed retreat*. These actions are being revisited, with the Government announcing a new adaptation framework. An adaptation framework that sets out clear roles and responsibilities, and how the costs of planning, adaptation and loss will be shared and met will help to reduce the economy domain risks as these provide signals that enable better risk-based decision-making such as where to build new housing and infrastructure in a way that reduces exposure to climate-related hazards and impacts.

There is uncertainty around some of the enabling actions to address climate risks to the economy domain. This includes actions such as *action 3.20: Continue prioritising research and investment in climate-related science*. This action is mapped to the specific sector risks (to the tourism, fisheries and land-based primary industries) in the economy domain. It will be important for these sectors to have access to high-quality science and data to inform adaptation decisions that avoid increasing exposure to climate-related hazards and impacts.

The actions mapped to the economy domain risks generally have a strong focus on building adaptive capacity. For example, there are many actions focused on improving the knowledge base of economic impacts and adaptation options for parts of the economy through actions such as *action 10.9: Identify the impacts of climate change on regional economies, action 10.17: Support Māori small business resilience and transitions*, and *action 10.18: Research business adaptation preparedness and provide guidance for small businesses to adapt*. Some of these actions are also likely to have indirect benefits for exposure and sensitivity. For example, providing information about adaptation to small businesses can lead to them making better informed decisions that then reduce exposure to climate-related hazards and impacts.

There are some actions that may have benefits for reducing exposure and sensitivity, although it is likely these benefits will be more indirect. For example, *action 3.5: Support high-quality implementation of climate-related disclosures and explore expansion* will help to increase understanding of business exposure to climate-related risks, which will likely lead in turn to business decisions that reduce exposure to those risks.

Are there are any gaps in addressing the economy domain risks?

The first national adaptation plan does not set out a clear justification for why actions are mapped to specific economy domain risks and how they will reduce these risks. For the economy domain this is particularly important due to the nature of the risks and the cascading impacts of climate risks from other NCCRA domains. The plan would be improved by setting out a clear reasoning and justification for how the actions will contribute to reducing risk.

There is a gap clearly outlining actions and details on how the costs of climate change will fall, and how they will be met. These will contribute to reducing economy domain risks by providing more certainty and supporting good decision-making. Setting out clear roles and responsibilities will also contribute to reducing economy domain risks. We discuss this further in *Chapter 7: Barriers to the plan's effectiveness*.

There are a range of actions mapped against the economy risks focused on sector strategies and plans. Some of these do not appear to have a specific focus on outcomes for adaptation. These actions could be strengthened by expanding these plans to include specific outcomes for adaptation.

Step 4: Assessing how well the plan responds to the economy domain risks

Figure 6.9 shows our assessment of how well the first national adaptation plan addresses the NCCRA economy domain risks. The overall rating for this assessment is that some of the climate change risks for this domain are not covered, and that significant gaps in action remain.

The first national adaptation plan has not responded well to some of the risks in this domain. Our assessment reflects that while there are actions directly targeted at reducing risks to some economic sectors, such as the land-based primary sectors, there are significant gaps in setting out clear roles and responsibilities, and how the costs of climate change will fall and how they will be met, which could have significant economic implications.

Figure 6.9: How well the plan addresses the NCCRA economy domain risks

Overall assessment: All economy domain risks

Significant gaps	Some of the climate change risks for this domain are not covered, and significant gaps in action remain. The first national adaptation plan has not responded well to some of the risks in this domain

↑

Assessment: Most significant risk E1 – 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

Significant gaps	Some important aspects of this significant risk are not well covered, and gaps in action remain. The first national adaptation plan has not responded well to some important aspects of this significant risk

Assessment: Most significant risk E2 – Risks to the financial system from instability due to extreme weather events and ongoing, gradual changes

Significant gaps	Some important aspects of this significant risk are not well covered, and gaps in action remain. The first national adaptation plan has not responded well to some important aspects of this significant risk

Assessment: All other economy domain risks

Significant gaps	Some of the climate change risks for this domain are not covered, and significant gaps in action remain. The first national adaptation plan has not responded well to some of the risks in this domain

Source: Commission analysis

Built environment domain

Step 1: Understanding the nature of the risks

Why address climate risks in the built environment domain

Climate change will have significant physical impacts on the built environment including homes, commercial buildings, public buildings (such as schools and hospitals) and infrastructure. For example, flooding and landslides from extreme weather events have caused significant damage to New Zealanders' homes and properties.

Climate change will also affect access to services such as electricity, telecommunications, water, waste, and transport. Without a resilient built environment, communities will continue to face major disruptions. For example, rural communities can become isolated when a single-access road is flooded or affected by a landslide, preventing their ability to access services such as supermarkets or hospitals.[111]

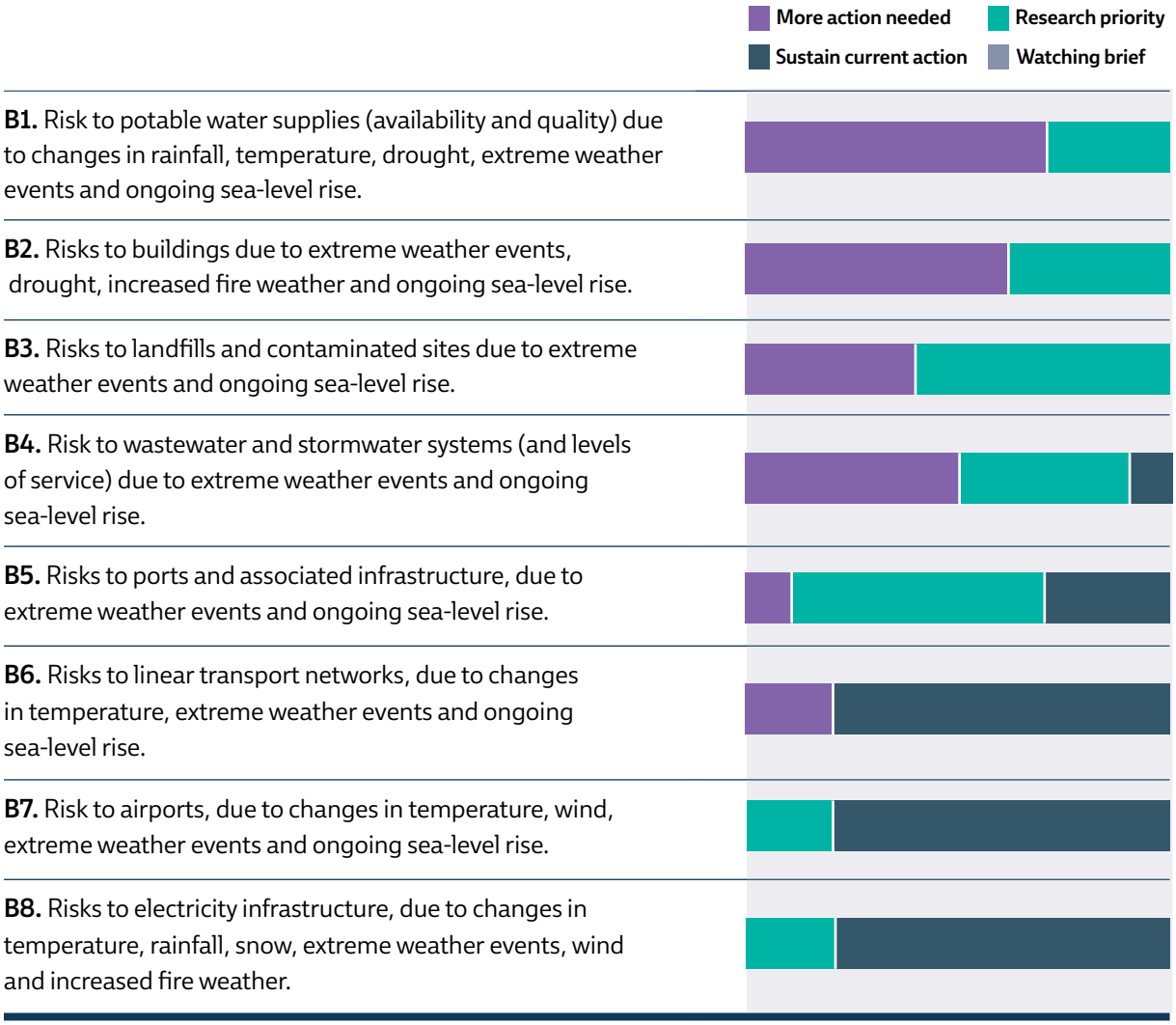
The costs of damaged infrastructure are significant and often fall on governments, which in turn has an impact on the economy. The costs of damages to physical assets from the 2023 North Island extreme weather events are estimated by Treasury to be between NZ$9 billion and NZ$14.5 billion, with over half of this from damage to infrastructure.[112]

Risks in the built environment domain

The first NCCRA identifies eight climate risks in the built environment domain. These cover physical infrastructure, transport systems, buildings and urban spaces. The key infrastructure covered is the transport network (road, rail, shipping, aviation), energy systems (electricity and gas networks), waste (landfills and recycling plants), and water (wastewater, stormwater and drinking water). In this section we have also assessed how well the additional risk to telecommunications (fibre, broadband and cellular networks) included in the first national adaptation plan, has been addressed.

Figure 6.10 shows the first NCCRA's built environment domain risks and the type of action identified to address these risks. The 'more action needed' category makes up a significant proportion of the urgency scores of the top four risks in the built environment domain. The bottom three of the risks have a significant portion of the urgency score made up from the 'sustain current action'. A 'research priority' is required across all but one of the built environment risks.

Figure 6.10: Climate risks for the built environment domain, and degree of different types of action required to address each risk (as identified by the first NCCRA)



Source: Adapted from the *National climate change risk assessment for New Zealand: Main report* (2020)

Table 6.4: The number and type of actions from the first national adaptation plan mapped to risks from the first NCCRA's built environment domain

Total actions	Critical	Supporting	Proposed
40	16	17	7

The nature of risks in the built environment domain

The climate risks identified in the built environment domain span across the range of key infrastructure that supports Aotearoa New Zealand. The built environment risks are discrete and related to specific types of infrastructure and/or the systems they support.

Step 2: Identifying how the plan covers the built environment risks

Relevant actions from the first national adaptation plan

In the first national adaptation plan, the risks to the built environment are predominately addressed in the homes, buildings and places, and infrastructure outcome areas. There are some actions in the system-wide area that also address these risks. Table 6.4 shows the total number and type of actions mapped to these risks. A full list of actions from the first national adaptation plan mapped against each natural environment domain risk can be found in *Tables of national adaptation plan actions mapped to NCCRA risks* – which is available at: https://www.climatecommission.govt.nz/our-work/adaptation/nappa/nappa-2024#supporting-material

Step 3: Assessing how well the built environment risks are addressed and identifying any gaps

How well are the built environment risks addressed?

There are actions in the plan mapped against each of the eight built environment risks, however some of those actions do not directly target the key component of the risk.

The 'most significant' built environment risk *B1 – Risk to potable water supplies (availability and quality) due to changes in rainfall, temperature, drought, extreme weather events and ongoing sea-level rise* has 18 actions mapped against it. The main action mapped to this risk is *action 4.5: Reform institutional arrangements for water services*. This action has been discontinued (see *Chapter 8: Progress towards implementing the plan*). The Government has announced Local Water Done Well, with transitional legislation expected to be passed by mid-2024. Many of the other actions mapped to this risk are focused on reducing risk for infrastructure more broadly. This includes *action 4.6: Integrate adaptation into Treasury decisions on infrastructure* and *action 8.8: Support knowledge sharing and the implementation of adaptation actions across the sector*. There are also other actions mapped against this risk that focus on other types of infrastructure such as electricity and gas networks, or landfills. It is unclear how these actions will specifically reduce risks to potable water.

The other 'most significant' built environment risk *B2 – Risks to buildings due to extreme weather events, drought, increased fire weather and ongoing sea-level rise* has 22 actions mapped to it. Based on our assessment, ten of these actions have the potential to directly reduce climate risk to buildings. Of those, four are critical or supporting actions such as *action 4.3: Establish an initiative for resilient public housing* or *action 4.4: Embed adaptation in funding models for housing and urban development, including Māori housing*. The other six actions are proposed actions, these include actions such as *action 7.3: Partner with Māori landowners to increase the resilience of Māori-owned land, homes and cultural sites*, or *action 7.4: Update regulatory requirements to ensure buildings are designed and constructed to withstand more extreme climate hazards*.

There are some key enabling actions set out in the plan, which relate to reducing built environment risks. These include *action 4.1: Reform the resource management system* and *action 4.2: Set national direction on natural hazard risk management and climate adaptation through the National Planning Framework*. However, there is uncertainty in these actions following a change of direction under the new Government.

There are some actions in the plan that could reduce the sensitivity of the built environment to these climate risks. This includes *action 5.6: Scope a resilience standard or code for infrastructure*, which is mapped against all the built environment risks, and *action 7.4: Update regulatory requirements to ensure buildings are designed and constructed to withstand more extreme climate hazards*, which is mapped against 'most significant' risk *B2 – Risks to buildings due to extreme weather events, drought, increased fire weather and ongoing sea-level rise*.

There are some actions that will improve adaptive capacity – such as *action 3.6: Improve natural hazard information on Land Information Memoranda*, and *action 8.8: Support knowledge sharing and the implementation of adaptation actions across the sector*. These may also have indirect benefits that reduce sensitivity and exposure for some built environment risks. For example, by supporting access to climate-related hazard information and an awareness of how climate impacts may affect a property, it enables prospective property owners to make risk-informed decisions.

There are no actions specifically targeted at the additional risk to telecommunications, although there are general infrastructure actions that will contribute to reducing this risk such as *action 5.6: Scope a resilience standard or code for infrastructure*.

Action 5.6: Scope a resilience standard or code for infrastructure has been mapped as an action against all built environment risks from the first NCCRA. While the first national adaptation plan identifies this action as critical, the action is focused on assessing the need for a resilience standard or code for infrastructure, which is an early stage of the policy process and creates uncertainty about whether it will proceed.

There are a number of sector and/or industry specific strategies or adaptation plans mapped to the built environment risks. Some of these plans, for example *action 8.2: Develop the National Energy Strategy* have a primary focus on reducing emissions, rather than outcomes for adaptation. These plans create an opportunity for sectors and infrastructure providers to think about the link between emissions reductions efforts and reducing risks from climate change in a joined-up way, however they need to be more explicit about how they include adaptation outcomes.

Are there are any gaps in addressing the built environment risks?

The first national adaptation plan would benefit from clearer reasoning and justification explaining how specific actions in the plan will contribute to reducing climate risks in the built environment domain. While the first national adaptation plan sets out a broad package of actions to address these risks, some of the key enabling actions that would contribute to reducing these climate risks have significant uncertainty surrounding them, including for the 'most significant' risks.

Action 4.1: Reform the resource management system was mapped to just one climate risk in the built environment domain (risk *B3 – Risks to landfills and contaminated sites due to extreme weather events and ongoing sea-level rise*). A well-functioning resource management system is an essential enabler for reducing risk to the built environment as it guides decision-making around land use and development. There is currently uncertainty about the future of resource management in Aotearoa New Zealand, but any future system would need to enable good adaptation to reduce exposure to the built environment.

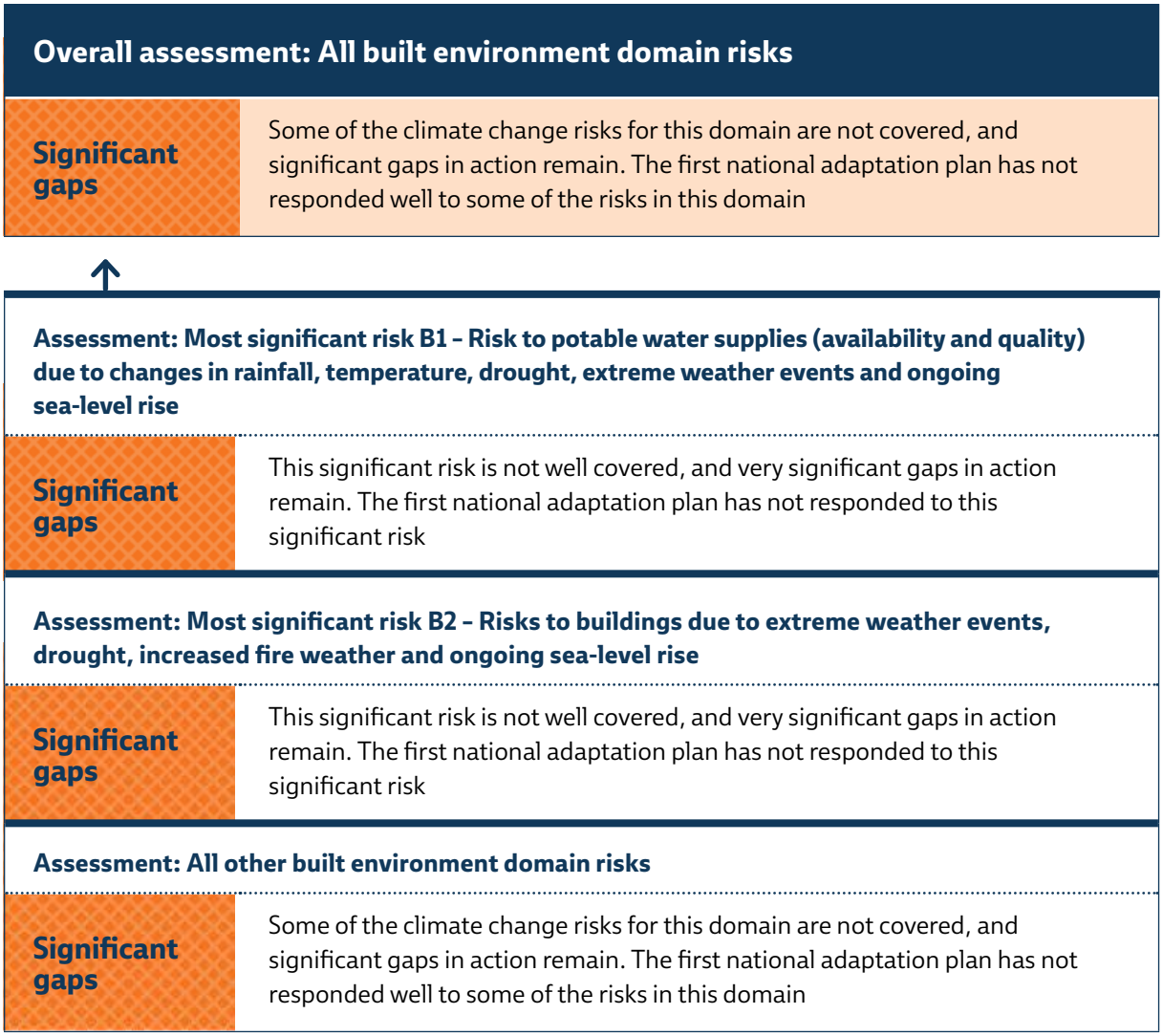
Developing and implementing policies and frameworks to guide decisions around land use and the built environment takes a long time. However, policies and frameworks that reduce the exposure and sensitivity of the built environment are critical now. Greater certainty around the long-term direction of travel, including for the resource management system, is a key enabler for building, maintaining, and (potentially) relocating infrastructure in a way that reduces climate risk.

Step 4: Assessing how well the plan responds to built environment risks

Figure 6.11 shows our assessment of how well the first national adaptation plan addresses the NCCRA built environment risks. The overall rating for this assessment is that some of the climate change risks in this domain are not covered, and that significant gaps in action remain.

The first national adaptation plan has not responded well to some of the risks in this domain. Our assessment reflects that while there are actions that could help to reduce sensitivity and improve adaptive capacity of the built environment, there is a very significant gap around addressing exposure. This includes, for example, resource management and land-use planning that drives climate-resilient development in the right locations, and uncertainty as to how well new water legislation will support adaptation.

Figure 6.11: How well the plan addresses the NCCRA built environment domain risks



Source: Commission analysis

Governance domain

Step 1: Understanding the nature of the risks

Why address climate risks in the governance domain

Governance arrangements will have a significant impact on adaptation. The way institutions are arranged and interact, how responsibilities are assigned, and the way decisions are made will all have an impact on how adaptation happens, and whether it is effective. All of these things need to happen in a way that supports good adaptation outcomes and supports action to reduce the range of climate change risks.

The governance domain in the first NCCRA includes risks that are different from the risks in the other domains. The risks in this domain act as barriers or enablers for adaptation and are relevant across all domains. This means the risks are largely indirect, and flow from the risks in other domains. At the same time, the risks in this domain will have an impact on how well the risks in the other domains can be addressed.[113] For example, the resource management system is the land-use planning framework that enables decisions to be made about where new development takes place. Under the current resource management system councils are still able to issue new consents for developments in areas that are at risk of flooding. Because the current legislative settings allow for this to happen, it is also increasing risk *B2 – Risks to buildings due to extreme weather events, drought, increased fire weather and ongoing sea-level rise*.

Our assessment for how well the first national adaptation plan addresses the governance domain risks is therefore different from the assessment in the preceding sections. A key difference is that we have not considered whether actions address different elements of these risks.

Risks in the governance domain

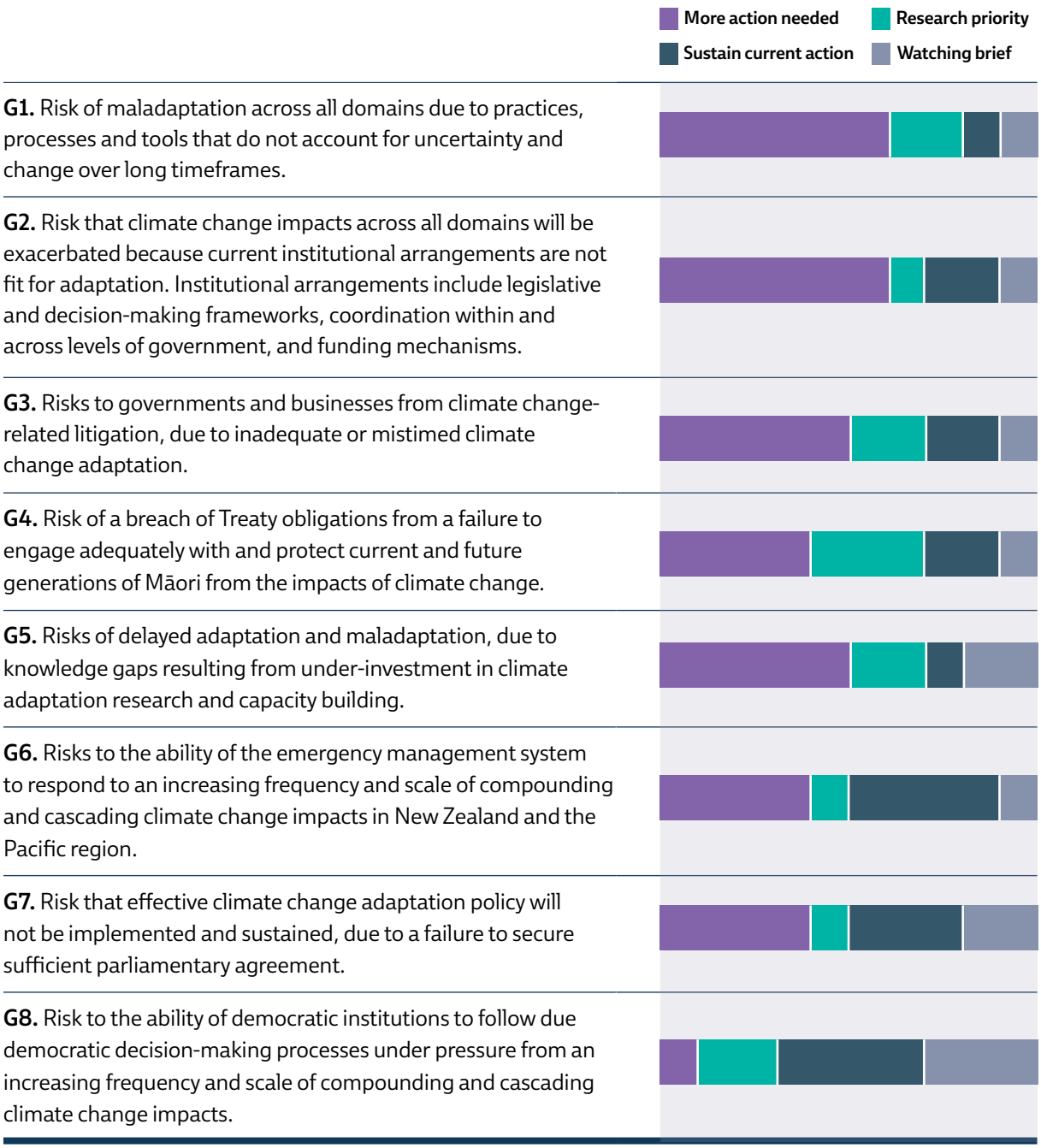
There are eight risks identified in the first NCCRA's governance domain. The risks largely relate to the governing architecture within which adaptation occurs, and to particular mechanisms and processes that can impact adaptation outcomes – for example, democratic decision-making and parliamentary agreement. They cover processes of interaction and decision-making in and between government and economic and social institutions. Institutions are the rules and norms held by social actors that shape interactions and decision-making and the agents that act within institutional frameworks. The risks in this domain are related to all climate risks in other domains.

Figure 6.12 shows the risks from the first NCCRA's governance domain and the type of action identified in the first national adaptation plan to address these risks. The urgency scores for most of the governance domain risks are based on a high level of 'more action needed'.

The nature of risk in the governance domain

The first NCCRA's governance domain risks differ from the other domain risks as they are generally risks that are indirect and underpin the risks in all of the other domains. These risks are wide ranging and impact on the ability to reduce risk in other domains.

Figure 6.12: Climate risks for the governance domain, and degree of different types of action required to address each risk (as identified by the first NCCRA)



Source: Adapted from the *National climate change risk assessment for New Zealand: Main report* (2020)

Table 6.5: The number and type of actions from the first national adaptation plan mapped to risks from the first NCCRA's governance domain

Total actions	Critical	Supporting	Proposed
63	27	10	26

Step 2: Identifying how the plan covers the governance risks

Relevant actions from the first national adaptation plan

The governance domain is another area where the first national adaptation plan and the first NCCRA diverge. There is no section in the first national adaptation plan that corresponds with the governance domain of the first NCCRA.

The risks from this domain are mostly addressed through actions in the system-wide outcome area of the plan. However, some risks are addressed through actions included in other outcome areas across the plan.

Table 6.5 shows the total number and type of actions mapped to these risks. A full list of actions from the first national adaptation plan mapped to each governance domain risk can be found in *Tables of national adaptation plan actions mapped to NCCRA risks* – which is available at: https://www.climatecommission.govt.nz/our-work/adaptation/nappa/nappa-2024#supporting-material.

Step 3: Assessing how well the governance risks are addressed and identifying any gaps

How well are the governance risks addressed?

The first national adaptation plan sets out 63 actions that address risks identified in the first NCCRA's governance domain. However, the plan does not provide a clear and coherent logic for why some of these actions are mapped against governance risks, or how those actions will contribute to reducing risk. The first national adaptation plan has good coverage in terms actions mapped against all of the governance risks, but does not appear to address these risks well, including the 'most significant' governance risks.

The 'most significant' governance risk *G1 – Risk of maladaptation across all domains due to practices, processes and tools that do not account for uncertainty and change over long timeframes* has 33 actions mapped to it. None of the actions specifically mention maladaptation and it is not clear how these actions will reduce the risk of maladaptation across all domains. There are actions that support decision-making under uncertainty and over long timeframes that may contribute to reducing the risk of maladaptation, such as a*ction 3.7.3: Produce guidance for dynamic adaptive pathways planning (DAPP)* or *action 3.7.5 Regularly update adaptation guidance for local government*. We note that this guidance is aimed at central and local government adaptation practitioners, rather than a more general audience.

It is not clear how some of the actions mapped to this risk could contribute to reducing maladaptation across other domains, such as *action 8.2: Develop the National Energy Strategy* and *action 6.7: Implement the National Policy Statement on Freshwater Management 2020*. The national energy strategy, for example, is a plan focused on emissions reduction efforts. Maladaptation will look different across different communities, systems and sectors. The first national adaptation plan does not set out tools or guidance that specifically focuses on assessing maladaptation or avoiding maladaptive outcomes, including targeted for specific sectors.

The other 'most significant' governance risk *G2 – Risk that climate change impacts across all domains will be exacerbated because current institutional arrangements are not fit for climate change adaptation* has a wide range of actions mapped to it. This includes some actions focused on legislative reform, such as *action 4.1: Reform the resource management system, action 5.1: Pass legislation to support managed retreat* and a*ction 5.2: The Future for Local Government review*. The plan considers these actions will enable risk-informed decision-making and set out a framework for adaptation options. There is currrently uncertainty about the future of these actions, following a change in direction from the new Government. While a new resource management system and a climate adaptation framework have been signalled, details of these and how they will affect institutional arrangements for making good adaptation decisions are not yet known.

The first national adaptation plan sets out some clearly targeted actions for some of the governance risks. For example, *G6 – Risks to the ability of the emergency management system to respond to an increasing frequency and scale of compounding and cascading climate change impacts in New Zealand and the Pacific region* has several relevant actions mapped against it, including *action 9.1: Modernise the emergency management system* and *action 9.3: Develop the emergency management workforce*.

There have been delays in implementing emergency management actions in the first national adaptation plan, though we note the recommendations from the Government inquiry into the response to the 2023 North Island extreme weather events and announcements in Budget 2024 relating to the emergency management system (see *Chapter 8: Progress towards implementing the plan*).

There is also significant uncertainty surrounding actions set out to address *G5 – Risks of delayed adaptation and maladaptation, due to knowledge gaps resulting from under-investment in climate adaptation research and capacity building. Action 3.19: Develop Te Ara Paerangi – Future Pathways programme for the research, science and innovation system* is listed as a supporting action mapped against this risk. However, we have assessed this action as critical to addressing this risk because strategic and coordinated investment in research, science and innovation is needed to generate the knowledge and information needed for informed decision-making for adaptation. We note that this action has been discontinued (see *Chapter 8: Progress towards implementing the plan*), however new work is underway by the Science System Advisory Group and the University Advisory Group.

Risk *G4 – Risk of a breach of Treaty obligations from a failure to engage adequately with and protect current and future generations of Māori from the impacts of climate change* has a range of actions mapped to it. The action that is likely to have the most direct effect on this risk is *action 3.3: Establish a platform for Māori climate action*. This is a fundamental step for good engagement with Māori at a strategic level, but it is not clear how this will lead to on the ground engagement with Māori at a flax-roots level or to greater funding for iwi/Māori to carry out adaptation initiatives. Following recent budget announcements there is now uncertainty surrounding the future of the Māori Climate Platform.

There are other more broad actions mapped against this risk, such as *action 4.1: Reform the resource management system* and *action 5.9: Prioritise nature-based solutions*. While these actions are important the plan does not set out how these will contribute to reducing this specific risk.

The first NCCRA governance risks underlie all other risks and act as either barriers or enablers for the other domain areas. The first national adaptation plan does not clearly set out how the actions mapped to the first NCCRA governance risks reduce these risks in practice.

Are there are any gaps in addressing the governance domain risks?

Addressing the first NCCRA's governance risks is important for providing predictability about how decisions will be made over the long term, including complex decisions around issues like loss.

Actions set out to address the first NCCRA's governance domain risks include many system and legislative reforms that now have significant uncertainty surrounding them. Where actions have been repealed, they need to be replaced with new actions that support the governance arrangements needed for good adaptation outcomes. This includes a legislative framework for adaptation planning, implementation and monitoring that outlines clear roles and responsibilities, a framework for funding adaptation, and a science and research system that ensures knowledge of climate adaptation is accessible and available to enable good risk-based decision-making.

The first national adaptation plan would benefit from a broader range of tools for assessing the risk of maladaptation and allowing for decision-making under uncertainty across all domains and for various adaptation actions. Maladaptation will look different across different communities and sectors and play out over different timeframes. While the plan sets out actions for the development of a series of guidance under *action 3.7: Deliver a rolling programme of targeted adaptation guidance*, these are generally aimed at government adaptation practitioners, as opposed to a broader range of users.

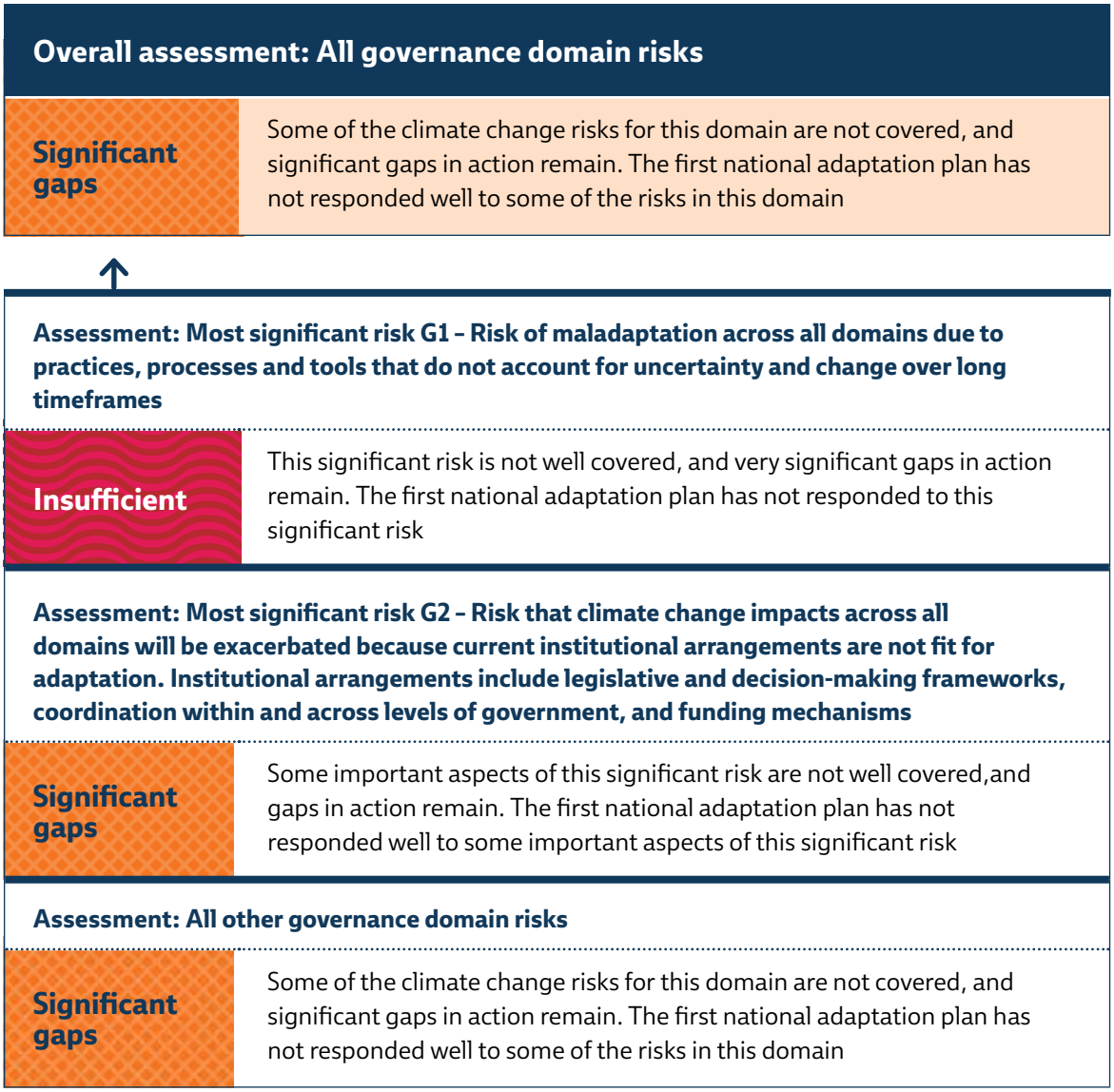
There are limited actions within the first national adaptation plan that are directly targeted at addressing risk *G4 – Risk of a breach of Treaty obligations from a failure to engage adequately with and protect current and future generations of Māori from the impacts of climate change*. The plan does not address this risk across other domains. An adaptation response that addresses this risk across all domains by adequately engaging and creating partnership with iwi/Māori grounded in their tikanga and in line with their wāwata (aspirations) will enable good adaptation outcomes for all of Aotearoa New Zealand.

Step 4: Assessing how well the plan responds to the risks

Figure 6.13 shows our assessment of how well the first national adaptation plan addresses the NCCRA governance domain risks. The overall rating for this assessment is that some of the risks for this domain are not well covered and significant gaps in action remain.

The first national adaptation plan has not responded well to some of the risks in this domain. Our assessment reflects that there are very significant gaps in directly addressing maladaptation – the risk of maladaptation will remain unless this risk is explicitly considered in adaptation planning across all domains. Our assessment also reflects that there are significant gaps surrounding the research and science system, the emergency management system, and in institutional arrangements.

Figure 6.13: How well the plan addresses the NCCRA governance domain risks



Source: Commission analysis

Ngā taupā ki te whai hua o te mahere | Barriers to the plan's effectiveness

In this part of our review of the quality of the first national adaptation plan, we identify barriers to the effectiveness of the plan.

Understanding barriers to effectiveness

For the first national adaptation plan to be effective, it needs to enable New Zealanders to prepare for and adapt to the impacts of climate change.

Through the first national adaptation plan and other initiatives and actions, central government has a role to play in creating an environment where climate risks are well understood, well planned for and well managed. Adaptation decisions – like where and how to live and do business – can then be made locally by New Zealanders, including councils, communities, iwi and hapū, businesses, property owners, households, and others.

Many local entities and individuals are taking action to adapt, but some are encountering challenges that make it hard for them to do so effectively. These challenges can take many forms and vary depending on the system, sector, organisation, or community they are affecting. Common challenges to adaptation relate to institutional and legislative settings, clarity around how the costs of adaptation and loss will be shared and met, and access to data, information and tools.[114]

Where the first national adaptation plan, or other central government initiatives or actions, do not sufficiently address these challenges, barriers to the effectiveness of Aotearoa New Zealand's adaptation action become apparent.

Our approach to identifying barriers to effectiveness

To identify barriers to the effectiveness of the first national adaptation plan, we looked at current actions and policies and determined whether there are gaps between government action and Aotearoa New Zealand achieving good adaptation outcomes. We looked at the most significant challenges to New Zealanders being able to prepare for and adapt to the impacts of climate change, and assessed how well the first national adaptation plan addresses these challenges. Where the plan does not address these challenges – either adequately, or at all – we consider this a barrier to the plan's effectiveness.

In our assessment, we have also considered other central government actions that sit outside the first national adaptation plan. We recognise that the context has changed since the first national adaptation plan was released in August 2022,

and that adaptation may be supported through other government actions outside of this plan. However, we note that it is difficult to have a complete overview of every government policy that may be related to adaptation.

This assessment is part of our responsibilities under the Climate Change Response Act 2002 (the Act), which tasks us with identifying "any known barriers to the implementation and effectiveness of the current plan, including recommendations for how those barriers might be addressed or overcome in future." We discuss implementation barriers in *Chapter 8: Progress towards implementing the plan*. Together, this work has informed *Chapter 3: Our key findings and recommendations*, which includes our recommendations for how these barriers could be addressed in the future.

Step 1: Understanding the most significant adaptation challenges

Our first step in identifying barriers to effectiveness was to understand what challenges are hindering good adaptation outcomes that could be supported by central government policy. We wanted to understand what barriers or opportunities different communities, community groups, organisations and sectors are facing to progress their climate adaptation work, where they think progress has been made, and if there are any gaps in central government policy or action that would help support progress.

To do this, we carried out extensive engagement, including speaking with a variety of organisations, non-governmental organisations and community groups, local government, businesses, industry bodies, researchers, and central government agencies. We also spoke with organisations within or representing sectors that reflect each of the outcome areas in the first national adaptation plan (natural environment; homes, buildings and places; infrastructure; communities; economy and financial system),[x] and attended webinars from various sector/industry groups.

We also drew on recently published reports and reviewed relevant literature and submissions on the draft national adaptation plan from 2022 and other relevant consultation processes.

Step 2: Assessing how well each challenge has been addressed

After identifying these significant challenges, we assessed how well they have been addressed by central government action. We did this by looking at the actions in the first national adaptation plan and other relevant central government-led initiatives. We considered initiatives introduced since the publication of the first national adaptation plan in 2022, but not later than 31 May 2024.

We also took into consideration that policies not explicitly focused on adaptation may still have adaptation implications. We have included these types of policies in our assessment where possible, while acknowledging there are other actions happening related to adaptation that He Pou a Rangi Climate Change Commission (the Commission) is not aware of or that have been introduced during the publication of this report. To minimise gaps in our assessment, we have sought to test our analysis of challenges and supporting actions with relevant government agencies.

Step 3: Considering the significance of any policy gaps

To identify whether there is a barrier to the effectiveness of the national adaptation plan, we looked at each challenge and asked two questions:

- How well has central government action (including through the first national adaptation plan) addressed this challenge?
- If a gap in central government action exists, how significant is this policy gap? For example, is it likely to have significant or wide-reaching, flow-on effects on Aotearoa New Zealand achieving good adaptation outcomes?

Step 4: Identifying whether there is a barrier to effectiveness

Based on the answers to the questions in Step 3, we assessed each challenge with a rating from the scorecard in Figure 7.1 and determined whether policy gaps present a barrier to effectiveness.

x. Sectors include: banking, insurance, business, fisheries, tourism, forestry, agriculture, horticulture, arable, marine farming, biodiversity, marine/oceans, forestry, health, community organisation, infrastructure, transportation, waste, building and construction, energy, telecommunications, water, local government, and research science.

Figure 7.1: Criteria for assessing challenges to effective adaptation

Score	Criteria for assessing challenges to effective adaptation
No significant gaps	The most important aspects of this challenge are addressed, and no significant policy gaps remain. **This does not present a barrier** to the effectiveness of the first national adaptation plan.
Moderate gaps	Some important aspects of this challenge are addressed, but moderate policy gaps remain. **This may present a barrier** to the effectiveness of the first national adaptation plan.
Significant gaps	Many aspects of this challenge remain unaddressed, and significant policy gaps remain. **This presents a barrier** to the effectiveness of the first national adaptation plan.
Insufficient	Action to address this challenge is insufficient to avoid serious flow-on effects. **This presents an acute barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenges to New Zealanders preparing for and adapting to the impacts of climate change

Our assessment identified 11 significant challenges. The first four challenges cut across all areas of the adaptation system and frequently came up across our conversations and research. The remaining seven challenges are more specific and focus on individual sectors. Although the breadth of each challenge varies, each is important and has an impact on achieving good adaptation outcomes.

We acknowledge the large number of challenges raised through our engagement and review of reports, literature, and submissions – not all of which are reflected in this chapter. The 11 challenges included in this chapter are those that were raised most frequently across our engagement, and those that we assessed to be the most important for setting foundations to enable effective climate adaptation over the long term (see Box 1.1: What is adaptation, and what does effective adaptation look like?).

Challenge 1:

A coherent legislative framework and clear institutional arrangements enable effective adaptation

Step 1: Understanding the challenge

Aotearoa New Zealand currently **lacks a clear and coherent national framework for adaptation planning and implementation**. Instead, there is an intersecting set of institutions and laws that set rules and assign responsibilities on issues relevant to planning and implementing adaptation.

These intersecting laws include, among others, the Resource Management Act 1991, Local Government Act 2002, Building Act 2004, and Civil Defence Emergency Management Act 2002. These pieces of legislation do not always align well. For example, the different acts require councils to plan over different timeframes, with long-term planning under the Local Government Act 2002 covering 10 years, infrastructure strategies covering 30 years, the Building Act 2004 covering 50 years, and the New Zealand coastal policy statement (under the Resource Management Act 1991) looking out over a 100-year timeframe.

Current institutional arrangements require local government to plan for natural hazards. Adaptation to climate impacts (from progressive and ongoing climate trends, and more frequent and extreme weather events) has also historically been embedded in natural hazard management. However, existing planning and decision-making frameworks often contain assumptions that risk profiles of natural hazards are unchanging. This means that they are not well-suited to planning for and dealing with changing and uncertain risks from climate change.[115]

Responsibility for different aspects of adaptation-related planning and implementation is currently distributed across central and local government, as well as across a range of communities, individuals, organisations, iwi, hapū, businesses, and investors. However, roles and responsibilities are not clearly and appropriately defined. For example, we heard that action is being stalled as there is a lack of agreement on who should take the lead role in community adaptation planning and implementation.[116] Some underpinning processes and steps for adaptation planning and implementation are also not defined, including how decisions are made about proactive action, and where and how to protect, accommodate and retreat.

Why we focused on this challenge

Aotearoa New Zealand needs an enduring legislative framework for adaptation.

The lack of a legislative framework that mandates local government action on adaptation, and which provides clear roles and responsibilities and processes for decision-making around changing and uncertain climate risks, is a fundamental barrier to effective adaptation. This challenge has significant and wide-ranging flow-on effects, impacting local government in particular, but extends much more broadly. This challenge was raised frequently during the Commission's engagement with local government staff, community members and academic experts, as well as in submissions and literature reviewed for this assessment.[117]

At a fundamental level, the lack of a legislative mandate and standardised adaptation framework makes it challenging to overcome the natural tendency (by councillors and the communities they represent) to focus on the 'here and now' rather than making climate adaptation decisions that endure beyond the current electoral cycle. For example, our research showed that because there is currently no clear mandate for local government action on adaptation, when councils try to act, they often face difficulties at all stages of the process – including getting adaptation prioritised, securing funding (including through their long-terms plans), and obtaining important specialist knowledge and expertise.[118]

Despite these challenges, many councils are already working with their communities on adaptation planning. However, they are often doing so using a variety of different tools and approaches. For example, undertaking risk assessments in different ways, or undertaking adaptation planning processes with varying scopes. In the absence of a clear framework and consistent processes, there is the potential for a patchwork of different approaches around the country, which could lead to inefficiencies and inequities. This situation could result in precedents being set that could increase moral hazard behaviour, erode trust, and result in processes being stalled due to lack of agreement around roles and responsibilities.[119]

The lack of legislative mandate and standardised adaptation framework also heightens the litigation risk felt by councils, imposing significant costs on them. Councils are often challenged by landowners or developers when regulating land use. Legal challenges to proposed regional plan and district plan changes are also frequent. Litigation risk has a significant influence on decision-making and often results in no adaptation action being undertaken, or action being watered down.[120]

Within this context, clear roles and responsibilities and decision-making processes are important to ensure that planning and action happen in a robust and consistent way. This will help homeowners,

communities, businesses and others have certainty around how decisions around adaptation (including where to protect, accommodate and/or retreat) will be made. For example, some councils have advocated for nationally prescribed processes for regional and local risk assessments and levels of risk-tolerance, to ensure greater consistency and equity in adaptation planning.[121] Some councils have also emphasised the importance of clear and consistent approaches to local adaptation planning for setting community expectations and enabling ongoing and effective engagement in the planning process.[122] Setting out standard processes for adaptation planning and action, and how decisions will be made with respect to those processes is important for ensuring a consistent standard of robustness, while being appropriate within local contexts.

Developing and implementing a new legislative framework and institutional arrangements for adaptation will take time, as will the transition to a new system. In the meantime, councils will continue to make decisions around land use, and individuals and others will make decisions about where and how they want to live – both of which will impact future climate risk. Therefore, it is also important to provide clear direction on how councils can and should use existing levers and tools to reduce future climate risk now, avoid maladaptation and support good adaptation outcomes – for example, through the provision of national direction and guidance.

The legal framework and institutional arrangements for adaptation are intimately linked with the issue of who pays for adaptation and loss. A national framework for funding climate adaptation – including managed retreat – will be important alongside a clear mandate for action, and clarity around decisions, processes and roles and responsibilities. Issues around who pays for adaptation planning, action and loss are discussed further in *Challenge 2: A clear framework for who pays for adaptation planning, action and loss, alongside more funding and investment in adaptation, is needed.*

Step 2: Assessing how well government action addresses this challenge

The first national adaptation plan contains some actions that are relevant to addressing this challenge, with additional actions underway since the plan was released.

The Resource Management Act 1991 is the key piece of legislation that governs the regulation of land use and the environment. It influences adaptation practice, but currently does not include explicit obligations for the development or implementation of adaptation plans or the collection and communication of risk information. *Action 4.1: Reform the resource management system* was a key action in the first national adaptation plan, with the plan stating that a key objective of this reform was "to better prepare for adapting to climate change and risks from natural hazards". This action was intended to be delivered through the Natural and Built Environment Act and the Spatial Planning Act. The Spatial Planning Act would have required each region to develop a regional spatial strategy that set out the long-term issues, opportunities and challenges for development and the environment in the region, including areas that are or will be vulnerable to the risks arising from natural hazards and the effects of climate change.

The Natural and Built Environment Act and Spatial Planning Act were repealed in December 2023. The current Government has indicated it intends to take a phased approach to reforming the resource management system. The first phase was to repeal the Natural and Built Environment Act and Spatial Planning Act. The second phase includes the introduction of the Fast-track Approvals Bill, which is intended to reduce cost and improve the speed of regionally and nationally significant projects,[123] as well as targeted legislative changes to the Resource Management Act 1991 (RMA). The first RMA Amendment Bill was introduced to Parliament in May 2024, and is the first of two bills intended to amend the Resource Management Act 1991, with the intent of making it easier to consent new infrastructure, build more houses and enhance the primary sector.[124]

The Government intends to introduce new resource management legislation to replace the Resource Management Act in mid-2025 (phase three of the approach), with this legislation "based on the enjoyment of property rights".[125]

It is important that clear signals of the direction of travel, including how the reforms will overcome the challenges to adaptation planning and implementation described above, are provided as soon as possible. Work on the reforms will need to be monitored for how and if they address these challenges.

At the time of publication of the first national adaptation plan in 2022, the Government's intention behind *action 4.1: Reform the resource management system* was to replace the current Resource Management Act 1991 in stages over a ten-year period. Any alternative system will also take a long time to implement. The first national adaptation plan does not address the need for transitional measures, including clear direction on what existing levers and tools local government should use to support good adaptation outcomes and maladaptation – including avoiding new developments in at-risk places.

The first national adaptation plan also included *action 5.1: Pass legislation to support managed retreat*,[xi] and processes were underway as part of the wider resource management reforms to develop a Climate Adaptation Act. However, the Climate Adaptation Bill was delayed, with the Parliamentary Environment Committee opening an inquiry into options for community-led retreat and adaptation funding in 2023. In May 2024, the Government announced a cross-party inquiry into the development of an adaptation framework. The inquiry is being led by the Finance and Expenditure Committee, which will report back in September 2024 and take into consideration submissions on the previous inquiry.[126] The specific consideration of roles and responsibilities as part of this inquiry may help to address this challenge.[127]

There are some actions in the first national adaptation plan that intended to help provide clarity around processes and decision-making for adaptation planning. This includes the package of actions under *action 3.7: Deliver a rolling programme of targeted adaptation guidance*. Some of the guidance sub-actions have already been completed, such as *action 3.7.4: Produce guidance on using different socio-economic scenarios for adaptation planning* and the updated coastal hazards guidance part of *action 3.7.5: Regularly update adaptation guidance for local government*. However, the majority of guidance actions are on hold and being reviewed in light of the development of the adaptation framework.

Several other legislative and institutional reforms were included in the first national adaptation plan, including *action 4.5: Reform institutional arrangements for water services, action 5.2: The Future for Local Government review*, and *action 9.1: Modernise the emergency management system*. Changes to institutional arrangements for water services are discussed further in *Challenge 8: A clear framework for water services should support good adaptation outcomes*. The Future for Local Government report has been completed. As at 31 May 2024, it is not clear whether and/or how any of the recommendations from this review might be adopted. In addition, emergency management plays a critical role in the response to extreme weather events, but our assessment shows there have been delays in implementing many of the emergency management actions included in the first national adaptation plan (see *Chapter 8: Progress towards implementing the plan*).

As the Government makes decisions around the path forward for these and other reforms, it will be important to ensure that they align and integrate well to support a clear and coherent approach for adaptation.

xi. The first national adaptation plan defined managed retreat as an approach to reduce or eliminate exposure to intolerable risk. It enables people to relocate assets, activities and sites of cultural significance (to Māori and non-Māori), away from areas at risk from climate change and natural hazards. For communities in areas of high risk, managed retreat is an adaptation option. It is usually not considered in isolation from other options, especially when planning for future rather than current impacts of climate change. In some cases, retreat may be a last resort, and in all cases the costs and benefits will need to be carefully weighed.

Step 3: Considering the significance of any policy gaps

There are some actions in the plan that aim to help overcome this challenge, however there are also some significant gaps that need addressing urgently. The lack of a clear legislative mandate for adaptation planning, including a clear and inclusive process for decision-making and clear roles and responsibilities has flow-on effects, many of which Aotearoa New Zealand is already experiencing. These effects can include ad hoc and reactionary decision making, and adaptation planning and action coming to a standstill.

There is a particular gap around transitional measures, including the provision of clear direction on what existing levers and tools local government should use to support good adaptation outcomes and avoiding new developments in areas of increased climate risk. This is a significant gap because councils continue to make decisions every day around how land will be used, and individuals and businesses continue to make decisions about where and how they want to live and do business.

These decisions will have an impact on future risk to communities, businesses and government. Clear direction on existing levers and tools to support effective adaptation and avoid maladaptation is also needed.

The Government's resource management system reforms, and work to develop an adaptation framework, provide an important opportunity to address this challenge. It is important that this work happens as a matter of urgency, to provide clarity around the long-term direction of travel.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that this challenge is not sufficiently addressed by central government action, including the first national adaptation plan, and that this creates a barrier to the effectiveness of the plan. As illustrated in Figure 7.2, we have therefore assigned this challenge the rating 'insufficient'. This challenge is expected to have significant flow-on effects on Aotearoa New Zealand's ability to achieve good adaptation outcomes.

Figure 7.2: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 1:	
A coherent legislative framework and clear institutional arrangements enable effective adaptation	
Insufficient	Action to address this challenge is insufficient to avoid serious flow-on effects. **This presents an acute barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 2:

A clear framework for who pays for adaptation planning, action and loss, alongside more funding and investment in adaptation, is needed

Step 1: Understanding the challenge

There is currently **no national funding framework for climate adaptation** that identifies who will pay for various adaptation-related actions and processes, including adaptation planning, implementation and dealing with issues of loss.[xii] A funding framework is needed that sets out how to share costs for the range of potential adaptation options, including nature-based solutions, hard engineered solutions, or relocation.

Another aspect to this challenge is addressing *how* adaptation planning and action will be paid for. **Existing sources of funding and investment (public and private) are not sufficient to support adaptation needs**. New instruments for investing public funds and leveraging private investment in adaptation are needed to enable adaptation across all sectors and drive proactive adaptation on the scale needed.

Current approaches for paying for adaptation have developed based on a mixture of existing legislative responsibilities relating to natural hazard management, and common practice.[128] The current funding system has a strong focus on response and recovery, with little focus on reducing risk before an event. For example, under the national civil defence and emergency management plan, central government covers 60% of the costs of repair for some essential council infrastructure after a natural disaster, as well as funding to support response and recovery.[129] There is no provision for co-funding for council (or other) investments to reduce climate risks before an event. Decisions about funding and dealing with issues of loss have also often been reactionary and may create expectations that costs associated with climate change adaptation and loss will be compensated.

This challenge is closely linked to *Challenge 1: A coherent legislative framework and clear institutional arrangements enable effective adaptation*, as clarity around 'who pays for adaptation and loss' is an important part of any broader framework for adaptation.

Why we focused on this challenge

Adaptation planning and action will require significant investment to help minimise future damage and loss due to climate impacts. Investment decisions made today will impact how Aotearoa New Zealand proactively prepares for and responds to climate risks and extreme weather events.

A crucial component of decisions around adaptation planning and action is how they will be paid for, and how the costs of loss will be dealt with. The current absence of a national framework around paying for adaptation has significant impacts – this gap interacts with and amplifies other challenges and risks. This includes challenges related to obtaining staff to progress adaptation action (*Challenge 3: Adequate capacity and capability can progress adaptation action*) or not having the adequate access to funding to support communities to prepare for and respond to extreme weather events (*Challenge 9: Communities need equitable support before and after an extreme event*).

This challenge was raised frequently by stakeholders across a range of organisations and sectors, particularly by local government, who have responsibility for regulating land use and planning for natural hazards.[130] Councils currently largely rely on long-term plan funding for proactive adaptation and other climate change work programmes and projects. Accessing funding through the long-term plan process, and competing with other organisational priorities, makes it difficult to access the necessary funds. Using other tools, such as targeted rates, to fund adaptation planning and action can be challenging for some councils without a clear mandate to do so.

xii. Loss can include, but is not limited to, damage to and/or destruction of homes, assets, property and livelihoods by climate-related hazards.

Without a clear and consistent framework for who pays for adaptation, approaches could vary between communities and regions, or action could be delayed and/or halted because agreement cannot be reached on how to fund it. We are already seeing both scenarios playing out.

For example, some well-planned adaptation processes have been stalled because it was not clear how implementation of the plan should be funded. This has been the case with the Hawke's Bay's Clifton to Tangoio Coastal Hazard Strategy 2120. The development of the Strategy began in late 2014 in an effort by the three Hawke's Bay councils to develop a common understanding of the risks and to respond to community concern about the effects of coastal hazards in a more coordinated and forward looking way.[131] Over an 18-month period, mana whenua, coastal residents, inland residents, businesses, lifeline utility providers and others formed community panels that worked with independent advisors and specialists to come up with the recommendations that respond to the coastal hazard risks.[132] In 2018, the Strategy was endorsed; however, it came to a standstill as further work was needed to clarify how to share the costs of adaptation action, and how roles and responsibilities for implementing the strategy should be allocated.[133] The community in South Dunedin shared a concern that progress on the South Dunedin Future programme could stall for the same reasons (see **Box 7.1: South Dunedin case study**).

Local government staff have also noted that there are cases where councils have completed climate risk assessments that identify high-risk locations where managed retreat will likely be needed, but moving forward with such processes has not been possible, in large part due to uncertainty around funding.[134]

At the same time, decisions about dealing with private property losses are often made in a reactive way following extreme events, including following Cyclone Gabrielle and the Auckland Anniversary floods in 2023. For example, in June 2023 the Government announced funding to support councils to offer voluntary buyouts for owners of residential properties designated as no longer being safe. Under the Future of Severely Affected Locations (FOSAL) buy-out programme, the Government committed to contributing 50% of the cost of buying out these properties, with the requirement that councils share remaining buy-out costs. Central government also committed to co-funding work needed to protect some other affected properties.[135] Total central government expenditure on the FOSAL programme is forecast to be more than NZ$1 billion.[136]

Precedents are set by decisions around compensation for such losses. Those precedents will have a material impact on future risk because decisions about where and how to live and do business can be made based on expectations about what will happen in the event of climate impacts and extreme events, including expectations around provision of compensation. Ad hoc and differing approaches to compensating for loss can also lead to inequity between individuals, communities and regions.

In 2023, the Parliamentary Environment Committee's Inquiry into climate adaptation considered several interconnected issues,[xiii] including funding.[137] Many submitters mentioned that the main issue with funding and financing is the lack of an agreed framework to guide how adaptation funding is provided.[138] Some submissions called for clear principles on which decisions around funding adaptation should be based.[139] Many supported that costs should be shared across central and local government, the private sector and individuals.[140] Many submitters suggested that banks and insurers can support adaptation outcomes, before and after an event, as the availability of lending and insurance are important contributors to how Aotearoa New Zealand shapes its adaptation response.[141]

xiii. Issues included: the current approach to retreat and adaptation funding, roles and responsibilities of central and local government agencies, iwi, hapū and Māori participation, alignment and integration with existing legislation and regulatory framework and funding sources, access to those sources, and principles and criteria for cost sharing.

A framework for who pays for adaptation, including proactive planning and implementation, and loss on its own will not be sufficient. The costs of adaptation across the country and economy, and dealing with loss from climate impacts, will be significant. The costs will also not fall evenly. Differences in the concentration of assets and people, the makeup of regional economies, and exposure to climate risk mean that impacts between regions and communities will vary greatly. For example, many low-lying coastal communities have large amounts of infrastructure, homes, buildings and assets exposed to flooding and inundation.[142] At the same time, some regional economies rely heavily on tourism or agriculture – sectors that face significant risks from climate change. Regional differences in exposure and sensitivity to climate risks could lead to significant inequities if communities are left to deal with costs and impacts on their own.

There is currently insufficient capital (public and private) available to meet adaptation needs – this is a critical component of this challenge. Attempts have been made at a global level to estimate the scale of the gap between adaptation needs and levels of expenditure.[143] The gap in Aotearoa New Zealand is unquantified, but also significant – with needs far exceeding current investment.[144]

The Commission has heard consistently through conversations and research that access to capital to support adaptation has been a challenge – including for iwi/Māori, and across a range of businesses, communities, local government and sectors. Challenges around accessing capital for adaptation take many different forms. For example, through our conversations we heard that funding and financing issues make adaptation very difficult for the energy and building sectors.

Additional investment is needed to address the gap, from both public and private sources. A key issue is that investments in adaptation and resilience generally do not generate direct investment returns or revenue streams. However, they can lead to significant avoided costs and damages over the long term and generate broader social and environmental benefits.[145] This shows the need for new tools and innovative thinking. For example, Aotearoa New Zealand may want to look at impact investment vehicles, potential revenue streams for adaptation, as well as how blended finance might be used to adjust risk-return factors for adaptation projects, and to meet the specific needs of different sectors and groups.[146]

It is important to ensure that investment decisions (by public and private entities) account for climate risks and avoid maladaptation that could increase future risks and costs. Investment decisions made today will impact future risks and costs to sectors, businesses, communities and all levels of government, with cascading impacts for wellbeing. At the same time, scaling-up private-sector investment in adaptation, which complements public funding, is urgent if adaptation investment needs are to be met.

Government has an important role to play creating an enabling environment for investment in adaptation – just as it does with supporting the transition to a low emissions economy. This could include developing metrics, frameworks and standardised approaches that incentivise investment in climate resilience, as well as enabling research and the provision of high-quality data to support investment decisions.[147]

Step 2: Assessing how well government action addresses this challenge

There are several actions in the first national adaptation plan that aim to support investment, including actions to enable adaptation decision making, support local government, and taking climate adaptation into consideration for future investment decisions.

Actions that address who pays for adaptation and loss

A key action in the first national adaptation plan relevant for this challenge was *action 5.1: Pass legislation to support managed retreat*, through the introduction of the Climate Adaptation Bill as part of the resource management reforms. One purpose of this legislation was to address the complex financial issues associated with managed retreat. The intended Climate Adaptation Bill was delayed, with work now underway to develop an adaptation framework.

Managed retreat is just one aspect of where funding is needed; mechanisms are also needed for the range of adaptation solutions, adaptation planning, and other forms of loss. There are no actions within the first national adaptation plan focused on these other areas, so the development of a comprehensive adaptation framework for issues around who pays for adaptation and loss is important. This work needs to happen with urgency because decisions about where and how to live and do business continue to be made based on recent precedents, including those set by reactive decisions to extreme weather events. These decisions will impact future risks and costs.

In May 2024, the Finance and Expenditure Committee began an inquiry into climate adaptation. The topics the committee must consider include frameworks for investment and cost-sharing.[148] The committee must also take into account the submissions that were received by the Environment Committee into its 2023 inquiry into climate adaptation. The Finance and Expenditure Committee is expected to deliver their final report to Parliament by 5 September 2024.[149]

Action that supports a proactive and agile climate change response from local government

Action 5.2: The Future for Local Government Review is also relevant to this challenge. The final report was released by the review panel in June 2023 and includes recommendations to central and local government for what local government does, how it does it, and who pays for it.[150] The report includes recommendations for some significant changes to the local government funding and financing system, including the creation of an 'intergenerational climate change fund' to support local adaptation efforts, as well as more central government investment in local outcomes.[151] As at 31 May 2024, it remains unclear whether and how any of the recommendations from the review will be adopted.

Actions to better account for climate risk in investment decisions

The first national adaptation plan contains actions focused on ensuring climate risks are better accounted for in some key government funding and investment decisions. This includes *action 4.6: Integrate adaptation into Treasury decisions on infrastructure; action 4.7: Integrate adaptation into Waka Kotahi decision-making*; and *action 4.4: Embed adaptation in funding models for housing and urban development, including Māori housing*. These are mostly focused on housing and infrastructure decisions.

There are also some actions focused on enabling greater consideration of climate risk in wider investment decisions. This includes *action 3.8: Develop guidance for assessing risk and impact of physical assets and services they provide* and *action 3.5: Support high-quality implementation of climate-related disclosures and explore expansion*.

Actions in the plan focused on improving the quality and accessibility of data, information and tools are also relevant for supporting investment decision-making. These actions are described under *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point across all sectors*.

Step 3: Considering the significance of any policy gaps

There are some important actions in the plan that aim to ensure some public and private investment decisions better account for climate risks and create a more enabling environment for investments in resilience. The actions in the plan to develop and make high-quality information about climate risk more accessible are also important to support investment in good adaptation outcomes.

However, there are significant gaps relating to the need for a clear and comprehensive framework for who pays for adaptation planning, implementation and loss. These gaps need to be addressed urgently to minimise the significant flow on effects, such as maladaptive decisions that lead to greater risks and costs in the future, and varied and ad hoc approaches that can lead to inefficiencies and inequitable outcomes.

The Commission notes that an adaptation framework is currently under development and has the potential to look more broadly at issues around costs than just with respect to managed retreat. While this is encouraging, progress in this area is slower than set out in the first national adaptation plan, and slower than what is needed given the potential flow-on effects. It also remains unclear at this stage how effectively it may address current adaptation funding and investment challenges.

It will be important that the adaptation framework clarifies roles and responsibilities around funding and investment in adaptation, and sets out:

- how the costs of local adaptation planning and implementation will be shared
- how costs of climate-related losses will be dealt with (including public and private losses)
- how private investment in resilience will be encouraged and supported
- targeted funding and investment tools/ instruments that can enable and drive pre-emptive adaptation at the scale needed.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that many aspects of this challenge remain unaddressed by central government action, including the first national adaptation plan, and this presents a barrier to the effectiveness of the plan. As illustrated in Figure 7.3, we have therefore assigned this challenge the rating 'significant gaps'.

Figure 7.3: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 2:	
A clear framework for who pays for adaptation and loss, alongside more funding and investment in adaptation, is needed	
Significant gaps	Many aspects of this challenge remain unaddressed, and significant policy gaps remain. **This presents a barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Box 7.1: South Dunedin case study

The South Dunedin community is working together with its city and regional councils to find solutions for flooding and the flow-on impacts it causes. Built on a former wetland, South Dunedin is low-lying and prone to flooding from a combination of a rising water table, heavy rainfall, drainage, and rising sea level. There is also ongoing concern about coastal erosion of the sand dunes that protect South Dunedin from the ocean.

In June 2015, widespread flooding affected around 1,200 properties and caused NZ$28 million of insured damages. When factoring in the social and economic impacts, costs were estimated to be around NZ$138 million. While the city and regional councils had carried out some work to understand the issue, the 2015 floods provided the impetus for action. This included immediate responses to improve stormwater systems and early warning systems, as well as setting up a process for finding long-term solutions.

Following the 2015 floods, councils started to work more closely together, and to form relationships with the local community that was initiating community-led responses. South Dunedin Future was later set up, as a joint work programme of Dunedin City Council and Otago Regional Council. A key focus of South Dunedin Future is to better understand the problems South Dunedin is facing, and to work with the community to find solutions. To date, South Dunedin Future has worked with the community to develop a list of 16 potential solutions to the physical impacts of climate change and the flow-on impacts on the environmental, social, cultural, and economic wellbeing of the community. The programme is moving into a phase of narrowing down the potential solutions, with the aim of completing an adaptation plan by 2026.

The Commission visited South Dunedin between 13–15 February 2024 to hear the community's perspectives on the impacts they are facing from climate change and how they are working together to develop solutions. We met with community groups, mana whenua, local government, researchers, and local utilities.

Community, mana whenua and councils working together on solutions

The councils, mana whenua and community members we spoke with all agreed that working together is critical for finding solutions to the challenges they face in South Dunedin. In our conversations we heard repeatedly about the importance of local community involvement in finding solutions to local issues, while recognising the difficult context and the varied perspectives and opinions.

South Dunedin Future plays a central role in facilitating relationships and bringing people together to respond to the climate impacts South Dunedin is facing. It does this through ongoing hui, events, research, and other interactions. We heard from community members that these interactions are fruitful and have allowed the community to co-develop potential solutions. To build these relationships, they have focused on:

- **Honesty and transparency**: South Dunedin Future and the councils noted that being honest with the community has been important, even when that means acknowledging the councils do not know what to do. They have found that the more they are honest, the better the community understands the situation. This in turn means that the community is better able to work together to consider solutions, and to respond and recover if an event were to occur.

- **Opportunities and the community's needs**: South Dunedin Future noted they put emphasis on shifting language away from negative framing of the problem. Instead, they focus on framing around people, water and space and making 'South D' a better and safer place.
- **Communicating technical information**: South Dunedin Future has worked with a range of experts to understand the nature of the climate challenge facing the community and communicating that in a clear and accessible way with the community. This means that everyone involved in the process starts with a shared understanding of the issues.
- **All solutions are on the table**: South Dunedin Future initiated conversations with the community based on all options being on the table, and options were then narrowed down from there. Potential solutions may include pumps, pipes, sea walls, nature-based solutions, planning tools that make it easier or harder to build in areas, managed retreat, de-intensification.

Community members we spoke with reflected well on the South Dunedin Future process. They noted a positive turning point in the relationship between the councils and community when the councils acknowledged they did not know how to address the climate challenge the community is experiencing. They also noted that South Dunedin Future and the councils have come to conversations with an open mind and to listen, and have given the community a voice, especially during decision-making.

In our conversation with members of Te Rūnanga o Ōtākou, the mana whenua in Dunedin, about the work they are doing and their broader whakaaro around adaptation issues, they emphasised the importance of bottom-up processes to inform adaptation planning. They also noted that it is crucial that rūnanga can offer their whakaaro on adaptation decisions in a way that leads to genuine input, and benefits for the taiao and rūnanga. Wider kōrero in the community around the future, so that decisions are made with them and not for them by groups external to the South Dunedin community, is a critical part of this.

Community conversations have been underpinned by expert information

We heard during many of our conversations about the important role that experts – from University of Otago and GNS Science in particular – are playing in the process underway in South Dunedin. Experts have played a significant role in advancing understanding of the issues at play, and potential solutions. Many community members commended these experts for how they have communicated the challenge and helped to build the community's understanding.

Some of the experts we spoke with noted that Dunedin is in a 'Goldilocks' position – it is large enough to have well-regarded research institutions and small enough that physical and social scientists themselves live in the wider Dunedin community and care about its future. These experts note that they are able to harness their professional relationships and have strong links to the community and council. The councils have been able to commission a range of local experts to help build understanding and draw on research that they carry out through other funding mechanisms, such as national science funds.

Continued over page

Removing barriers for adaptation processes

The community and councils raised several barriers to adaptation, including these points.

- **Mandate to act**: The mandate to address the flooding challenges in South Dunedin came from the community after the widespread flooding in June 2015. The councils lacked a strong legal mandate to plan for adaptation in South Dunedin, but the push from the community following the 2015 floods provided a social mandate for considering long-term solutions. This mandate from the community depends strongly on the relationships that have been built and maintained since the 2015 floods.
- **Integrated solutions**: The adaptation process is much broader than what councils alone can consider and deal with. Councils can only address aspects that are within their control, such as council assets, roads and water. Many different organisations have a role and need to work together to address the challenge.
- **Funding for implementing solutions**: Many people we spoke with shared the view that the South Dunedin Future process is going well. Alongside this, we heard concern that the process could stall when it reaches the stage of identifying solutions and needing funds to implement them. South Dunedin Future is funded for operational purposes only, until the plan is ready in 2026. Everything else, including implementing the plan and funding to carry out any capital works associated with the plan, is beyond the scope of the programme.
- **Guidance**: We heard that more guidance is needed in some key areas. For example, council planners noted that the process around how, when, and where to retreat from exposed areas is unclear – there is currently no guidance on this.
- **Available and reliable information**: Many of those we spoke to noted that high-quality data and information are important to support an effective process, and that this needs to be easily digestible for different audiences, with common definitions and methods. Specific data and information needs that were mentioned in our conversations included more precise weather information during extreme weather events, flood modelling, national-level exposure data, floor height data, and data on the risk of displacement and social isolation.
- **Emergency management**: We heard that evacuation processes need to be planned and the needs of different groups of society need to be factored in when planning emergency responses. This includes providing emergency support, access to support staff, and enabling access to medication for those that rely on it.

Challenge 3:

Adequate capacity and capability can progress adaptation action

Step 1: Understanding the challenge

A variety of organisations are reporting **a lack of capacity and capability as a challenge to progressing adaptation**.

Adaptation draws on a multitude of skills and expertise. It is a process that requires councils, planners, the construction sector, infrastructure providers, emergency managers, a range of technical experts and many others to plan, do business, build and manage assets, and make decisions in new ways.

The capacity and capability challenge is a particular issue for many councils, where adaptation planning may be left to one or two individuals. A recent survey commissioned by Ministry for the Environment found that 38% of local councils stated that issues with staff/not enough resource and insufficient expertise is one of the challenges inhibiting climate action.[152] The survey also found that although some adaptation planning tools do exist, councils do not always have the staff or skills to make effective use of them.[153] Local community adaptation processes require particular skills and expertise that can be hard for councils to come by. This includes, for example, specialist expertise engaging with local communities and communicating technical information about climate risks and adaptation options.

Depending on the organisation and sector, this challenge may be related to other systemic issues. For example, the availability of funding to fill roles required, lack of skills or technical knowledge in the current workforce to undertake adaptation work, or staff not having enough time to do adaptation-focused work due to other workload pressures and competing priorities. These challenges can hinder adaptation outcomes and stall progress.

This challenge is closely tied to *Challenge 1: A coherent legislative framework and clear institutional arrangements enable effective adaptation* and *Challenge 2: A clear framework for who pays for adaptation planning, action and loss, alongside more funding and investment in adaptation, is needed*. A legislative framework and funding to support adaptation outcomes would help drive climate adaptation and prioritise adaptation resources across local government.

Why we focused on this challenge

Organisations need staff with both the time and expertise to assess climate risks and plan for their impacts and how to adapt. The technical expertise that is needed is wide ranging, and without a clear focus on developing the range of skills and expertise needed, Aotearoa New Zealand will not be able to deliver good adaptation outcomes.

This challenge is experienced across many councils and different sectors but can look different depending on the organisation. Through our research and conversations, we heard for example, that having people on the ground to undertake conservation work is critical for protecting the natural environment. Whereas infrastructure organisations working within regulations and legislation, such as regulated entities or those working with building regulations, need staff with legal and policy skills. A wide range of organisations and businesses also need to keep up with information on climate change adaptation and how it may impact daily operations. Research also indicates that smaller businesses, such as tourism operators, may find it challenging to resource and support staff to understand the impacts of climate change on their day-to-day operations and supply chains.[154]

Through our conversations with local councils, we heard that having a significant business-as-usual work programme, alongside the requirement to implement central government policy direction, does not leave time for meaningful climate adaptation work. Adaptation work can therefore drop off the radar, become a lesser priority or be 'put in the too-hard basket'.[155]

Other factors faced by local government include staff turnover resulting in a loss of knowledge and experience, staff burn out, and local government staff moving to roles that offer higher salaries – including within central government.[156] Climate change adaptation is complex to understand, plan for, and implement; local government staff do not always have the knowledge and expertise to support these work programmes, which has resulted in an increased reliance on consultants.[157]

Additional skill is also needed to facilitate community-led adaptation processes and appropriately integrate mātauranga Māori into adaptation processes. There is currently no way to pool and coordinate resource to help councils address knowledge, capability and capacity gaps.

Having a wide array of skills has been critical to the success of the South Dunedin Future programme – a community-led adaptation process (see **Box 7.1: South Dunedin case study**). Dunedin-based researchers and engagement specialists have been important for both providing the underlying science and helping communities understand the challenges and impacts of climate change. A challenge is that not every local council has experts within the community to support their process or access to funding for engagement specialists in the enduring way that is needed.

Having people with the right skills and dedicated time to undertake climate adaptation work (including understanding risks, adaptation planning, and implementation of actions) will be important for Aotearoa New Zealand's future. Stalling climate adaptation work at the local level could have significant flow-on effects, including the inability to understand and prepare for current and future climate risks to local businesses, the economy, and the health and wellbeing of communities. Delayed action may also increase recovery costs.

Step 2: Assessing how well government action addresses this challenge

Some actions in the first national adaptation plan focus on capacity and capability issues, including the generation and availability of information. For example, the plan contains actions that intend to provide guidance and information to local government and certain sectors. This may help build some knowledge and skill for climate adaptation, specifically around understanding risk and resilience, using best practices such as dynamic adaptive pathways planning, and providing guidance on monitoring and evaluating the impact of adaptation initiatives.

Programmes are also being developed to build new knowledge and understanding of climate adaptation for local government (*action 3.29: Produce an adaptation professional development programme for key audiences*), which are intended to help staff with learning and development. There are also actions that involve undertaking work to better understand which communities may be impacted by climate change.

These actions intend to provide consistent guidance and information specifically to those working in climate adaptation in local government, and some sectors. However, climate change adaptation is a complex and growing field, and it will be important for Aotearoa New Zealand to develop the skills needed and create appropriate education pathways. It is unclear whether and how the tertiary education system will teach the relevant skills needed to support climate adaptation work.

Outside of the first national adaptation plan, there are tools developed by government to support some sectors and businesses. This includes extreme weather information for businesses provided by business.govt.nz, which helps build knowledge and capacity to help prepare for climate risks.[158] Tools like these will help, but more mechanisms will be needed to provide professional training and development in key skills areas.

With respect to the environmental organisations, we heard through our engagement about the positive impact of the Jobs for Nature programme (*action 6.9: Deliver Jobs for Nature to restore indigenous ecosystems*). This programme has enabled environmental organisations to have the capacity to deliver their frontline programmes. However, funding for this action came to an end in June 2024, and it is uncertain whether or how this gap may be filled.

Actions in the first adaptation plan that support *Challenge 1: A coherent legislative framework and clear institutional arrangements enable effective adaptation* and *Challenge 2: A clear framework for who pays for adaptation planning, action and loss, alongside more funding and investment in adaptation, is needed* will support building capacity and capability. Adequate funding and clear roles and responsibilities may help provide the impetus to resource adaptation action.

Step 3: Considering the significance of any policy gaps

There are some actions in the plan that may help address this challenge. However, these are primarily focused on information and guidance and there are some significant gaps.

The plan does not address the need for a systematic approach that better aligns the tertiary education system and future adaptation needs. There is also no direct focus on capacity and capability to support local community adaptation processes, including iwi/Māori-led processes, which could have flow-on impacts in terms of enabling participation.

Additionally, expertise lost from the research and science sector (see *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point across all sectors*) may impact tertiary education, which is important for building future workforce needs.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that many aspects of this challenge remain unaddressed by central government action, including the first national adaptation plan, and this presents a barrier to the effectiveness of the plan. As illustrated in **Figure 7.4**, we have therefore assigned this challenge a rating of 'significant gaps'.

Figure 7.4: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 3:	
Adequate capacity and capability can progress adaptation action	
Significant gaps	Many aspects of this challenge remain unaddressed, and significant policy gaps remain. **This presents a barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 4:

Access to data, information and decision-support tools provides a consistent starting point across all sectors

Step 1: Understanding the challenge

There are **challenges with accessing current data, information and decision-support tools** in forms that are relevant for different users and sectors.

A sound understanding of potential climate risks is critical to support effective adaptation action.[159] Access to current data and information is important for understanding climate risks and what they mean for communities, sectors, or local businesses. Data and information support decision-making for a wide range of users with different needs, including government, community groups, iwi/Māori, large and small businesses, and property owners. For example, geospatial tools that allow local councils and infrastructure providers to identify interdependencies may help identify areas of risk and potential cascading impacts.

Through our research and conversations, we heard about some of the specific aspects of this challenge that can prevent different users from accessing climate risk information. These included:

- **Access to data and information**: the difficulty in knowing where to look for data and information as there is no centralised climate risk portal/database[160] or one agency to provide a trusted source of information that all users can draw on.
- **Standardised data**: data are often not standardised across the country and therefore not easily comparable.
- **Format of data and information**: data and information that are available are not provided in a format that is useful for meeting the full range of user needs. This includes diverse needs of communities and being relevant for specific sectors, such as finance or business.
- **Costs of data**: the cost associated with being able to obtain climate data and research, including information generated through publicly funded research.
- **Decision-support tools and guidance**: online tools and platforms require specific skills or knowledge to use, and additional tools and guidance are needed to support decision-making.

High-quality data, information and decision-support tools would help provide an understanding of climate risks, what they mean and how to adapt to them. This challenge was mentioned across conversations with all sectors, representing communities, infrastructure providers, the finance sector, the natural environment, and the built environment. This challenge also links to *Challenge 3: Adequate capacity and capability can progress adaptation action*, in that people need the right technical skills to synthesise and understand data and information and utilise decision-support tools.

Why we focused on this challenge

Providing data, information and decision-support tools in a form that enables a range of sectors, local councils, investors and communities to understand how climate risks may impact them is foundational for making decisions and progressing adaptation outcomes.

Different groups can benefit from better and more available data, information and tools. For example, businesses would be able to understand how extreme weather events may impact their business, supply chains, profitability, and ability to stay open, provide income and ensure the safety of their employees.

Aotearoa New Zealand has close to 576,000 small businesses,[xiv] accounting for 29% of employment and contributing to over a quarter of our gross domestic product.[161] Small businesses may not have the ability to hire staff with technical expertise or consultants to understand how their business may need to change to respond to climate change. Having data, information and tools available in an accessible format that explains how sectors may be impacted could help businesses from all sectors, and of all sizes, plan for and make decisions to address climate impacts.

Through our conversations we also heard about the need to have a central trusted agency that could provide climate data and information. If Aotearoa New Zealand had a central repository for climate change data, information and tools, this would reduce the need for individual businesses or sectors to invest resources into proving the credibility of their information sources to their customers.

Data and tools are critical to support local councils to progress their climate change work. A survey by the Ministry for the Environment indicated that 32% of councils needed standardised models, data and tools, while 30% needed better risk assessments and 18% needed data on flood-prone areas.[162] Local councils identified the need for an easy to use geospatial risk assessment tool, with reliable data that is regularly updated and is aligned with the needs of iwi/Māori.[163]

Submissions on Parliament's Environment Committee Inquiry into Climate Adaptation in 2023 supported making data and information easily understandable and widely available to allow individuals, communities and businesses to make informed decisions about the risks they are comfortable taking.[164] Local communities will benefit from being able to access information about climate change risks and how they can create more resilient homes, assets, and businesses.

For communities wanting to understand local risks and impacts, information needs to be easily accessible and cater to a diverse range of community needs, such as people with disabilities, and provided in different formats (not just digitally) and various languages. To convey this information, local councils and community organisations have used a range of communication channels, such as public meetings to explain climate science, flyers, leaflet drops, social media, and traditional media (television, newspaper and radio).

The role of the science and research system

The current structure of Aotearoa New Zealand's science and research system is a challenge to the availability of data, information and tools. From our conversations we heard that costs are a significant challenge to accessing existing climate data, despite Crown Research Institutes being publicly funded. The structure and operation of Crown Research Institutes has resulted in the monetisation of the production of information and data. This limits data sharing, leading to unequal access to information and impeding decision-making. This aspect of the challenge is also dependent on *Challenge 3: Adequate capacity and capability can progress adaptation action*, as the viability of the research sector is dependent on having the skills within Aotearoa New Zealand to produce the necessary climate change research.

Not having easily accessible data, information and decision-support tools will impact decision-making and could result in increased climate risk, ad hoc responses, financial burden and inequities in the future.

xiv. Small businesses are defined as those having fewer than 50 employees.

Step 2: Assessing how well government action addresses this challenge

There are actions in the first national adaptation plan that are focused on the development of data and information. Many of these actions intend to support a range of users, including specific sectors (such as agriculture and tourism), local government, and the public. There is effort being made to provide increased access to data, guidance and information. For example, *action 3.1: Provide access to the latest climate projections data* intends to "give New Zealanders the regional and local climate projections data they need to assess future climate risk and make adaptation decisions."[165] *Action 3.7: Deliver a rolling programme of targeted adaptation guidance*, and the development of sector specific guidance will help provide information on climate risk and adaptation. In addition, *action 3.7.3: Produce guidance for dynamic adaptative pathways planning (DAPP)* intends to "support local government to consider adaptation planning and decisions", including "guidance on communicating scientific and technical information to communities and on making climate decisions".

Action 3.2: Design and develop risk and resilience and climate adaptation information portals provides an opportunity to hold climate information in one place, making it easier for users to find. However, the quality and availability of Aotearoa New Zealand's data and information is inconsistent, for example, our understanding of coastal issues is relatively more advanced than our understanding of other hazards.

Outside of the national adaptation plan, Budget 2023 allocated NZ$24.7 million to the Climate Data Infrastructure initiative, and this initiative will continue under Budget 2024. The initiative is led by the Ministry for the Environment and aims to collate and integrate New Zealand's climate change data, with the intention of making them easier to find, access and use.[166]

In May 2024, the Government tasked the Finance and Expenditure Committee with carrying out an inquiry into adaptation. One aspect of the inquiry includes how hazard risk and response information can be better shared so that property owners, insurers, financial markets, and councils can make more informed decisions about their appetite for and management of risk.[167] It aims to focus on key blockages in the system government can address.[168] This piece of work has the potential to address some of the challenges identified in this section and will be monitored as work progresses.

It will be important that the actions delivering data, information and decision-support tools are targeted to diverse audiences, such as providing information in different languages and making information available in both print and digital platforms.

Climate risks will change over time. It will be important to continue to update information, and build on the current evidence-base to ensure that these are not one-off actions. This will heavily rely on the science and research system.

The underlying issues with the science and research system is a crucial aspect of this challenge that is not addressed by the first national adaptation plan. In particular, the current system creates significant costs for users and therefore results in unequal access to data and information that are critical for decision-making. Continuous funding and programme investment will be key to ensuring that the generation and availability of climate change science and research is increased over time.

Action 3.19: Develop Te Ara Paerangi – Future Pathways programme for the research, science and innovation system, aimed to "position the system for the future. This includes focusing resources on national goals, such as climate change, and addressing other issues facing the research system, such as how best to honour Te Tiriti/The Treaty obligations, system funding and incentives, workforce and institutional design." However, this action has been discontinued. The National Science Challenges accelerated adaptation relevant research over the last decade, however these came to an end in June 2024. The new Science System Advisory Group and University Advisory Group will provide advice to the Government on how to improve the effectiveness and impact of the science and research sector,[169] which may help to address this gap. In the meantime, ongoing uncertainty concerning the future of the science and research system could lead to lost expertise, an inability to attract prospective new researchers to Aotearoa New Zealand, and reduced research in key areas for adaptation.

Step 3: Considering the significance of any policy gaps

There are several actions in the first national adaptation plan that have the potential to increase the availability and accessibility of data and information and provide tools and guidance for supporting decision-making. However, because the underlying issues with the science and research system are not addressed, it is unlikely that some of the actions will be achievable, and prohibitive costs for access to some important data and information will continue.

Ongoing uncertainty concerning the future of the science and research system could also lead to lost expertise, inability to attract prospective or new researchers to Aotearoa New Zealand and reduced research in key areas for adaptation. This is likely to have significant implications as high-quality data and information are essential to support risk-informed decision-making.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that many aspects of this challenge remain unaddressed by central government action, including the first national adaptation plan, and this presents a barrier to the effectiveness of the plan. As illustrated in Figure 7.5, we have therefore assigned this challenge a rating of 'significant gaps'.

Figure 7.5: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 4:	
Access to data, information and decision-support tools provides a consistent starting point across all sectors	
Significant gaps	Many aspects of this challenge remain unaddressed, and significant policy gaps remain. **This presents a barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 5:

A joined up health sector can minimise health and wellbeing impacts

Step 1: Understanding the challenge

The **health sector is operating reactively, leaving little opportunity to develop a joined-up approach to adaptation**, including how to prepare for the health and wellbeing impacts of climate change and extreme weather events.

In its response to the review of the health and disability system, the then Government noted the system has become overly complex and fragmented, and could provide more equitable and better care.[170] The review also indicated that from a workforce perspective, staff are feeling more stressed and are facing increasing demands and shortages in supply.[171] The health sector is made up of many segments that work together to provide care and services for New Zealanders. This includes hospitals, primary health organisations, community health providers, Māori health providers, and aged care facilities. The system operates both privately and publicly, which can make some of the sector, such as privately-run general practices (GPs) and pharmacies feel cut off.

This challenge is relevant for communities and the health sector. It is also related to *Challenge 3: Adequate capacity and capability can progress adaptation action* and *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point across all sectors*, as having the capacity and capability, and access to data and information, will help the sector understand what types of health impacts may occur.

Why we focused on this challenge

Climate change will affect the health and wellbeing of individuals and communities in a variety of direct and indirect ways. This will depend on the exposure to climate-related hazards, and will be influenced by social, economic, and geographic factors.[172] The first national adaptation plan recognised that climate change will have greater impact on communities with poorer health outcomes such as iwi/Māori, Pacific people, children, and older people.[173] For example, elderly people are often more vulnerable to heatwaves than others.

Impacts from Cyclone Hale, the Auckland Anniversary floods and Cyclone Gabrielle in 2023 shed light on how extreme events can impact communities, before, during and after the event. Communities experienced isolation for days when roads and infrastructure, such as power and telecommunications, became damaged.[174] This impacted the ability to access necessary healthcare services, food and water.

Support for mental health and wellbeing will be increasingly important as the frequency of events intensifies with climate change. Recent research on the health and wellbeing impacts of adverse weather conditions in 2022 and 2023 highlighted the widespread health and wellbeing impacts on communities. Both adults and children experienced impacts to their mental health and wellbeing, such as 'rain anxiety', due to the repeated extreme weather events.[175]

Recent extreme weather events also exposed gaps in Aotearoa New Zealand's health system, particularly highlighting the issues facing people with high health needs, disabled people, older people, and those living in remote communities.[176] The health of those living with pre-existing chronic health conditions (for example, those living with asthma or blood pressure issues) worsened as a result of stress, anxiety and environmental hazards from these extreme weather events.[177] Individuals with pre-existing health conditions and disabilities were isolated for longer or unable to access information, resources and support (for example, clean water and medication) as needed.[178]

Having a good understanding of communities, where exposed groups are and what their unique mental and physical health needs are will be critical for the health sector. Understanding regional climate change and health impacts on these groups will give the health sector a better idea of how to prepare and respond to current and future risks.

Step 2: Assessing how well government action addresses this challenge

The health sector actions in the first national adaptation plan primarily focus on government-provided healthcare services and infrastructure, such as public hospitals. *Action 9.5: Continue with the reform of the health and disability system* intends to help address this challenge, as the "new system will be simpler and more coordinated allowing for better and more consistent care". This action highlights the role of Te Aka Whai Ora – the Māori Health Authority, which intended to ensure the health system works well for Māori. However, in February 2024, Te Aka Whai Ora Māori Health Authority was disestablished.[179]

Action 9.2: Develop the Health National Adaptation Plan is a key action for addressing this challenge. The Health National Adaptation Plan will "be supported by regional climate health action plans that are developed by the sector", which aims to help identify the unique needs of individual communities, including vulnerable groups. It will be important for implementation of this action to include all parts of the healthcare sector, including primary and community health providers, which are important for communities especially in the recovery period following extreme weather events.

Step 3: Considering the significance of any policy gaps

The development of the health adaptation plan provides the opportunity for close collaboration between primary and community health providers. Noting the physical health and wellbeing impacts of the 2023 North Island extreme weather events, the timely delivery of this action will be important to ensure there is continued focus on mental health.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that some aspects of this challenge are addressed by central government action, including the first national adaptation plan, but some gaps remain which may present a barrier to the effectiveness of the plan. As illustrated in Figure 7.6, we have therefore assigned this challenge a rating of 'moderate gaps'.

Figure 7.6: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 5:	
A joined up health sector can minimise health and wellbeing impacts	
Moderate gaps	Some important aspects of this challenge are addressed, but moderate policy gaps remain. **This may present a barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Box 7.2: Wairoa case study

Wairoa is the northernmost district in the Hawke's Bay. The town of Wairoa, the largest in the district, sits at the mouth of Te Wairoa Hōpūpū Hōnengenenge Matangi Rau (the Wairoa River). The main local industries in the Wairoa District are agriculture, forestry and horticulture. The district is prone to flooding, and along with it, liquefaction, landslides, and damage from forestry slash. Major roads are often cut off. The community has shown huge resilience in the face of repeated flooding.

Extreme rainfall and storms have occurred multiple times over short periods. In March 2022, torrential rain caused flooding in the district, and led to extensive damage to roading, houses, and farms. This was closely followed by ex-Cyclone Fili, exacerbating these impacts. In January 2023, Cyclone Hale brought high winds, heavy rainfall and flooding, causing damage to homes and infrastructure. Then in February 2023, a national state of emergency was declared as Cyclone Gabrielle brought widespread devastation to the district. In between these events, Wairoa has also experienced smaller events that resulted in the community being cut off.

The Commission learned about this first hand when we visited Wairoa between 7–9 November 2023 to hear the community's perspectives on the climate-related hazards and impacts they are facing, and the challenges and opportunities preparing for, and recovering from these events. We met with community groups and members, iwi/hapū, local government, foresters, researchers, and local utility companies. The community has experienced further states of emergency from frequent weather events since this visit.

The Wairoa community is tight-knit and socially resilient

A key theme raised by many people and groups we spoke with in Wairoa was the social resilience of the community. We heard that Wairoa is 'naturally resilient' due to its isolation. Close community connections have been a key aspect of this resilience.

Many local groups have played important roles in responding to and recovering from extreme weather events, including, for example iwi/hapū through local marae, and local catchment groups. The close connections of these groups to the community are a key part of their effectiveness. The Guardians of the Ruakituri Catchment Group, for example, told us that the social cohesion built through the group meant that, when flooding hit, community needs were well understood, and the community could pull together and support each other more effectively.

While the resilience and connectedness of the community was a strong theme from our conversations, many people we spoke with would like to see more support for developing local leadership, and for local leaders to play a more prominent role. For example, Tātau Tātau o Te Wairoa Trust (which is responsible for managing Treaty Settlement redress on behalf of iwi and hapū of Te Rohe o Te Wairoa) noted the importance of understanding local social structures, local aspirations, and what is happening on the ground. During Cyclone Gabrielle, iwi and hapū of Te Wairoa demonstrated extensive leadership helping coordinate immediate response efforts, and they are still heavily involved in the ongoing recovery. They noted that building strong local leadership will lead to positive adaptation outcomes for the community, and that this type of whakaaro can only come from the community. They noted this takes time, and more support to build local capability would be helpful.

Support for broader community wellbeing is an important part of building long-term resilience

The wellbeing of Wairoa residents has been deeply affected by the series of weather events over the last few years. We heard that the frequency of weather events means the community's default setting is reactive, which is fatiguing and makes it difficult for the community to focus on long-term needs and adaptation. Several groups characterised the community as 'traumatised' following Cyclone Gabrielle.

Many people noted long-term thinking is important for building broader resilience. We specifically heard that wellbeing is receiving too little focus and that longer-term health and social support were often overlooked. From a physical resilience perspective, we also heard that investments in housing, infrastructure, and the local economy are needed to support the community to thrive over the long term. The importance of building back better was highlighted – including, for example, more resilient transport connections and lifeline systems. We also heard support across the community for improving housing – with many residents still living in temporary housing, with the fate of their damaged homes still unclear. Some see a need for houses to become more sustainable and resilient, for example with water tanks and solar panels, but to do so in a way that is led by the community.

There is a strong sense within the community that Wairoa can have a positive future, and that the district, and sectors within it, can thrive if built back better, supported by the right infrastructure, and with innovation and 'visionary thinking'. We also heard that Treaty partnership can be a source of strength and resilience in the district and should be more effectively leveraged to bring long-term solutions for Wairoa that are led by the community. The approach taken by Tātau Tātau o Te Wairoa Trust was noted as an example of the strength that Treaty partnership can bring to the community.

The way land is used affects the outcomes for the community

Many groups and individuals we spoke with emphasised that land use can have a significant effect on the community during extreme weather events. The way forested land is managed was a particular concern, and we heard many different perspectives on forestry in Wairoa.

Slash and forestry debris have caused significant damage to housing and infrastructure, and exacerbated flooding by pooling under bridges and clogging waterways during extreme weather events. We heard concerns from some groups that plantation forestry poses a challenge for long-term resilience, and that harvest management plans are often not well monitored. At the same time, we heard from some foresters that the forestry industry is dealing with legacy issues such as forests planted on steep, highly erodible land and historic harvest residues. There was support from many for recent new forestry regulations, though also concern that these still allow for a lot of slash to be left behind, which will continue to cause issues for the community.

Almost all that we talked to acknowledged that there would likely be a role for forestry in the region, albeit with changes. We heard that foresters need clarity around the role of forestry from central government, and that no changes will occur until this happens. The District Council and others also emphasised that a more holistic approach to land use in general is needed, which considers the relationship between forestry, farming, and conservation. We also heard the concern that carbon forestry – which is increasing in the district – may cause more issues than plantation forestry, as these forests are often not actively managed.

Continued over page

There are some structural barriers getting in the way of progress

We heard that a fragmented governance system between district council, regional council, and central government creates challenges for building resilience. There were concerns voiced by many that governance structures often impede progress, and that roles and responsibilities between levels of government, community groups and others are often unclear. Addressing this was considered important to support effective, cohesive long-term planning for the district.

We also heard that more funding and resources are needed to support effective local adaptation planning. There was a sense that current support received from central or regional government – during and post event – is often not well-targeted at community needs. Several people and groups also suggested that new roles should be established and resourced to build community connectedness and support more effective planning and response to events, including paid local community coordinators.

Making data, knowledge and information more readily available and accessible was also noted as important to support effective planning. This includes, for example, information to inform decisions about future land use. Building local knowledge and ensuring that mātauranga Māori is appropriately reflected in planning and decision-making was also noted.

Challenge 6:

Well planned and managed land use can prevent impacts on communities

Step 1: Understanding the challenge

Poor land-use planning and management practices are causing significant damage to some communities. The most severe cases of this can occur during and after extreme weather events.

How Aotearoa New Zealand uses land plays a key role in the country's emissions reductions and climate adaptation strategies. Landscapes and communities can be more resilient with good land-use planning and management. Planned, proactive and integrated land management can restore soil and water quality and enhance biodiversity – which in turn can make our economy, environment and society more resilient.

There are a variety of land uses across the country with different benefits and environmental impacts. Each have different management regimes and will be affected differently during extreme weather events. Gradual changes such as temperatures increasing will force some changes in the way land is used, however it is more difficult to project the impact of extreme weather events.[180]

The impacts of environmental degradation from poor land management will be compounded due to the effects of climate change. The impacts of poor land-use management and climate change have been felt most acutely in steep and erosion-prone regions. Destructive debris flows have caused widespread damage to properties and infrastructure (for example, roads and powerlines) in these areas. While soil erosion is a natural process, particularly in geologically young areas, it can be accelerated due to climatic conditions, or when human activities modify soil or vegetation, including from farming, forestry, construction and mining.[181]

Government policies related to land use are not coordinated and sometimes lead to maladaptation. Aligning land-use policies requires identifying clear outcomes across various issues such as rural communities, climate mitigation, climate adaptation, biodiversity and water quality. This is being achieved at a local scale by some catchment groups that have taken a proactive approach to land-use planning and are already helping farmers prepare farm plans by building their understanding of the local context and potential on-farm actions.[182] However, the success of catchment groups depends on the quality and skills of the people in them (particularly their leadership), support, resources and incentives to collaborate.[183] A challenge is how this can be better supported by government and scaled up across the country.

This challenge is particularly relevant for the primary industry sectors, such as agriculture and forestry, and has flow-on effects for the broader natural environment, communities, and Aotearoa New Zealand's economy.

Why we focused on this challenge

Well-managed land use can help minimise damage during and after extreme weather events and prevent long-term impacts on communities while also providing employment and income. Extreme weather events have seen movement of woody debris and sediment, impacting the wider natural environment (including land and waterways), and have put the health and safety of people at risk. Cyclone Gabrielle highlighted the erosion risk in Tairāwhiti/Gisborne, Hawke's Bay and Wairarapa regions. There were more than 300,000 landslides with an economic cost of approximately NZ$1.5 billion.[184] The Ministerial Inquiry into Land Use in Tairāwhiti/Gisborne and Wairoa reported that while some clean-up is happening, it is ad hoc and would benefit from coordination.[185] Up until February 2024, the Government had invested NZ$232 million in the clean-up of sediment and debris across Hawke's Bay and Tairāwhiti/Gisborne.[186]

In 2023, the Ministerial Inquiry into Land Use in Tairāwhiti/Gisborne and Wairoa identified issues in the regulatory environment that prevented an integrated approach and have left these areas vulnerable to extreme weather events. The inquiry articulated a future vision for the region of "flourishing biodiversity; healthy catchments, waterways and coastlines; and resilient infrastructure and diversified economy".[187] To address the issues raised by the Ministerial Inquiry into Land Use, the Government appointed a resource management advisor and facilitator.

The first report from the advisor stated, "Any long-term solution will need to address land use in Tairāwhiti as a whole and align regulatory and non-regulatory levers and incentives".[188] While Gisborne District Council was working on plan changes in the Tairāwhiti Resource Management Plan and Regional Policy Statement, the resource management advisor raised concerns about the evidence base, analysis, engagement and hasty pace. We have also heard that many councils are seeking further direction and resources from central government on how to apply the Resource Management Act 1991 in a climate change context.

To further understand land-use challenges, the Commission spoke with the forestry sector, iwi/Māori, farming groups, and local and regional councils in Wairoa (see **Box 7.2: Wairoa case study**). Almost all groups we spoke with agreed that agriculture, horticulture, production forests and permanent forests all have a role in the region. We heard the need for central government to support local government and communities to identify and plan for the 'right' type of land use in the right place, and that central government support should include appropriate incentives such as carbon pricing, biodiversity incentives, and regulations. We also heard about how communities and businesses have been reactive and have not been able to focus on long-term planning. These issues are not new, through our conversations we heard concerns that recommendations made after Cyclone Bola in 1988 were never implemented.

The unique and wide-ranging relationship iwi/Māori have with the land means the flow on effects of poorly managed land can have significant impacts on iwi/Māori. The Commission has heard through Maui.Tech case studies that iwi/Māori have a strong connection to the land and often rely on it for sustenance, spiritual wellbeing and economic prosperity.[189] Iwi/Māori hold important roles in the primary industries and, due to the rural nature of iwi/Māori communities, often make up a high proportion of those affected by poor land-use planning.

Direction on where different land uses should be located, how those activities are undertaken and how land use might evolve over time is needed. This can prevent future destruction to communities, the natural environment and infrastructure, as well as minimise clean-up costs.

Step 2: Assessing how well government action addresses this challenge

There are actions in the first national adaptation that look to help address some land-use challenges for primary industries, including forestry and agriculture. *Action 3.13: Provide a forestry planning and advisory service* "will promote better land use, tree selection, resilience and suitability for the landscape, and support the forestry to identify climate risks and take action". There are also actions that intend to support regional planning for erosion prone land and establish a long-term work programme to support native afforestation and restoration (*action 6.12: Implement the Sustainable Land Management Hill Country Erosion Programme* and *action 6.5: Establish an integrated work programme to deliver climate, biodiversity and wider environmental outcomes*). While these actions aim to support the sector towards progressing adaptation outcomes, they do not address the need for direction on land use and the role of forests for both climate adaptation and emissions reductions.

There are also several actions that intend to support agriculture specifically, such as *action 3.15: Design and implement the Farm Monitoring Programme*, and *action 10.5: Deliver the Māori agribusiness extension programme*, which aim to help "landowners and agribusiness to take a te ao Māori approach to meet their aspirations for their whenua in a productive and sustainable way". Actions related to improving access to climate data, information and tools (see *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point across all sectors*) also have the potential to support these sectors if information and tools on climate risks are targeted for the primary sectors.

Forestry regulations have been updated since the publication of the first national adaptation plan. In October 2023, changes were made to how the effects of commercial forestry are managed through the National Environmental Standards for Commercial Forestry (previously called the National Environmental Standards for Plantation Forestry).[190] The regulations apply to both plantation forestry and exotic continuous-cover forests (carbon forests) that are established for commercial purposes. To reduce impacts

on communities and the environment, these changes aim to give councils greater control over commercial forestry by providing clear rules on harvesting practices and new requirements on slash removal from erosion-prone land.[191]

Industry Transformation Plans provided an opportunity for government to work with forestry businesses, workers and iwi/Māori to improve the sector.[192] The Forestry and Wood Processing Industry Transformation Plan acknowledged that the sector will be affected by the opportunities and risks presented by climate change. It included a priority to 'create a resilient and collaborative sector' which aimed to improve the social licence of the sector. However, Industry Transformation Plans have been discontinued and it remains unclear whether this work will be delivered through other mechanisms.

The 2023 Ministerial Inquiry into Land Use in Tairāwhiti/Gisborne and Wairoa included 49 recommendations.[193] The then Government agreed in principle to a cross-system change, but did not agree to all recommendations and proposed to focus on two phases of work: reducing risk (such as clearing woody debris) and strengthening resilience.[194] Within the 'reducing risk' phase of work, actions are progressing to increase efforts to manage woody debris, appoint a statutory Resource Management advisor to strengthen the resource management framework in Tairāwhiti/Gisborne, appoint a facilitator to build partnerships with the forestry industry and landowners and Māori interests to support recovery and longer-term resilience, and progress actions to improve forestry management (this includes working with Gisborne District Council on options to speed up a review of existing resource consents, provide national guidance on forestry slash risk, and complete changes under the National Environmental Standards for Plantation Forestry).[195]

Step 3: Considering the significance of any policy gaps

There are some actions in the first national adaptation plan that aim to support forestry and land-use planning. However, the way that land is used can have significant flow-on impacts to people's homes and livelihoods, infrastructure, community health and wellbeing and the natural environment – and there is still a significant gap around direction from central government about the role of forests and what is best suited where, that needs to be addressed to avoid future consequences.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that many aspects of this challenge remain unaddressed by government action, including the first national adaptation plan, and this presents a barrier to the effectiveness of the plan. As illustrated in Figure 7.7, we have therefore assigned this challenge a rating of 'significant gaps.'

Figure 7.7: Scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 6:	
Well planned and managed land use can prevent impacts on communities	
Significant gaps	Many aspects of this challenge remain unaddressed, and significant policy gaps remain. **This presents a barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 7:

Integration of nature-based solutions can minimise climate impacts

Step 1: Understanding the challenge

Local government is not currently enabled to integrate nature-based solutions or green infrastructure into their planning processes. This may present a challenge in efforts to minimise impacts from extreme weather events, such as flooding from intense heavy rainfall.

Nature-based solutions aim to help address challenges – such as climate change and threats to human health, food and water – by integrating elements from nature, and by protecting, managing and restoring natural ecosystems.[196] Examples of nature-based solutions include trees and green roofs to help reduce heat in urban areas; wetlands and planting to help manage flooding and support cleaner water and biodiversity; and designing public spaces like parks or reserves to flood to help to manage flooding of homes and buildings while avoiding the need for expensive stormwater upgrades.

There are a range of issues that affect the ability of local government to effectively integrate nature-based solutions into planning processes, and central government has a role in ensuring that those working within the planning system are able to deliver effective adaptation alongside other objectives.

Green infrastructure is an important type of nature-based solution and includes features or processes that help to manage floodwaters – such as trees, rain gardens, permeable pathways and planted stream banks.[197] However, traditional planning often favours grey infrastructure such as retention ponds or seawalls to prevent flooding. Aotearoa New Zealand's National Planning Standards do define green infrastructure, however, but there is no requirement for councils to consider integrating green infrastructure into their plans.

Currently, councils can charge developers a fee to help recover the costs of community facilities, such as water pipes. However, the Local Government Act 2002 places a cap on how much councils can charge for green spaces (such as parks and reserves). This can disincentivise developers to incorporate green spaces into their developments. Evidence also suggests that many councils are not asking the maximum amount they are entitled to.[198] Integrating the natural environment into the planning system through guidance, regulations, or other incentives could provide local government with more levers to improve climate resilience and biodiversity outcomes.

This challenge applies to the natural environment, infrastructure and finance sectors and has flow-on effects to communities, homes, buildings and places.

Why we focused on this challenge

Nature-based solutions offer several co-benefits alongside adaptation to climate-related hazards, including supporting wellbeing, emissions reductions, and improved biodiversity. Nature-based solutions, such as water-sensitive urban design, also often draws on and supports fundamental iwi/Māori values and practices, such as kaitiakitanga (environmental guardianship/stewardship) and mauri (essence/life-force, derived from whakapapa).[199]

It is estimated that about 675,000 (or one in seven) people across Aotearoa New Zealand live in areas that are prone to flooding, which amounts to over NZ$100 billion worth of residential buildings.[200] Climate-related hazards can damage infrastructure and homes, impact mental and physical health, and impose costs on governments and communities. A study commissioned by the Treasury estimated that in the decade of 2007-2017, climate change caused at least NZ$120 million worth of privately insured damage from floods and NZ$720 million in economic losses from drought.[201] The Treasury found the total cost of damage to physical assets from the Auckland Anniversary floods and Cyclone Gabrielle extreme weather events in early 2023 was in the range of NZ$9–14.5 billion – with more than half relating to damage of public infrastructure.[202]

Investment in developing resilient communities, including through the use of nature-based solutions and green infrastructure, could help minimise future damage to properties and assets.

During our engagement we heard from conservation organisations that the role of nature in climate change adaptation is often overlooked, and that the sector faces funding and resourcing constraints to maintain delivery of programmes that support nature-based solutions. Clarifying how adaptation is part of wider decision-making processes (for example, under the Local Government Act 2002 or Resource Management Act 1991) would allow decision-makers to consider a range of outcomes together, such as considering biodiversity outcomes alongside climate adaptation requirements. Integrated decision-making needs to be supported by a framework for adaptation, and therefore this challenge is closely linked to *Challenge 1: A coherent legislative framework and clear institutional arrangements enable effective adaptation*. Through our engagement we heard that local council decisions are often affected by concerns about litigation under the Local Government Act 2002 and Resource Management Act 1991. Such litigation can often be driven by concerns about private property rights, how land is zoned and how infrastructure is managed. Fear of litigation does not encourage local government to take innovative approaches to planning.

Nature-based solutions will play an increasingly important role in climate adaptation. Without levers in the planning system to avoid and minimise building in areas of high risk, exposure of people and assets will continue to rise. For example, between February and November 2023, Auckland Council issued 1,873 building consents for homes in areas with known hazards, with 1,415 dwellings consented in flood plains.[203] Nature-based solutions can be used to help reduce risk at different stages of the development process and can play an important role in mitigating unavoidable risk.

Within Aotearoa New Zealand, integrating nature-based solutions in local planning decisions is not common practice, but has been shown to provide benefits during extreme events. For example, Kainga Ora have invested in climate-resilient infrastructure to minimise impacts from flooding, in the Auckland suburbs of Hobsonville point, Northcote, Roskill South, Ōwairaka and Tāmaki. In 2023, during the Auckland Anniversary Floods Northcote's Greenslade Reserve filled up with 12 million litres of water as designed, preventing stormwater systems from being overwhelmed and saving homes and buildings from flooding.[204] This water drained away in less than 15 hours after the flood, allowing retail stores to reopen for business and the reserve to be in use again.[205] Investments in such nature-based solutions are not common across the country, despite their benefits.

Nature-based solutions and green infrastructure are more common in other countries, such as the United Kingdom, United States of America, China, and Scotland.[206] For Aotearoa New Zealand it will be important to enable councils to make nature-based solutions part of regular decision-making. This can help minimise future costs and impacts for communities.

Step 2: Assessing how well government action addresses this challenge

There are some actions in the first national adaptation plan that intend to increase the ability to consider nature-based solutions in planning and infrastructure decisions. For example, there are specific actions that may help embed nature-based solutions as part of future infrastructure and transport policy investment (*action 8.7: Embed nature-based solutions as part of the response to reducing transport emissions and improving climate adaptation and biodiversity outcomes* and *action 4.6: Integrate adaptation into Treasury decisions on infrastructure*). These actions combined have the potential to help increase the use of nature-based solutions that could reduce future costs and impacts for communities.

There are also actions that intend to support the inclusion of nature-based solutions within planning and regulations, and the development of climate and nature-positive investments. This includes *action 5.9: Prioritise nature-based solutions*. However, our assessment in *Chapter 8: Progress towards implementing the plan* shows that this action is on hold, which may impact timely integration of nature-based solutions.

Action 7.5: Update housing and urban settings is focused on reviewing strategies, programmes and regulations "to ensure housing and urban environments are fit for the changing climate." These actions may be supported by *action 6.3: Implement Te Mana o te Taio – Aotearoa New Zealand Biodiversity Strategy 2020*, which includes the climate-specific goal "Biodiversity provides nature-based solutions to climate change and is resilient to its effects."

The first national adaptation plan states that findings from *action 5.16: Identify options to increase the integration of nature-based solutions into urban form* will be "progressed through *action 4.1 Reform the resource management system* and *action 7.5: Update housing and urban settings*." However, since *action 4.1: Reform the resource management system* has been repealed, it will be important to ensure nature-based solutions are integrated in upcoming resource management reforms.

While there are a number of actions that could help to address this challenge, our implementation assessment shows that many of these are not on track (see *Chapter 8: Progress towards implementing the plan*).

Step 3: Identifying whether there is a barrier to effectiveness

There are actions that aim to better integrate nature-based solutions and the wider natural environment into urban form. However, the implementation of some of these actions is not on track and some are on hold. Timely delivery of these actions is important to put nature-based solutions on par with grey infrastructure, particularly as there are no interim measures to support local councils to prevent the development of homes and buildings in areas that are vulnerable to risk, such as flood plains. The actions in the first national adaptation plan aim to better integrate nature-based solutions in specific areas, although there is no broader action to enable nature-based solutions in a consistent or systematic way across systems.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that many aspects of this challenge remain unaddressed by central government action, including the first national adaptation plan, and this presents a barrier to the effectiveness of the plan. As illustrated in Figure 7.8, we have therefore assigned this challenge a rating of 'significant gaps.'

Figure 7.8: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 7:	
Integration of nature-based solutions can minimise climate impacts	
Significant gaps	Many aspects of this challenge remain unaddressed, and significant policy gaps remain. **This presents a barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 8:

A clear framework for water services should support good adaptation outcomes

Step 1: Understanding the challenge

A **lack of a clear framework for water infrastructure makes it hard** for planners, water providers and asset managers (including local councils) **to make decisions that support good adaptation outcomes**.

Water services include wastewater, drinking water and stormwater.[xv] Aotearoa New Zealand's water infrastructure is facing a variety of challenges in addition to climate change. These include ageing infrastructure, historic under-investment, increasing consumer expectations and potential for source water contamination in some places.[207]

The water infrastructure system also faces some broader issues. This includes lack of consistent design standards, fragmented responsibilities for water infrastructure, poor alignment of stormwater management and land-use planning.[208]

The current legislative framework makes it difficult for planners, water providers, and asset managers (including councils) to make decisions related to water infrastructure in a way that aligns with good adaptation outcomes, because there is no clear and coordinated approach to water management. The ability of water systems around the country to deal with impacts from climate change alongside other challenges depends on effective oversight, clear direction and consistent standards. Providing consistent tools, data and information would be beneficial to understanding climate risks and impacts, which would support long-term planning and investment.

Most water services are owned and delivered by local councils, with some by community-based providers. This challenge is relevant to water providers, asset managers and the financial system, and will have flow-on effects to communities that rely on drinking water being safe and available, and stormwater systems being able to cope during extreme rainfall.

This challenge is also closely related to other challenges covered in this chapter. Establishing a clear and effective funding framework for water infrastructure that improves the resilience of water services would align with *Challenge 2: A clear framework for who pays for adaptation planning, action and loss, alongside more funding and investment in adaptation, is needed*). Data, information and tools would support the ability of water service providers to plan for and manage climate risks (*Challenge 4: Access to data, information and decision-support tools provides a consistent starting point across all sectors*). Capacity and capability is also important for delivering and managing water infrastructure that is climate resilient (*Challenge 3: Adequate capacity and capability can progress adaptation action*). This is also related to *Challenge 10: Coordination and alignment across infrastructure providers is needed*, in that taking a coordinated approach to infrastructure and land-use planning could prevent cascading impacts from extreme weather events and failures to infrastructure.

xv. There are six categories of water infrastructure: potable (drinking) water, wastewater (sewerage), stormwater, rural drainage, river control and flood protection, and irrigation (productive water).

Why we focused on this challenge

Stress on the water infrastructure system is likely to worsen from more frequent and severe flooding from rising seas and extreme rainfall events, as well as from higher temperatures, more frequent dry spells and droughts. Climate-related hazards can impact the availability of safe drinking water if treatment facilities are unable to perform, which may increase risks to public health. Infrastructure is also interdependent, and failure in one part of a system may have cascading impacts, see *Challenge 10: Coordination and alignment across infrastructure providers is needed*.

Historic under investment in water services and increasing costs of repairs have resulted in the need for significant investment into water infrastructure today and in the future. It has been estimated that over the next 30 years, a fit-for-purpose and future-proofed 'three waters' service would cost NZ$120–185 billion nationally, over and above planned investment.[209] Some councils are increasing rates to pay for needed upgrades to water infrastructure.[210]

Through conversations with the water sector, we heard about the need for a more holistic approach to water management, including for reforms that facilitate long-term planning and a more integrated 'systems approach'. Submissions on the draft first national adaptation plan also highlighted how local councils could benefit from an improved understanding of flood risk, and stormwater systems and their capacity. Having consistent standards, data and guidance for flood protection could help water asset managers to effectively consider adaptation in their planning.[211]

As the impacts of climate change are increasingly felt alongside other challenges, the current lack of a clear legislative or regulatory framework for the management, planning and delivery of water services is likely to lead to poor outcomes. This includes poor understanding of key issues, ad hoc approaches and application of different standards between and among regions, as well as significant inefficiencies.

Step 2: Assessing how well government action addresses this challenge

Action 4.5: Reform institutional arrangements for water services was the key action in the first national adaptation plan focused on water services. This action was focused on four key outcome areas: 1) safe, reliable drinking waters; 2) better environmental performance of wastewater and stormwater services; 3) efficient sustainable, resilient and accountable multi-regional water and sewage services; 4) making it affordable for future generations.[212] The Water Services Entities Act 2022 included a provision to "deliver water services in a sustainable and resilient manner that seeks to mitigate the effects of climate change and natural hazards and support and enable climate change adaptation."[213]

In February 2024, the Government repealed the Water Services Entities Act 2022 and announced a new approach to water service delivery 'Local Water Done Well'.[214] This is being progressed through the introduction of two new bills in 2024 – the first was introduced on 30 May 2024 and the second is intended to be introduced by December 2024.[215] The key principles of this approach are to: introduce greater central government oversight, economic and quality regulation; fit-for-purpose service delivery model and financial tools; setting rules for water services and infrastructure investment; and ensuring water services are financially sustainable.[216] As Local Water Done Well progresses, it will be important to monitor for its ability to effectively prepare the sector to respond to the effects of climate change and natural hazards.

In May 2024, the Government announced the Regional Infrastructure Fund for investing in new and existing infrastructure with a focus on resilience and enabling infrastructure.[217] Part of this is an initial investment of NZ$200 million for flood resilience infrastructure. Of this, up to NZ$101.1 million is committed for co-investment in 42 flood resilience projects that are ready to get started.[218] These projects have been identified by local government through the 2023 Before the Deluge 2.0 report.[219]

There are also actions targeted more generally at infrastructure that could help address this challenge, such as *action 5.6: Scope a resilience standard or code for infrastructure, action 4.6: Integrate adaptation into Treasury decision on infrastructure*), and *action 3.8: Develop guidance for assessing risk and impact on physical assets and the services they provide*.

Additional actions that will enable planners, water providers and asset owners to understand climate risks fall under *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point across all sectors*. However, it is not clear how this information will be made relevant for specific sectors such as the water sector. *Challenge 3: Adequate capacity and capability can progress adaptation action* is also related to this challenge in that the water sector needs staff with the right capabilities to consider and manage climate risks.

Step 3: Considering the significance of any policy gaps

It is unclear at this early stage how Local Water Done Well will enable local councils to progress water services delivery and investment in a way that considers climate change impacts. It will be important to watch the progress of this action, as it is the primary action that could help to address this challenge.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that this challenge is not sufficiently addressed by central government action, including the first national adaptation plan, and this creates a barrier to the effectiveness of the plan. As illustrated in Figure 7.9, we have therefore assigned this challenge the rating 'insufficient'. This challenge is expected to have significant flow-on effects on Aotearoa New Zealand's ability to achieve good adaptation outcomes.

Figure 7.9: Overall scorecard assessment rating of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 8:	
A clear framework for water services should support good adaptation outcomes	
Insufficient	Action to address this challenge is insufficient to avoid serious flow-on effects. **This presents an acute barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 9:

Communities need equitable support before and after an extreme event

Step 1: Understanding the challenge

Communities do not currently have equitable access to support before and after a climate-related hazard or extreme weather event. Equitable access to support is particularly important for the diverse range of communities who will be disproportionately impacted by climate change.

Analysis undertaken by Environmental Health Intelligence New Zealand (EHINZ) finds that particular groups or individuals are more likely to experience harm when affected by a hazard. This is often due to personal circumstances, pre-existing conditions, or socio-demographic characteristics (see *Chapter 10: Developing key national metrics* for more information).[220] This includes, for example:

- People with low incomes, who may be less able to prepare for, cope with and recover from hazard events, or recover from losses after a disaster.
- Older people, and those with chronic health conditions and disabilities, who often have specific needs that need to be considered and met during emergency preparedness, response and recovery, and as adaptation measures are developed and implemented.
- People living in rental housing, who can be at greater risk of displacement post-event. Rental homes are often of poorer quality than owner-occupied houses, and people living in damp or crowded households are more at risk of poor health outcomes, which can make them more vulnerable to climate-related hazards.
- People working in primary industries can experience more harm when affected by climate-related hazards, as they work outdoors, and many livelihoods will depend on natural resources.

Different types of support for communities, before and after an extreme weather event, can help people plan and prepare for, and recover from such events. This includes, for example, assistance in accessing funds, food, water, supplies, mental health support, as well as navigating government systems to access services such as temporary housing.

However, currently not all communities have equal access to support after an extreme event. For example, historically we have seen central and local government buy-out property owners whose homes have been destroyed in hazard events[221] – a response not typically benefiting renters.

Community organisations and groups have played a vital role in providing front-line support during the response and recovery of extreme weather events. For example, during the 2023 North Island extreme weather events,[xvi] Pacific communities and churches, and other ethnic communities supporting a range of language and cultural needs, stepped up to support their own communities without hesitation.[222] When councils, communities and organisations plan and prepare ahead of events, they have been better placed to respond effectively.[223]

Marae also have an important leadership role within the wider community, including during times of crisis and recovery. During Cyclone Gabrielle, many marae were the key providers of shelter, emergency and welfare support, and stepped in to a provide support to communities. Marae welcomed and supported people from within and outside their communities, including many with no prior connection to the marae.[224]

The challenge around lack of equitable support before and after an extreme event is relevant to communities and community organisations, as well as the built environment and financial sectors. It is closely related to *Challenge 2: A clear framework for who pays for adaptation planning, action and loss, alongside more funding and investment in adaptation, is needed*, because having a funding framework that clarifies who pays for adaptation and loss could also help provide clarity around the provision of financial support to communities.

xvi. Cyclone Hale, the Auckland Anniversary floods and Cyclone Gabrielle.

This challenge is also closely related to *Challenge 3: Adequate capacity and capability can progress adaptation action* as building capacity and capability to manage extreme weather events will help improve the ability to address community needs in preparing for and responding to these events.

Why we focused on this challenge

Different communities across Aotearoa New Zealand will require different and specific types of support to plan, prepare for and respond to extreme weather events. The Government Inquiry into the Response to the North Island Severe Weather Events found that there is a lack of focus on investment in readiness planning, and that communities and key organisations were not involved in planning activities despite the fact that the "emergency management system is most effective when individuals, communities and entities are well-informed about local hazards, involved in readiness activities, and embedded in the official response".[225]

Through our conversations and research, we heard about how some communities have multiple characteristics or dimensions that make them more likely to experience harm from climate-related hazards and events. For example, a higher proportion of Māori households are at risk of health disparities, live in areas of high socioeconomic deprivation, and live in poor quality or crowded housing, which means they could face additional burdens in preparing for and recovering from an event.[226] People with disabilities, the elderly, and those living in rental or public housing may require specialised support in preparing for and responding to an extreme weather event.

Following the 2023 North Island extreme weather events, the Chief Ombudsman found that the lack of timely communication and useful information put some communities at more risk, particularly people with disabilities, non-English speakers, and the elderly. Some people with disabilities were at risk of being isolated as their care networks could not reach them, and those who were financially disadvantaged struggled to access safe, dry rental accommodation and replace damaged property.[227]

Different communities will require different types of support. Beyond financial support, there are many wrap-around services that can be beneficial after an extreme weather event, such as providing access to mental health services. For example, in the 2023/24 financial year, the Government invested NZ$13 million to fund 65 'Community Connectors' in the regions impacted by the January 2023 floods and Cyclone Gabrielle.[228] Community Connectors are employed by social sector providers and non-government organisations, such as churches, marae and local community groups, to provide short-term support to individuals to prevent and reduce the impacts of hardship.[229] Through this funding, Auckland Council was able to partner with non-government organisations and iwi to provide whānau, families, and individuals with insurance, legal and budgeting advice, and ensure that people had the most up-to-date information, appropriate accommodation and other social and health services such as counselling and GP services.[230] Such services have also been made available in previous extreme weather events, such as the 2017 flooding in Whakatāne.

Through our conversations and research, we also heard about how community hubs can support community resilience and wellbeing until further support is available, especially in hard-to-reach areas. As seen during the COVID-19 pandemic, marae play a critical role. More recently during the North Island extreme weather events in 2023, iwi opened marae as emergency hubs, and provided food, shelter and internet connections.[231] Marae are extremely important community hubs; however they are not necessarily supported to play a role as an emergency hub. The inclusion of iwi/Māori in formal local government emergency management structures is discretionary, and in some regions is not happening.[232] We also heard that it is often difficult for marae to obtain insurance. This puts more cost on marae to self-insure or incur the costs of damage from an event, despite the vital role they play in supporting their communities.

The acknowledgement of the role iwi and marae play in the response to extreme weather events has been noted repeatedly through various reviews. In 2017, a Ministerial review into Better Responses to Natural Disasters and Other Emergencies recommended that Government "recognise the capability that iwi bring to emergency management and to legislate to enable iwi to participate in planning for and responding to a natural disaster or other emergency and to bring more clarity in their role".[233] More recently in 2023, the Chief Ombudsman report on extreme weather events highlighted the key role iwi and marae played in supporting their communities, and that local councils saw that "more needs to be done to ensure marae are sufficiently equipped for this vital community role, as many were over-stretched, under-funded and unrecognised".[234] The Government Inquiry into the Response to the North Island Severe Weather Events also noted that early activation of marae and community structures and networks meant iwi/Māori responded more effectively than some councils, and recommended the emergency management system should optimise the effort of iwi/Māori to benefit all people in an emergency.[235]

Step 2: Assessing how well government action addresses this challenge

There are a series of actions in the first national adaptation plan that intend to enable communities to understand and prepare for extreme events and build community resilience. These include *action 3.4: Raise awareness of climate hazards and how to prepare* that is intended to "work with communities, including rural communities, iwi/Māori, organisations and others to make emergency preparedness part of everyday life through public awareness and advice" and *action 5.13: Connect communities to wider response and recovery support*.

Action 9.9: Expand current funding for proactive community resilience focuses on providing direct funding to communities and "will seek to expand funding for Māori to build their community resilience through the COVID-19 pandemic and plug funding gaps for communities to carry out their long-term resilience plans". This "funding will be accessible to all communities to proactively future-proof and adapt to the best of their ability to whatever adversity comes their way". There are some actions in the first national adaptation plan that intend to support emergency management, however our assessment shows there have been delays in implementing these actions (see *Chapter 8: Progress towards implementing the plan*).

The first national adaptation plan also includes specific actions intend to help support iwi/Māori and those living in public housing to better prepare for and understand how to respond to extreme events, such as *action 3.10: Assess socio-economic and climate vulnerability for Māori, action 3.22: Work with community housing providers to enable effective climate hazard response, action 4.3: Establish an initiative for resilient public housing,* and *action 7.6: Manage potential impacts of adaptation related to regulatory change.*

Actions that support *Challenge 4: Access to data, information and decision-support tools provide a consistent starting point across all sectors* will also help provide relevant climate information that may help inform how communities and organisations may need to be supported.

Since the publication of the first national adaptation plan, there have been multiple reviews undertaken around the response to the 2023 North Island extreme weather events, such as the report of the Government Inquiry into the Response to the North Island Severe Weather Events, Hawke's Bay Civil Defence and Emergency Management Group Response to Cyclone Gabrielle, and the Auckland Flood Response Review. Recommendations from these reports generally focus on improving emergency management systems, building capability to respond to extreme events, involving communities in the emergency management response, recognising the capability that iwi/Māori bring to emergency management, and ensuring funding settings support reduction and readiness activities, including welfare related costs. It will be important to monitor the uptake of these recommendations to improve community outcomes for future extreme weather events.

In May 2024, the Government announced an investment of more than NZ$1 billion in a package of initiatives to support the rebuild and recovery of communities affected by Cyclone Gabrielle and the 2023 Auckland Anniversary floods to improve Aotearoa New Zealand's emergency preparedness.[236] Some of this funding may help to address this challenge – for example, it includes some funding for non-government organisations to provide training to improve the response to future extreme weather or emergency events,[237] for temporary accommodation services, and support for councils to speed up critical recovery functions.[238]

Step 3: Considering the significance of any policy gaps

There are actions in the first national adaptation plan that relate to emergency management and proactive measures for building community resilience, as well as actions that intend to provide financial support in some situations. However, there are no actions underway that specifically address the need to ensure that those who face losses or damages from climate change are treated equitably.

This gap has significant flow-on impacts, and can further exacerbate existing inequities, such as when individuals and families do not have the resources to start again. The broader question remains around who pays for adaptation and loss (as described in *Challenge 2: A clear framework for who pays for adaptation planning, action and loss, alongside more funding and investment in adaptation, is needed*), including how to equitably share the cost of the impacts from climate change, and how it can be done in a way that considers the diverse range of community needs and supports community organisations, including marae.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that this challenge is not sufficiently addressed by central government action, including the first national adaptation plan, and that this creates a barrier to the effectiveness of the plan. As illustrated in Figure 7.10, we have therefore assigned this challenge the rating 'insufficient'. This challenge is expected to have significant flow-on effects on Aotearoa New Zealand's ability to achieve good adaptation outcomes.

Figure 7.10: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 9:	
Communities need equitable support before and after an extreme event	
Insufficient	Insufficient – Action to address this challenge is insufficient to avoid serious flow-on effects. **This presents an acute barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 10:

Coordination and alignment across infrastructure providers is needed

Step 1: Understanding the challenge

There is a **lack of coordination between and across different infrastructure types when considering resilience and adaptation**. This includes with respect to proactively planning for climate risks, as well responding to extreme weather events.

Infrastructure networks – such as transport, electricity, telecommunications, water, and waste – are highly connected. Infrastructure is often co-located, meaning that multiple infrastructure types are exposed to the same climate impacts. For example, many roads contain water or telecommunications beneath them and electricity lines alongside them.

Damage to one asset can result in cascading failures and effects on other infrastructure, communities and businesses. For example, damage to electricity distribution infrastructure can cause widespread power outages that can lead to failure of other infrastructure, such as water supply (the pumps require electricity to function) and wastewater (wastewater treatment plants need electricity to treat incoming sewage). Damage to roads and rail networks can also disrupt access to critical (lifeline) utilities such as airports, ports, and power or water infrastructure. This is a key issue in rural areas where there may only be one road in, and where communities may be left without services for days.

Coordination is important for understanding climate risks and how they impact assets, as well as for identifying vulnerabilities and developing joined-up adaptation plans. Infrastructure providers need to be enabled to coordinate when considering the resilience of their interconnected networks and when thinking about long-term investment decisions. Intellectual property rights and competition laws, as well as the lack of a coordinating body to bring both public and private infrastructure providers together, create challenges for sharing information amongst providers. Through our conversations we heard how data and information is essential to adaptation, and building a shared understanding of risks would better support infrastructure providers to create more resilient networks.

This challenge is also related to *Challenge 1: A coherent legislative framework and clear institutional arrangements enable effective adaptation*, in that a coherent national framework for adaptation planning and implementation could enable councils to avoid development in areas of high risk.

Why we focused on this challenge

Interdependencies between critical infrastructure networks and services are a crucial consideration in resilience planning, as no infrastructure asset operates in isolation.[239] This challenge is relevant to the infrastructure, building and construction, transport, and financial sectors, as well as communities. Understanding the complex interdependencies and vulnerabilities across infrastructure systems involves identifying the connections and reliance between different assets.[240]

Through our conversations we heard about the need for an improved geospatial understanding of climate risks and where important infrastructure 'nodes' are located. This would help infrastructure providers better plan for climate risks and coordinate their response and recovery time when networks are damaged by extreme weather events. The lack of coordination between and among infrastructure providers, land-use planners and adaptation practitioners is a significant issue that could lead to:

- **bad adaptation outcomes, or maladaptation**, because decisions are not made from a systems perspective.
- **inefficiencies**, such as duplication in infrastructure providers commissioning the same information.
- **stranded assets**, for example if a provider makes long-term infrastructure investments in an area that is later retreated from.
- **poor long-term investments**, as individual infrastructure providers make long-term investment decisions without full information about risks.

Many infrastructure asset owners have existing duties as lifeline utilities[xvii] under the section 60(a) of the Civil Defence Emergency Management Act 2002 and are required to "function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency". However, a recent inquiry into the response to the 2023 North Island extreme weather events found that a lack of communication and coordination between different parts of the system slowed down utility providers.[241]

Through our conversations with the waste sector, we also heard about the role that waste and recovery services can play in emergency management and in the days following an extreme weather event. If not removed in a timely way, waste can pose a risk to public health and the environment. While waste is not classified as a lifeline utility, we heard about the need to think about the capacity of landfills and services to operate in extreme-weather events, and how to deal with the type of waste materials that might be produced in emergencies. Given the scale of Cyclone Gabrielle in 2023, the Government contributed NZ$15 million to help some local councils who did not have the financial capacity to deal with all the waste generated from the event.[242]

This challenge is also closely linked to *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point for all sectors*. This is because access to climate risk data and information is important for infrastructure providers to understand climate risk, and where assets and services could be more vulnerable to the impacts of climate change, and to support them to make decisions about how to adapt.

Infrastructure providers also benefit from being aware of which areas/communities may be considering managed retreat, which would support long-term investment planning.

Step 2: Assessing how well government action addresses this challenge

There are actions in the first national adaptation plan that focus on specific infrastructure sectors and how to ensure they consider climate-related risks in asset management and service delivery. Examples of these actions include *action 8.1: Develop and implement the Waka Kotahi Climate Adaptation Plan* and *action 8.2: Develop the National Energy Strategy*.

Under the Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021, about 200 large businesses are required to analyse and publicly disclose their climate-related risks each year. Some private infrastructure providers are already reporting under this scheme. The first national adaptation plan includes *action 3.5: Support high-quality implementation of climate-related disclosures and explore expansion*, which notes the government will explore extending this scheme, for example to include public entities.

Actions that support *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point for all sectors* will also support infrastructure sectors, by improving access to climate risk data to support decision-making.

There are a few actions in the plan that may help address coordination within the infrastructure sector, such as *action: 8.8 Support knowledge sharing and the implementation of adaptation actions across the sector*. This action provides the platform to "convene a regular event for local government, central government and private sector asset owners to share information on the implementation of actions in the national adaptation plan and to support alignment across the sector". *Action 5.6: Scope a resilience standard or code for infrastructure* includes a focus on "the role of resilience standards in enabling communities to better match their own planning and strategies to the resilience of the networks they rely on."

xvii. Lifeline utilities include road transport, rail transport, ports, airports, energy, water, and telecommunications and digital (Radio New Zealand and Television New Zealand, and telecommunication network providers).

However, there are not specific actions in the plan that support the understanding of infrastructure interdependencies and infrastructure decisions in broader land-use planning and community decision-making. Future action could include providing geospatial tools that allow councils and infrastructure providers to identify interdependencies across infrastructure networks and identify areas of risk, including potential cascading risks.

Outside of the first national adaptation plan, other government actions may also help overcome this challenge. In December 2023, the Commerce Commission released Collaboration and Sustainability Guidelines, to assist businesses in understanding when collaboration with competitors for sustainability objectives may raise competition issues under the Commerce Act. The guidance is aimed at supporting collaboration between businesses who would usually be expected to compete.[243]

In addition, the Department of the Prime Minister and Cabinet is leading a critical infrastructure resilience work programme, working with relevant agencies to develop a new regulatory regime. The intent is to develop a regime that enables consistent and enforceable resilience requirements, and improved information sharing and gathering on hazards, threats and vulnerabilities.[244]

As part of Budget 2024, the Government announced NZ$5 million for advice on the design and establishment of a new National Infrastructure Agency, with the goal of improving government procurement and delivery.[245] Given the early stage of work to establish this agency, it is currently not clear how it will consider climate resilience.

Step 3: Considering the significance of any policy gaps

There are actions in the first national adaptation plan that focus on helping individual infrastructure providers – such as NZ Transport Agency Waka Kotahi, Transpower and KiwiRail – assess and address climate risk. However, there are no actions in the plan focused on ensuring coordination or consideration of infrastructure interdependencies. There is no single government agency responsible for infrastructure, with critical infrastructure resilience work currently being led out of the Department of the Prime Minister and Cabinet.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that this challenge is not sufficiently addressed by central government action, including the first national adaptation plan, and that this creates a barrier to the effectiveness of the plan. As illustrated in Figure 7.11, we have therefore assigned this challenge the rating 'insufficient'. This challenge is expected to have significant flow-on effects on Aotearoa New Zealand's ability to achieve good adaptation outcomes.

Figure 7.11: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 10:	
Coordination and alignment across infrastructure providers is needed	
Insufficient	Action to address this challenge is insufficient to avoid serious flow-on effects. **This presents an acute barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

Challenge 11:

Regulated entities need to be able to justify and get approval for adaptation initiatives

Step 1: Understanding the challenge

Businesses that build and operate electricity and fibre networks are reporting that **it is difficult to justify and get approval for spending on adaptation and resilience initiatives**.

These businesses are regulated by the Commerce Commission, which regulates markets where there is little or no competition. The intention is that these regulated entities have incentives to innovate, invest, and meet customers' quality demands or levels of service, but are also limited in their ability to earn excessive profits. Depending on the entity, they may be subject to price-quality regulation and/or information disclosure where they are required to publish information about their performance.

The Commerce Commission approves expenditure allowances for entities subject to price-quality regulation, such as electricity distribution businesses that are not consumer owned and telecommunications businesses with fibre networks.

In making decisions on expenditure allowances for electricity networks, the Commerce Commission must consider a number of factors relating to the long-term benefit to consumers under Part 4 of the Commerce Act 1986. In making similar decisions for fibre networks, the Commerce Commission must consider factors relating to the long-term benefits to end-users under Part 6 of the Telecommunications Act 2001.

Climate change, and in particular climate change adaptation and resilience, is not one of the factors that the Commerce Commission must consider under these Acts. The Commerce Commission has indicated they can take climate change mitigation into consideration under section 5ZN of the Climate Change Response Act 2002, but cannot do so in a way that compromises their overriding statutory duty to promote the Part 4 purpose.[246] This is important given the significant development required to electrify and decarbonise the economy. However, section 5ZN does not include considerations for adaptation and resilience.

This challenge also links to *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point for all sectors*, in that regulated entities note they would be able to better justify when investment in resilience is needed if they have access to better tools, data and information.

Typical approaches for justifying investment decisions would factor in the likelihood and consequence of a risk. However, the key distinction with climate adaptation and resilience investments is that it is not possible to forecast the likelihood of a climate-related hazard. The increasing frequency and severity of climate-related hazards also means that past expenditure should not be used as an indicator for future costs.

Why we focused on this challenge

The resilience of infrastructure, including electricity and telecommunications networks, is vital for maintaining a reliable service for New Zealanders. When these services go down, for example due to extreme weather events, there can be significant flow-on consequences on health and wellbeing. For example, an electricity outage can impact the ability to provide clean water to homes, store food in supermarkets and homes, and withdraw cash from ATMs. Many New Zealanders rely on electricity for lifesaving medical devices.

Infrastructure investments are long-term investments. Failing to address this challenge could result in infrastructure decisions that do not appropriately account for climate change. This could result in stranded assets or a reduced quality of service from infrastructure networks.

It is important that methods are developed to enable justification of needed adaptation and resilience investment decisions to allow such investments to be made as proactively as possible. This recognises that proactive adaptation provides economic and social benefits, and reduces costs, with international evidence suggesting that adaptation actions can have benefit-costs ratios ranging from 2:1 to 10:1.[247]

This challenge was raised frequently during our engagement with businesses that build and operate electricity and fibre networks, as well as in submissions and literature reviewed for

this assessment. In engagement, some of these businesses noted that they have been finding solutions to fund some adaptation and resilience initiatives through other means.

Step 2: Assessing how well government action addresses this challenge

The Commerce Commission has two actions in the first national adaptation plan, looking at how climate change adaptation and resilience can be better addressed by electricity and gas networks. *Action 3.18: Review electricity and gas networks' management of climate risk and resilience* is focused on reviewing how electricity and gas networks manage climate risks and resilience, which may support electricity and gas networks in forming expenditure forecasts. *Action 8.4: Provide for regulated network revenues to reflect the prudent and efficient costs of resilience* is focused on the reviews of regulated price-quality paths for electricity and gas networks. Additional actions that improve access to data and information (see *Challenge 4: Access to data, information and decision-support tools provides a consistent starting point for all sectors*) may be helpful in terms of providing consistent and robust information for regulated entities.

The Commerce Commission's two actions in the plan are focused on electricity and gas networks. However, the issue of justifying and getting approval for expenditure decisions is a broader issue that also affects telecommunications businesses.

Step 3: Considering the significance of any policy gaps

There are actions in the plan that could help to address the challenge that regulated entities are facing in justifying and getting approval for expenditure for adaptation and resilience initiatives. However, these actions are currently focused on electricity and gas networks and need to be broadened to consider this issue for telecommunications businesses.

Step 4: Identifying whether there is a barrier to effectiveness

Overall, our assessment finds that some aspects of this challenge are addressed by central government action, including the first national adaptation plan, but moderate gaps remain which may present a barrier to the effectiveness of the plan. As illustrated in Figure 7.12, we have therefore assigned this challenge a rating of 'moderate gaps'.

Figure 7.12: Overall scorecard assessment of how well this challenge is addressed by central government action, including the first national adaptation plan

Assessment for Challenge 11:	
Regulated entities need to be able to justify and get approval for adaptation initiatives	
Moderate gaps	Some important aspects of this challenge are addressed, but moderate policy gaps remain. **This may present a barrier** to the effectiveness of the first national adaptation plan.

Source: Commission analysis

WĀHANGA 8 | CHAPTER 8

Ngā kokenga ki te whakatinana i te mahere | Progress towards implementing the plan

In this chapter we evaluate the implementation of the first national adaptation plan. As part of this evaluation, we assess the progress made towards implementing the actions in the plan, and identify barriers to implementation.

Introduction

As required under section 5ZS of the Climate Change Response Act (the Act), the first national adaptation plan sets out the Government's strategies, policies and proposals for addressing the most significant risks from climate change, and for meeting their objectives for adapting to the effects of climate change.

Under section 5ZU of the Act, He Pou a Rangi Climate Change Commission (the Commission) is required to:

- assess the progress made towards implementing the strategies, policies and proposals included in the plan
- identify any known barriers to implementation.

The first national adaptation plan includes 112 actions, across 5 outcome areas and system-wide issues. Some of these actions contain sub-actions. The Commission therefore monitors implementation across 127 actions and sub-actions.

For the adaptation plan to be effective, it needs to enable New Zealanders to prepare for and adapt to the impacts of climate change. The previous chapter focused on assessing how well the plan does this. Evaluating the implementation of the plan is also important because effective adaptation can only be achieved if strategies, policies and proposals are actually delivered.

The Commission's implementation monitoring role

Successfully implementing the first national adaptation plan will require action across government, as well as more broadly. Coordination mechanisms are important to support effective and coherent monitoring of progress.[248]

In Aotearoa New Zealand, the Climate Change Chief Executives Board (the Board) has been established to play an inter-agency coordination role. The Board is supported by a secretariat, which coordinates and tracks cross-agency implementation of the national adaptation plan and emissions reduction plan. This includes frequent monitoring and reporting on overall progress of these plans.[249]

A key mechanism for this monitoring and reporting is the Board's progress reports, which provide a regular, cross-agency view of progress.[250] These reports are informed directly by lead implementing agencies. Lead agencies are required to fill in an 'action tracker' spreadsheet, and provide an assessment of progress for each action they are responsible for delivering every six months. The Board provides quarterly progress reports to the Climate Priorities Ministerial Group, with every second report containing information from the six-monthly action tracker.

The Board has proactively released its monitoring reports. These cover the periods July to December 2022, January to June 2023, and July to December 2023. The latest of these is the base of our assessment. It is available here: Climate Change Chief Executives Board released material | Ministry for the Environment.

The Commission also has a role assessing progress in implementing national adaptation plans. Our role is different from, but complementary to, the inter-agency coordination role of the Board.

The Commission is an independent Crown entity, with a mandate to provide impartial and evidence-based advice and monitoring towards climate change goals. Our independence provides assurance to New Zealanders – and internationally – about the credibility of Aotearoa New Zealand's action on climate change.

A key part of the Commission's role is to prepare and deliver independent and publicly available progress assessments that support transparency around adaptation progress. This is important to support accountability across the wider climate change policy system and will enable the public to hold decision-makers to account.[251]

While the Climate Change Chief Executives Board's role is an important one, it is largely focused on coordination and tracking of progress across agencies, for internal accountability purposes. In contrast, the Commission's evaluation of implementation of the first national adaptation plan sits alongside and in conjunction with our broader role assessing the effectiveness of the plan. Our progress assessments focus on the outcomes that can result from government action and policy, and the choices that decision-makers have – including the opportunities and risks presented by different options. The aim is to support the Government to fulfil its role under the Act, including supporting New Zealanders to prepare for, and adapt to, the effects of climate change.

Evaluating implementation of the first national adaptation plan

Drawing on the Climate Change Chief Executives Board's reporting

The Commission's assessment draws on the Board's progress reports on the implementation of the first national adaptation plan, and the action tracker underpinning those reports (as described above). Specifically, we have used information from the Board's March 2024 quarterly progress report to the Climate Priorities Ministerial Group, which covers the period July to December 2023,[252] and its supporting action tracker spreadsheet, rather than requesting information directly from implementing agencies.

In the action tracker, reporting agencies assign ratings for each action in the first national adaptation plan. This is done for the current reporting period (reflecting progress against milestones in the previous six months), and to indicate confidence to deliver on key milestones for the next six-month reporting period. The ratings are based on a red, amber, green framework, or 'RAG framework', so agencies choose whether to report progress as 'red', 'amber' or 'green'.

Under this framework, if an agency assigns a rating of green, it means that 'delivery confidence is high'; amber means 'moderate confidence with some issues or risks'; and red means 'low delivery confidence with major risks or issues'.[253] If agencies assign a rating of amber or red, they must provide a reason for this status. Agencies are also able to report actions as 'on hold', 'discontinued', 'closed', 'not started' or 'completed'.

The Commission made the decision to draw on the Board reporting for our evaluation of implementation, because we consider that this will avoid duplication of evidence gathering. This approach will also prevent additional reporting burden on those government agencies implementing national adaptation plan actions.

A key focus of this decision was making sure that the Commission provides an independent and evidence-based assessment of implementation of the plan – as required under the Act – but doing so in a way that provides public value for money.

Our approach to understanding barriers to implementation

To identify barriers to the implementation of the first national adaptation plan we looked at both whether the plan is set up for effective delivery, and assessed whether delivery of the actions is on track.

For this assessment, the Commission has looked at each individual action included in the first national adaptation plan. The plan contains 112 actions, however some of these actions contain sub-actions. We therefore have monitored across a total of 127 actions and sub-actions.

The first national adaptation plan includes 20 objectives, across the 5 outcome areas of the plan, and system-wide issues (the elements of the plan are described in more detail in *Chapter 5: The plan's overall architecture, goals and objectives*). Each action and sub-action in the plan is mapped against one of these objectives. Two actions are mapped against two different objectives in the same outcome area. For the purposes of our assessment, we looked at all actions mapped against objectives under each outcome area.[254] This allowed us to focus our assessment on how implementation is progressing for each outcome area, and system-wide issues.

Assessing whether foundations for implementation are in place

Before carrying out our detailed assessments, we first looked at whether important enablers of effective implementation are in place. To do this, we drew on our review of emerging international best practice to identify important elements to support effective delivery. This review pointed towards three aspects as being particularly important for supporting effective delivery of actions: monitoring and evaluation, clearly defined roles, and clear implementation delivery milestones.

Monitoring and evaluation is important for ensuring that actions are being implemented as planned and are having the impact intended. Monitoring and evaluation is also important for providing transparency about progress being made, and for enabling learning so actions can be refined and adjusted, if necessary, to deliver the intended impact.

Well defined and clearly assigned roles and responsibilities are important for supporting effective delivery of actions. This includes clearly identifying which agency is responsible for delivery of an action, which is important for accountability. Making sure that roles and responsibilities are clearly defined also helps to support more effective coordination across agencies, and across levels of government.[255]

Alongside this, clearly setting out the steps needed to deliver on each action is important. To support this, clear implementation delivery milestones are needed, including clearly defined deliverables, and clear dates for each deliverable. Implementation delivery milestones are distinct from outcome-focused targets and goals, in that they are focused on process as opposed to outcomes. Both implementation delivery milestones and outcome-focused targets and goals play important roles.

Understanding how well the first national adaptation plan addresses these enabling factors provides important context for assessing progress delivering the actions in the plan.

Step 1: Assessing progress delivering the actions in the plan

The first step in our assessment focused on understanding the progress that has been made implementing the actions the plan. This included tracking implementation of the actions in the plan against delivery milestones. We conducted this assessment by drawing on the Climate Change Chief Executives Board's latest progress reports and the underlying action tracker. This tracker captures progress as self-reported by the lead implementing agency for each action, using a RAG framework.

The Commission's assessment of progress for each outcome area draws on the RAG ratings in the action tracker that informs Board progress reports. We looked at all actions mapped against each outcome area, and asked two questions:

- Did actions for this outcome area deliver to timelines during July to December 2023?
- Did critical actions for this outcome area deliver to timelines during July to December 2023?

Based on the answers to these questions, we assigned a score for each outcome area as in Figure 8.1.

In our assessment we placed extra emphasis on critical actions because these are the actions the Government considered to be most urgent when developing the first national adaptation plan. Understanding whether delivery of critical actions is on track helps us to understand the significance of potential gaps.

Step 2: Identifying whether there is a barrier to implementation

The second step of our assessment is to identify whether there is a barrier to the implementation of the plan. Barriers could relate to elements that would enable implementation, or to progress in delivering actions in the plan.

As part of this assessment, we have considered whether clear reasons have been given when delivery confidence is not high, or when actions are on hold, or discontinued.

Figure 8.1: Criteria for assessing progress made towards implementing actions in each outcome area

Score	Criteria for assessing implementation progress
No significant gaps	Actions are largely on track to deliver to timelines. High confidence that all critical actions will be delivered.
Moderate gaps	Actions are largely on track to deliver to timelines, with some gaps. Medium to high confidence that all critical actions will be delivered.
Significant gaps	Many actions are off track to deliver to timelines, with some important gaps. Some critical actions have medium to low confidence of delivery.
Insufficient	Many actions are off track to deliver to timelines. Many critical actions have medium to low confidence of delivery.

Source: Commission analysis

Limitations of this assessment

This first assessment of progress implementing the actions in the first national adaptation plan has a number of limitations.

As noted throughout this report, the rapidly moving policy landscape has made this assessment challenging. The change in government and resulting shift in priorities – including through May 2024 Budget announcements – mean that there have been some significant changes since agencies reported on progress through the action tracker.

In April 2024 the Board provided the Commission with a draft of their quarterly progress report and action tracker covering the period July to December 2023. This means that, at the time of receiving the tracker, many of the updates provided within it may have already been out of date – because the general election was held during the period covered by the reporting, and the coalition agreement was signed in November 2023. Therefore, not all the shifts in policy priority will have been reflected. The next progress report prepared by the Board will cover the period January to June 2024, and will likely include significant changes based on decisions made since December 2023, including Budget 2024 decisions. The report covering the period January to June 2024 will be delivered to Ministers in September 2024; it was not available in time to inform this progress assessment.

Where possible, we have considered information about changes that have been made since December 2023 but not yet reflected in the Board reporting provided to the Commission. This includes, where possible, decisions made as of 31 May 2024, which was our cut-off date for assessment. However, we acknowledge that our assessment is unlikely to have captured all of the changes that have occurred since the reporting period, and that Government priorities are continuing to change, which will have an impact on the implementation of first national adaptation plan actions.

Another limitation of this assessment is that it is based on self-reporting from the lead agencies, which means that ratings may not be consistently applied. There may be inconsistencies in how lead agencies apply the RAG framework to report progress for each action. There will be some subjectivity, for example, when choosing to report an action as amber (moderate confidence with some issues or risks) or red (low delivery confidence with major risks or issues). Similarly, there may be inconsistencies when lead agencies have chosen to report an action as being 'on-hold' as opposed to 'discontinued'.

Foundations for implementation

This section focuses on assessing how well the first national adaptation plan has set the foundations for effective delivery of actions. We drew on our review of emerging international best practice to identify important elements to support effective delivery. In this section, we assess the following aspects:

- **Monitoring and evaluation:** Are clear monitoring and evaluation processes in place?
- **Responsibility**: Is it clear what government agency is responsible for the delivery of each action?
- **Milestones**: Are there clear progress implementation delivery milestones in place for each action?

Monitoring and evaluation

We have considered what monitoring and evaluation is in place, at all levels, for actions in the first national adaptation plan. Monitoring and evaluation is important for ensuring that actions are being implemented as outlined and are having the impact that is intended. The purpose of monitoring and evaluation is to provide transparency about progress being made and enable learning so that actions can be refined and adjusted to deliver the intended impact.

We note that monitoring and evaluation of the actions in the national adaptation plan is in place at various levels, which is in line with emerging international best practice. Government agencies are responsible for carrying out monitoring and evaluation of their own specific programmes or policies. As noted above, the Board is responsible for monitoring the implementation of adaptation actions in a more real-time way, and drawing together implementation information provided by government agencies. This is reported through regular progress reports (drawing on an underlying action tracker), which raise opportunities and risks related to the Government's climate change work programme. We also note the specific role that the Commission has to independently and transparently evaluate implementation and effectiveness of national adaptation plans, as set out in the Act – the first assessment of which is contained in this report.

We note that some of the actions in the first national adaptation plan are to develop or implement plans that contain further actions within them. Examples include the *Department of Conservation's Climate Change Adaptation Action Plan, Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020*, the *Health National Adaptation Plan*, the *Waka Kotahi Climate Adaptation Plan*, and the *Transpower Adaptation Plan*. It is important that specific consideration is given to how the actions within these plans are monitored. We note that the action tracker underlying Board reporting contains information on some of the specific actions within the *Department of Conservation's Climate Change Adaptation Action Plan*.

Responsibility

We reviewed the table of actions released alongside the national adaptation plan in 2022, and the Board's latest reporting (and underlying action tracker), to assess if there was a clear government agency lead for each action. A clear lead agency for each action is important for reducing confusion about who is responsible and accountable, and reduces the chance of important actions falling between the cracks.

Each of the 127 actions and sub-actions in the first national adaptation plan has a clear government agency responsible for its delivery. When the first national adaptation plan was released in 2022, NIWA was listed as the lead of *action 3.1: Provide access to the latest climate projections data* rather than a lead government agency. The Board has since clarified that the Ministry for the Environment is the lead government agency for this action.

Where multiple agencies were listed as responsible for delivery in the 2022 table of actions, the Board has since clarified who is the lead, co-lead and supporting agency. This is important as it avoids situations where it is not clear who has overall responsibility and accountability for delivery.

Milestones

We reviewed the table of actions released alongside the first national adaptation plan to assess if clear implementation delivery milestones were in place for each action.[256] Clear delivery milestones are important so that government agencies and stakeholders know what is being delivered, and when.

Of the actions in this table, 74% were clear about what was being delivered, and what future phases of work would be. They contained clear dates for delivery, and interim milestones where appropriate.

A further 17% of the actions had clear deliverables and dates for delivery for the short term. These tended to be actions where initial scoping was needed to determine what future work would be. Future phases of work, and clear end dates for delivery of that work, will need to be determined and clarified as this initial scoping is completed. Regularly updating the table of actions in the national adaptation plan over time would provide an effective means of doing this.

Two of the actions (less than 2% of the actions) are future proposed actions that are dependent on another action being completed before being initiated.

The remaining 7% of actions (9 actions in total) contained unclear implementation delivery milestones, and/or there were no clear end dates for delivery. In some of these cases, the milestones listed were outcome-focused targets rather than delivery milestones, for example outcome targets for the land area protected from the invasion of wilding conifers. While outcome-focused targets are important, these are distinct from implementation delivery milestones. Three of the actions without clear delivery milestones and/or clear delivery dates are critical actions:

- *action 6.5: Establish an integrated work programme to deliver climate, biodiversity and wider environmental outcomes*
- *action 6.6: Implement the Water Availability and Security programme*
- *action 6.8.5: Prevent the spread of wilding conifers, and contain or eradicate established areas of wilding conifers by 2030*

Although most milestones were assessed to have clear implementation delivery milestones, we found some inconsistencies in the approach and terminology used. This is particularly apparent in how milestones are set out, and how timeframes are described.

The delivery dates for actions would benefit from clear and consistent terminology. In the table of actions released alongside the first national adaptation plan, the delivery dates for milestones vary with some actions being due 'by' a specific year, some being due 'in' a specific year, and others being due 'by the end of' a specific year.

In some cases, the delivery dates appear to be misleading. For example, the table of actions released alongside the first national adaptation plan states that the milestone for a*ction 3.1: Provide access to the latest climate projections data* is "By 2024, the projections data are made available and deliver a product that enables end-users to appropriately measure climate change risk." This action has been rated as having high confidence of delivery, while also reporting it is due to be completed by 30 June 2024.

It also appears that milestones in the table of actions released alongside the first national adaptation plan have been developed specifically for the Commission's monitoring, with milestones for the majority of actions reported for 2024, 2026 and 2028 – when the Commission's independent monitoring reports are due. Milestones would be most useful for government agencies and stakeholders if they aligned with actual timelines. For example, *action 8.4: Provide for regulated network revenues to reflect the prudent and efficient costs of resilience* has the milestone "By 2026, electricity network price-quality path decisions are completed." However, the Commerce Commission website reports that these decisions are required by 20 November 2024.[257]

Assessing progress made towards implementing actions in the plan

System-wide

Table 8.1: RAG status of all system-wide actions in the first national adaptation plan

Status	Actions with this status	Critical actions with this status	Supporting actions with this status	Proposed actions with this status
Green	22	11	3	8
Amber	6	4	2	0
Red	2	1	1	0
On hold	0	0	0	0
Discontinued	2	1	1	0

Source: Climate Change Chief Executives Board

Table 8.2: RAG status of all system-wide critical actions in the first national adaptation plan

Status	Number of critical actions with this status	Critical actions (who is responsible)
Green	11	3.1 Provide access to the latest climate projections data (MfE) 3.3 Establish a platform for Māori climate action (MfE) 3.7.1 Promote the use of the New Zealand Climate Change Projections guidance (MfE) 3.7.2 Produce adaptation guidance for central government policy makers (MfE) 3.7.3 Produce guidance for dynamic adaptive pathways planning (DAPP) (MfE) 3.7.4 Produce guidance on using different socio-economic scenarios for adaptation planning (MfE) 3.7.5 Regularly update adaptation guidance for local government (MfE) 5.2 The Future for Local Government review (DIA) 5.3 Complete case study to explore co-investment for flood resilience (DIA) 5.5 Publish the programme of work on how Aotearoa meets the costs of climate change and invests in resilience (MfE/Treasury) 11.1 Establish central government oversight and coordination for implementing the national adaptation plan (MfE)

Amber	4	3.2 Design and develop risk and resilience and climate adaptation information portals (MfE/EQC) 4.1 Reform the resource management system (MfE) 4.2 Set national direction on natural hazard risk management and climate adaptation through the National Planning Framework (MfE) 5.1 Pass legislation to support managed retreat (MfE)
Red	1	9.1 Modernise the emergency management system (NEMA)
On hold	0	–
Discontinued	1	4.5 Reform institutional arrangements for water services (DIA)

Source: Climate Change Chief Executives Board

Step 1: Assessing progress delivering the actions in the plan

There are 32 actions in the first national adaptation that are mapped to system-wide objectives. This includes 17 critical actions, 7 supporting actions, and 8 proposed actions.

Most of the actions mapped against system-wide objectives were rated as green/delivery confidence is high – 22 out of the total 32 actions (see Table 8.1). However, a number of these actions were not yet underway, because they were not due to start until later years. In total, eight of the 22 actions rated as green were classified in the first national adaptation plan as future proposed work programmes.

There were a total of six actions rated as amber/moderate confidence with some issues or risks, and four of these were critical actions. Two of the critical actions rated as amber were foundational actions for addressing the first system-wide objective focused on legislation and institutional arrangements[xviii] – *action 4.1: Reform the resource management system*; and *action 5.1: Pass legislation to support managed retreat* (see Table 8.2). One supporting action related to this objective was also off track, *action 9.3: Develop the emergency management workforce*.

Another critical action rated as amber was *action 3.2: Design and develop risk and resilience and climate adaptation information portals*. This is an important action for addressing system-wide objective SW2, and helping to make data and information available and accessible.[xix] A supporting action related to this objective was also amber, *action 3.12: Improve how science, data and knowledge are used to inform emergency management*.

There were a total of two actions that were rated as red/low delivery confidence with major risks or issues, and one of these was critical *action 9.1: Modernise the emergency management system*, which is being led by the National Emergency Management Agency (NEMA). In their reporting, NEMA indicated that the action had not progressed as planned due to 'Ministerial decision', including changes in the timeframes for emergency management legislation, which they now anticipate being in place in 2025 (rather than in 2024 as planned). They noted that until there is clarity around what the emergency management legislation will provide for, other work to support this (e.g. regulation, rule and guidance development) will not be able to progress. The other action rated as red was supporting *action 3.11: Implement the National Disaster Resilience Strategy*, which is also being led by NEMA.

xviii. SW1: Legislation and institutional arrangements are fit for purpose and provide clear roles and responsibilities
xix. SW2: Robust information about climate risks and adaptation solutions is accessible to all

There were two system-wide actions that have been discontinued, one of which is a critical action (*action 4.5: Reform institutional arrangements for water services*). The reason given for this action being discontinued was "Ministerial decision". The other discontinued action is *action 3.19: Develop Te Ara Paerangi – Future Pathways programme for the research, science and innovation system*, which is an important action to support the second system-wide objective focused on data and information.

Scorecard assessment

We have assessed the implementation of system-wide actions in the first national adaptation plan as having significant gaps (see Figure 8.2). Although the majority of actions were rated as green/delivery confidence is high, some of these were future proposed work programmes that were not yet underway.

There were several critical actions that were not on track. This includes four critical actions with an amber rating, one with a red rating, and one that has been discontinued.

Two of the critical actions rated as amber were foundational actions for addressing the first system-wide objective related to legislation and institutional arrangements – *action 4.1: Reform the resource management system*; and *action 5.1: Pass legislation to support managed retreat*. The direction of future resource management reforms remains unclear. *Action 9.1: Modernise the emergency management system* is also an important action for supporting this objective, given that extreme weather events will become more frequent and severe as the climate changes, and this was rated as red.

Of the 11 system-wide critical actions rated in the action tracker as green, we are aware of two that have since been put on hold. These are *action 3.7.2: Produce adaptation guidance for central government policy makers* and *action 3.7.3: Produce guidance for dynamic adaptive pathways planning (DAPP)*, which has been put on hold and is now dependent on what is included in the adaptation framework. There may be other examples like this, given that the Board's assessment of implementation progress was for the period July to December 2023 and there has been a change in government in that time.

Figure 8.2: Scorecard assessment for progress implementing system-wide actions

Assessment: System-wide	
Significant gaps	Many actions are off track to deliver to timelines, with some important gaps. Some critical actions have medium to low confidence of delivery.

Source: Commission analysis

Step 2: Identifying whether there is a barrier to implementation

One of the key reasons cited in the action tracker for ratings of amber, red or 'discontinued' for critical actions in the system-wide outcome area was 'Ministerial decisions'.

For some actions, the lead implementing agency noted that this referred to decisions that had already been made, as a result of a change of policy direction. For example, for the *action 4.1: Reform the resource management system*, which was rated as amber, the lead agency noted that "Government committed to revisiting RM reform, but previous timeframe no longer relevant, and future timeframes unset."

For reform of the emergency management system, the lead agency noted that Ministerial decision was still being awaited to enable work to progress.

For *action 3.2: Design and develop risk and resilience and climate adaptation information portals*, which was rated as amber, the reason cited was 'external budget constraints' following an unsuccessful Budget bid.

Natural environment

Table 8.3: RAG status of all natural environment actions in the first national adaptation plan

Status	Actions with this status	Critical actions with this status	Supporting actions with this status	Proposed actions with this status
Green	8	6	2	0
Amber	11	6	4	1
Red	2	2	0	0
On hold	3	2	1	0
Discontinued	1	1	0	0

Source: Climate Change Chief Executives Board

Table 8.4: RAG status of all natural environment critical actions in the first national adaptation plan

Status	Number of critical actions with this status	Critical actions (who is responsible)
Green	6	6.2 Engage with councils to implement the New Zealand Coastal Policy Statement 6.6 Implement the Water Availability and Security programme 6.7 Implement the National Policy Statement on Freshwater Management 2020 6.8.2b Invest in strengthening border biosecurity 6.8.5 Prevent the spread of wilding conifers, and contain or eradicate established areas of wilding conifers by 2030 6.8.8 Use the Animal Health Laboratory and Plant Health and Environment Laboratory
Amber	6	6.3 Implement Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020 6.8.3 Continue the Freshwater Biosecurity Partnership Programme 6.8.6 Continue the National Interest Pest Responses programme 6.8.7 Invest in plant health and environmental capability facility 6.8.2a Invest in strengthening border biosecurity 6.8.4 Reduce the spread and impacts of marine pest species through the Clean Hull programme
Red	2	6.1 Implement the Department of Conservation Climate Change Adaptation Action Plan 6.4 Implement the proposed National Policy Statement on Indigenous Biodiversity
On hold	2	6.5 Establish an integrated work programme to deliver climate, biodiversity and wider environmental outcomes 5.9 Prioritise nature-based solutions
Discontinued	1	6.8.1 Implement an on-farm biosecurity programme

Source: Climate Change Chief Executives Board

Step 1: Assessing progress delivering the actions in the plan

There are 25 actions in the first national adaptation that are mapped to natural environment objectives. This includes 17 critical actions, 7 supporting actions, and 1 proposed action (see Table 8.3).

More than half (16 of 25) of the actions in the natural environment area were rated with a RAG status of green/delivery confidence is high. However, fewer than half of the critical actions in this area were rated as green – only 6 of the 17 critical actions.

There are a total of 11 actions that were rated as amber/moderate confidence with some issues or risks, and this included 6 critical actions. Five of the critical actions marked as amber are mapped against the second natural environment objective focused on biosecurity.[xx] One proposed action in the natural environment outcome area was rated as amber, *action 3.21: Develop mātauranga Māori indicators of climate impacts on the natural environment*.

Two actions were given a RAG status of red/low delivery confidence with major risks or issues, and both of these are critical actions (see Table 8.4). One of these red actions, *action 6.1: Implement the Department of Conservation Climate Change Adaptation Action Plan* is a foundational action for addressing the first national environment objective, and is a key action mapped against all of the natural environment risks in the first national climate change risk assessment (see discussion on natural environment in *Chapter 6: How well the plan addresses climate risks*).[xxi] The other critical action marked as red is also mapped against the first natural environment objective.

There are three actions that were classed as being on hold, and 2 of these are critical actions that are mapped against the third natural environment objective.[xxii]

One action was classed as discontinued, and this is critical *action 6.8.1: Implement an on-farm biosecurity programme*.

One critical *action 6.8.2: Invest in strengthening border biosecurity*, has been reported through the action tracker as two separate critical actions (*action 6.8.2a* covers the Sea Cargo Programme, rated as amber, and *action 6.8.2b* covers the Mail Pathways Project, rated as green).

Scorecard assessment

We have assessed the implementation of actions mapped against natural environment objectives in the first national adaptation plan as insufficient (Figure 8.3).

Overall, fewer than half of the critical actions in this outcome area were rated green.

There are two actions in the first national adaptation plan mapped against the third natural environment objective focused on working with nature, and both of these actions were 'on hold'.

Of the eight critical actions mapped against the second natural environment objective focused on biosecurity, only two have been rated green.

Critical *action 6.1: Implement the Department of Conservation Climate Change Adaptation Action Plan* was rated as red. This is a foundational action for addressing natural environment risks.

Figure 8.3: Scorecard assessment for progress implementing natural environment actions

Assessment: Natural environment	
Insufficient	Many actions are off track to deliver to timelines. Many critical actions have medium to low confidence of delivery.

Source: Commission analysis

xx. NE2: Robust biosecurity reduces the risk of new pests and diseases spreading
xxi. NE1: Ecosystems which are healthy and connected, and where biodiversity is thriving
xxii. NE3: Support working with nature to build resilience

Step 2: Identifying whether there is a barrier to implementation

For the three critical actions that were shown as no longer going ahead (two 'on hold', one 'discontinued'), the reason given was 'Ministerial decisions'. For example, critical *action 5.9: Prioritise nature-based solutions* was currently on hold awaiting decision on priority and resourcing. The lead agencies noted in the action tracker that "progressing this workstream will require cross agency and Ministry buy-in and resourcing".

Awaiting Ministerial decision was also the reason given for why critical a*ction 6.4: Implement the proposed National Policy Statement on Indigenous Biodiversity* was rated red.

Most of the other actions that were rated as not having high confidence of delivery indicated that this was due to funding and resource constraints. This includes critical *action 6.1: Implement the Department of Conservation Climate Change Adaptation Action Plan*, with the lead agency noting through the action tracker that the Department of Conservation had funded active actions from within available baseline funding.

For the two critical actions focused on biosecurity, *action 6.8.3: Continue the Freshwater Biosecurity Partnership Programme*, and *action 6.8.4: Reduce the spread and impacts of marine pest species through the Clean Hull programme*, which are both being led by the Ministry for Primary Industries, recruitment issues were noted as the reason the lead agency did not have high confidence of delivery. It is unclear whether these issues have since been resolved.

Homes, buildings and places

Table 8.5: RAG status of all homes, buildings and places actions in the first national adaptation plan

Status	Actions with this status	Critical actions with this status	Supporting actions with this status	Proposed actions with this status
Green	13	3	1	9
Amber	2	1	0	1
Red	0	0	0	0
On hold	0	0	0	0
Discontinued	0	0	0	0

Source: Climate Change Chief Executives Board

Table 8.6: RAG status of all homes, buildings and places critical actions in the first national adaptation plan

Status	Number of critical actions with this status	Critical actions (who is responsible)
Green	3	4.4 Embed adaptation in funding models for housing and urban development, including Māori housing (HUD) 5.7 Reduce and manage the impacts of climate hazards on homes and buildings (HUD, MBIE) 5.8 Support kaitiaki communities to adapt and conserve taonga/cultural assets (MCH)
Amber	1	4.3 Establish an initiative for resilient public housing (KO)
Red	0	-
On hold	0	-
Discontinued	0	-

Source: Climate Change Chief Executives Board

Step 1: Assessing progress delivering the actions in the plan

There are a total of 15 actions mapped to objectives in the homes, buildings and places outcome area. This includes 4 critical actions, 1 supporting action, and 10 proposed actions.

Most of the actions mapped against these objectives were rated as green/delivery confidence is high – 13 out of the total 15 actions (see Table 8.5). However, nine of these actions were classified in the first national adaptation plan as future proposed work programmes, and some of these were not yet underway. This includes, for example, proposed actions, *action 7.3: Partner with Māori to support Māori-led approaches to adaptation planning* and *action 7.4: Updating regulatory requirements to ensure buildings are designed and constructed to withstand more extreme climate hazards*, which have longer timeframes set out within the plan.

There were two actions rated as amber/moderate confidence with some issues or risks, and one of these was a critical action. None of the actions in this outcome areas were rated as red, on hold or discontinued.

Of the four critical actions mapped against the homes, buildings and places objectives, only one was rated as not having high confidence of delivery – *action 4.3: Establish an initiative for resilient public housing*. This was rated as amber (see Table 8.6).

One critical action that was rated as green (*action 4.4: Embed adaptation in funding models for housing and urban development, including Māori housing*) had not yet started, even though it was due to start in 2022. The first implementation delivery milestone for this action is "[b]y 2024, HUD has begun reviewing funding programmes it administers and amending them to appropriately consider climate-related risk."[258]

Critical *action 5.7: Reduce and manage the impacts of climate hazards on homes and buildings* was also rated as green. This action is made up of five sub-actions, with varied amounts of progress across each of these sub-actions.

Scorecard assessment

We have assessed the implementation of actions mapped against homes, buildings and places objectives in the first national adaptation plan as having moderate gaps (see Figure 8.4).

Most actions mapped against homes, buildings and places objectives have been rated as green/delivery confidence is high. This includes three of the four critical actions. However, nine of these green actions were classified in the first national adaptation plan as future proposed work programmes, and some of these were not yet underway.

None of the critical actions for this outcome area were rated as red/low delivery confidence with major risks or issues, though one was rated as amber/moderate confidence with some issues or risks. However, there is some uncertainty as to why critical *action 4.4: Embed adaptation in funding models for housing and urban development, including Māori housing* has been rated as green when work has not yet started.

Figure 8.4: Scorecard assessment for progress implementing homes, buildings and places actions

Assessment: homes, buildings and places	
Moderate gaps	Actions are largely on track to deliver to timelines, with some gaps. Medium to high confidence that all critical actions will be delivered.

Source: Commission analysis

Step 2: Identifying whether there is a barrier to implementation

Critical *action 4.3: Establish an initiative for resilient public housing* was rated as amber, with internal funding resource constraints given as the reason for why the action was not on track.

Although they were rated as green, three out of the four actions assigned to Ministry of Culture and Heritage highlighted resourcing and budget constraints as an issue, and they noted that they were carrying out the work within existing baseline funding. This includes critical *action 5.8: Support kaitiaki communities to adapt and conserve taonga/cultural assets*. The only Ministry of Culture and Heritage action that was rated amber due to internal budget constraints is *action 7.1: Research how cultural heritage contributes to community wellbeing and climate change adaptation*. At the time of reporting in the action tracker, no further work had been undertaken for this action, and the Ministry was waiting for priorities from the Minister.

Action 5.16: Identify options to integrate nature-based solutions into urban form was rated green and was on track to complete some parts of this action. However, the tracker notes that this action was put 'on hold' temporarily due to "100-day plan work".

Communities

Table 8.7: RAG status of all communities actions in the first national adaptation plan

Status	Actions with this status	Critical actions with this status	Supporting actions with this status	Proposed actions with this status
Green	7	1	4	2
Amber	2	1	1	0
Red	4	1	3	0
On hold	0	0	0	0
Discontinued	1	0	0	1

Source: Climate Change Chief Executives Board

Table 8.8: RAG status of all communities critical actions in the first national adaptation plan

Status	Number of critical actions with this status	Critical actions (who is responsible)
Green	1	3.6 Improve natural hazard information on Land Information Memoranda (DIA)
Amber	1	9.2 Develop the Health National Adaptation Plan (MOH)
Red	1	3.4 Raise awareness of climate hazards and how to prepare (NEMA)
On hold	0	-
Discontinued	0	-

Source: Climate Change Chief Executives Board

Step 1: Assessing progress delivering the actions in the plan

There are a total of 14 actions mapped to objectives in the communities outcome area in the first national adaptation plan. This includes three critical actions, eight supporting actions, and three proposed actions.

Half of the actions mapped against these objectives were given a RAG status of green/delivery confidence is high (see Table 8.7). Of the seven actions rated green, two were proposed actions that had not yet started. One was a critical *action 3.6: Improve natural hazard information on Land Information Memoranda* (see Table 8.8).

Two actions were rated as amber/moderate confidence with some issues or risks, and one of these was a critical action, *action 9.2: Develop the Health National Adaptation Plan*. This is a foundational action for achieving communities objective C4.[xxiii] The first progress milestone for this action was for the Health National Adaptation Plan to be completed by the end of 2022. In their reporting through the action tracker, the Ministry of Health noted that internal funding and resource constraints associated with ongoing reform of the health system had slowed progress, and that the time required to bed in a new system had affected the ability to work collaboratively across the

xxiii. C4: The health sector is prepared and can support vulnerable communities affected by climate change

health sector to deliver this action.

Four actions were given a RAG status of red/low delivery confidence with major risks or issues; one of these is a critical action, *action 3.4: Raise awareness of climate hazards and how to prepare*. As the lead agency for this action the National Emergency Management Agency (NEMA) noted in the action tracker that work was not proceeding as intended due to funding not being granted through the Climate Emergency Response Fund (CERF), but that some work was continuing as part of NEMA business-as-usual activities.

Supporting *action 5.13: Connect communities to wider response and recovery support* was also rated as red. This is an important action for achieving Objective C3 in the first national adaptation plan.[xxiv] NEMA noted that this action had not progressed due to changes in the timeframes for emergency management legislation, which they now anticipated being in place in 2025 (rather than in 2024 as planned). NEMA noted that until there was clarity around what the emergency management legislation would provide for, other work to support this (such as regulation, rule and guidance development) would not be able to progress.

Scorecard assessment

We have assessed the implementation of actions mapped against communities objectives in the first national adaptation plan as having significant gaps (see Figure 8.5).

Of the three critical actions for communities, one was rated green, one amber and one red. Both of the critical actions that were not on track are important for achieving the communities objectives in the first national adaptation plan.

Step 2: Identifying whether there is a barrier to implementation

The key barriers to implementation of actions in the first national adaptation plan to support the communities objectives were agencies awaiting Ministerial direction, and funding and resource constraints.

Several actions were rated as not being on track due to reasons of awaiting Ministerial direction, or clarity around Government priorities. This included two actions rated as red: supporting *action 5.13: Connect communities to wider response and recovery support*, being led by NEMA; and supporting *action 9.7: Strengthen teaching and learning related to climate change*, being led by the Ministry of Education.

In addition, supporting *action 9.5: Continue with the reform of the health and disability system* was rated as amber, with the Ministry of Health noting that at the time of reporting (December 2023) their work programmes were under review to align with new Government priorities, and that the direction of health system reforms as outlined in the first national adaptation plan would likely change.

Lead agencies for some other actions that were rated as not having high confidence of delivery cited funding and resource constraints as the reason for this. This included two actions rated as red: critical a*ction 3.4: Raise awareness of climate hazards and how to prepare*, being led by NEMA; and supporting *action 9.9: Expand current funding for proactive community resilience*, which is being led by Te Puni Kōkiri. In the action tracker, Te Puni Kōkiri noted that preparatory work was underway for the 2024 Budget round to request funding to support this action. It appears that funding to support this work was not provided in Budget 2024.

Figure 8.5: Scorecard assessment for progress implementing communities actions

Assessment: Communities	
Significant gaps	Many actions are off track to deliver to timelines, with some important gaps. Some critical actions have medium to low confidence of delivery.

Source: Commission analysis

xxiv. C3: Support communities when they are disrupted or displaced

Infrastructure

Table 8.9: RAG status of all infrastructure actions in the first national adaptation plan

Status	Actions with this status	Critical actions with this status	Supporting actions with this status	Proposed actions with this status
Green	12	3	9	0
Amber	3	1	2	0
Red	1	0	1	0
On hold	1	0	1	0
Discontinued	0	0	0	0

Source: Climate Change Chief Executives Board

Table 8.10: RAG status of all infrastructure critical actions in the first national adaptation plan

Status	Number of critical actions with this status	Critical actions (who is responsible)
Green	3	4.6 Integrate adaptation into Treasury decisions on infrastructure (Treasury) 5.6 Scope a resilience standard or code for infrastructure (DPMC) 8.1 Develop and implement the Waka Kotahi Climate Adaptation Plan (NZ Transport Agency Waka Kotahi)
Amber	1	3.8 Develop guidance for assessing risk and impact on physical assets and the services they provide (New Zealand Infrastructure Commission Te Waihanga)
Red	0	-
On hold	0	-
Discontinued	0	-

Source: Climate Change Chief Executives Board

Step 1: Assessing progress delivering the actions in the plan

There are a total of 17 actions mapped to objectives in the infrastructure outcome area. This includes 4 critical actions, 13 supporting actions, and no proposed actions.

Most of the actions mapped against these objectives were given a RAG status of green/delivery confidence is high – 12 of the total 17 actions (see Table 8.9). Some actions were rated as green even though some implementation delivery milestones had not been met. For example, supporting *action 8.2: Develop the national energy strategy* had a milestone of "by 2024, the National Energy Strategy is developed", but as of 31 May 2024 this has not yet been released.

There were three actions rated as being amber/moderate confidence with some issues or risks, and

one of these was a critical action (see Table 8.10). *Action 3.8: Develop guidance for assessing risk and impact on physical assets and the services they provide* is being led by the New Zealand Infrastructure Commission Te Waihanga, and the first implementation delivery milestone for this action was "by 2024, the guidance is drafted and available for stakeholder feedback", but this milestone was not met.[259]

Only one action in this outcome area was rated red/low delivery confidence with major risks or issues, and that was supporting *action 8.7: Embed nature-based solutions as part of the response to reducing transport emissions and improving climate adaptation and biodiversity outcomes*, which is being led by the Ministry of Transport. This action was meant to start in 2022, but based on the action tracker, it had not yet started as of December 2023.

There is one infrastructure action that was rated as on hold: *action 8.3: Manage dry-year risk through the New Zealand Battery Project*. The Government has announced that the Lake Onslow Pumped Hydro Scheme project will not go ahead, however the tracker notes that this action is on hold pending Ministerial decision on how to progress managing dry-year risk.[260]

Scorecard assessment

We have assessed the implementation of actions mapped against infrastructure objectives in the first national adaptation plan as having moderate gaps (see Figure 8.6).

Most of the actions in this area were rated as having high confidence of delivery. Of the four critical actions in this area, only one was rated as not being on track. This is an important action for achieving objective INF1.[xxv]

Step 2: Identifying whether there is a barrier to implementation

The key barriers to implementation of actions in the first national adaptation plan to support the infrastructure objectives were reported as: agencies awaiting Ministerial decisions and direction on priorities; and funding and resource constraints.

Supporting *action 8.3: Manage dry-year risk through the New Zealand Battery Project*, being led by the Ministry for Business, Innovation and Employment (MBIE), was noted as being on hold pending Ministerial decision.

Internal funding and resource constraints were cited as the reason why supporting *action 8.7: Embed nature-based solutions as part of the response to reducing transport emissions and improving climate adaptation and biodiversity outcomes,* being led by the Ministry of Transport, was not rated as green. Internal funding and resource constraints were also cited as the reason why critical *action 3.8: Develop guidance for assessing risk and impact on physical assets and the services they provide* was delayed. The lead agency, the New Zealand Infrastructure Commission Te Waihanga, also noted that procurement to support this action had been paused.

External funding constraints led to delays implementing supporting *action 3.17: Support and promote the integration of climate adaptation and mitigation in new and revised standards commissioned by third parties*, being led by Standards NZ, within MBIE. That agency noted in the action tracker that all Standards NZ work was cost recovered and required funding from third parties, and it cited uncertainty of funding while Government priorities were confirmed as underlying the delay in delivery.

Figure 8.6: Scorecard assessment for progress implementing infrastructure actions

Assessment: Infrastructure	
Moderate gaps	Actions are largely on track to deliver to timelines, with some gaps. Medium to high confidence that all critical actions will be delivered.

Source: Commission analysis

xxv. INF1: Reduce the vulnerability of assets exposed to climate change

Economy and financial system

Table 8.11: RAG status of all economy and financial system actions in the first national adaptation plan

Status	Actions with this status	Critical actions with this status	Supporting actions with this status	Proposed actions with this status
Green	21	5	14	2
Amber	2	1	1	0
Red	1	0	0	1
On hold	0	0	0	0
Discontinued	0	0	0	0

Source: Climate Change Chief Executives Board

Table 8.12: RAG status of all economy and financial system critical actions in the first national adaptation plan

Status	Number of critical actions with this status	Critical actions (who is responsible)
Green	5	5.4 Develop options for home flood insurance (Treasury) 10.1 Deliver the New Zealand Freight and Supply Chain strategy (MOT) 10.2 Strengthen fisheries rules (MPI) 10.3 Deliver the Aquaculture Strategy (MPI) 10.4 Reserve Bank of New Zealand supports the stability of the financial system (RBNZ)
Amber	1	3.5 Support high-quality implementation of climate- related disclosures and explore expansion (MFE/MBIE/XRB/FMA)
Red	0	-
On hold	0	-
Discontinued	0	-

Source: Climate Change Chief Executives Board

Step 1: Assessing progress delivering the actions in the plan

There are a total of 24 actions mapped to objectives in the economy and financial system outcome area. This includes six critical actions, 15 supporting actions, and three proposed actions.

Most of the actions in this area were rated as green/delivery confidence is high, 21 of the total 24 actions (see Table 8.11). Of the six critical actions in this outcome area, only 1 was rated as amber/moderate confidence with some issues or risks (see Table 8.12).

Critical *action 3.5: Support high-quality implementation of climate-related disclosures and explore expansion* was rated as amber because, while regulations have been completed, the lead agencies noted that little progress had been made on other work related to this action.

The other action rated as amber was supporting a*ction 10.14: Deliver the Tourism Industry Transformation Plan*, being led by MBIE. It is unclear why this action was rated amber, rather than discontinued, because MBIE noted in the action tracker that all work on industry transformation plans was to be halted as part of the new Government coalition agreement. Work on industry transformation plans was halted on 20 December 2023 as part of the Government's mini-budget.[261]

Only one economy and financial system action was rated as red/low delivery confidence with major risks or issues, and that is supporting *action 10.17: Support Māori small business resilience and transitions.* The tracker noted that this action had not started yet.

There are no actions in this outcome area that were rated as on hold or discontinued. However, as noted above, work on the Tourism Industry Transformation Plan will no longer be going ahead.

Scorecard assessment

We have assessed the implementation of actions mapped against economy and financial system objectives in the first national adaptation plan as having moderate gaps (see Figure 8.7).

Most of the actions in this area were rated as green/delivery confidence is high, and only one critical action was not rated green. Critical *action 3.5: Support high-quality implementation of climate-related disclosures and explore expansion*, being led by multiple agencies, was rated as amber. Some progress milestones for this action had been met, and the tracker noted that work was underway to make decisions about how to progress assurance work and engage with reporting entities on this action.

Figure 8.7: Scorecard assessment for progress implementing economy and financial system actions

Assessment: Economy and financial system	
Moderate gaps	Actions are largely on track to deliver to timelines, with some gaps. Medium to high confidence that all critical actions will be delivered.

Source: Commission analysis

Step 2: Identifying whether there is a barrier to implementation

There are three actions in this outcome area that were rated as not having high confidence of delivery, with a different reason given for this in the case of each action.

For critical a*ction 3.5: Support high-quality implementation of climate-related disclosures and explore expansion*, the reason was reported as internal funding and resource constraints.

Supporting *action 10.14: Deliver the Tourism Industry Transformation Plan* was rated as amber, due to Ministerial decision and change of direction following the change in government. This action has since been discontinued.

Supporting *action 10.17: Support Māori small business resilience and transitions*, that was rated as red, had not yet been started due to external budget constraints.

Overall conclusions

Overall, there are 51 critical actions included in the first national adaptation plan. As at the end of December 2023, just over half of these were rated green/ delivery confidence is high (29 out of the total 51 actions). Just over one third of critical actions were rated as amber (14 actions), and 4 were rated as red. In addition to this, two critical actions were rated as on hold, and 2 as discontinued – 3 of these were within the natural environment outcome area, and the other was in the system-wide area. This means that, overall, 22 out of 51 critical actions were rated as not having high confidence of delivery according to reporting through the action tracker as at the end of December 2023 – just over 40%.

Our analysis indicates that there is some uncertainty, or lack of clarity, around the status of many of the actions in the first national adaptation plan. This is in part due to re-prioritisation decisions being made with respect to some actions. It is also due to the lack of consistency in how lead agencies choose to rate their actions. The Board acknowledges this uncertainty in their progress report.[262]

There are some important areas where implementation is not progressing well

Our analysis has identified several important areas where implementation is not progressing as set out in the first national adaptation plan.

Legislation and institutional arrangements

Several foundational actions for enabling effective adaptation were rated with moderate or low confidence of delivery, or had been put on hold or discontinued.

This includes some actions that are important for clarifying roles, responsibilities and processes for planning and decision-making around adaptation. This includes critical *action 4.1: Reform the resource management system*, and *action 5.1: Pass legislation to support managed retreat*, both being led by the Ministry for the Environment. Considerable uncertainty remains around the future of these two actions following the change of Government. These actions could also have helped to provide some clarity around how the costs of adaptation and loss would be shared.

On 10 May 2024 the Government announced that Parliament's Finance and Expenditure Committee will conduct a cross-party inquiry to develop an adaptation framework, with key findings expected in September 2024.[263] The development of an adaptation framework could help to make progress in this area, but it remains unclear whether the adaptation framework will set out roles, responsibilities and processes to support local adaptation planning, including managed retreat, as was initially intended with the two actions noted above.

A lack of clarity around roles and responsibilities is also playing out in some specific areas and sectors where implementation of first national adaptation plan actions is delayed. This includes, for example, the water sector. The current lack of a systematic approach to water infrastructure makes it difficult for planners, water providers and asset managers to make decisions in a way that aligns with adaptation outcomes that anticipate and reduce climate risk. *Action 4.5: Reform institutional arrangements for water services* has been discontinued. The Government has announced a new approach to water service delivery 'Local Water Done Well', with legislation expected to be enacted by mid-2025.[264]

The natural environment

A significant share of the actions mapped against the first national adaptation plan's natural environment objectives were reported as not having high delivery confidence. Less than half of the critical actions in the natural environment area were rated as green – 6 of the 17 critical actions.

Of particular concern, *action 6.1: Implement the Department of Conservation Climate Change Adaptation Action Plan* was rated as red/low delivery confidence with major risks or issues. The reason given for this was internal funding and resource constraints. This action is important for addressing the first national environment objective focused on healthy and biodiverse ecosystems. It is also a key action mapped against all of the natural environment risks in the first national climate change risk assessment (as discussed in *Chapter 6: How well the plan addresses climate risks*).

A number of other actions related to the natural environment objectives in the first national adaptation plan were reported as amber or red. This included actions mapped against all three natural environment objectives. Many critical and supporting actions focused on issues of biosecurity, for example, were rated as amber or red – including actions focused on on-farm, freshwater and marine biosecurity.

The lack of progress made towards implementing natural environment actions is an important gap which could have significant impacts. Climate change will have major effects on Aotearoa New Zealand's indigenous ecosystems, and the diverse range of species these environments are home to. The natural environment also underpins many sectors of the country's economy, including tourism, agriculture, forestry and fisheries.

The emergency management system

Another area where many actions were rated as not having high delivery confidence is in relation to the emergency management system. Of the six actions included in the first national adaptation plan that have NEMA as the lead agency, none were rated green – four were rated red/low delivery confidence with major risks or issues, and two amber/moderate confidence with some issues or risks. Both critical actions were rated as red – *action 3.4: Raise awareness of climate hazards and how to prepare*, and *action 9.1: Modernise the emergency management system*.

NEMA reported through the action tracker that the reasons for this delay included internal funding and resources constraints, external funding constraints, and Ministerial decisions.

It is possible that some resource constraints flow from the diversion of resources to response and recovery following the recent extreme weather events in 2023 – alongside other cost pressures. For the two actions that cited Ministerial decision as the reason for delay, *action 5.13: Connect communities to wider response and recovery support*, and a*ction 9.1: Modernise the emergency management system*, the delay flowed from the Government's decision not to proceed with the 2023 Emergency Management Bill, as it was not deemed fit for purpose. Based on engagement, the Commission understands that new legislation will be developed, though the scope and exact timing remains uncertain.

Ensuring that the emergency management system is fit-for-purpose is critical, with Aotearoa New Zealand facing more frequent and extreme weather events as the climate changes. The reviews and inquiries following the 2023 North Island extreme weather events may support work to improve the emergency management system.

Other considerations

The national adaptation plan as an evolving document

The first national adaptation plan was released in 2022, and is being implemented within a dynamic environment. The extreme weather events of 2023 and the change in government following the 2023 general election have both resulted in shifting priorities for adaptation. This is reflected in this assessment of progress implementing the actions in the first national adaptation plan, which shows that some actions had been delayed or discontinued. Other actions were tracking well against implementation delivery milestones. New adaptation actions have also been undertaken, which are not reflected in the first national adaptation plan (some new actions are discussed in *Chapter 9: Observed progress towards the plan's objectives*).

Adaptation is a process, and monitoring it effectively also requires an adaptive approach as more information comes to light, and as circumstances lead to changes in priorities.[265] Making the national adaptation plan a living and evolving document would allow it to be more effective within such a dynamic environment. Under the Climate Change Response Act 2002 national adaptation plans must be released every six years, in response to each new national climate change risk assessment. Much can change over the course of six years – as Aotearoa New Zealand is already witnessing. Regularly updating the 'table of actions' released alongside the plan would help to make sure that changes in the status of actions are transparent and can be viewed in the context of the package of actions in the plan. This would support public transparency and effective monitoring.

The table of actions could be updated every two years, and could be timed to coincide with the Government's response to the Commission's two-yearly assessment of progress of the national adaptation plan and the Commission's associated policy recommendations. The Government would need to consider how this could be achieved, whether such changes would be considered "minor and technical" under section 5ZT of the Act, or whether any legislative changes are needed to enable this.

Sector-specific plans

Some of the actions in the first national adaptation plan focus on the development and/or implementation of sector-specific adaptation plans, which may contain other actions within them. This includes, for example, the *Department of Conservation's Climate Change Adaptation Action Plan*, the *Health National Adaptation Plan,* the *NZ Transport Agency Waka Kotahi Climate Adaptation Plan* and the *Transpower Adaptation Plan*. Some of these plans were developed prior to the publication of the first national adaptation plan, and some have yet to be developed.

Monitoring, reviewing, and reporting on these plans will be undertaken by government agencies as part of their regulatory stewardship responsibilities. It will be important to consider how this monitoring of the actions within those plans can most effectively interact with, and feed in to, the Board's national adaptation plan monitoring.

This will also be important to consider for the sector plans and strategies included as actions in the first national adaptation plan, but which are not focused specifically on adaptation, such as the National Energy Strategy. Monitoring the progress of developing and implementing these types of strategies and plans at a high level will likely not be sufficient for understanding how well adaptation in being considered and addressed within, and through, them.

Cross-agency coordination

The Climate Change Chief Executives Board, and its secretariat, play an important role coordinating cross-agency monitoring and reporting on progress of actions in the first national adaptation plan – as well as in the emissions reduction plan. Given the number of agencies involved in adaptation planning and action, this coordination role is crucial for supporting a broad view of progress and identifying important gaps.

For some actions, cross-agency coordination is also important for effective implementation. For example, some actions in the first national adaptation plan have multiple lead agencies.

In addition, some actions in the plan – or actions not included in the plan but which are relevant for adaptation – will potentially have flow-on effects to other actions, or focus on similar issues and areas. This makes cross-agency coordination important for making sure priorities and actions align, and for avoiding duplication of effort. For example, *action 3.8: Develop guidance for assessing risk and impact on physical assets and the services they provide*, being led by New Zealand Infrastructure Commission Te Waihanga, is closely linked with *action 5.6: Scope a resilience standard or code for infrastructure*, being led by the Department of Prime Minister and Cabinet (DPMC). It is also aligned with work currently being led by DPMC to enhance the resilience of Aotearoa New Zealand's critical infrastructure, which is not an action in the first national adaptation plan.

Similarly, there is a wide range of work underway across government that relates to emergency preparedness and response. This includes the first national adaptation plan actions related to the emergency management system, but also other actions in the plan, including, for example, *action 9.9: Expand current funding for proactive community resilience* (being led by Te Puni Kōkiri), and *action 3.22: Work with community housing providers to enable effective climate hazard response* (being led by the Ministry of Housing and Urban Development) – and also other initiatives being undertaken across government in response to the 2023 North Island extreme weather events.

Several agencies noted the importance of cross-agency coordination in their reporting through the action tracker. For example, several agencies noted the need for greater inter-agency collaboration, and one agency indicated that the Board could "Help promote more of a cross agency approach and encourage agencies who have relevant actions to work together".[266]

Ngā kokenga kua kitea ki ngā whāinga o te mahere | Observed progress towards the plan's objectives

This chapter presents our analysis of progress towards the adaptation objectives included in the first national adaptation plan, in the years since the plan was released.

Introduction

As required under section 5ZS of the Climate Change Response Act (the Act), the first national adaptation plan sets out the Government's objectives for adapting to the effects of climate change.

Under section 5ZU of the Act, as part of its progress reports on each national adaptation plan, He Pou a Rangi Climate Change Commission (the Commission) is required to assess "the degree to which the objectives of the plan have been achieved".

The first national adaptation plan contains twenty objectives, which are grouped into six categories (or outcome areas):

- system-wide issues
- natural environment
- homes, buildings and places
- infrastructure
- communities
- economy and financial system.

In assessing progress being made towards achieving the objectives in the plan, we have considered whether that progress is in line with adaptation needs, and with the progress we would expect to see. This has helped us to identify areas of improvement for future plans.

Aotearoa New Zealand's first national adaptation plan was released in 2022

It is important to note that the first national adaptation plan was released just two years ago, in 2022. It takes time for policy to flow through to impacts and outcomes, which means that this first assessment of progress towards the plan's objectives is limited in terms of actual outcomes that we can observe on the ground. Because of this, we are focusing our first assessment on early signs of progress, and including evidence of outcomes where we can.

Although two years is a short time to observe adaptation progress, a lot has changed in the last two years in terms of the wider context within which the plan sits. The North Island extreme weather events of 2023 and the change in government following the 2023 general election have both resulted in shifting priorities for adaptation. Some of the actions in the plan have been delayed, accelerated, or discontinued, and new adaptation actions have been undertaken. To reflect this changing environment, this assessment is not limited to the actions included in the plan. Here, we are considering any adaptation actions that contribute to progress towards the plan's objectives (see Box 9.1). These include not only central government actions, but also adaptation actions carried out by other actors such as local government, iwi/Māori, and the private sector.

Our approach to this assessment

In this assessment we have looked at the degree to which each objective in the plan has been achieved. The analysis is largely qualitative, with quantitative information included where available. Our assessment focuses in particular on identifying signs of movement that tell us whether Aotearoa New Zealand is making progress towards achieving each of the objectives. In order to inform our assessment of progress against the 20 objectives, we have considered not only the objective itself but also the explanation of each objective provided in the plan.

To assess overall progress, we have focused this first assessment on early signs of progress – work programmes that are intended to, in time, flow through to adaptation outcomes on the ground. We have also included evidence of adaptation outcomes on the ground where it has been possible to do so. Future versions of this assessment intend to focus more on outcomes over time, as policies are implemented and flow through to outcomes that can be observed on the ground.

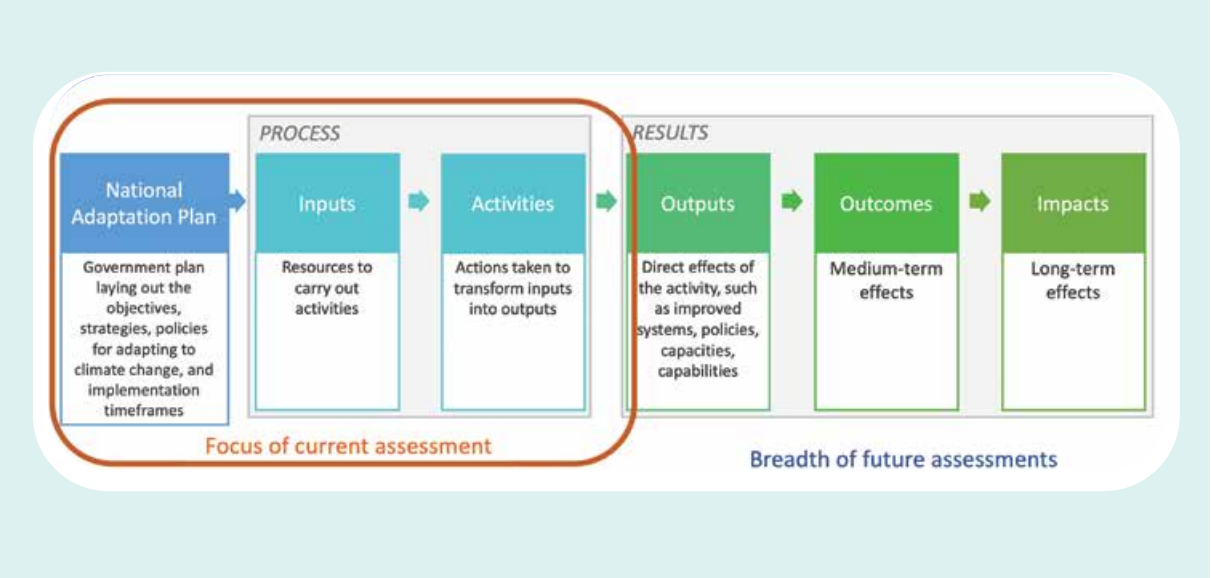
Not all progress will be driven by the actions in the plan. The plan includes national-level actions owned by central government agencies, while much adaptation action takes place locally through decisions made by councils, communities, iwi/Māori, property owners, individuals, financial institutions, businesses, and others. We have included examples of actions that contribute to progress that are carried out at the local and regional levels in this assessment, because the plan contributes to the creation of an enabling environment that drives local and regional adaptation actions. We have also identified gaps, both in terms of the progress being made, and in terms of the information available to us to allow us to measure progress.

This assessment draws on a range of information sources to identify actions that affect progress towards the 20 objectives. This includes academic literature, publicly available reports, information from central government agencies and from local government, insights from our case studies and engagement, research, data and official statistics, as well as conversations with key experts and central government officials.

Box 9.1: Scope of this assessment

Our assessment of progress towards adaptation objectives is not limited to actions included in the first national adaptation plan, nor to actions carried out by central government. It includes any actions that contribute to progress towards (or away from) the objectives in the plan, including actions carried out by local government, iwi/Māori, and the private sector.

Figure 9.1: Diagram illustrating how adaptation work programmes (inputs and activities) flow through to adaptation outcomes on the ground (outputs, outcomes and impacts)



Source: Commission analysis

Work programmes underway

Given it has only been two years since the plan was released, our assessment has focused in particular on work programmes underway (for example, inputs and activities – see Figure 9.1) that could be early indicators of change. Although in this first assessment the work programmes underway carry more weight, as time progresses we expect the volume of evidence will shift to outcomes on the ground and that our future assessments will therefore shift focus.

Evidence of outcomes on the ground

We have also included evidence of adaptation outcomes on the ground where that information has been available. However, at this stage the evidence of outcomes on the ground represents more of a baseline against which we can measure future progress, rather than an indication of outcomes resulting from actions in the first national adaptation plan.

Box 9.2: Questions that have guided our assessment

- Is there evidence of work programmes underway relating to this objective?
- What is the speed and direction of movement, and to what degree does this movement contribute towards achieving the objective?
- Are there significant gaps (both in terms of the progress being made and the information available to measure progress)?

Overall assessment of progress

We have drawn on our observations in both of these areas (work programmes underway and evidence of outcomes on the ground) to inform our overall assessment of progress for each of the 20 objectives. The questions that we used to guide our assessment are outlined in Box 9.2.

In assessing the degree to which each of the objectives has been achieved, we have considered what stage in the policy or planning cycle the various work programmes supporting the objective are at. If they are at an early stage, this represents a lesser degree of movement towards achieving the objective than if they are at a later stage. For example, work being undertaken to better understand risks represents an early stage in the process, while a policy or plan that has been completed and is being implemented represents a later stage. Adaptation outcomes that are being observed on the ground also represent a later stage in the process, and therefore a greater degree of movement.

Because of the lack of evidence relating to adaptation outcomes at this early stage, we have made the decision not to apply a scorecard rating to our assessment of each of the 20 objectives. However, as we observe more evidence of outcomes on the ground in future assessments we expect to apply a similar scoring methodology as we have used in *Chapter 6: How well the plan addresses climate risks* and *Chapter 7: Barriers to the plan's effectiveness*.

Becoming increasingly quantitative over time

As part of transitioning our assessment of observed progress towards the plan's objectives to be more outcomes-focused over time, we will continue with work already underway to develop a suite of indicators of progress that make sense in the Aotearoa New Zealand context – with a view to using these alongside qualitative approaches in future progress reports. See *Chapter 10: Developing key national metrics* for more information.

Limitations of this assessment

This first assessment of progress has a number of limitations. Firstly, as discussed in *Chapter 5: The plan's overall architecture, goals and objectives*, the objectives are not easy to measure progress against. They are not specific, measurable, or time bound. They are also framed inconsistently, made up of a mixture of actions, outcomes, and statements, and some are much broader than others in scope.

Secondly, our assessment is limited by the amount of information that exists and is publicly available, as well as how easy that information is to find. The amount of information available also varies greatly from objective to objective, where we have been able to find a large amount of information to support our assessment of progress for some objectives and have struggled to find sufficient information for others. The change in government and the resulting rapidly changing policy landscape (to reflect the new Government's priorities) has also made this assessment difficult. We acknowledge that our assessment is unlikely to have captured all of the work programmes underway that contribute to progress across the 20 objectives.

Overall conclusions

Looking across the 20 objectives in the first national adaptation plan, there is variation in the degree of progress we are observing towards achieving those objectives.

There are a small number of objectives where progress towards achieving those objectives seems to be stalled, with little or no movement being observed. This is particularly true for the system-wide objectives relating to fit-for-purpose legislation and institutions (SW1) and to investment in climate resilience (SW4), and for objectives relating to planning and managing new and existing places to minimise the risks from climate change (HBP2) and preparing the health sector to support vulnerable communities (C4).

For most of the objectives, we are observing some degree of progress, but these work programmes are often early in the policy process and significant gaps remain in terms of the amount of progress that is needed in order to achieve the objectives.

There is variation across the objectives in terms of both the scope of each objective (with some objectives being broad and others more focused) and in terms of the amount of available information relating to progress being made towards each objective. This has made our assessment of progress difficult.

We are seeing evidence that some of the key barriers identified in *Chapter 7: Barriers to the plan's effectiveness* are also evident here. In particular this relates to the system-wide objectives SW1 and SW4, but the lack of a legislative framework for adaptation and the lack of a funding framework for adaptation also both have flow-on effects for objectives in other outcome areas. However, the recently announced adaptation framework has the potential to contribute significantly to progress towards both of these objectives.

The objectives for which we are observing the greatest degree of progress include objectives relating to the accessibility of data and information (SW2), the provision of tools and guidance (SW3), and the resilience of the financial system (EF2). The objectives for which we are observing the least degree of progress are objectives SW1, SW4, HBP2, C3 (which relates to supporting communities when they are disrupted or displaced), and C4.

There are a number of work programmes and adaptation outcomes that contribute to progress (or lack thereof) for multiple objectives, including objectives in different outcome areas. These include:

- the adaptation framework
- the proposed natural hazards national direction
- the Fast-track Approvals Bill
- the climate-related disclosures legislation and resources
- various pieces of tools and guidance by both central and local government, the private sector and others.

There are a number of areas in which more data and information would enable us to provide a fuller assessment of progress, and we have identified these throughout the assessment.

Assessment of objectives by outcome area

System-wide issues

The objectives in the first national adaptation plan either relate to one of the five specific outcome areas, or to system-wide issues. We will cover our assessment of the four objectives which relate to system-wide issues first. Table 9.1 sets out the system-wide objectives from the plan alongside their explanations.

These four objectives cover legislation and institutional arrangements for adaptation; information, tools, and guidance; and investment in climate resilience.

Climate risks are interconnected and affect the broader systems of society. The system-wide objectives are intended to create an enabling environment for adaptation through providing the legislation, information and tools, and funding and investment required to support local government, sectors, and communities to undertake adaptation actions.

In the absence of this enabling environment, there is a risk that adaptation responses will be insufficient, ad hoc, and inconsistent around the country, and that maladaptive responses may occur.

Table 9.1: System-wide objectives and their explanations in the first national adaptation plan

Code	Objective	Explanation in the plan
SW1	Legislation and institutional arrangements are fit for purpose and provide clear roles and responsibilities	Use legislation or regulation to: • enable clear, adaptive decision-making • appropriately allocate responsibilities.
SW2	Robust information about climate risks and adaptation solutions are accessible to all	• Combine data into meaningful information for different contexts. • Create datasets that better respond to iwi, hapū and Māori needs.
SW3	Tools, guidance and methodologies enhance our ability to adapt	• Manage risk by making decisions despite uncertainty. • Use the right tools, guidance and methodologies to manage climate risks. • Allow for uncertainty when planning for future risk.
SW4	Unlocking investment in climate resilience	• Ensure that investment from public and private sources is available to respond to growing risks from climate change. • Encourage early investment to help reduce overall costs in the long term.

Summary of findings for this outcome area

There is variation in terms of the progress being made towards each of four objectives in the first national adaptation plan that cover system-wide issues. While we are observing good progress overall towards objectives SW2 and SW3, it's a different story for objectives SW1 and SW4 – which are arguably the most important system-wide objectives given that they aim to address significant barriers to adaptation action in Aotearoa New Zealand (see *Chapter 7: Barriers to the plan's effectiveness*).

Progress towards objectives SW1 and SW4 seems to have largely stalled, and there are significant gaps in terms of the work programmes we are observing and their ability to achieve these objectives. This lack of progress means that the current situation, in which there is no overarching legislative or funding framework for adaptation, will continue. The Government's recently announced adaptation framework has the potential to be a key process step for both objectives, and we will watch its development with interest.

SW1: Legislation and institutional arrangements are fit for purpose and provide clear roles and responsibilities

The first system-wide objective relates to having legislation and institutional arrangements in place which enable clear, adaptive decision-making, and provide clear roles and responsibilities.

Adapting to the diverse impacts of climate change at different scales requires statutory and policy alignment, coordination across levels of government and across sectors and systems, and clearly defined roles and responsibilities. The absence of these factors is a significant barrier to effective adaptation, particularly for local government.

Under the current legislative framework, there are various Acts (e.g. the Resource Management Act, Building Act, Local Government Act, Civil Defence Emergency Management Act) that can inform and influence adaptation planning, however these Acts at times conflict with one another.[267] There is no specific legislation or national policy that mandates adaptation, nor is there currently a framework for adaptation.

Work programmes underway

Our assessment of progress towards achieving this objective has identified some key work programmes relevant for understanding progress towards this objective. These are primarily in the early stages of development and are primarily being carried out by central government (given the objective relates to legislation and institutional arrangements).

In May 2024 the Government announced a **cross-party inquiry into the development of a national adaptation framework**. The inquiry will be led by **Parliament's Finance and Expenditure Committee**, which will report back in September 2024, with a view to introducing legislation in 2025. It has been signalled that the framework will clarify roles and responsibilities for adapting to climate change, and will help to ensure people have the ability and incentive to make decisions to reduce their risk where they can.[268] See *Chapter 7: Barriers to the plan's effectiveness* for more information.

The **Ministry for the Environment's natural hazards work programme** includes two proposed pieces of national direction: a National Policy Statement For Natural Hazard Decision-making, which is intended to limit new development in areas at high risk from natural hazards, and longer-term comprehensive national direction for natural hazards that aims to ensure local authorities identify and address natural hazard risk in a consistent and rigorous way. The Ministry for the Environment ran a consultation process in late 2023 on the proposed National Policy Statement.[269]

A **Māori Climate Platform** is being developed in partnership with tangata whenua to assist Māori-led climate action, planning and solutions. This was a critical action in the first national adaptation plan, where it was referred to as the key mechanism through which the Government would build a climate response partnership with Māori. A Ministerial Advisory Committee was appointed to engage with Māori and lead the design phase of the platform in 2022.[270] However, based on announcements in Budget 2024, the future of the Māori Climate Platform remains uncertain, and the first national adaptation plan does not outline any other specific ways to resource iwi/Māori adaptation initiatives.

The recently introduced **Fast-track Approvals Bill** has the potential to hinder progress towards this objective by adding additional complexity to the legislative landscape. It also does not require that consideration be given to climate and environmental outcomes, which means that decisions made through the fast-track process will not necessarily support good adaptation outcomes.

Evidence of outcomes on the ground

We have observed some evidence of outcomes on the ground that relate to this objective. Much of this is happening at the local level.

Local government has largely undertaken adaptive planning outside of the regulatory processes. **Dynamic Adaptive Pathways Planning (DAPP)**, an approach first outlined in the 2017 Coastal Hazards and Climate Change guidance, has been used to carry out adaptation planning over recent years in a number of coastal and flooding situations.[271] Some examples of adaptation planning processes which have used the DAPP approach include:

- the Hutt River Flood Risk Management Plan
- the Hawke's Bay Clifton to Tangoio Coastal Hazards Strategy 2120
- Wellington City's Mākara Beach
- Amberley Beach at Hurunui district.[272]

There are other relevant examples. Marlborough District Council has included policy in the Regional Policy Statement which identifies DAPP as the method which is to be used for future planning processes in areas of identified coastal hazard risk. Whakatāne District Council has a district plan with strong policy and rules to manage development within hazard areas, and Tasman District Council has undertaken a planning process with the community of Māpua, an area which is vulnerable to coastal erosion.[273]

However, there are also many examples (even in places that have undertaken adaptation planning) where development has been intensified behind coastal protection structures, for example at Haumoana, Clifton, and Waihi Beach. This has the potential to increase exposure and vulnerability to sea-level rise and increasing residual risk.[274]

We have heard through our engagement that the lack of a clear legislative framework has led to inconsistent approaches to adaptation planning around the country, and to stalled processes in some regions. Some councils that have drafted adaptation plans have found that their processes are stalled at the implementation phase. These difficulties are in part due to the lack of a clear mandate for action, and lack of clarity around the respective roles of district and regional councils in the adaptation process. This has resulted in issues funding the implementation of adaptation plans, and to a lack of buy-in from the community and/or elected members.

The **New Zealand Planning Institute Climate Change Adaptation Survey**, released in September 2023, found that 52% of respondents identified "no legal requirement to address the issue" as a barrier they experience when addressing the effects of a changing climate in their planning work. When asked "How clear do you think the current responsibilities are for managing risks from climate change and natural hazards, including who is responsible for undertaking risk assessments?" 52% of respondents answered "Unclear" and 20% answered "Very unclear".[275]

Overall assessment of progress

Overall, the evidence outlined above points to a lack of movement towards achieving this objective. There are some activities underway, such as the development of an adaptation framework and the proposed natural hazards national direction, which have the potential to help achieve this objective, but these are very early in the policy development process. The Fast-track Approvals Bill also has the potential to hinder progress towards achieving this objective. The lack of an overarching legislative framework and clear mandate for adaptation planning and action continues to represent a barrier to progress.

More information on council adaptation processes that are underway and what stage these processes are at would be helpful to us in terms of completing this assessment in the future.

SW2: Robust information about climate risks and adaptation solutions are accessible to all

The second system-wide objective relates to providing robust information and data about climate risks and adaptation solutions that is easily accessible to all New Zealanders.

To make good decisions in the face of climate change, individuals, communities, businesses, and others need to be able to assess climate risk. There is a significant amount of information on how climate change is expected to affect Aotearoa New Zealand that can be used to assess risk. However, the way that information is collected, managed and presented is inconsistent and it can be hard to find and use.

Work programmes underway

There are a number of activities underway that contribute to progress towards this objective.

The **Local Government Official Information and Meetings Amendment Act** (passed in 2023) aims to ensure Land Information Memoranda (LIMs) provide natural hazard information to property buyers that is clear, concise, nationally consistent in its presentation, and easily understood.

EQC Toka Tū Ake published a **Natural Hazards Portal** in August 2023, which includes information about settled EQC claims, from 1997 onwards, on residential properties throughout Aotearoa New Zealand, and provides access to local and national-level risk information from multiple government agencies (such as council hazard maps).[xxvi] The intention is to continue to expand and improve the portal over time.

The **Climate Adaptation Information Portal**, a key action in the first national adaptation plan that would contribute to achieving this objective, did not obtain funding in Budget '23, meaning the scale is smaller and progress developing the portal is slower than it otherwise might have been. The Portal would contribute to this objective by bringing together climate data and information to enable users to make risk-informed decisions. The Ministry for the Environment has signalled that some components of the portal will be delivered through the Climate Data Infrastructure Initiative, which has received funding.

National climate projection datasets for Aotearoa New Zealand are being developed by NIWA, through their downscaling of the latest global projections included in the IPCC's Sixth Assessment Report. These projections are expected to be completed in 2024.[276] The Ministry for the Environment is developing software to make the projections more accessible and user-friendly.

Research that has been carried out through the National Science Challenges has contributed to the knowledge base for adaptation, particularly research carried out through the **Deep South National Science Challenge** and **Resilience to Nature's Challenges**. There are 29 projects (some active and some completed) under the Deep South's Impacts and Adaptation research programme, which aims to ensure New Zealanders can properly consider and evaluate the key impacts of climate change. Research projects on understanding hazard risk and the effects of climate change on natural hazards such as coastal hazards, storms, flooding, droughts, and wildfires have also been carried out through the Resilience to Nature's Challenges National Science Challenge.

The Ministry for Primary Industries provides **information and resources for rural communities** on planning for natural disasters and offers on-farm support for farmers and growers.[277]

xxvi. EQC Toka Tū Ake's name changed to the Natural Hazards Commission Toka Tū Ake on 1 July 2024, to reflect that the agency's role relates to a range of natural hazards, not just earthquakes. In this report, we refer to this agency as EQC Toka Tū Ake, in line with the agency's name as at 31 May 2024.

The first **National Climate Change Risk Assessment** for Aotearoa New Zealand was released by the Ministry for the Environment in August 2020. The report identified 43 priority risks that the country faces from climate change, across 5 value domains. It also identified the 10 most significant risks that need to be addressed. See *Chapter 6: How well the plan addresses climate risks* for more information about the risks.

In 2021 Manaaki Whenua – Landcare Research released a report titled ***He huringa āhuarangi, he huringa ao: a changing climate, a changing world***, for Ngā Pae o te Māramatanga, which summarises the latest research and guidance on climate change impacts on whānau/hapū/iwi and Māori business, and considers implications for diverse Māori interests and investments. The report draws on the risk assessment framework and methods used in the first national climate change risk assessment, and applies a kaupapa Māori analytical approach that affirms the importance of Māori self-definitions and self-evaluations.[278]

The **New Zealand Lifelines Council** released its most recent **national vulnerability assessment for New Zealand's critical infrastructure** in September 2023. This provides a strategic perspective across infrastructure services, and how they act in combination.

A number of councils have carried out **local and regional climate change risk assessments**, including Bay of Plenty, Otago, Canterbury, Auckland, Northland, Kaipara, and Manawatū-Whanganui. Risk assessment processes are also underway for the Waikato region, Christchurch, Whakatāne, and Buller. These risk assessments help councils and communities to better understand the risks they face in their regions, and provide the evidence base for adaptation planning and action.

A **Wellington Regional Climate Change Impacts Assessment Report** was released in May 2024 and adopted by the **Wellington Regional Leadership Committee**. The report is intended to act as a foundational assessment of the risks, impacts and opportunities of a changing climate in the Wellington region over the next 100 years, and is the first phase in a project to help the region adapt to the impacts of a changing climate.[279]

In the Ministry for the Environment's **Adaptation preparedness: 2020/21 baseline survey report**, 15 of 61 councils reported that access to data at a regional, local, and asset level was part of their work.[280] The report is based on responses from policy and service delivery organisations to the first request for information made under the Climate Change Response Act 2002. The results were intended to set a baseline for measuring the effectiveness of adaptation actions as reporting organisations prepare for the impacts of climate change. The Ministry for the Environment recently repeated the survey in 2024, and 21 of 70 councils reported that access to data at a regional, local, and asset level was part of their work (the raw data from this survey was provided to the Commission by MfE under section 5ZW(3) of the Climate Change Response (Zero Carbon) Amendment Act 2019).

In 2023 **Ipsos completed research to better understand the barriers councils face in developing evidence-based climate change policy** in their regions. The findings were released in March 2024, and show that funding and resourcing are often a challenge, and that there is an opportunity to provide improved data tools which streamline adaptation planning. A geospatial risk assessment tool was ranked highest in terms of councils' priorities, need, and usefulness both now and in the next 5–10 years.[281]

Evidence of outcomes on the ground

We have observed some evidence of outcomes on the ground that relate to this objective.

Through our engagement we heard that accessing data and information about climate risks can be difficult. This can be due to the cost of obtaining data, limitations around using data for multiple purposes, and a lack of capability and skill needed to understand the data.

A **2023 survey of New Zealanders by IAG** found that, when asked if they understand the climate-related hazards to which their homes are exposed, 42% of respondents said no, 42% said partially and 16% said yes. When respondents were asked if they use their knowledge of climate-related hazards to help decide where to live, 37% said no, 42% said partially, and 21% said yes.[282]

It is worth noting that some of the work programmes which have been completed, for example the Local Government Official Information and Meetings Amendment Act, are too recent for us to be able to observe the impact they are having in terms of outcomes on the ground.

Overall assessment of progress

Overall, there is some evidence of good progress being made towards achieving this objective. The EQC Toka Tū Ake natural hazards portal, the requirement for LIMs to include natural hazard information, and the regional risk assessments completed by councils are all good examples of information about climate risks being made available to the general public. This information is important to help guide decision-making by councils and individuals (such as when considering where to buy a house). The IAG survey results suggest that the information is not necessarily reaching people on the ground, but we note that it's too early to see the flow-on effects from the EQC hazards portal and the LIMs reflected in this survey.

The fact that the Climate Adaptation Information Portal has not received funding represents a gap in terms of the progress we would expect to see, as it was a key action relating to this objective in the first national adaptation plan. This means that progress towards achieving this objective is slower than it might otherwise be.

SW3: Tools, guidance and methodologies enhance our ability to adapt

The third system-wide objective relates to providing tools, guidance, and methodologies that enhance the ability of users to adapt by enabling them to manage risks despite uncertainty.

Tools, guidance, and methodologies are important enablers to help Aotearoa New Zealand understand, plan for, and respond to climate-related risks. Central government has a particular role to provide tools, guidance, and methodologies to support local councils to carry out adaptation planning and action in their communities. At the local government level, councils share experiences and lessons learned through adaptation planning processes with each other. Businesses can also play a leadership role in this space, through sharing their approaches and experiences with other businesses.

Work programmes underway

We have seen evidence of a number of workstreams and activities contributing towards this objective.

An update to the Ministry for the Environment's 2017 **Coastal Hazards and Climate Change guidance for local government** was released in February 2024.[283]

Guidance has been produced through the **Deep South National Science Challenge**, for example **guidance on adaptive decision making for addressing compound climate change impacts for infrastructure** (March 2024) and **practice guidance on signals and triggers** (2020).[284]

The Aotearoa Circle has produced **sector-specific climate scenarios and adaptation plans** for the tourism, seafood, agriculture, transportation and energy sectors. The Aotearoa Circle has also produced a **toolkit for directors on managing climate risk in New Zealand**, in collaboration with Chapman Tripp.

The External Reporting Board (XRB) has created **guidance and resources** to support financial institutions in carrying out climate scenario analysis and climate-related disclosures. The Reserve Bank of New Zealand has developed **guidance for regulated entities on managing climate-related risks**.

The Climate Leaders Coalition and ThinkstepANZ released **guidance on assessing climate risk and opportunities for business** in October 2023.[285]

There are several additional examples of **national-scale guidance** that have been released since the first national adaptation plan was released. This includes:

- NZ Transport Agency Waka Kotahi's ***Coastal Hazards and Land Transport Infrastructure guide*** (August 2023)
- the Ministry for the Environment's ***National adaptation plan and emissions reduction plan: Resource Management Act 1991 guidance note*** (December 2022), which provides information on how local government might 'have regard to' the first national adaptation plan and the emissions reduction plan when developing or changing plans under the RMA
- Te Whatu Ora's ***Heat Health Plans: Guidelines and Key Information*** (September 2023)
- ***Landslide Planning Guidance: Reducing Landslide Risk through Land-Use Planning*** released by GNS Science in January 2024
- ***Guidance on adaptive decision making for addressing compound climate change impacts for infrastructure*** released through the Deep South National Science Challenge in March 2024.

Several tools have also been developed in recent years to help guide adaptation planning and inform people of the risks they may face. These include:

- **RiskScape™** (released publicly in 2022), which is an open-source spatial data processing application used for multi-hazard risk analysis, primarily funded by NIWA, GNS Science and EQC Toka Tū Ake
- the release of an online tool developed by the **NZ SeaRise programme**, which contains location-specific sea-level rise projections out to the year 2300 for every 2 km of the coast of Aotearoa New Zealand
- NIWA and MPI's **drought forecasting tool** was launched in 2023 with the goal of supporting the resilience of the agriculture sector[286]
- A **Climate Scenarios Toolkit**, prepared by WSP for the Ministry for the Environment, was released in May 2024. This online toolkit provides people with information about different climate change scenarios and the impact they may have.[287]

In addition, **a number of councils have developed tools for improving understanding and awareness of climate-related risks within their specific regions**. For example, Waikato Regional Council has developed a coastal inundation tool; Greater Wellington Regional Council has released sea-level rise mapping tools; and Christchurch City Council has released a coastal hazards online portal.

All of the above examples are tools relating to coastal hazards and sea-level rise, whereas fewer tools are available for other types of climate-related hazards.

The **Climate Adaptation Information Portal**, mentioned in objective SW2 above, was intended to host tools and guidance for adaptation. However, this has not been funded, meaning the scale may be smaller and progress developing the portal is slower than it otherwise might have been.

Evidence of outcomes on the ground

Findings from the **2020/2021 Adaptation Preparedness baseline survey** of organisations that provide essential services (such as central government, local government, and lifeline utilities) point to areas where priority actions or resources could help these organisations better prepare for the impacts of climate change. This includes tools to help quantify impacts from climate change (79% of respondents identified this as a key resource) and guidance on how to assess and consider the impacts of climate change on an organisation (75% of respondents identified this as a key resource).[288]

New Zealand Planning Institute's 2023 Climate Change Adaptation Survey asked their members to 'Please indicate how strongly you agree with the statement "I know how to access the required information, guidance, and expertise needed for addressing climate change in my planning work"'. Of the 121 respondents answering the question, 41% agreed with the statement, 26% were neutral, 23% disagreed, 7% strongly agreed and 2% strongly disagreed.[289]

The **Ipsos report on local government climate data needs**, in October 2023, notes that:

- Councils are using a range of tools in their climate change workstreams, with the most common being government agency issued guidance (such as the coastal hazard guidance).
- When asked why some of the tools are not used, councils mostly stated they hadn't heard of the tools.
- When asked about tools that the Ministry for the Environment was proposing to develop, a geospatial risk assessment tool was most commonly ranked as the highest priority for development (by 46% of councils).[290]

Councils have been using the 2017 Coastal Hazards and Climate Change guidance in the years since its release, and their experiences with it provide a useful case study for how work programmes flow through to impacts and outcomes on the ground (see Box 9.3).

Box 9.3: How work programmes flow through to impacts and outcomes, as illustrated by the Ministry for the Environment's 2017 Coastal Hazards and Climate Change guidance

The Ministry for the Environment's 2017 Coastal Hazards and Climate Change guidance, and the Dynamic Adaptive Pathways Planning (DAPP) approach that it contains, have been widely used and adopted by councils in the years since the guidance was released.

One of the earliest examples is the Hawke's Bay Clifton to Tangoio Coastal Hazards Strategy 2120.[291] Auckland Council, Christchurch City Council, and the South Dunedin Future programme have also all adopted a DAPP approach to their adaptation planning (along with a number of other councils).

However, councils have indicated that they are struggling to actually implement the adaptation plans they develop, and many processes have stalled at the implementation phase (including the Hawke's Bay Strategy). Implementation has proved difficult for reasons that by and large have nothing to do with the guidance itself, but rather with the broader enabling environment (such as the lack of a legislative framework or mandate for adaptation, as outlined in objective SW1 above, or issues accessing funding as outlined in objective SW4 below).

This example illustrates that work programmes do not always flow through to desired adaptation outcomes on the ground, as there are often other factors which come into play. For this reason, we will focus our assessment of observed progress more and more on outcomes on the ground as time goes on and more adaptation outcomes become apparent.

Overall assessment of progress

We are observing good evidence of progress towards achieving this objective. There is a decent amount of guidance and tools being produced, in particular for local government. There are also some tools being produced by local government to help keep their communities informed around climate-related risks, as well as guidance and tools being produced for businesses to help them assess the risks they face.

Tools, information, and guidance has historically focused heavily on coastal hazards over other types of climate-related hazard, but this is beginning to change. The recent landslide planning guidance is an example of this shift.

There is some evidence that the tools and guidance being produced will not necessarily be sufficient to deliver desired adaptation outcomes on the ground because of the absence of other factors – such as a clear legislative mandate for adaptation planning, and the availability of adequate resourcing to carry out these processes.

The lack of a portal (such as the Climate Adaptation Information Portal, which hasn't been funded) means it can be difficult for councils, businesses, and individuals to find the right tools and guidance (as illustrated by the recent Ministry for the Environment report where councils have indicated that they are not aware of all the tools that are available to them).

Within this context, although overall progress towards this objective has been good, there are some gaps – in particular around awareness and accessibility of tools and guidance.

Data around the uptake and usage of guidance and tools would be helpful to us when completing this assessment in future.

SW4: Unlocking investment in climate resilience

The fourth system-wide objective relates to investment in climate resilience. In particular, it relates to ensuring that investment from public and private sources is available to respond to growing risks from climate change, and encouraging early investment to help reduce overall costs in the long term.

Climate change impacts have significant costs, and these will not fall evenly. Existing sources of money will need to be expanded to help bridge the gap. There is a need to develop new instruments to invest public funds and leverage private investment to enable and drive pre-emptive adaptation on the scale needed.

Investing early in adaptation delivers good value for money and is in the country's long-term economic self-interest. Adaptation creates economic benefits in several ways, including by reducing future damage and losses, increasing productivity, and generating broader social and environmental benefits. Some international evidence suggests that many adaptation actions have benefit-cost ratios in the range of 2:1 to 10:1.[292]

The current funding system has a strong focus on response and recovery. For example, under the national civil defence and emergency management plan, central government covers 60% of the costs of repair for some essential council infrastructure after a natural disaster, as well as funding to support response and recovery. There is no provision for co-funding for council (or other) investments to reduce risks before an event.[293]

Work programmes underway

The announcement in May 2024 of a **cross-party inquiry into the development of a national adaptation framework** is an important step for this objective. The inquiry will be led by **Parliament's Finance and Expenditure Committee**, which will report back in September 2024, with a view to potentially introducing legislation in 2025. The Government has indicated that the framework will set out its "approach to sharing the costs of adaptation, and what support will be available for property owners",[294] as well as ways to "[m]inimise the long-term costs to New Zealand of adapting to the impacts of natural events".[295]

In 2021, the **Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act** required around 200 large financial institutions covered by the Financial Markets Conduct Act 2013 to start making climate-related disclosures. These reports disclose information about the effects of climate change on their business or any fund they manage. Disclosures must be published in accordance with **climate standards published by the External Reporting Board (XRB)**, which include three climate scenarios that entities must consider.[296]

The Reserve Bank of New Zealand released the results of their **2023 Climate Stress Test** in April 2024. The Climate Stress Test sought to assess the financial impacts of a scenario involving climate related risks on the balance sheets of the largest banks, and to uplift industry capability in managing such risks. It made recommendations for banks to improve management of climate-related risks.[297]

A November 2022 **Ministry of Business, Innovation and Employment report on mobilising investment to achieve Aotearoa New Zealand's climate goals** notes the imbalance between investment in mitigation and investment in adaptation. Experts interviewed for the report considered that far greater investment in adaptation is needed and much more needs to be done to make investment consistent with climate goals. Key suggestions for mobilising investment included: increasing the scale/pace of investment in adaptation; making high quality, granular, climate and risk data more accessible; and clearly allocating the sharing of adaptation costs across the public and private sectors as early as possible.[298]

As part of the Regional Infrastructure Fund, **Budget 2024 allocated $200 million in grants and loans to co-fund flood resilience** as asked for by regional councils in their updated case for co-investment in flood management infrastructure, Before the Deluge 2.0.[299]

In response to the **2023 Auckland Anniversary Weekend floods and Cyclone Gabrielle, the Government announced funding to clean up, rebuild and aid long-term recovery**. This included:

- Immediate funding decisions in the aftermath of the events to make urgent infrastructure repairs, assist with temporary accommodation, and provide business and community support (NZ$883 million total operating, NZ$1.5 million capital).[300]
- Budget 2023 North Island Weather Events Response and Recovery Package (NZ$941 million total operating, NZ$195 million capital).[301]
- Budget 2024 allocated more than $1 billion to further support the rebuild and recovery of communities affected by Cyclone Gabrielle and the Auckland Anniversary floods.[302]

In June 2023, the Government announced funding to support councils to offer voluntary buyouts for owners of residential properties designated as no longer being safe. Under the **Future of Severely Affected Locations (FOSAL) buy-out programme**, the Government committed to contributing 50% of the cost of buying out these properties, with councils covering remaining buyout costs. Central government also committed to co-funding work needed to protect some other affected properties.[303] Total central government expenditure on the FOSAL programme is projected to be more than NZ$1 billion.[304]

In February 2024, **the Government provided an additional NZ$63 million for sediment and debris removal** in Hawke's Bay and Tairāwhiti. The funding will help local councils continue urgent work removing and disposing of sediment and debris left from Cyclone Gabrielle.[305]

Evidence of outcomes on the ground

The **New Zealand Green Bond Allocation Report 2022/23** notes that currently only 4% of the total proceeds are allocated to climate change adaptation, but that this is expected to grow.[306] It also notes that under the Climate Change Adaptation Category, proceeds have financed the Crown's contribution to more than 50 regional council projects to deliver flood protection, mitigation, and control through the construction and upgrading of stop banks, sea walls and other climate-resilient infrastructure.[307]

In Feb 2024, about 40% of NZX companies were **disclosing climate-related risks** in their financial statements, up from 22% the previous year.[308]

New Zealand Planning Institute's 2023 Climate Change Adaptation Survey asked their members what they consider to be the "biggest barriers for decision makers proactively adapting to risks from climate change and natural hazards" and 70% selected "access to capital/funding" as one of the biggest barriers. When asked "who do you think should be responsible for funding proactive adaptation to risks from climate change and natural hazards?", 76% of respondents selected "central government".[309]

In their **submission to the Environment Select Committee Inquiry into Climate Adaptation**, the Aotearoa Climate Adaptation Network (ACAN) noted areas highly exposed to climate change where managed retreat is the only viable solution, but has not progressed due to a range of uncertainties including funding/affordability and financing constraints on local government.[310]

Through our engagement we have also heard of some examples where assets damaged during the 2023 North Island extreme weather events are being rebuilt 'like for like', due to difficulties accessing the additional funding required to improve the resilience of those assets. One example is a Napier water treatment plant that was inundated by floodwaters during Cyclone Gabrielle, leading to extensive damage to electrical equipment on the lower floor. While moving equipment to the second floor would have helped to improve the resilience of the plant, insurance was for like for like reinstatement and additional funds were not available, so the risk remains the same.[311]

Overall assessment of progress

Evidence indicates there has been some movement towards achieving this objective, but significant gaps remain. For example, while significant funds have been made available to co-fund buyouts of residential properties designated as no longer being safe, we are seeing little evidence of proactive co-funding for adaptation. This is a significant gap which needs to be addressed urgently if this objective is to be realised.

There have been steps around the development and allocation of green bonds, including for climate change adaptation. But adaptation accounts for a relatively small share, and funds often go to projects to deliver hard flood protection measures. If development is intensified behind these flood protection measures, it has the potential to increase exposure and vulnerability as well as increasing residual risk.

The national adaptation framework has the potential to contribute towards achieving this objective, through providing a funding framework for adaptation and setting out the Government's approach to sharing the costs of adaptation.

Natural environment

There are three objectives in the first national adaptation plan for the natural environment outcome area. They cover healthy, connected ecosystems and biodiversity, as well as biosecurity and working with nature to build resilience (see Table 9.2).

Healthy, biodiverse, and connected ecosystems are more able to withstand, recover from, and adapt to the impacts of climate change, including drought, storm damage, and pest and pathogen incursion.

While Aotearoa New Zealand's isolation contributes to the uniqueness of the country's biodiversity, it also makes local ecosystems especially vulnerable to the harmful effects of pests and diseases that may enter the country. The restoration, protection, and sustainable management of the natural environment can also help to make communities more resilient to the effects of climate change – for example, by providing physical protection, opportunities for employment, and supporting wellbeing.

Summary of findings for this outcome area

We are observing some progress across the three natural environment objectives. However, the evidence of progress we were able to observe for this outcome area (both in terms of activities and outcomes on the ground) is fairly minimal and significant gaps remain, particularly in relation to objectives NE2 and NE3. More action is needed across the three objectives to ensure that progress aligns with needs and expectations.

Natural environment was one of the more difficult outcome areas to find information on, in particular information relating to objective NE2. This lack of information has made our assessment of progress for the natural environment outcome area more difficult.

Table 9.2: Objectives in the natural environment outcome area and their explanations in the first national adaptation plan

Code	Objective	Explanation in the plan
NE1	Ecosystems which are healthy and connected, and where biodiversity is thriving	• Biodiversity, ecosystems and dynamic land and sea environments are strengthened. • Ecosystem health improves, ecosystems and species have room to move, and human pressures lessen. • The natural environment can best respond to climate impacts if it is intact and connected. Its natural diversity, and ecological and physical processes, are supported and enhanced.
NE2	Robust biosecurity reduces the risk of new pests and diseases spreading	• Plants and animals are more resilient through the control of invasive pests and diseases, and the risk of these establishing and spreading is reduced.
NE3	Support working with nature to build resilience	• Indigenous ecosystems are restored and protected, sites that need buffers against climate risks are identified and communities are supported in understanding nature-based solutions as a choice for adaptation.

NE1: Ecosystems which are healthy and connected, and where biodiversity is thriving

The first natural environment objective relates to ecosystem health and biodiversity, elements that reduce sensitivity and improve ability to adapt to climate impacts.

This objective covers the health and biodiversity of Aotearoa New Zealand's many and varied ecosystems, so is broad in scope. Healthy, biodiverse, and connected ecosystems are more able to withstand, recover from and adapt to the impacts of climate change, including drought, storm damage, and pest and pathogen incursion.

Work programmes underway

In 2020 the previous Government released **Te Mana o te Taiao – Aotearoa New Zealand biodiversity strategy**, which recognises the importance of thriving biodiversity in the context of climate change. The strategy includes several 2050 objectives and nearer-term goals, including the objective that *Ecosystems and species are protected, restored, resilient and connected from mountain tops to ocean depths*. The first progress review of the strategy will be in 2025.

The Government of the day announced the **Predator Free 2050 goal** in 2016, which aims to eradicate possums, rats, and stoats by 2050 so that Aotearoa New Zealand's ecosystems can thrive.[312] It was allocated $76 million ($19 million per year) thanks to funding from the Government's Jobs for Nature programme.[313] Funding for Predator Free 2050 will expire on 30 June 2025.[314]

Many New Zealanders are taking action to support biodiversity, through donations of time or money to **conservation organisations**.[315] There are hundreds of conservation groups across Aotearoa New Zealand that contribute to ecosystem health and biodiversity through a wide range of projects and initiatives. This includes, for example, predator control, tree-planting, weed eradication, and other restoration projects, as well as groups focused on protecting specific at-risk species.[316]

The Department of Conservation (DOC) released their **Climate Change Adaptation Action Plan** in 2021, outlining the actions DOC will take to reduce climate risks to the natural environment between 2021 and 2024/25. The plan includes actions focused on supporting biodiversity of terrestrial and aquatic ecosystems, including developing risk assessments on priority species and habitats, and addressing information gaps.[317] However, there have been some delays in implementing this plan (see *Chapter 8: Progress towards implementing the plan* for more information).

The **National Policy Statement for Indigenous Biodiversity** was introduced in July 2023, to provide direction to councils on their roles and responsibilities for identifying, protecting, and maintaining indigenous biodiversity under the Resource Management Act. It requires councils to identify areas of significant indigenous biodiversity and manage any adverse effects on them from new development and related activities. The current Government has signalled their intention to suspend the requirement in the National Policy Statement for councils to identify new Significant Natural Areas for three years, as part of proposed changes to the Resource Management Act that were announced in April 2024.[318] The first RMA Amendment Bill was introduced to Parliament in May 2024, and includes this proposed change to suspend for three years the requirements for councils to identify new Significant Natural Areas and include them in district plans.[319]

The recently introduced **Fast-track Approvals Bill** does not require consideration of environmental impacts, and there is no requirement for decisions to be aligned with existing national policy statements – such as those on freshwater management or coastal environment. Projects that could be fast tracked through the new regime include marine consents, section 61 land access arrangements under the Crown Minerals Act, concessions and other permissions under the Conservation Act and Reserves Act, and approvals under the Wildlife Act – among others.[320] This could have impacts on ecosystem health and biodiversity – particularly when consideration of environmental impacts is not required. This new Bill has the potential to undermine progress towards this objective.

Evidence of outcomes on the ground

Environmental reporting shows continuing trends of decline for some important ecosystem types. For example, historically there is a continuing trend of **loss of indigenous land cover**, with cover reducing by almost 13,000 hectares between 2012 and 2018.[321] There is also a continuing trend of **decrease in wetland area**, with freshwater wetland area reducing by 0.6% between 2012 and 2018, and saline wetlands by 0.1%.[322]

DOC reporting notes that across Aotearoa New Zealand more than 30% of **land is legally protected**, although protection is uneven. Less than 20% of remaining indigenous landcover is protected. Legal protection includes all DOC-managed land, Ngā Whenua Rāhui, and Queen Elizabeth II National Trust (QEII) covenants.[323] Recent trends show an increase in **private land under some form of environmental protection**, which is important because 70% of land in Aotearoa New Zealand is under private ownership.[324] For example, there is a continuing increase in land protected via covenant through the QEII Trust. In 2023 QEII registered 104 new covenants covering 2,264 hectares.[325]

The **Predator Free 2050 (PF2050)** goal has resulted in large areas being subjected to some predator control. There are now 18 large landscape level projects underway through PF2050, collectively covering almost 800,000 hectares across a range of land types and geography. More than 54,000 hectares have been cleared of predators through PF2050 projects, and continue to be defended. Preliminary results indicate biodiversity gains in predator cleared areas. This includes significant increases in native bird abundance between 2020-2022 in two areas covered by PF2050 projects – Waiheke Island and Predator Free Wellington.[326]

Overall assessment of progress

We are observing some signs of progress towards this objective. There has been some progress made protecting and restoring ecosystems and biodiversity, including on private land. Predator control, in particular, has progressed significantly over recent years, thanks in large part to the Predator Free 2050 goal and associated funding. However, historic data point to some important ecosystems and species remaining under threat, and climate change will exacerbate this. It is unclear if these trends, including declining indigenous land cover and wetland area, have been improved.

Some work programmes and actions relevant for this objective, and which are quite far along the policy cycle, are facing uncertainty. For example, the intention to suspend the requirement in the National Policy Statement on Indigenous Biodiversity for councils to identify new Significant Natural Areas for three years.[327] Predator Free 2050 funding is also uncertain with the funding for the Jobs for Nature programme having come to an end in June 2024.[328] In addition, the Fast-track Approvals Bill opens up considerable risk to the natural environment (and to progress towards this objective) due to there being no requirement to consider impacts on ecosystem health and biodiversity in major infrastructure decisions.

NE2: Robust biosecurity reduces the risk of new pests and diseases spreading

The second natural environment objective relates to controlling invasive pests and diseases, and reducing the risk of these establishing and spreading.

Aotearoa New Zealand's unique ecosystems have been shaped by its geographical isolation. The country's flora and fauna has evolved in isolation over time, resulting in a high number of endemic species. While this isolation contributes to the uniqueness of Aotearoa New Zealand's biodiversity, it also makes these ecosystems especially vulnerable to the harmful effects of pests and diseases that may enter the country.

Aotearoa New Zealand relies heavily on biosecurity measures to prevent the entry, establishment and spread of invasive species that pose risks to the country's environmental, cultural, social, health, and economic wellbeing. Climate change will heighten existing challenges and bring new ones to the biosecurity system. Combined with increased global movements of people, goods, and vessels, it may lead to conditions that facilitate the invasion of species capable of establishing rapidly.

Work programmes underway

Over recent years funding and resources have been allocated to a **range of collaborative initiatives** focused on reducing the risk of invasive weeds, pests, and diseases spreading. This includes through New Zealand's **Biological Heritage National Science Challenge**, the **Biosecurity 2025 partnership**, and **Predator Free 2050**. These are collaborative programmes that involve communities, organisations, iwi/Māori, and various government levels, including central, local, and regional bodies. Overall, in Budget 2022 the Government allocated a total of $110.9 million into biosecurity work.[329]

Te Mana o te Taiao – Aotearoa New Zealand biodiversity strategy, released in 2020, includes the 2050 objective of "management ensures that biological threats and pressures are reduced". The first progress review of the strategy will be in 2025.

The Ministry for Primary Industries published **biosecurity guidelines for farmers** to help keep their animals free from pests and diseases in May 2023.[330] They are also developing a **new biosecurity system strategy**, which, subject to ministerial and cabinet approval, will be consulting on the final draft version with the aim to finalise and release the strategy in 2024.[331]

The **Sea Cargo Pathways Programme**, which started in 2020, includes a set of projects to reduce the risks of pests and disease entering Aotearoa New Zealand, reduce delays in clearing goods, and improve trust and confidence in the pathway.[332]

Evidence of outcomes on the ground

There is limited evidence available in relation to outcomes on the ground that are relevant for this objective.

The **estimated cost of primary sector production losses from pests increased** to over NZ$4.3 billion in 2020, compared to NZ$1.5 billion in 2009.[333] The Ministry for Primary Industries (MPI) reported that they receive approximately 10,000 reports of suspected pests and diseases annually, and estimate that the total economic cost of pests to Aotearoa New Zealand in 2019/20 was NZ$9.2 billion – equivalent to 2.9% of GDP.[334]

In 2018 MPI reported through the Biosecurity 2025 programme that 59% of New Zealanders believe they know what steps to take if they encounter an unwanted pest, weed, or disease, and that 18% take action to control plant or animal pests in their community.[335]

Overall assessment of progress

We are observing some potential signs of slow progress towards this objective – however, we were limited in terms of the information we were able to find, with much of it pre-dating the publication of the first national adaptation plan. More recent information and statistics relating to biosecurity would be helpful to us in completing this assessment in the future.

NE3: Support working with nature to build resilience

The third natural environment objective relates to restoring and protecting indigenous ecosystems, identifying sites that need buffers against climate risks, and supporting communities in understanding nature-based solutions as a choice for adaptation.

Resilient ecosystems are those that are biodiverse, connected, and buffered against climate risks. Such ecosystems are more able to withstand, recover from, and adapt to the impacts of climate change, including drought, storm damage, and pest and pathogen incursion.

The restoration, protection, and sustainable management of indigenous ecosystems, as well as natural features and processes, can also help to make communities more resilient – for example, by providing physical protection, opportunities for employment, and supporting wellbeing.

In the context of climate change the term 'nature-based solutions' refers to actions that protect, conserve, manage or restore natural or modified ecosystems, while also providing benefits for resilience. Working with nature, in this context, is about integrating climate and biodiversity outcomes while also offering other benefits – for example, for wellbeing and/or carbon removal.

Some ecosystems and features are particularly important for building resilience. This includes, for example, wetlands and coastal ecosystems that can provide natural defence against storm surge and flooding, and trap sediment and filter out pollutants before they reach the ocean. Likewise healthy indigenous forests in upper catchments can reduce the flow of sediment into rivers and habitats downstream, and urban greenspaces can provide flood protection, shade, health and wellbeing benefits, and reduce the need for expensive grey infrastructure upgrades.

Work programmes underway

Iwi/hāpu and some councils are putting increased focus on **restoring and enhancing the natural environment** and **prioritising nature-based solutions** to support climate outcomes. For example, **Auckland's Climate Plan**, launched in 2020, includes an action area focused on implementing nature-based solutions in planning.[336]

Greater Wellington Regional Council's long-term plan has "implementing nature-based solutions to climate change" as a strategic priority. Through its Low Carbon Acceleration Fund, Greater Wellington is restoring native forests, peatlands, and dunes on the Kāpiti Coast and in Kaitoke Regional Park to remove carbon from the atmosphere and realise wider social and environmental benefits.[337]

The focus on nature-based solutions can be seen in some **community projects**. Examples include:

- A project by a group of volunteers to re-establish a natural dune at Pāuanui Beach on the Coromandel, which won a coastal restoration award in 2023.[338]
- The Waimakariri Upstream Berm Transition Project, which is a three-year native restoration and enhancement project covering 54 hectares of the Waimakariri River berm, northwest of Christchurch.[339]
- Work between Kāti Huirapa Rūnaka ki Puketeraki and Otago Regional Council looking at the potential for nature-based solutions, like wetlands and planting to help manage flooding and support cleaner water and biodiversity on Te Hakapupu / Pleasant River system in East Otago.[340]
- A programme to restore the Puhinui Stream in Manukau, led by Te Waiohua iwi with Auckland Council, Crown agencies, community organisations and community members. Restoring the stream would address stormwater risks and connect ecosystems, neighbourhoods, and whānau along the stream's length.[341]

The **Te Mana o te Taiao – Aotearoa New Zealand biodiversity strategy** includes several 2050 objectives and goals, including the objective that "biodiversity provides nature-based solutions to climate change and is resilient to its effects", and that "biodiversity protection is at the heart of economic activity". The first progress review of the strategy will be in 2025.

The Department of Conservation (DOC) released their **Climate Change Adaptation Action Plan** in 2021, outlining the actions DOC will take to reduce climate risks to the natural environment between 2021 and 2024/25. The plan includes an action to ensure that 'nature-based solutions' to improve biodiversity and climate change resilience are included in the climate change adaptation plans of other land-use sectors.[342]

The previous Government introduced the **'Jobs for Nature' programme** as part of the COVID-19 recovery package. It was a $1.2 billion programme that manages funding across a number of different agencies.[343] While climate change adaptation was not a key focus of the programme, some of the projects under the programme had adaptation benefits – for example, pest control and restoration projects that can enhance biodiversity and improve ecosystem health and resilience. Funding for the programme has come to an end. In 2023 a **transition strategy** was released to promote the legacy of the Jobs for Nature programme, given that the funding was time limited.[344]

Evidence of outcomes on the ground

Reporting for the 'Jobs for Nature' programme indicates that, as of December 2023, the programme had funded 518 projects covering weed and pest control, capability and development, and freshwater and other restoration projects, and had delivered a total of 9.8 million hours worked.[345]

In a **2021 DOC survey**, 84% of respondents felt that access to Aotearoa New Zealand's outdoors was a major advantage of living in Aotearoa New Zealand, and 58% of respondents rated the state of NZ's natural environment as "good", and 42% rated the state of NZ's biodiversity as good. This survey found that many New Zealanders are already taking action to support biodiversity – including planting native trees and plants in their gardens (57%), and supporting conservation projects – for example, through donations of time or money to conservation organisations.[346]

A March 2023 **report by the Parliamentary Commissioner for the Environment** found that between 1980 and 2016 urban greenspace declined as a proportion of urban area by 10–15% in Auckland and Hamilton, driven largely by changes on private residential land – for example, through subdivision.[347]

There were some nature-based solutions that worked during **Auckland Anniversary Floods**. These included:

- Kāinga Ora in partnership with Auckland Council's Healthy Waters designed Greenslade Reserve in Northcote, Auckland, as a stormwater retention basin. Fifteen hours after the rainfall, 12 million litres of floodwater had drained and it was back to being a playing field.[348]
- Similar stormwater projects have been completed in Roskill South[349] and Ōwairaka encouraging floodwaters to travel down 'planned pathways' instead of through people's homes.[350]

Overall assessment of progress

We are observing some progress towards achieving this objective. However, significant gaps remain.

Although there are some examples of activities underway, the Jobs for Nature programme is wrapping up with funding coming to an end in June 2024. There are some local examples of good outcomes, for example in Auckland. However, we have heard through our engagement that councils, with limited budgets, are often not prioritising nature-based solutions.

More information about which councils are using nature-based solutions, and the types of approaches and expected benefits, would be helpful to us in completing this assessment in the future.

Homes, buildings and places

The first national adaptation plan includes four objectives in the homes, buildings and places outcome area. These cover climate-resilient homes and buildings; new and existing places which are planned to minimise climate risk; strengthened iwi/Māori connections to whenua and places of cultural value; and understanding and minimising the threats to cultural heritage from climate change (see Table 9.3).

Homes, buildings and places play a vital role in the health, wellbeing, and quality of life for New Zealanders. Many homes and buildings are in areas currently at risk from climate-related hazards, including flooding and sea-level rise, or in areas that will become increasingly exposed to climate-related hazards over time. If development continues in such areas, the country's exposure to climate change risks will continue to increase.

Climate change can also affect how durable and healthy homes and buildings are. For example, a warmer, wetter climate may affect the durability of building materials and the lifespan of homes and buildings. This could include an increased risk of damage due to coastal erosion, or of subsidence during intense rainfall and coastal storm surges. The potential costs of climate-related damage to homes and buildings are high. How and where homes and buildings are constructed can have implications in terms of reducing or increasing Aotearoa New Zealand's exposure and vulnerability to climate change risks.

Table 9.3: Objectives in the homes, buildings and places outcome area and their explanations in the first national adaptation plan

Code	Objective	Explanation in the plan
HBP1	Homes and buildings are climate resilient, and meet social and cultural needs	• Reduce exposure to climate hazards and support businesses and communities to understand and respond to climate risks. • Improve homes and buildings so they can withstand the expected range of temperatures, rainfall and wind and to improve energy and water efficiency. • Conserve valued cultural heritage.
HBP2	New and existing places are planned and managed to minimise risks to communities from climate change	• Improve resilience through effective planning, urban design, and management. • Avoid development in places that may be more exposed to climate hazards. • Support existing places to adapt. • Relocate people and assets where risks are too high to manage otherwise.
HBP3	Māori connections to whenua and places of cultural value are strengthened through partnerships	• Support initiatives that identify and respond to climate risks specific to iwi and Māori. • Work in partnership with hapū, iwi, and Māori on Māori-led adaptation solutions. • Identify and embed Māori knowledge, identity, and values in urban design and construction to manage climate hazards. • Increase the resilience of cultural heritage, to strengthen the ties between whānau, hapū, and iwi and their whenua.

HBP4	Threats to cultural heritage arising from climate change are understood and impacts minimised	• Understand where cultural heritage sites are, their values, who they are important to and how climate change could affect them. • Understand how the loss of cultural heritage can affect social, cultural, spiritual, and economic wellbeing, including for Māori, and the positive role of cultural heritage in adaptation and wellbeing. • Improve disaster management for cultural heritage. • Enable communities to maintain and protect their taonga and assets. • Protect and conserve cultural heritage through appropriate regulation.

Summary of findings for this outcome area

We are observing some progress being made towards each of the four objectives in the homes, buildings and places outcome area. However, significant gaps still remain, particularly in relation to objective HBP2, which is a critically important objective in terms of reducing Aotearoa New Zealand's exposure to climate change impacts.

Currently, there is evidence that Aotearoa New Zealand's exposure is continuing to increase, and it will take time to turn this trajectory around. Therefore, this objective represents a significant gap that needs to be urgently addressed.

HBP1: Homes and buildings are climate resilient, and meet social and cultural needs

The first objective for this outcome area relates to reducing exposure to climate-related hazards, improving the resilience of homes and buildings, and conserving valued cultural heritage.

Homes and buildings that are built in the right locations, and which are designed to be climate resilient, will be better able to withstand the impacts of climate change. The form, design and characteristics of homes and buildings play a vital role in supporting health, wellbeing, and quality of life.

The first National Climate Change Risk Assessment noted that, at the time of its release in 2020, there were more than 72,000 people and 49,700 buildings exposed to coastal flooding. It also noted that exposure of buildings to coastal flooding will increase this century under both a medium and a high emissions scenario. Exposure to inland flooding is also high, with about 675,000 people living in flood hazard areas and an estimated 411,500 buildings exposed in 2020.[351]

Work programmes underway

There are several actions and work programmes underway that are relevant for this objective.

The Ministry for the Environment is developing **two pieces of national direction** – the National Policy Statement for Natural Hazard Decision-making, and the longer term, more comprehensive national direction for natural hazards.[352] These have the potential to contribute to progress towards achieving this objective. They are discussed in more detail under objective SW1.

The **Local Government Official Information and Meetings Amendment Act** (passed in 2023) also contributes to progress towards this objective, because it focuses on ensuring that LIMs provide clear, concise, nationally consistent natural hazard information to property buyers.

EQC Toka Tū Ake's **Resilient Homes and Buildings Action Plan**, released in 2022, sets out three overarching objectives to improve the resilience of the built environment: ensuring new homes and buildings are designed and built for resilience, assessing and managing Aotearoa New Zealand's existing buildings so they are safe and resilient, and ensuring the built environment system is enduring and fit for purpose.[353] The plan includes actions to build for resilience and climate change, promote effective strategies to retrofit and strengthen existing buildings, and lead the development of a national risk and resilience portal, among others.

The Ministry of Business, Innovation and Employment (MBIE)'s **Building for Climate Change work programme** includes a workstream on increasing buildings' resilience to climate risk.[354] This workstream includes an action to publish adaptation resources in 2023. Some resources have been made available, such as **guidance on natural hazard provisions in the Building Act**, which came out in October 2023. This work programme also includes actions to provide new risk assessment methodologies for climate-related hazards in different building types and to update the Building Code and standards to reflect new climate-related hazard data, both due in 2026-2029.

The Ministry for Culture & Heritage published a report, **Climate change risks and adaptation tools for Aotearoa New Zealand's cultural heritage**, in June 2023. It is a review and gap analysis of the literature on culture and heritage regarding climate change risks, vulnerabilities, and adaptation. The report makes some recommendations for next steps government agencies could take, along with recommendations for future research.[355]

Evidence of outcomes on the ground

The extreme North Island weather events in 2023 resulted in 493 houses being deemed too risky to continue to be lived in ("red stickered", or "category 3"), with 330 of these in Auckland. As of August 2023, it was reported that some 700 properties at risk of future extreme weather damage have received Government and council buyout offers.[356]

As discussed in the section on objective SW2, a **2023 survey by IAG** found that, when asked if they understand the climate-related hazards to which their homes are exposed, 42% of respondents said no, 42% said partially and 16% said yes. When respondents were asked if they use their knowledge of climate-related hazards to help decide where to live, 37% said no, 42% said partially and 21% said yes. When asked if they take steps to reduce the impacts of climate-related hazards on their home, 39% said no, 49% said partially and 12% said yes.[357]

In a new nationwide survey commissioned by AMI, State and NZI Insurance, 86% of New Zealanders responded that they would now consider climate risk when choosing a home, compared to 55% only two years ago.[358]

Overall assessment of progress

The evidence outlined above indicates that there is some progress being made towards achieving this objective, but this movement is small and largely focused on understanding exposure.

Many of the work programmes and actions underway are focused on information and learning – such as the Local Government Official Information and Meetings Amendment Act, and the Ministry for Culture and Heritage report. We have observed less evidence of progress in terms of increasing the climate resilience of homes and buildings, or action to directly reduce exposure.

The proposed National Policy Statement for Natural Hazard Decision-Making has the potential to contribute to achieving this objective, but it is at a very early stage in the policy process. The Local Government Official Information and Meetings Amendment Act may also have an impact on where people choose to live, by making natural hazard information available on LIMs. Because this legislation was only passed in 2023, it is too early to see flow through to outcomes on the ground (the IAG survey data should not be taken as a reflection of the impact of this legislation).

Actions that are likely to have the greatest impact in terms of driving change towards this objective are at the earliest stages of their development, and therefore the most uncertain in terms of their delivery (for example, the National Policy Statement for Natural Hazard Decision-making and the Building for Climate Change work programme). Overall, significant gaps remain in terms of processes underway to help us achieve this objective.

Information about retrofitting homes and buildings for climate resilience is currently limited, and has made assessment of that component of this objective difficult. More data and information relating to this aspect of the objective would be helpful to us in completing this assessment in the future.

HBP2: New and existing places are planned and managed to minimise risks to communities from climate change

The second objective for this outcome area relates to improving resilience of new and existing places, and avoiding new development in exposed locations.

Most existing homes and buildings were located without ongoing climate change in mind, and built to perform under climate conditions at the time. However, as the climate changes, an increasing number of homes and buildings are at risk of being damaged or destroyed by climate-related hazards, or of becoming less liveable.

In addition, it is important to consider the future impacts of climate change when considering where and how to build new developments, because the risk profile of these locations will change over time. How and where we build will affect communities' ability to adapt to the effects of climate change.

Work programmes underway

The **Resource Management Act reforms** carried out by the previous Government had introduced two pieces of legislation with implications for this objective: the **Natural and Built Environment Act** and the **Spatial Planning Act**. The Spatial Planning Act is of particular relevance, because it would have required each region to develop a regional spatial strategy that set out the long-term issues, opportunities, and challenges for development and the environment in the region, including areas that are or will be vulnerable to the risks arising from natural hazards and the effects of climate change.[359] These Acts were repealed in December 2023.

The current Government has indicated it intends to take a **phased approach to reforming the resource management system**. The first phase was to repeal the Natural and Built Environment Act and Spatial Planning Act. The second phase includes the introduction of the Fast-track Approvals Bill that is intended to reduce cost and improve the speed of regionally and nationally significant projects,[360] as well as targeted legislative changes to the Resource Management Act 1991 (RMA). The first RMA Amendment Bill was introduced to Parliament in May 2024, and is the first of two bills that will amend the Resource Management Act 1991 with the intent of making it easier to consent new infrastructure, build more houses and enhance the primary sector.[361] The Government intends to introduce new resource management legislation to replace the Resource Management Act in mid-2025 (phase three of the approach), with this legislation based on the enjoyment of property rights.[362]

The **proposed National Policy Statement for Natural Hazard Decision-making** and **proposed longer-term national direction for natural hazards** both have the potential to contribute to progress towards this objective. The National Policy Statement would limit new development in areas at high risk from natural hazards, and the longer-term national direction would ensure local authorities identify and address natural hazard risk in a consistent and rigorous way.

The National Emergency Management Agency's **National Disaster Resilience Strategy**, released in 2019 and expected to be in place for 10 years, includes an objective to *ensure development and investment practices, particularly in the built and natural environments, are risk-aware, taking care not to create any unnecessary or unacceptable new risk*. There is some uncertainty around how implementation of the Strategy is progressing, as it is subject to internal funding and resource constraints.

EQC Toka Tū Ake's **Resilience and Research Highlights Report**, published in 2023, notes that they have launched a risk tolerance methodology to support governments to make transparent risk-based decisions. They are now engaging with stakeholders at national, regional and local levels to introduce the methodology.

All **significant Kāinga Ora projects** have been required to **undertake a climate change risk assessment** during planning since June 2022, including assessing exposure and vulnerability to flooding.[363] Kāinga Ora is now establishing its own tolerances for climate risks and improving the quality of data available so they can make better decisions when it comes to avoiding, adapting or mitigating climate risks.[364] It is uncertain at this stage what impact the recent independent review of Kāinga Ora and the decrease in funding across the public sector will have on this work.

Evidence of outcomes on the ground

There is some evidence that exposure of homes and buildings to climate-related hazards is still increasing (at least in some places). For example, the **January 2024 monthly housing update** published by Auckland Council shows that 1,873 new dwellings were consented in known hazard zones between February and November 2023. Of those, 1,415 were consented on flood plains.[365] Another example is that in 2022, Napier planned to build nearly 700 homes on a known flood plain, in one of the city's lowest lying areas – this development was fast tracked by the then Government because of the hundreds of jobs and new homes it could bring to the community.[366]

The 2023 **climate change adaptation survey of New Zealand Planning Institute members** found that 41% of respondents had been involved in a process to proactively respond or adapt to high or increasing levels of risk to existing communities from climate change or natural hazards, while 55% hadn't.[367]

There have also been examples of councils receiving pushback from developers and landowners when attempting to consider high emissions scenarios in their land-use and development planning. For example, Auckland Council opposed a fast-track consent for a surf park and data centre development and received criticism for using high emissions scenarios.[368] However, high emissions scenarios play an important role as a stress test for assessing future climate risk.

Overall assessment of progress

We have observed fairly minimal progress being made towards achieving this objective. The proposed National Policy Statement for Natural Hazards Decision-Making and the longer-term natural hazards national direction have the potential to be a step in the right direction for this objective, but both are at a very early stage in the policy process. There is also uncertainty around the implementation of the National Disaster Resilience Strategy due to internal funding and resourcing constraints.

The recently announced cross-party inquiry to develop an adaptation framework has flow-on implications for this objective. In the absence of a clear mandate to avoid building in areas of high exposure, exposure to the impacts of climate change will continue to increase, as development in areas at risk from climate-related hazards continues.

Significant gaps remain in terms of progress towards achieving this objective and exposure of homes and buildings to climate-related hazards is likely to continue to increase until the necessary actions are realised and flow through to outcomes. Progress is not in line with needs and expectations.

Data on the number of new consents that are in climate-related hazard areas would help us to complete this assessment in future.

HBP3: Māori connections to whenua and places of cultural value are strengthened through partnerships

The third objective for this outcome area relates to supporting initiatives that identify and respond to climate risks specific to iwi and Māori, working in partnership with hapū, iwi, and Māori, and increasing the resilience of cultural heritage.

Māori will be disproportionately impacted by climate change. Culturally significant sites will be threatened, as many of these sites (such as marae, urupā, and papa kāinga) are located along coastlines or near flood-prone rivers.

In addition, land held by iwi, hapū, and Māori is likely to be disproportionately vulnerable to climate impacts and natural hazards, because much of it is located in low-lying areas, coastal areas, or steep marginal places.

Work programmes underway

The report, ***He huringa āhuarangi, he huringa ao: a changing climate, a changing world***, previously discussed in objective SW2, summarises the latest research and guidance on observed and projected climate change impacts on whānau/hapū/iwi and Māori businesses.

The **Māori Climate Platform**, previously discussed in objective SW1, is another important activity that contributes to this adjective. The platform is being developed in partnership with tangata whenua to assist Māori-led climate action, planning, and solutions. A Ministerial Advisory Committee was appointed to engage with Māori and lead the design phase of the platform, but based on announcements in Budget 2024, the future of the platform remains uncertain.

The Ministry for the Environment's **Community-led retreat issues and options paper** (published in 2023) proposes a Te Tiriti-based approach to adaptation, but it remains to be seen whether this will carry through into the development of the adaptation framework.

A number of iwi have developed their own climate change strategies and plans. For example:

- The Maungaharuru-Tangitū Trust Locality Plan – Hawke's Bay Cyclone Gabrielle Recovery Plan April 2023 outlines how the region's hapū and takiwā will recover from the catastrophic impacts of Cyclone Gabrielle.[369]
- In 2018, Te Rūnanga o Ngāi Tahu released a climate change strategy, Te Tāhū o te Whāriki. Te Rūnanga o Ngāi Tahu followed this up with the release of a climate action plan, Te Kounga Paparangi, in 2022.
- In December 2022, Maketū launched its iwi-led Climate Change Adaptation Plan (which also won New Zealand Planning Institute's 2023 Best Practice Award). Iwi brought the community together working with various members to bring the plan together.

Auckland Council's **Auckland Plan 2050** also includes an outcome around Māori identity and wellbeing.

Evidence of outcomes on the ground

Some iwi are already experiencing the effects of climate change first-hand. At Ōkūrei Point in Maketū, a sacred burial site on a cliff-top collapsed onto the beach below, scattering human remains into the sand and sea. In other areas, urupā at risk from flooding have had to be relocated.[370]

Taonga species such as tuna (eels), kōura (crayfish), and kākahi (mussels) are central to the identity and wellbeing of many Māori. Many communities are reporting that both the abundance and size of their taonga species are declining.[371]

Challenges that mana whenua report facing in dealing with climate change include:

- accessing resourcing for climate change adaptation work
- leadership (the leadership skills involved in helping the community negotiate climate change are different from those involved in running a marae, for instance)

- building capacity and capability within the iwi/hapū to address climate challenges
- some communities are facing major risks from flooding or sea-level rise so are having to consider whether they may need to move marae, urupā and/or kāinga, which is extremely challenging given the enduring connections to the whenua
- for those who are considering relocation, challenges include not necessarily having land to relocate to, and the costs involved.[372]

Overall assessment of progress

We are not seeing much evidence of progress being made towards this objective by central government. More information is becoming available about sites of importance that are at risk (e.g. marae and urupā). The design of the Māori Climate Platform is underway, but it's at an early stage. Meanwhile, the delay of the adaptation framework means that there is uncertainty around whether a Te Tiriti-based approach will ultimately be reflected.

Most work happening in this space is being led locally, without consistent support or direction from central government. Many councils are endeavouring to work closely with iwi/hapū/Māori as part of their adaptation planning, including working with at-risk communities, but face significant challenges (such as the cost of these processes and staff capability to carry them out). Many marae/hapū/iwi are also getting on with developing their own plans, with little in the way of partnership and support. *He huringa āhuarangi, he huringa ao: a changing climate, a changing world*, the Māori risk assessment, is another example of this.

This lack of support from central government represents a significant gap in terms of progress towards achieving this objective.

More complete exposure data for cultural sites would help us to carry out this assessment in future.

HBP4: Threats to cultural heritage arising from climate change are understood and impacts minimised

The fourth objective for this outcome area relates to understanding where cultural heritage sites are, who they are important to and how climate change could affect them; understanding how the loss of cultural heritage can affect social, cultural, spiritual and economic wellbeing; and protecting and conserving cultural heritage and improving disaster management.

Climate change is having, and will continue to have, negative impacts on culture, heritage, traditional knowledge and ways of life. Many communities will face challenges preserving taonga and managing properties, facilities and cultural heritage sites in locations at risk from climate-related hazards.

Māori identity and wellbeing is particularly threatened by climate change. The timing of seasonal tohu are changing. They are becoming less reliable, which affects planting, decision-making, and activities like resource gathering and hunting. A warming climate is affecting where some taonga species can live, their numbers, and size. Culturally significant places are at risk of being damaged, as many marae and urupā are threatened by flooding and erosion from sea-level rise and extreme weather events. The ability to manaaki is threatened by climate change, and mātauranga may not be able to be passed on if climate change results in a loss of traditional resources.[373]

Work programmes underway

The key activities that relate to this objective include the Ministry for Culture & Heritage report, **Climate change risks and adaptation tools for Aotearoa New Zealand's cultural heritage**, which presents a review and gap analysis of the literature on culture and heritage with regard to climate change risks, vulnerabilities, and adaptation.

The Ministry for the Environment's **Our Atmosphere and Climate 2023 report** also includes information about the threats to cultural sites due to changes in the climate.

The **Māori Climate Action Platform** is under development, in partnership with tangata whenua. A Ministerial advisory committee was appointed to engage with Māori and lead the design phase,[374] but based on announcements in Budget 2024, the future of the platform remains uncertain.

Te Puni Kōkiri published a **Civil Defence Marae Emergency Preparedness Plan** toolkit in 2017, which is designed to help marae be as prepared as possible in the event of a natural disaster or emergency.[375]

Te Puni Kōkiri have also released a report which found that Māori households have a similar exposure level to climate-related hazards as the general population, but they are projected to face greater risks as a **higher proportion of Māori households are vulnerable** due to poverty, health disparities, justice and protection concerns. The report found 86% of Māori households are located in flood-exposed SA2 (statistical analysis) areas.[376]

There has also been some independent research carried out in support of this objective, including a paper **Calculating Heritage Risks for the Climate Emergency in Aotearoa (New Zealand)**.[377]

Evidence of outcomes on the ground

We have observed very few outcomes on the ground that relate to this objective.

There remain important gaps in knowledge about where cultural heritage sites are located and how they could be affected by climate change.

ArchSite is the national database of recorded archaeological sites in Aotearoa New Zealand. It contains information on over 73,600 recorded archaeological sites, but there are many more that are unrecorded.[378] As of May 2021, the ArchSite database held 73,694 recorded sites and 39.6% are within 1km of the coast.[379]

Research by Bailey-Winiata in 2021 found that 191 marae around Aotearoa New Zealand are within 1 km of the coast. Six coastal marae are exposed to a 100 year extreme sea-level event at current mean sea level, while 41 coastal marae are exposed to a 100 year extreme sea-level event with a 3 m rise in mean sea level.[380]

Overall assessment of progress

Overall, there is some evidence of progress towards this objective. The activities we have observed are mainly focused on understanding the threats to cultural heritage. We're seeing less evidence of progress towards minimising the impacts and this represents a significant gap. The Ministry for Culture & Heritage literature review and gap analysis represented a first step towards considering how they will address their actions in the first national adaptation plan.

More exposure and vulnerability data for cultural sites would help us to complete this assessment in future.

Infrastructure

There are three objectives included for infrastructure. These cover reducing the vulnerability of existing infrastructure; ensuring new infrastructure is fit for a changing climate; and using renewal programmes to improve adaptive capacity (see Table 9.4).

People, communities and businesses around Aotearoa New Zealand rely on a range of infrastructure to enable daily life, stay connected and support wellbeing. Impacts on infrastructure from climate change can cause physical damage and disruption. This can in turn lead a range of direct and indirect impacts. For example, damage to transport infrastructure can prevent the movement of people and affect supply chains, and damage to electricity distribution infrastructure can cause widespread power outages that can lead to failure of other infrastructure, such as water supply and wastewater.

Summary of findings for this outcome area

Across the three objectives in the infrastructure outcome area, we are observing some progress being made towards achieving each of the objectives.

However, significant gaps still remain, particularly in relation to objectives INF2 and INF3. Most of the work programmes and outcomes which we were able to observe related to objective INF1.

Even with objective INF1, much of the progress relates to understanding the risks to infrastructure from climate change, rather than taking action to manage those risks.

It should be noted that we found it more difficult to find information relating to work programmes and outcomes for this outcome area than for many of the others. There are a few possible reasons for this, including that private infrastructure providers may be carrying out work to understand their risks and improve resilience, but have not made this information public. There may also be examples of work getting underway by councils and lifelines groups that are at very early stages and thus haven't been communicated publicly yet.

Table 9.4: Objectives in the infrastructure outcome area and their explanations in the first national adaptation plan

Code	Objective	Explanation in the plan
INF1	Reduce the vulnerability of assets exposed to climate change	• Understand where infrastructure assets and their services are exposed and vulnerable to climate impacts. • Prioritise the risk management of assets so that services can continue if disruption occurs.
INF2	Ensure all new infrastructure is fit for a changing climate	• Consider long-term climate impacts when we design and invest in infrastructure, so the right infrastructure is in the right places. • Understand future adaptation options and finance them as part of the investment in new infrastructure to build capacity to adapt.
INF3	Use renewal programmes to improve adaptive capacity	• Consider long-term climate impacts when making decisions to maintain, upgrade, repair or replace existing infrastructure.

INF1: Reduce the vulnerability of assets exposed to climate change

The first objective for this outcome area relates to reducing the vulnerability of existing assets.

Infrastructure is important to support wellbeing. Transport links and telecommunication networks connect people, communities and the economy. Access to fresh water, and systems to dispose of storm and wastewater, help keep New Zealanders safe and healthy. Climate change will exacerbate existing hazards, and have significant impacts on existing infrastructure networks and assets. This is likely to have flow-on effects on the availability of funds for improvements, accessibility of insurance, and on physical condition and standards of service of infrastructure.

There are currently no nationally consistent standards for resilience for critical infrastructure, or nationally acceptable levels of service following an extreme event. There is also no national approach for coordination across different types of infrastructure when considering adaptation.

Work programmes underway

As part of the Regional Infrastructure Fund, **Budget 2024 allocated NZ$200 million in grants and loans to co-fund flood resilience** as asked for by regional councils in their updated case for co-investment in flood management infrastructure, Before the Deluge 2.0.[381]

There have been a number of **studies that have increased understanding and awareness of the exposure of infrastructure to climate-related hazards**. For example:

- A recent study by **Local Government NZ** identified that as much as NZ$14 billion of local government infrastructure was likely to be at risk from sea-level rise alone.[382]
- Other recent studies found that Aotearoa New Zealand has about 1400 kilometres of roads currently exposed to coastal flooding,[383] and that more than 19,000 kilometres of road (about 20% of Aotearoa New Zealand's road network) is located in inland flood hazard areas.[384]
- **Industry bodies** have undertaken work to understand exposure of certain types of infrastructure to coastal and/or inland flooding. In addition to the studies mentioned above, in 2012 NIWA developed a coastal sensitivity index (CSI), to understand the sensitivity of the coastal margin of Aotearoa New Zealand to climate change. Analysis of the CSI for inundation identified that 5% and 23% of Aotearoa New Zealand's wastewater treatment plants are located within 5 kilometres of highly sensitive and moderately sensitive coastal inundation zones, respectively.[385]
- The report prepared by **Urban Intelligence** for the Climate Change Commission found that the spatial distribution of infrastructure exposure varies considerably across Aotearoa New Zealand. In terms of coastal flooding, districts such as Napier and Hauraki have over 20% of roads exposed to a coastal flooding event under 20 centimetres of sea level rise. Districts including Napier, Nelson, and Hauraki have over 30% of at least one type of infrastructure exposed under one metre of sea-level rise. When looking at landslides, Porirua, Waimakariri, Kaipara and Hauraki have over 25% of at least one type of infrastructure exposed.[386] See *Chapter 10: Developing key national metrics* for further information.
- **New Zealand Infrastructure Commission Te Waihanga** provided a summary assessment of how various infrastructure services in Auckland were affected by the Auckland Anniversary floods in 2023. The report notes issues and weaknesses around stormwater management and the infrastructure system were raised through this event.[387]

There have also been **tools developed that help to support infrastructure resilience planning**. For example:

- Working with Environment Canterbury and the Ministry for the Environment, Tonkin + Taylor undertook a pilot study using data from three regions (West Coast, Southland and Canterbury) to develop a **risk assessment tool for prioritising closed landfills** across the country in terms of their exposure and vulnerability to climate-related natural hazards. The work began in 2019. Further development is required before it could be adopted across Aotearoa New Zealand as a national management tool.[388]
- A tool **Measuring the Economics of Resilient Infrastructure**, or MERIT, was used in the Wellington Lifelines Group Regional Resilience Project to quantify the impacts on communities of lifelines outages, and the benefits to be gained by increased infrastructure resilience. The MERIT tool is in a state of continual improvement and development as it is progressively applied by NZ Transport Agency Waka Kotahi, ports, local authorities and others.[389]
- Hamilton City Council has an ongoing programme to understand the effects of very large rain events, and an **online tool that allows people to search flood risks by property address**. Auckland Council also has a flood viewer.[390]

An important element of reducing vulnerability is ensuring that infrastructure networks and assets are well maintained, and therefore better able to cope with stresses such as extreme weather events. **New Zealand Infrastructure Commission Te Waihanga** released a report in February 2024 on Aotearoa New Zealand's **infrastructure asset value, investment, and depreciation**, which found that around 60% of investment in infrastructure will need to go to renewing existing assets to keep them in good condition for future generations.[391]

The **Department of Prime Minister and Cabinet (DPMC)** is leading work to **enhance the resilience of Aotearoa New Zealand's critical infrastructure**. DPMC commenced public consultation in 2023 on the adequacy of Aotearoa New Zealand's current regulatory approach to delivering resilient critical infrastructure. The Government will assess options and make decisions on next steps in 2024.

The **New Zealand Lifelines Council** released its most recent **national vulnerability assessment for Aotearoa New Zealand's critical infrastructure** in September 2023. This provides a strategic perspective across infrastructure services, and how they act in combination. The report is intended to increase awareness, particularly around interdependencies, and drive a change in approach to prioritising investment in the resilience of infrastructure.

Guidance on adaptive decision-making for addressing compound climate change impacts for infrastructure was released through the Deep South National Science Challenge in March 2024. The guidance gives infrastructure providers tools for decision-making under deep uncertainty that are needed to grapple with the risks and uncertainties that arise from ongoing and progressive climate change.[392]

The Ministry for Business, Innovation and Employment released a discussion document in March 2023 proposing options for amending the **Electricity (Hazards from Trees) Regulations 2003**, to help improve the resilience of the electricity network.[393] During Cyclone Gabrielle, out-of-zone trees[xxvii] were the number one cause of outages and interrupted supply for 68,000 customers at the cyclone's peak.[394] In May 2024 the Government announced amendments to the Electricity (Hazards from Trees) Regulations 2003 that will make it easier for lines firms to take action to remove vegetation from obstructing local powerlines.[395]

xxvii. Out-of-zone trees grow outside the zone where electricity distribution businesses can control their trimming or removal.

Evidence of outcomes on the ground

In the Ministry for the Environment's **Adaptation preparedness: 2020/21 baseline survey report**, 9 of 49 lifeline utilities referenced "integration of climate change impacts into infrastructure asset management plans" as part of their work.[396] The Ministry for the Environment recently repeated the survey in 2024, and 18 of 86 lifeline utilities referenced this aspect as part of their work. In the same two surveys, 7 of 49 lifeline utilities referenced "reporting under TCFD requirements" as part of their work in 2020/21, and 10 of 86 lifeline utilities referenced it as part of their work in 2024. Top Energy, Vector, Meridian Energy, Auckland Airport, Chorus and Genesis Energy have all completed climate-related disclosures.[xxviii]

There is increasing evidence that a large amount of existing infrastructure, of different types, is becoming exposed to climate-related hazards. For example:

- **Landfills** situated within coastal or river margins or on floodplains are becoming more exposed to hazard events due to the effects of climate change, including sea-level rise and more frequent severe storm events. The recent breaching of the Fox River landfill by an extreme storm event spread waste materials along 21 kilometres of riverbed and 51 kilometres of coastline, highlighting this increased risk and the increased urgency required to address similar landfills and take action to reduce their vulnerability.[397]
- In the Auckland region 7 of the 17 **wastewater treatment plant facilities** (41%) are located within a flood plain. All other wastewater treatment plants in the region are within 1 km of a flood plain. In the Waikato Region, 32% of wastewater treatment plant facilities are within a flood hazard zone, 41% are within 1 km, and 20% are within 5 km.[398]
- Increased temperatures can cause damage and disruption to **rail and road networks**, with extreme heat causing rail lines to buckle and signalling systems to overheat, and degradation of asphalt road surfaces. These impacts are already occurring regularly, and this has led to Metlink in Wellington placing permanent temperature monitoring equipment across its rail network.[399]

The impacts of these high levels of exposure are already being felt. For example, during Cyclone Gabrielle, some drainage systems in the Hawke's Bay were overrun, stopbanks were breached or compromised, and a large amount of critical infrastructure (roads, electricity, bridges etc) was inundated, damaged, or destroyed.[400]

There is also evidence that some important infrastructure 'pinch-points' are vulnerable to climate impacts. Nationally significant infrastructure assets are often located where there are single-site 'pinch-points', which would cause significant loss of service if they failed catastrophically. These are typically key energy and telecommunications sites, ports and airports. Other infrastructure is also often co-located with roadways – such as electricity, water and internet – and there are some important infrastructure hotspots where critical assets of different types converge, meaning that climate-related hazards could lead to significant consequences.[401]

We have heard through our engagement that coordination between and across different types of infrastructure when considering adaptation remains an issue. Some **Regional Lifelines Groups** are currently not very active, or do not have good buy-in from their members. We have also heard some reports of damaged assets and infrastructure being rebuilt 'like for like', rather than in a way that improved resilience.

The 2023 extreme weather events (the Auckland Anniversary floods and Cyclone Gabrielle) cost an estimated NZ$9 billion to NZ$14.5 billion of damage to assets – with more than half relating to damage of public infrastructure.[402] These events highlight the exposure and vulnerability of infrastructure networks to natural hazards, which will be exacerbated by climate change, as well as the interconnection of these networks (where a failure in one network can have a cascading effect on other infrastructure networks).

xxviii. These numbers are based on the Commission's assessment of raw survey data from the Minister of Climate Change's request into adaptation preparedness available as of 31 May 2024.

Overall assessment of progress

We have observed some evidence of progress towards this objective. The action we have observed underway is mainly focused on improving understanding of the exposure of infrastructure to climate-related hazards. There is less focus on the risk management of assets so services can continue when events occur, and this represents a significant gap. The development of tools is promising, but more work is needed for the tools to be widely applicable and support decision-making.

In terms of outcomes on the ground, Cyclone Gabrielle illustrated that critical infrastructure is still highly exposed and vulnerable to extreme events. There is still little or no coordination across providers to ensure continuation of services when disasters occur.

There is currently no national picture of planned investments in improving infrastructure resilience, which would be helpful to us in completing this assessment. More information is also needed around critical dependencies.

INF2: Ensure all new infrastructure is fit for a changing climate

The second objective for this outcome area relates to considering the long-term impacts of climate change when planning and designing new infrastructure (including when making decisions around where it should be located).

As the impacts of climate change are increasingly felt, it will be important to ensure that all new infrastructure is built to be resilient. For this to happen, long-term climate impacts need to be understood and considered when designing and investing in new infrastructure.

Recent weather events bring a sharp focus to the climate resilience challenge that Aotearoa New Zealand faces, which will only escalate as climate change accelerates and risk increases over the coming decades. There is a need to be smarter about where to build to ensure that new infrastructure is built in areas less susceptible to rising sea levels and other climate risks.

Progress towards the system-wide objectives SW1 and SW4 will have flow-on effects for this objective, as there is currently a lack of national direction to limit building in locations at risk from climate-related hazards. Lack of access to capital is also a barrier to building infrastructure that is fit for a changing climate.

Work programmes underway

Treasury's **Infrastructure Action Plan 2023** includes as one of its focus areas the need to ensure that Aotearoa New Zealand's infrastructure rebuild and new build is resilient in the face of climate change, natural disasters, and increasing extreme weather events.[403]

New Zealand Infrastructure Commission Te Waihanga released a **report monitoring progress against New Zealand's first Infrastructure Strategy** in May 2024. The report identifies key areas where progress is being made, and where more progress is required.[404]

As discussed in objective INF1 above, the **Department of Prime Minister and Cabinet** is leading work focused on improving the resilience of Aotearoa New Zealand's critical infrastructure.

The **Ministry for the Environment's** proposed **National Policy Statement for Natural Hazard Decision-Making** is also relevant for this objective, since it is expected to limit new development in areas that are at high risk from natural hazards. The Ministry for the Environment ran a consultation process in late 2023 on the proposed NPS.

In December 2022, **NZ Transport Agency Waka Kotahi** released **Tiro Rangi: our climate adaptation plan 2022-2024**. This plan sets a climate adaptation goal that by 2050: 'Our land transport system is resilient in a changing climate to enable a system that improves wellbeing and liveability'. Their aim is to have completed a step change in adaptation by 2035, including fully embedding climate risk in decision-making at all levels for the land transport system.[405]

NZ Transport Agency Waka Kotahi also released a **climate change policy for land transport infrastructure activities** in August 2023. One of the policy's two objectives is "to manage the risks that climate related hazards pose to, and the risks that arise from, land transport infrastructure".[406]

Auckland Transport has a **climate change adaptation policy** that requires adaptation to the physical impacts of climate change to be considered in the planning, design, and construction of new assets and renewals. It requires the impacts of climate change to be considered over the lifespan of the asset.[407]

The **Fast-track Approvals Bill** was introduced in March 2024. The Bill currently requires that applicants seeking approval for a project include a description of whether and how the project would be affected by climate change and natural hazards, though it does not outline the type or level of detail required.[408] In assessing applications to use the fast-track process, the Bill states that joint Ministers must consider whether the application would have significant regional or national benefits. Whether the application will support adaptation, resilience and recovery from hazards is noted as one aspect that may be considered in this context.[409] However, it is not a requirement to consider climate resilience.

Evidence of outcomes on the ground

We have not observed much evidence of outcomes on the ground that relate to this objective. However, we understand from our research and engagement that coordination between and across different types of infrastructure, when considering adaptation, remains an issue.

The **National Infrastructure Pipeline** is Aotearoa New Zealand's national data set of infrastructure project information. In March 2024, the Pipeline received updates from 82 contributing infrastructure providers, compared to 44 contributors in March 2022 – an increase of 86%.[410] The Pipeline gives infrastructure providers and construction markets valuable insights to help coordinate, plan and prioritise, including during times of crisis. The Pipeline is supporting the ongoing recovery and planning from the 2023 North Island extreme weather events, and the capability developed to support the recovery has enhanced the Pipeline's ability to facilitate strategic coordination between infrastructure providers, while keeping government stakeholders informed.[411] However, the Pipeline does not currently provide a picture of the resilience of planned new infrastructure, or if the long-term impacts of climate change have been considered.

Overall assessment of progress

We are seeing limited evidence of work programmes underway that will help to achieve this objective. The Infrastructure Action Plan, the Department of Prime Minister and Cabinet's (DPMC) work, and the NZ Transport Agency Waka Kotahi action plan all contribute to progress. However, the DPMC work is still in the early stages, as is the proposed natural hazards National Policy Statement. The Fast-track Approvals Bill has the potential to undermine progress towards this objective.

Lack of access to capital is a barrier to building infrastructure that is fit for a changing climate. The recently announced adaptation framework therefore has the potential to contribute to progress towards this objective, if that framework sets out an approach to sharing the costs of adapting to climate change.

We consider that there are significant gaps in progress which need to be addressed urgently if this objective is to be realised.

Data that would help us to carry out this assessment in the future include information on the amount of new infrastructure being consented in hazard zones versus not in hazard zones, and information on the adaptive capacity of new infrastructure.

INF3: Use renewal programmes to improve adaptive capacity

The third objective for this outcome area relates to considering the long-term climate impacts when making decisions to maintain, upgrade, repair or replace existing infrastructure.

Aotearoa New Zealand needs to be smarter about the way the country plans, delivers, and uses infrastructure in the face of increasing impacts from climate change. It is important to ensure critical infrastructure is resilient to future impacts and stressors as part of longer-term strategic investment planning. Using renewal programmes to increase resilience is a key part of this.

There are currently no nationally consistent standards for resilience for critical infrastructure, or nationally acceptable levels of service following an extreme event. There is also no national approach for coordination across infrastructure when considering adaptation.

Work programmes underway

The **Department of Prime Minister and Cabinet's** work to enhance the resilience of Aotearoa New Zealand's critical infrastructure will have implications for this objective as well.

The previous Government committed to **improve the resilience of Aotearoa New Zealand's critical infrastructure**, which features as one of the four key themes of Budget 2023. This includes funding of $6 billion for a new **National Resilience Plan** to build back better from Cyclone Gabrielle and support necessary investments to future proof Aotearoa New Zealand's road, rail, telecommunications and electricity networks.[412]

As discussed in objective INF1, **New Zealand Infrastructure Commission Te Waihanga** released a report in February 2024 on Aotearoa New Zealand's **infrastructure asset value, investment, and depreciation**, which found that around 60% of investment in infrastructure will need to go to renewing existing assets to keep them in good condition for future generations.[413]

NZ Transport Agency Waka Kotahi released a **climate change policy for land transport infrastructure activities** in August 2023. One of the policy's two objectives is "to manage the risks that climate related hazards pose to, and the risks that arise from, land transport infrastructure".[414] The policy states that it should be applied to the planning, design and delivery of all infrastructure improvement and operations and maintenance activities that NZ Transport Agency Waka Kotahi is responsible for.

Auckland Council has started a **'Making Space for Water' initiative**, which is a programme that would accelerate planned flood management works across the region. It proposes nine operational initiatives, ranging from increased stormwater maintenance and stream rehabilitation to blue-green projects and site-specific solutions for high-risk properties.[415]

Auckland Transport has a **climate change adaptation policy** that requires adaptation to the physical impacts of climate change to be considered in the planning, design, and construction of new assets and renewals. It requires the impacts of climate change to be considered over the lifespan of the asset.[416]

Several businesses are also considering climate adaptation within their renewal programmes. **Chorus** has a **Sustainability Report**, released in 2023, which notes that their recent assessment of flooding risk for their network assets is informing their future asset management plans.[417]

Vector's climate-related financial disclosure includes strategies to minimise the risks to their network from climate change, including through zone substation relocations and through raising control equipment above flood zones, as well as through taking a holistic approach to conductor renewals that incorporates the impacts of increasing wind and storms.[418]

Evidence of outcomes on the ground

In the Ministry for the Environment's **Adaptation preparedness: 2020/21 baseline survey report**, 9 of 49 lifeline utilities referenced "integration of climate change impacts into infrastructure asset management plans" as part of their work. In the 2024 survey, 18 of 86 lifeline utilities referenced this aspect as part of their work.[419] Additionally, 1 out of 49 lifeline utilities that responded had a plan specifically related to resilience to climate change impacts in 2020/21. In 2024, 10 of 86 lifeline utilities that responded had a plan specifically related to resilience to climate change impacts.

Local authorities have indicated that they have **wastewater treatment plants that are vulnerable or at risk due to climate change**. Organisations are at differing stages with some well underway with climate change strategies and responses, such as Watercare, and others who have not started to draft or consider plans.[420]

We have heard examples of **building back 'like for like'** after Cyclone Gabrielle (or not being able to build back) because insurance payouts do not cover building back in a more resilient way and there are difficulties accessing the additional funding required to improve the resilience of those assets. One such example is a Napier water treatment plant whose bottom floor was completely flooded. The insurance was for replacement value, and funds weren't available to move everything to the second floor, so the risk remains the same.[421]

During ex-Tropical Cyclone Hale in January 2023, State Highway 25A suffered significant damage, and continued to worsen for several days after the event – leaving many communities in the Coromandel cut off. NZ Transport Agency Waka Kotahi determined the best option to build back better in the shortest timeframe was to build a bridge that would be the safest and most resilient option – the bridge initially thought to take 12 to 14 months to construct was built and reopened to traffic on 20 December 2023.[422]

Top Energy note in their **2023 Sustainability Report** that in the past 5 years they have invested $81 million to substantially improving the resilience of their network.[423]

Overall assessment of progress

We are seeing little evidence of progress towards achieving this objective. Some localised examples of outcomes suggest movement away from achieving this objective. For example, infrastructure being built back 'like for like', rather than taking the opportunity to improve resilience and adaptive capacity. Additionally, the percentage of lifelines utilities who reported that they were factoring climate change impacts into infrastructure asset management plans decreased from 12% in 2020/21 to 6% in 2024.

There are significant gaps which need to be addressed urgently if this objective is to be realised. There are some barriers to building back in a way that improves resilience, including insurance being for replacement (like for like) and a lack of unbudgeted funds. In some cases, resource consents also limit the ability to improve resilience.

Data on how much infrastructure is being built back like for like after extreme weather events vs how much is being built back in a way that improves resilience, and reasons for each, would be helpful to us in completing this assessment in the future.

Communities

There are four objectives in the communities section of the first national adaptation plan. These objectives cover enabling communities to adapt; supporting vulnerable people and communities, and communities who are disrupted or displaced; and having a health sector that can support vulnerable communities (see Table 9.5).

Communities are diverse and experience the impacts of climate change in different ways. Communities that are aware of, prepared for, and empowered to respond to, climate risks will be less vulnerable to climate impacts.

Some individuals and communities are more exposed because of where they live. There are also some things that make particular communities or individuals more vulnerable to experiencing harm from climate impacts. Many of these things are outside of their control because they relate, for example, to personal circumstances, pre-existing conditions, or socio-demographic characteristics.

Summary of findings for this outcome area

Across the four objectives in the communities outcome area, we are observing some progress being made towards achieving each of the objectives.

However, significant gaps still remain, particularly in relation to objectives C3 and C4. Much of the progress that we have observed in relation to objective C3 in particular has been reactive rather than proactive, and more proactive action is needed. Little progress in general has been observed for C4, and there is evidence of movement away from achieving this objective.

In relation to the communities outcome area as a whole, the adaptation framework is urgently needed. Many council adaptation plans and processes are stalling at the implementation phase due to a lack of funding and mandate for adaptation.

Table 9.5: Objectives in the communities outcome area and their explanations in the first national adaptation plan

Code	Objective	Explanation in the plan
C1	Enable communities to adapt	• Enable communities to provide resources and take action relevant to their unique situation; build and share knowledge of local issues in culturally appropriate ways; support community engagement and participation in decisions and provide information on adaptation options.
C2	Support vulnerable people and communities	• Understand where our most vulnerable people are and what they need and value, and provide them with support, knowledge and resources.
C3	Support communities when they are disrupted or displaced	• Support communities facing climate-related disruption and disasters so response and recovery can improve their wellbeing and social cohesion.
C4	The health sector is prepared and can support vulnerable communities affected by climate change	• Understand future climate-related health risks and take steps early to ensure the healthcare system is ready for these shifting demands. This includes meeting the mental and social wellbeing needs of whānau and communities in emergencies, and supporting them to recover, adapt and thrive.

C1: Enable communities to adapt

The first objective for this outcome area is very broad, and is framed as an action, rather than an objective – which makes it difficult to assess progress towards.

The ability of a community to understand, prepare for, plan for and adapt to climate-related hazards and their impacts will be affected by a wide range of things. This includes having access to relevant, high-quality information and resources to support decision-making, and being able to participate in local processes that support community adaptation planning and action.

Communities vary greatly in their ability to adapt. In some areas, communities may be more resilient and can withstand many external challenges and adapt. Others may be more isolated and/or under-resourced, and therefore less resilient and less able to adapt.

Work programmes underway

In mid-2023 the Government passed the **Local Government Official Information and Meetings Amendment Act**, which aims to ensure Land Information Memoranda (LIM) provide clear, concise, and nationally consistent natural hazard information to property buyers.

A range of new **information, guidance and tools** have been developed over recent years to build and share knowledge of risks, and support communities, iwi and households to make decisions about how to adapt. Examples include:

- The Ministry for the Environment's **Coastal Hazards and Climate Change guidance** for local government, which presents a 10-step decision-cycle for adaptation planning that centres on community engagement, was most recently updated in early 2024. A supplement to the guidance on community engagement principles and approaches and practice methods is expected to be published in mid-2024.
- EQC Toka Tū Ake's **natural hazard portal**, which provides access to local level risk information, was published in August 2023.
- A number of tools have been developed by councils for their specific regions. For example, Waikato Regional Council's **coastal inundation tool**,[424] **sea level rise mapping tools** released by Greater Wellington Regional Council,[425] and a **coastal hazards online portal** developed by Christchurch City Council.[426]
- The Ministry for the Environment released a **guide to local climate change risk assessments** in 2021.

Many **regional and district councils have carried out climate change risk assessments**, including, for example, Bay of Plenty, Otago, Canterbury, Auckland, Northland, Kaipara and Manawatū-Whanganui. A number of other regions and districts have risk assessment processes underway, including Waikato, Christchurch, Whakatāne and Buller.

The **Wellington Regional Climate Change Impacts Assessment Report**, released in May 2024 and adopted by the **Wellington Regional Leadership Committee**, acts as an assessment of the risks, impacts and opportunities of a changing climate in the Wellington region over the next 100 years, and is the first phase in a project to help the region adapt to the impacts of a changing climate.[427]

The number of localised adaptation planning processes underway has grown significantly in recent years. There are now many examples of collaborative council-community adaptation planning processes around the country. Examples of community focused adaptation planning processes include the **Clifton to Tangoio Coastal Hazard Strategy 2120**, which was initiated in 2014, and the **South Dunedin Future Programme**, which was initiated following the 2015 floods in South Dunedin (see **Box 7.1**).

Other examples of where a **Dynamic Adaptive Pathways Planning approach** has been used include the **Hutt River Flood Risk Management Plan**, Wellington City's Mākara Beach, and Amberley Beach at Hurunui district. Thames Coromandel District Council has developed coastal compartment pathways with signals and triggers for monitoring them over time. Hauraki District Council and Waikato Regional Council have undertaken a DAPP process, via a community/stakeholder panel, for the **Wharekawa (Kaiaua) 2120 adaptation project**.[428]

Many local councils are undertaking community adaptation planning. However, with no clear mandate for councils to carry out adaptation actions, some plans are stalling at the implementation phase. The Government's recently announced **adaptation framework**, which is intended to be introduced in 2025, has the potential to address this challenge and contribute to progress towards this objective. The scope of the framework is not known at this stage.

Evidence of outcomes on the ground

The number of community level processes underway has been increasing over recent years. For example, more than 40% of respondents to the 2023 **New Zealand Planning Institute adaptation survey** indicated they had been involved in a process to adapt to risks to existing communities from climate change or natural hazards.[429]

However, **implementation of local/community adaptation plans** remains a significant issue. Some well-advanced plans and strategies have become stalled at the implementation phase because of a lack of agreement around how costs should fall. The Hawke's Bay Clifton to Tangoio Coastal Hazard Strategy 2120 is one example.

Council-community adaptation planning varies significantly in terms of scope, duration and maturity, and most plans to-date have been focused on coastal communities. Likewise, the sharing of risk information is often inconsistent across different communities – including different approaches taken to risk assessments, and information provided through council websites.

Overall assessment of progress

We are observing some progress towards achieving this objective, but this progress is hindered by the current lack of a legislative framework for adaptation.

Ensuring communities have access to clear, relevant and user-friendly information to help them understand local risks is an important initial step. Some good progress has been made in this respect. The development of local adaptation plans – including through collaborative community processes – is going well in some regions/communities, although councils are struggling to implement those plans (often due to funding constraints).

The adaptation framework has the potential to represent an important process step through providing an overarching legislative framework and mandate for adaptation, but the scope of this work is not fully known at this stage. This remains a significant gap that needs to be addressed in order to provide the legislative environment in which local adaptation plans can be successfully implemented.

C2: Support vulnerable people and communities

The second objective for this outcome involves understanding where the most vulnerable people are, and what they need and value, and providing them with support, knowledge and resources.

Some people and communities will be more affected by, or vulnerable to, the impacts of climate change than others. There are many different aspects that contribute to this, and many are outside an individual or community's control because they relate to socio-demographic characteristics, personal circumstances, or pre-existing conditions. For example, children and older people, and people with underlying health conditions are more vulnerable to climate impacts, as are people living in crowded households and poor-quality housing (see *Chapter 10: Developing key national metrics* for more information).

Work programmes underway

Work has been undertaken by the **Department of Internal Affairs** to identify the **most vulnerable small rural communities** that are exposed to flood hazards.[xxix] The report identifies 44 communities that are experiencing a high level of socioeconomic vulnerability, are potentially exposed to flood hazards, and have a lack of flood risk reduction infrastructure. The report also highlights further work that needs to be carried out in large urban areas to identify pockets of vulnerability in the highest flood risk areas.[430]

The report prepared by **Urban Intelligence** for the Climate Change Commission found that isolation, which occurs when properties are cut off from communities and critical services due to impacts on the transport network, may arise significantly earlier than direct inundation in some areas (as transport routes may be more exposed and vulnerable than the properties themselves). When looking at coastal flooding, Thames-Coromandel, Buller, Kaipara and Hauraki have over a quarter of their population at risk of isolation with 20 centimetres of sea-level rise.[431]

The Urban Intelligence report also looks at the exposure and risk of isolation for marae across the country. Significantly more marae are at risk of isolation from coastal flooding that are directly exposed. See *Chapter 10: Developing key national metrics* for more information.

xxix. Communities were defined in this report as a town, settlement or city with a population of more than 50.

Te Puni Kōkiri have identified Māori households have a similar exposure level to climate-related hazards as the general population but they are projected to face greater risks as a **higher proportion of Māori households are vulnerable** due to poverty, health disparities, justice and protection concerns. The report found 86% of Māori households are located in flood-exposed SA2 (statistical analysis) areas.[432]

The **guide to local climate change risk assessments**, released by the Ministry for the Environment in 2021, contains steps on assessing vulnerability in relation to climate risk.

Most regional councils have now completed **regional risk assessments** or have them underway. Some district councils have also completed risk assessments, or are planning to do so. Auckland Council[433] and Greater Wellington Regional Council have conducted vulnerability assessments to prioritise areas for adaptation planning and action.

The **Coastal Hazards and Climate Change guidance** for local government, released in 2017 and updated in February 2024, includes steps to identify and assess vulnerable communities. Central to all stages of the 10-step decision cycle outlined in the guidance is community engagement. The councils in Dunedin have set up the **South Dunedin Future Project** working through the guidance with the community in South Dunedin (Box 7.1).

Budget 2023 provided targeted support through the form of **Community Connectors** to individuals and whānau that had been impacted by the Auckland Anniversary floods and Cyclone Gabrielle to reduce the impacts of hardship.

Budget 2024 allocated more than NZ$1 billion to further **support the rebuild and recovery of communities** affected by Cyclone Gabrielle and the Auckland Anniversary floods.[434]

Evidence of outcomes on the ground

Budget 2023 provided targeted support through the form of **Community Connectors** to individuals and whānau that had been impacted by the Auckland Anniversary floods and Cyclone Gabrielle to reduce the impacts of hardship. The role of Community Connectors is to support and advocate for those they work with until they are connected with appropriate services. This includes psychosocial support, employment support, and ensuring people are accessing government services and support available to them. Around 65 Community Connectors were to help approximately **32,500 households and whānau**.[435]

Since its launch in July until the end of 2023 the EQC Toka Tū Ake **natural hazards portal** was accessed 29,000 times with 9,400 download requests about specific properties.[436]

A report prepared by **Environmental Health Intelligence New Zealand** for the Commission identifies dimensions that contribute to potential social vulnerability (see *Chapter 10: Developing key national metrics*). Communities and groups that have multiple or many dimensions that contribute to social vulnerability will be more likely to experience harm when affected by climate-related hazards. The report shows that key populations who are more susceptible to negative impacts from climate-related hazards made up a significant share of the population in 2018, including children aged 0–14 (almost 20%), older adults aged 65+ (15%), and people living with chronic health conditions like asthma (around 12%).[437] The full report is available on the Commission's website.

Overall assessment of progress

We are observing some progress towards achieving this objective. There is some action that indicates progress towards this objective, but these are mainly still at the stage of understanding where vulnerable communities are located. What these communities need and value, and how to support them to adapt, is less well understood. This represents a gap in terms of the progress we would expect to see. There are tools and information sources available to communities, but these can be difficult to find and use.

We don't yet know if these work programmes are leading to behaviour change on the ground, as there is currently limited evidence available around outcomes related to this objective.

Information that would help us to complete this assessment in the future includes data around how many councils have adaptation planning processes underway and at what stage of the process they're at. It would also be helpful to have data around community uptake of tools and how these influence decision-making.

C3: Support communities when they are disrupted or displaced

The third objective for this outcome area relates to supporting communities when they are disrupted or displaced, so that response and recovery can improve their wellbeing and social cohesion.

Leading up to and following extreme weather events, communities may face significant loss and damage. Individuals and families may become displaced, isolated, lose electricity. Damage to roads and infrastructure mean that people are unable to access health services, food and potable water, lose community connection, and face increased stress/mental health issues.

Work programmes underway

Following Cyclone Gabrielle and the Auckland Anniversary Weekend Floods in 2023, the Ministry for Business, Innovation and Employment activated the **Temporary Accommodation Service** which accepted registrations from displaced residents who needed assistance finding temporary accommodation in Auckland, Northland, Tairāwhiti/Gisborne, Bay of Plenty, Hawke's Bay, Waikato and Tararua districts.

Budget 2023 allocated $6 billion into a new **National Resilience Plan** to support medium- and long-term infrastructure investment. It also allocated funds into a **Recovery and Resilience package** for communities, businesses and whānau that were continuing to feel the effects of Auckland Anniversary floods and Cyclone Gabrielle. Budget 2023 built on the $889 million that was already provided.[438] However, the National Resilience Plan has now been closed as part of Budget 2024. The National Resilience Plan, established following the 2023 North Island extreme weather, provided an average of $400 million per annum of operating funding for rebuild and resilience projects. This marks a significant decrease in the available funding for climate resilience.[439]

An **independent external review of the Hawke's Bay Civil Defence and Emergency Management Group response to Cyclone Gabrielle** identified some **critical lessons to be learned** from the event at both the regional and national level, and made recommendations to improve future practices. The report also noted that similar lessons had been identified and recommendations made in a Ministerial review in 2017 and in a review of the Napier flood response in 2020.[440]

The **Report of the Government Inquiry into the Response to the North Island Severe Weather Events** was released in April 2024 and found that Aotearoa New Zealand's emergency management system has failed in places and is not fit for purpose. It makes recommendations to the Government to ensure the emergency management system is fit for the future.[441]

The Government intends to introduce a new **Emergency Management Bill** this term, alongside considering system improvements using existing mechanisms in the Civil Defence Emergency Management Act 2002 and non-legislative levers.

Evidence of outcomes on the ground

The report prepared by **Environmental Health Intelligence New Zealand** for the Commission includes "people in households with basic emergency preparedness" as one indicator of potential social vulnerability. This is defined as the household having all three of the following measures:

- having enough food for three days
- having enough water for three days
- having a household emergency plan.

The report found that in 2021, one in five people lived in households with basic emergency preparedness. Most people (83%) lived in households with enough food for three days. However, Pacific peoples were much less likely to report having enough food for three days (63%), which may reflect food security issues and/or poverty. About half of people (47%) lived in households with enough water for three days, and less than a third of people (31%) lived in households with a household emergency plan.[442]

During Cyclone Gabrielle, roads were washed away, telecommunications infrastructure knocked out, and power supplies were disrupted. This resulted in emergency response that could not reach some places. There was no way to access information or receive supplies or support – with some communities isolated for several weeks after the cyclone.[443]

In April 2023, 2,164 households were registered as needing temporary housing, with 1,179 from Auckland, 520 from Hawke's Bay, 161 from Tairāwhiti/Gisborne, 54 from Northland and 29 from Waikato.[444]

Marae have played a critical role in recovery post extreme weather events. A number of marae opened their doors during Cyclone Gabrielle.[445] They were able to provide kai, water, shelter, showers, electricity through generators, and the internet which allowed for people to connect to their loved ones.[446] However, many marae were over-stretched, under-funded and unrecognised in this vital role. Many locals emphasised that more needs to be done to ensure marae are supported in the future.[447]

The impacts of Cyclone Gabrielle left over 2,000 households filing insurance claims related to building damage. In Northland, more than 23,700 Civil Defence hardship grants were paid, and more than 300 Disaster Relief Fund grants were paid (totalling more than $1 million in Disaster Relief Fund grants).[448] The economic impact of the event is estimated to be hundreds of millions, with nearly 70% of the region's kūmara crop destroyed, more than 250 dairy farms without power during the event, at least 150 dairy farmers had to dispose of milk, some stock animals were killed, and fruit and vegetable crops were damaged.[449]

More than 7,000 properties in Auckland were stickered in the aftermath of the 2023 floods, and as of 1 December 2023, there were just over 8,000 insurance claims outstanding from the floods. The first Category 3 property buyouts in Auckland were completed in December 2023.[450]

Overall assessment of progress

There are a few steps underway to help Aotearoa New Zealand be more prepared to support communities when disasters occur. There are a number of outcomes that have resulted from the response to the 2023 North Island extreme weather events but these are largely reactive (ad hoc responses to support communities post-event), rather than proactively preparing for disasters with communities in an organised way. The outcomes from these particular events may not necessarily inform the responses to future events (e.g. buyouts have been signalled to only happen this one time). Significant gaps remain in terms of progress towards achieving this objective.

The Hawke's Bay Civil Defence and Emergency Management review report identified some lessons learned from the response to Cyclone Gabrielle and made some recommendations to ensure Aotearoa New Zealand is better prepared in future, but it remains to be seen how these recommendations are addressed.

The Government's new adaptation framework has the potential to contribute towards achieving this objective, through providing a funding framework for adaptation and setting out the Government's approach to sharing the costs of adaptation.

C4: The health sector is prepared and can support vulnerable communities affected by climate change

The fourth objective for this outcome area relates to understanding future climate-related health risks and taking steps early to ensure the healthcare system is ready for these shifting demands.

Climate change has many direct and indirect impacts on physical and mental health, and on broader wellbeing. Climate-related hazards and temperature changes can lead directly to physical injury or death (through physical injuries or deaths caused by weather itself, or heat stroke). Health impacts can also be indirect, happening when biological processes change due to climate impacts – for example, respiratory or water-borne diseases. Mental health risks from exposure to climate-related hazards range from minor stress and distress through to clinically recognised disorders such as anxiety and post-traumatic stress disorders.

Preparing the health sector to deal with climate related impacts will require a good understanding of the range of health risks, and potential shifting demands on the healthcare system. It will also require a joined-up approach to adaptation across regions and between different parts of the system – including hospitals, primary health organisations, community health providers, Māori health providers, and aged care facilities.

Work programmes underway

One of the priorities of the **New Zealand Health Strategy 2023** focuses on a resilient and sustainable healthcare system. The ten-year goal is to ensure the health system will be better prepared to manage future adverse events.

The responsibility for developing a **Health National Adaptation Plan** sits with the Public Health Agency (PHA) as part of their wider climate change and health work programme. To assist with the development of the plan, a **working group has been established** with representatives from the PHA, Te Aka Whai Ora, and Health New Zealand Te Whatu Ora. The group has been engaging with stakeholders and researchers to inform the development of the plan.

Following the 2023 North Island extreme weather events, around $13 million was invested in the previously mentioned **Community Connectors**, who were employed by social sector providers and non-government organisations to provide short-term support to individuals and whānau to prevent and reduce the impacts of hardship.[451]

The Bill to **disestablish the Māori Health Authority** was passed by the current Government in late February. It will be formally disestablished in June, and this has the potential to hinder progress towards achieving this objective. As discussed in objective C2, a higher proportion of Māori households are vulnerable to the impacts of climate change in part due to health disparities. The Māori Health Authority was established to directly address the long-standing inequities in health outcomes for Māori.

Evidence of outcomes on the ground

There were 65 **Community Connectors** that supported 32,500 households and whānau impacted by the January 2023 floods and Cyclone Gabrielle.[452] Community Connectors supported and advocated for those they worked with until they were connected with appropriate services.

Following the 2023 North Island extreme weather events, Work and Income provided help with emergency costs including medical costs. The Ministry of Social Development also provided support and funding for people with disabilities who were affected by the North Island floods and Cyclone Gabrielle.

Overall assessment of progress

We are seeing some evidence of progress towards this objective, with some work programmes underway. However, much of it is reactive rather than proactive, and significant gaps remain. The main process step, the Health National Adaptation Plan, is at a very early stage in its development and it is unclear what the next steps are.

There is some movement away from this objective with the disestablishment of the Māori Health Authority.

Economy and financial system

There are two objectives in the economy and financial system outcome area. These objectives cover the ability of sectors, businesses and regional economies to adapt to climate change; and the resilience of the financial system that underpins economic stability and growth (see Table 9.6).

Climate change is already affecting the economy, and investing early in adaptation is in the country's long-term economic self-interest. Adaptation creates economic benefits in several ways – including by reducing future losses, creating economic benefits by reducing risk and increasing productivity, and by generating broader social and environmental benefits.[453]

To support a resilient economy, and reduce the scale of long-run economic costs, central and local government, businesses, property owners and civil society all need to take action, and consider future climate impacts when making long-term decisions, such as where to locate or live, how to earn an income, and what type of insurance to buy.

Summary of findings for this outcome area

Across the two objectives in the economy and financial system outcome area, we are observing some good progress being made towards achieving each of the objectives.

However, there are gaps which still remain and have the potential to be significant. The scale of the financial barrier to action for many businesses, in many sectors, is significant. There are gaps with respect to the level of Government action needed to facilitate investment and finance at the pace and scale required. The lack of a funding framework for adaptation is an important gap that relates to this outcome area. Insurance retreat from areas exposed to climate-related hazards represents a risk on the horizon. Answering the question of how to deal with insurance retreat remains a significant gap.

Table 9.6: Objectives in the economy and financial system outcome area and their explanations in the first national adaptation plan

Code	Objective	Explanation in the plan
EF1	Sectors, businesses and regional economies can adapt. Participants can identify risks and take action.	• Give businesses and property owners the tools and information they need to respond to climate risks. • Reduce barriers to adaptation and innovation. • Enable sectors most vulnerable to near-term or significant change (e.g. tourism, land-based primary sector, fisheries and aquaculture) to take action now to reduce costs over time. • Provide regions with what they need to make informed assessments of their risk and reduce their exposure to climate-driven economic disruptions. • Help businesses, sectors and regions to identify economic opportunities that may arise from a changing climate.
EF2	A resilient financial system underpins economic stability and growth. Participants can identify, disclose and manage climate risks.	• Financial entities can identify, disclose and manage the risks to their business. • Insurance access and affordability is understood and managed.

EF1: Sectors, businesses and regional economies can adapt. Participants can identify risks and take action

This objective is broad in scope. It encompasses all sectors (and specifically mentions tourism, the land-based primary sector, fisheries and aquaculture), as well as businesses and regions and their ability to identify risks and opportunities, and to take action.

Climate change will impact businesses in different ways, including potential impacts on their supply chains and ability to provide continuous service. Assets in locations exposed to climate change will be at risk, and businesses in sectors that depend on the environment and natural resources will be particularly vulnerable.

Tourism, land-based primary industries, fisheries and aquaculture are some of Aotearoa New Zealand's most exposed sectors, because they depend on climate-sensitive natural resources. Many regional economies rely heavily on these sectors. Economic impacts will not be evenly distributed. Economic activities in hazard prone areas will be further exposed to risk. Failure to adapt could lead to business closures and job losses. This would have significant implications for workers and households, and, if widespread, could result in people having to leave some communities.

Work programmes underway

In 2021, the **Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act** required around 200 large financial institutions covered by the Financial Markets Conduct Act 2013 to start making **climate-related disclosures**. These reports publicly disclose information about the effects of climate change on their business or any fund they manage. Disclosures must be published in accordance with **climate standards published by the External Reporting Board (XRB)**, which include three climate scenarios that entities must consider.[454]

The businesses reporting under this scheme include those with a business model that relies on climate-sensitive natural resources. Examples of reporting entities include NZ King Salmon, Fonterra, Sanford, Synlait, and Tourism Holdings.

The Aotearoa Circle has produced **sector-specific climate scenarios and adaptation plans** for the tourism, seafood, agriculture, transportation and energy sectors. The sector-specific climate scenarios detail what the sectors could look like under different climate scenarios, in order to provide a foundational basis for adaptation planning. The adaptation plans were written in collaboration with the sectors they cover and include a roadmap of actions to improve sector resilience – with the goal of supporting proactive planning.

Several websites have been developed to provide businesses with **information about how to plan for extreme weather events**. This includes the website Business.govt.nz (run by the Ministry of Business, Innovation and Employment), which has resources for emergency planning, developing a business continuity plan, looking after employees including mental health and wellbeing, how to operate safely in extreme temperatures and what to do if you are a farmer or grower.

Information and support has also been made available for specific sectors. This includes:

- NIWA and MPI's drought forecasting tool was launched in 2023 with the goal of supporting the resilience of the agriculture sector.[455]
- MPI's On-Farm Support team, which is a free service that supports farmers and growers take an integrated approach to farm planning.
- The Fisheries Amendment Act (passed in November 2022), which aims to encourage better fishing practices and modernise and strengthen the fisheries management system.

The **Reserve Bank of New Zealand** released the results of their **2023 Climate Stress Test** in April 2024. The Climate Stress Test sought to assess the financial impacts of a scenario involving climate-related risks on the balance sheets of the largest banks, and to uplift industry capability in managing such risks.[456]

The **New Zealand Sovereign Green Bond Programme** was launched with an inaugural issuance of $3 billion in November 2022. The **New Zealand Green Bond Allocation Report 2022/23** notes that only 4% of the total is currently allocated to climate change adaptation, but that this is expected to grow.[457] It also notes that under the Climate Change Adaptation Category, proceeds have financed the Crown's contribution to more than 50 regional council projects to deliver flood protection, mitigation, and control through the construction and upgrading of stop banks, sea walls and other climate-resilient infrastructure.[458]

Evidence of outcomes on the ground

In February 2024, about **40% of NZX companies were disclosing climate-related risks** in their financial statements, up from 22% the previous year.[459]

In 2021 the results of the **Stats NZ business operations survey** indicated that 45% of businesses surveyed planned to take steps over the next five years in response to climate change, with 19% saying they are taking steps to reduce the risks to the business of the physical impacts of climate change.[460]

Stats NZ's business operations survey also found that over half of **Māori authorities** took action in response to climate change in the previous two years (compared with a third of all Aotearoa New Zealand businesses). Around a quarter of **Māori authorities** are in the primary industries, which are vulnerable to climate-related impacts.[461]

A recent "**climate action in Aotearoa NZ SME**" survey by the sustainable business network indicates that most SMEs (77%) were concerned about the impacts climate change would have on their business. However, only 36% identified climate action as a top priority for their business.[462]

The **Reserve Bank of New Zealand's 2022 climate change risk assessment for agricultural lending** assessed drought risk and found that a one-year drought was projected to result in 7% of banks' sheep and beef exposures and 8% of dairy exposures defaulting, and a two-year drought was projected to result in double those amounts, compared with around 3% in a baseline with no drought.[463]

Recent climate events have resulted in significant costs to the economy – for example, Cyclone Gabrielle was estimated to have caused damage to businesses of $2–3 billion.[464]

We also heard during our engagement that ability to access funding and investment in adaptation is a significant barrier across many sectors (see *Chapter 7: Barriers to the plan's effectiveness* for more information).

Overall assessment of progress

We are seeing some good evidence of progress towards achieving this objective, with some important work underway or recently completed.

Legislation mandating climate-related disclosures, and the climate standards and guidance published by XRB, represent important steps towards achieving this objective.

The Aotearoa Circle's sector-specific climate scenarios and adaptation plans are another important step forward, as they play an important role building knowledge and awareness within the sectors they cover, and highlighting potential paths forward.

There are also more information and tools being developed and made available to support businesses to understand risk. For farmers and growers, in particular, there is support available to help them to understand risk and plan for change. There was also financial and other support provided to farmers and growers following the North Island weather events in 2023. However, we are still hearing through our engagement that it is not sufficient, particularly to overcome financial barriers to taking action. There is less evidence of support being made available for some of the other sectors, including tourism.

In spite of the steps we see happening, and the increasing amount of information and tools being developed, the scale of the financial barrier to action for many businesses, in many sectors, remains significant. Some sectors face specific barriers around accessing capital to support adaptation, and we haven't observed much progress addressing this barrier. For example, we don't see targeted funding and financing tools to support action in key sectors. The recent announcement of the cross-party inquiry into the development of an adaptation framework, led by Parliament's Finance and Expenditure Committee, has the potential to help with progress towards achieving this objective.

Government action is needed to facilitate investment and finance at the pace and scale required – including private investment in resilience – and this represents a gap (see *Chapter 7: Barriers to the plan's effectiveness*).

EF2: A resilient financial system underpins economic stability and growth. Participants can identify, disclose and manage climate risks

The second objective for this outcome area relates to having a resilient financial system that underpins economic stability and growth.

The impacts of climate change are already evident, triggering growing concern for the future stability of the financial system. In addition to progressive and ongoing climate changes, such as increasing average temperatures, sea-level rise and ocean acidification, it is widely accepted that extreme weather events are increasing in frequency and severity. These events have significant economic impacts. Banks and insurers may be exposed through their mortgage portfolios and liabilities. As the risk of these events increases with climate change, some assets could become uninsurable. Insurance retreat would likely reduce private and public asset values, making households and firms or public entities less able to invest in adaptation. There are likely to be more insurance claims, greater damage repairs and higher premiums.

Work programmes underway

As with objective EF1, the **Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021**, makes an important contribution towards this objective. The Act requires around 200 large financial institutions covered by the Financial Markets Conduct Act 2013 to disclose their exposure to climate risk. Disclosures need to be in accordance with **Climate-related Disclosures standards** published by the External Reporting Board (XRB) in December 2022. The XRB has created **guidance and resources** to support entities when applying Aotearoa New Zealand Climate Standards.[465]

The Reserve Bank of New Zealand has developed **guidance for regulated entities on managing climate-related risks**. The guidance, published in March 2024, is aimed at all entities prudentially regulated by the Reserve Bank, namely registered banks, licensed insurers, licensed non-bank deposit-takers, and operators of designated financial market infrastructures. It is intended to support entities in meeting their obligations to effectively manage risks.[466]

The Reserve Bank of New Zealand has also released the results of their **2023 Climate Stress Test** in April 2024. The Climate Stress Test sought to assess the financial impacts of a scenario involving climate-related risks on the balance sheets of the largest banks, and to uplift industry capability in managing such risks. It made recommendations for banks to improve management of climate-related risks.[467]

In 2022 general insurers worked together through the Insurance Council of New Zealand (ICNZ) Climate Group, supported by KPMG, to develop **shared climate change scenarios**.[468] The ICNZ Shared Climate Scenarios for the insurance sector were completed in 2023, and have been used by organisations such as IAG to complete their climate-related disclosures.

A recent research paper, ***Insurance retreat in residential properties from future sea level rise in Aotearoa New Zealand***, focused on estimating when and where insurance retreat can be expected. It found that 99% of properties currently within 1% annual exceedance probability coastal inundation zones in four Aotearoa New Zealand cities can expect at least partial insurance retreat within a decade, with less than 10 centimetres of sea-level rise. The study's modelling predicts that full insurance retreat is likely within 20-25 years, depending on the property's elevation, distance from the coast, and the tidal range in each location.[469] Recognising areas where insurance retreat is inevitable can help prevent maladaptive measures such as the introduction or extension of public insurance to these areas.

Evidence of outcomes on the ground

In February 2024, about 40% of **NZX companies were disclosing climate-related risks** in their financial statements. This is almost double the number disclosing one year prior (22%).

The **2022 Insights on Aotearoa New Zealand Sustainability Professionals report** found that "climate change impact assessment and disclosure" is a priority sustainability topic for more than 70% of respondents. It was rated the second-highest priority topic, behind "measuring and managing organisational carbon emissions".[470]

The **Deloitte 2022 CFO Sustainability Snapshot Survey** results noted that for those respondents who are reporting entities under the Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021, 83% had completed or made progress towards their first climate-related disclosures. Respondents using a framework, or planning to use a framework, to conduct this reporting are primarily using the XRB's framework or the international Task Force on Climate-Related Financial Disclosures framework.[471]

Finity Consulting's Insurance Price Monitoring report, provided to the Treasury in August 2023, noted a 9% increase in the 'gross average cheapest insurance premium' between April 2023 and July 2023. They noted that all regions experienced at least a 6% increase, with larger increases for Wellington, Hawke's Bay and Marlborough. Since Finity began monitoring insurance premiums in late 2022, the average cheapest insurance premium has increased by more than 22%. Choice of insurer and ability to easily shop around for insurance has also decreased in some places, with properties in some regions now only able to get online insurance quotes from one or two underwriters.[472]

A CoreLogic report, **Solving the home insurance problem in Aotearoa New Zealand**, released in October 2022, notes that on the surface the insurance picture looks good – just 2% to 4% of homes in Aotearoa New Zealand are uninsured. However, underinsurance is a significant and growing problem, with a significant proportion of "insured" residential property owners not having sufficient cover to rebuild their home in the event of total loss.[473]

IAG's climate change survey, published in July 2023, found that a majority of New Zealanders agree that insurers should reflect the risk of climate hazards in their prices (59%) and say they will accept insurance becoming more expensive (74%) and harder to obtain (53%) if they live in a high-risk location. Of the respondents, 32% agreed insurers should stop supporting customers in locations where the risk is "too great".[474]

As of September 2023, **Insurance Council of New Zealand data** estimated the cost of general insurance claims for the Auckland Anniversary Weekend floods and Cyclone Gabrielle to be $3.5bn across 112,812 claims.[475]

Overall assessment of progress

We are observing some steps that signal a move closer towards achieving this objective, and some of these are well advanced (e.g. the Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021 and the XRB Climate-related Disclosures standards and guidance).

There are some early indications of outcomes on the ground, with 40% of NZX companies disclosing climate-related risks in their financial statements as at February 2024.[476] However, it is difficult to assess the quality of these disclosures, and whether the information provided through these disclosures is having an impact on investment decisions.

The impacts of climate change for the insurance sector are fairly well-understood by the sector, and the general public has some awareness of how climate change could impact their insurance cover (based on the IAG survey results). There is still a question of what will happen when insurers retreat from some locations, and this is a significant gap.

WĀHANGA 10 | CHAPTER 10

Te whakawhanake i ngā waeine matua ā-motu | Developing key national metrics

This chapter presents our initial work to develop key national-level metrics, as part of building a more quantitative picture of progress over time.

Introduction

To support our first assessment of progress, we commissioned work on three national-level metrics. These are intended to be the first of a set of high-level metrics that support a quantitative view of progress across different systems, and across the country. These metrics complement and feed into the Commission's objective-level assessment of progress (see *Chapter 9: Observed progress towards the plan's objectives*).

Developing quantitative indicators of adaptation progress is a complex task, and a challenge being navigated by many who are assessing adaptation progress across different scales around the world. As the Commission's adaptation monitoring continues to develop over time, we will explore additional metrics that are useful indicators of adaptation progress – including helping to understand how risk is changing, and whether adaptation action is driving change. The inclusion of measurable, outcomes-focused targets in future national adaptation plans would support this task (see *Chapter 5: The plan's overall architecture, goals and objectives*).

This chapter describes three initial national-level metrics, how they are relevant for understanding adaptation progress, and what they tell us. At this early stage of the Commission's progress reporting, these metrics offer early, illustrative insights into some selective areas relevant for adaptation planning and action. We will continue to develop these national-level metrics, alongside identifying other metrics that can offer broader insights into other important areas.

Further detail on these metrics can be found in the reports from Urban Intelligence and Environmental Health Intelligence New Zealand (EHINZ), which are available on our website.[477] Any reference to work by Urban Intelligence or EHINZ in this chapter refers to these reports, unless otherwise specified. The national-level metrics described in this chapter are based on data and information from a range of publicly available sources. Please see the Urban Intelligence and EHINZ reports for a full list of sources.

Three national-level metrics

Extent of buildings and infrastructure exposed to climate-related hazards

Urban Intelligence estimated the quantum of buildings and infrastructure exposed to landslides, and to coastal flooding across the country.

The infrastructure and assets included in this analysis were chosen because of their importance for connectivity, wellbeing, and functioning of communities across the country (see Table 10.1). This analysis was not able to look at some other critical infrastructure types (including water supply, landfill, wastewater, and telecommunications infrastructure) due to limited availability of comprehensive, nationwide data sets.

Exposure to coastal flooding was estimated based on a 1% annual exceedance probability (AEP) coastal flood event under different sea level rise scenarios. 'Annual exceedance probability' refers to the probability of a certain size event occurring within a single year.

A 1% AEP event has a 1% chance of occurring in any one year based on the current climate.[xxx] This is often referred to as a 1-in-100-year event. A 1% AEP event is commonly used in flood exposure assessments to provide an extreme scenario – for the purpose of risk assessment, for example – including by NIWA.[478]

It is important to recognise that today's 1% AEP flood (or 1-in-100-year event) will occur more frequently in the future. In 2015, analysis for the Parliamentary Commissioner for the Environment estimated that, with 10 centimetres of sea-level rise, a 1% AEP coastal flood would occur every 35 years in Auckland, every 20 years in Wellington, every 22 years in Christchurch and every 29 years in Dunedin.[479]

The coastal flooding exposure assessment for this analysis was based on matching NIWA's extreme sea-level rise extents,[480] with relative sea-level change projections for the different climate scenarios used by the NZ SeaRise programme.[481] Exposure to landslides was based on national Highly Erodible Land dataset developed by Maanaki Whenua Landcare Research, and available from Stats NZ. This does not include any environmental change (for example, changes in precipitation patterns) or temporal increments so, unlike the extreme sea-level data, cannot be used to project how risk will change in the future as a result of how this hazard changes.

Exposure was calculated spatially by determining whether the asset is located within a hazard-prone area, based on estimated hazard extent. This assessment does not report the potential *damage* that exposure may cause to these assets, which is also an important aspect of risk. For example, an asset might be exposed, but may be sufficiently robust to withstand that level of exposure.

Table 10.1: Asset and infrastructure types included in the Urban Intelligence analysis

Asset and infrastructure types considered for this metric	
• Buildings (including homes)	• Marae
• Roads	• Bridges
• Hospitals	• Airports
• Primary schools	• Electricity transmission structures
• Fire stations	• Rail

xxx. The analysis by Urban Intelligence is based on the current climate in 2020.

People and homes at risk of isolation

Risk of isolation refers to people and homes being cut off from important services like emergency services, supermarkets, education, work, and cultural sites of significance (such as marae) if transport networks are damaged. Isolation can be highly disruptive to communities, placing significant mental and economic burden on affected households. Understanding risk of isolation is important for Aotearoa New Zealand's understanding of adaptation needs, and urgency.

The Commission asked Urban Intelligence to build on their analysis of exposure of buildings and infrastructure to evaluate how many households and marae are at risk of isolation when transport infrastructure is exposed to landslides and to coastal flooding (a 1% AEP coastal flood event under different sea-level rise scenarios).

Dimensions of social vulnerability to climate-related hazards

Understanding groups and populations that may be more likely to experience harm from climate-related hazards and events is an important complement to these two metrics (exposure and risk of isolation). Information about "social vulnerability" is valuable for understanding how likely households and communities with high levels of exposure, or at risk of becoming isolated, are to experience harm.

Personal circumstances, pre-existing conditions, and/or socio-demographic characteristics can make particular groups or individuals more likely to experience harm when affected by a climate-related hazard. They may also affect how different groups or individuals perceive and respond to risk. No single aspect or dimension will provide a picture of how likely an individual or population is to be adversely affected, but those with multiple or many dimensions that contribute to social vulnerability will be more *likely* to experience harm.

The Commission contracted EHINZ, from Massey University, to bring together existing social vulnerability indicator data at a national level. EHINZ have developed social vulnerability indicators that have been assessed as working well for a range of natural hazards, including climate-related hazards – particularly sudden-onset hazards. The report EHINZ prepared for the Commission includes data from the 2013 Census, the 2018 census, with data from the 2006 census added where possible. These metrics can be updated over time, for example as data from the 2023 census become available.

The indicators cover important dimensions that affect social vulnerability, with key indicators under each. Some indicators are relevant for multiple dimensions. In Table 10.2 they have been included under the main dimension they are relevant for.

Table 10.2: Key social vulnerability indicators for dimensions included in the Environmental Health Intelligence New Zealand analysis

Dimension	Key indicators
Key population groups: Some population groups are more likely to experience negative impacts on their health and wellbeing from climate-related hazards. This includes children, older adults, people with chronic health conditions, people with disabilities, people with mental illness, and pregnant women.	• Children (0–14 years)/ Young children (0–4 years) • Households with at least one child/ at least one young child • Older adults aged (65+/75+/85+ years) • Households with an older adult living alone (65+ years)
Having enough money to cope with crises and losses: People with low incomes and/or without enough money to cope with crises and losses will be less able to prepare for climate-related hazards, cope with climate-related hazard events (for example, having emergency supplies set aside), and recover financially from losses after a disaster.	• People in areas of high socioeconomic deprivation • Unemployed/not in labour force • Single parent households • Households with no car

Social connectedness: Strong social connections, networks and kinship ties can be important. These can help people to know, help and support each other during and after a climate-related hazard event, and to better cope and recover as a community. People who are socially isolated or new to an area may be more vulnerable during and after a climate-related hazard event. This is because they may not have others to help them if needed or may not know how to access official support.	• One person households • Immigrants arriving in the past year • Immigrants arriving in the past two years
Awareness, knowledge, and skills to cope with climate-related hazards: Awareness and being able to access and understand information about climate-related hazards (including about preparedness, adaptation, and recovery), is important. Having access to communication devices allows people to access information, and to contact friends, family, and others before, during and after an event.	• Households with no access to a mobile phone • Households with no access to the Internet • People who do not speak English
Safe, secure, and healthy housing: People living in rental housing can be at greater risk of displacement and homelessness following an event. Those in crowded households are more at risk of infectious diseases and may not have sufficient emergency supplies. Damp and mouldy housing can affect health, and lead to respiratory issues. People who are homeless or in temporary accommodation may be highly exposed to extreme weather events, and not have anywhere else to go.	• Living in rented dwellings • People living in crowded households • Damp dwellings • Mouldy dwellings • Homelessness and/or severe housing deprivation
Enough food and water to cope with shortage: Having enough food and water, and ways of cooking food and ensuring drinking water is safe, is important for survival following a climate-related hazard event. A lack of emergency supplies, electricity supplies (to cook food, boil water, and keep fridges and freezers going) and/or shelter can severely impact on people's health and wellbeing.	• Households that meet basic emergency preparedness guidelines • Children living in households with food insecurity • Dwellings with no access to safe running water • Dwellings with no power / fridge
Decision-making and participation: Good leadership, inclusive planning and decision-making, and participation by the community, is important to ensure that people's needs are met. Effective leadership is important when coordinating emergency management during and after a disaster.	• Voting participation in local body elections
Occupation: People working in primary industries are more vulnerable to the impacts of climate-related hazards, as they work outdoors, and their livelihoods depend on natural resources. People who work in healthcare and social assistance may be more exposed during a climate-related hazard event if they need to work during a disaster. People working outdoors may be more exposed to extreme heat.	• Primary industry workers (among people 15+) • Primary industry workers (among employed 15+) • Healthcare and social assistance workers (among people 15+) • Healthcare and social assistance workers (among employed 15+)

Source: EHINZ

What these metrics tell us

Effective adaptation planning requires detailed and spatially explicit risk information at the local and regional government level. Social vulnerability data for smaller geographic areas could also be used to support adaptation planning in specific exposure zones. However, these national metrics offer a high-level perspective on potential risks and burdens posed by climate change-related natural hazards.

Extent of buildings, infrastructure and populations in at-risk areas

A lot of homes and infrastructure in Aotearoa New Zealand are exposed to climate-related hazards, including sea-level rise and coastal flooding, landslides and inland flooding. As sea level rises, and as the country experiences more frequent and extreme weather events, more homes and infrastructure will be exposed. This means that the potential for damage and disruption will also increase.

Damage to homes will have major impacts on the wellbeing of the people and families who live there. Damage to infrastructure can have significant impacts on the people, communities and businesses that rely on them – including significant cascading impacts. For example, damage to transport infrastructure can prevent the movement of people and affect supply chains and movement of goods. At the same time, damage to electricity distribution infrastructure can cause widespread power outages that can lead to failure of other infrastructure, such as water supply (the pumps require electricity to function) and wastewater (wastewater treatment plants need electricity to treat incoming sewage). Damage to healthcare, education and emergency services infrastructure, and to cultural facilities, will also affect the social and economic wellbeing of communities all across the country.

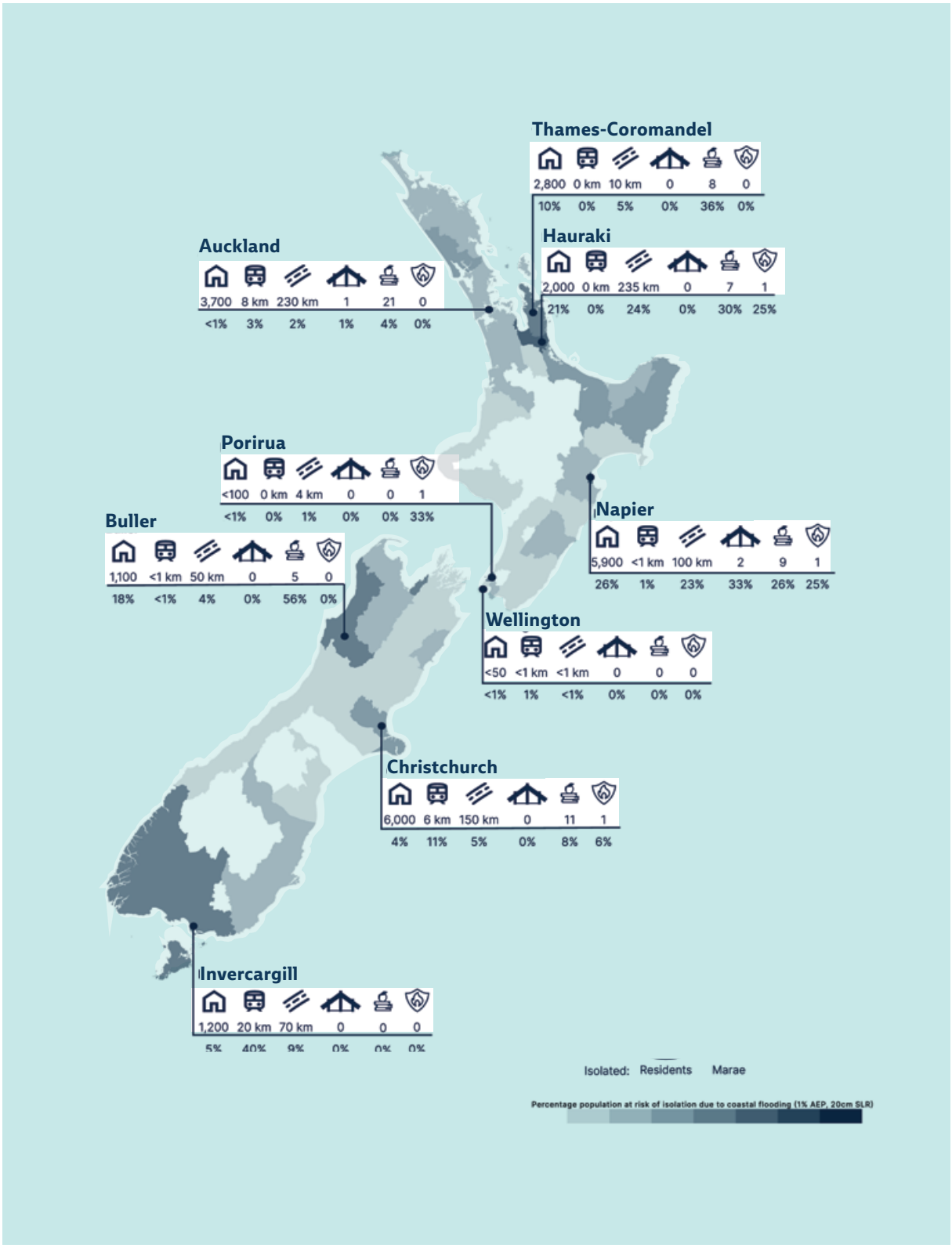
Assessing how exposed buildings and infrastructure are to climate-related hazards is important for understanding the potential damage and disruption that might occur following a climate-related hazard event. Looking at the layers of social vulnerability in highly exposed communities can help with a more nuanced understanding of risk and inform effective adaptation planning. Looking at these together can provide a picture to support the Commission's monitoring of adaptation planning and action over time, including how risk is changing.

Areas with the largest amount of buildings and infrastructure exposed

Analysis by Urban Intelligence looked at districts with the largest share of buildings, infrastructure and populations exposed to coastal 1% AEP flooding events under different levels of relative sea level, and to landslides. **Figure 10.1**, **Figure 10.2** and **Figure 10.3** show districts with the largest exposure to events for coastal 1% AEP flooding events under 20 centimetres, 50 centimetres and 1 metre of relative sea-level rise, respectively. **Figure 10.4** shows districts with the largest exposure to landslides.

Also of note, this analysis shows that 14 of Aotearoa New Zealand's airports are exposed to coastal 1% AEP flooding events under 20 centimetres of relative sea-level rise.

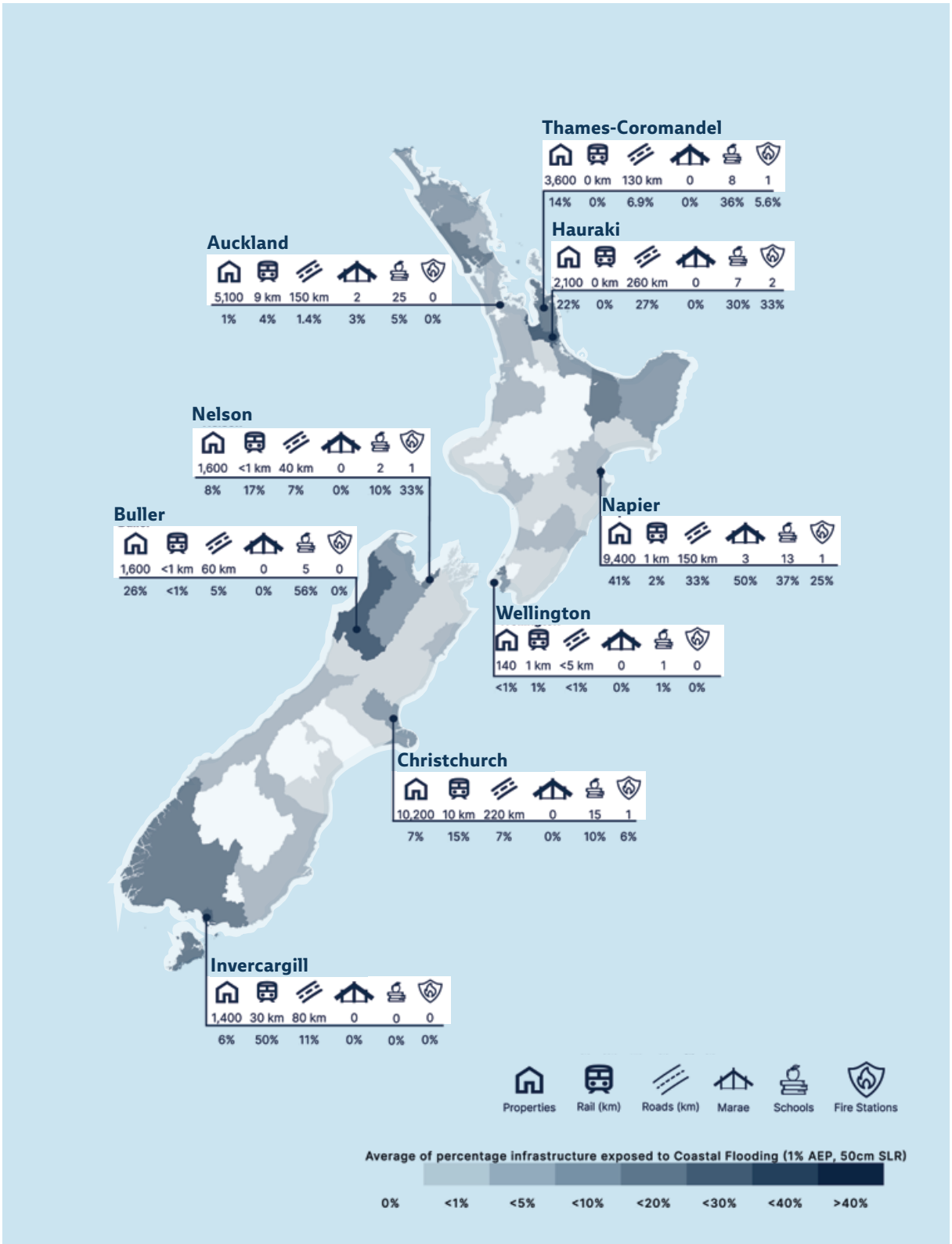
Figure 10.1: Aotearoa New Zealand's districts, shaded by the percentage of their infrastructure located in areas that, with 20 centimetres of relative sea-level rise, would have more than 1% probability of coastal flooding in any given year (the 1% annual exceedance probability zone)



Source: Urban Intelligence

Note: The six districts with the highest percentage exposure, along with Auckland, Christchurch, and Wellington, are shown.

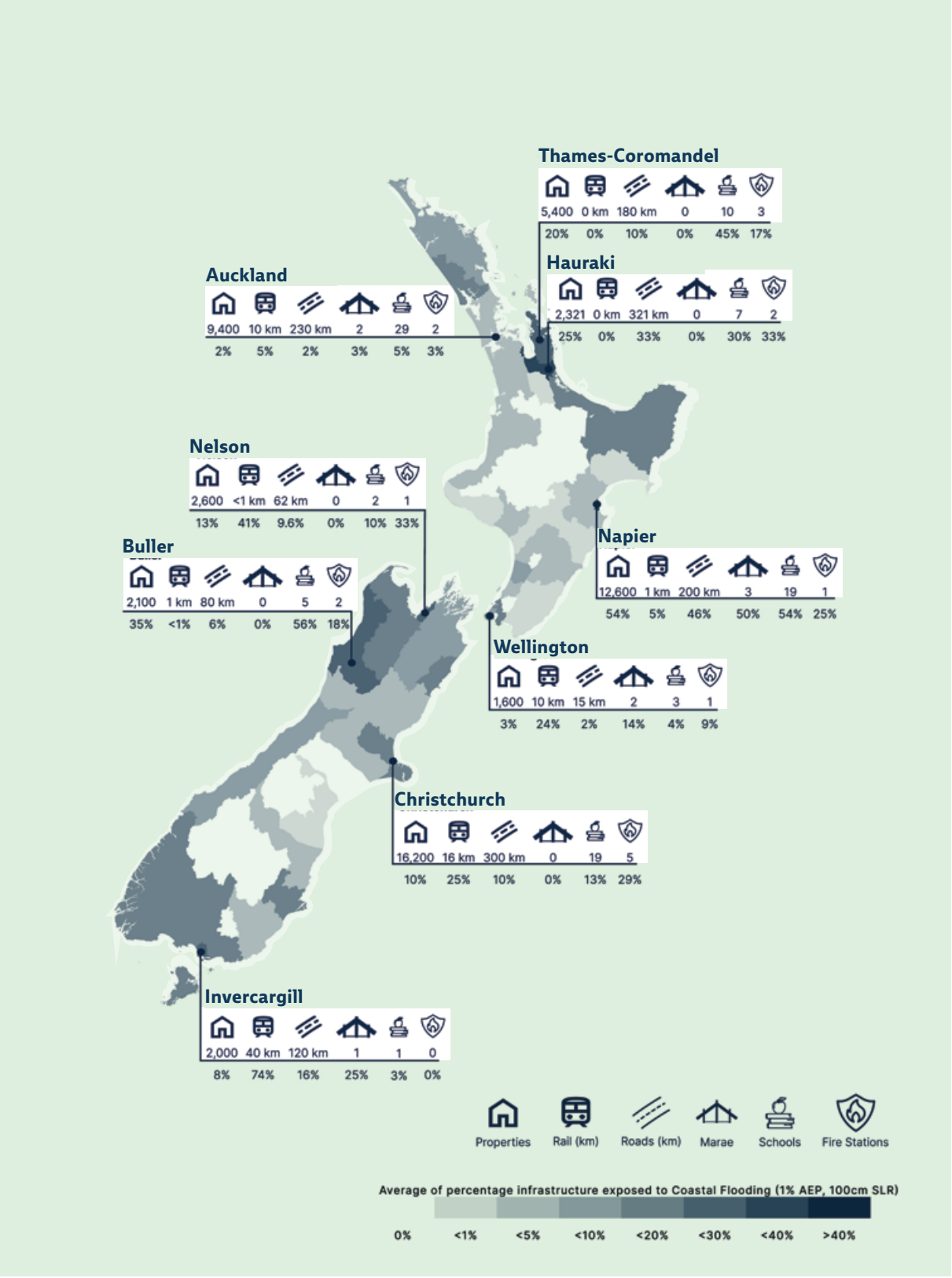
Figure 10.2: Aotearoa New Zealand's districts, shaded by the percentage of their infrastructure located in areas that, with 50 centimetres of relative sea-level rise, would have more than 1% probability of coastal flooding in any given year (the 1% annual exceedance probability zone)



Source: Urban Intelligence

Note: The six districts with the highest percentage exposure, along with Auckland, Christchurch, and Wellington, are shown.

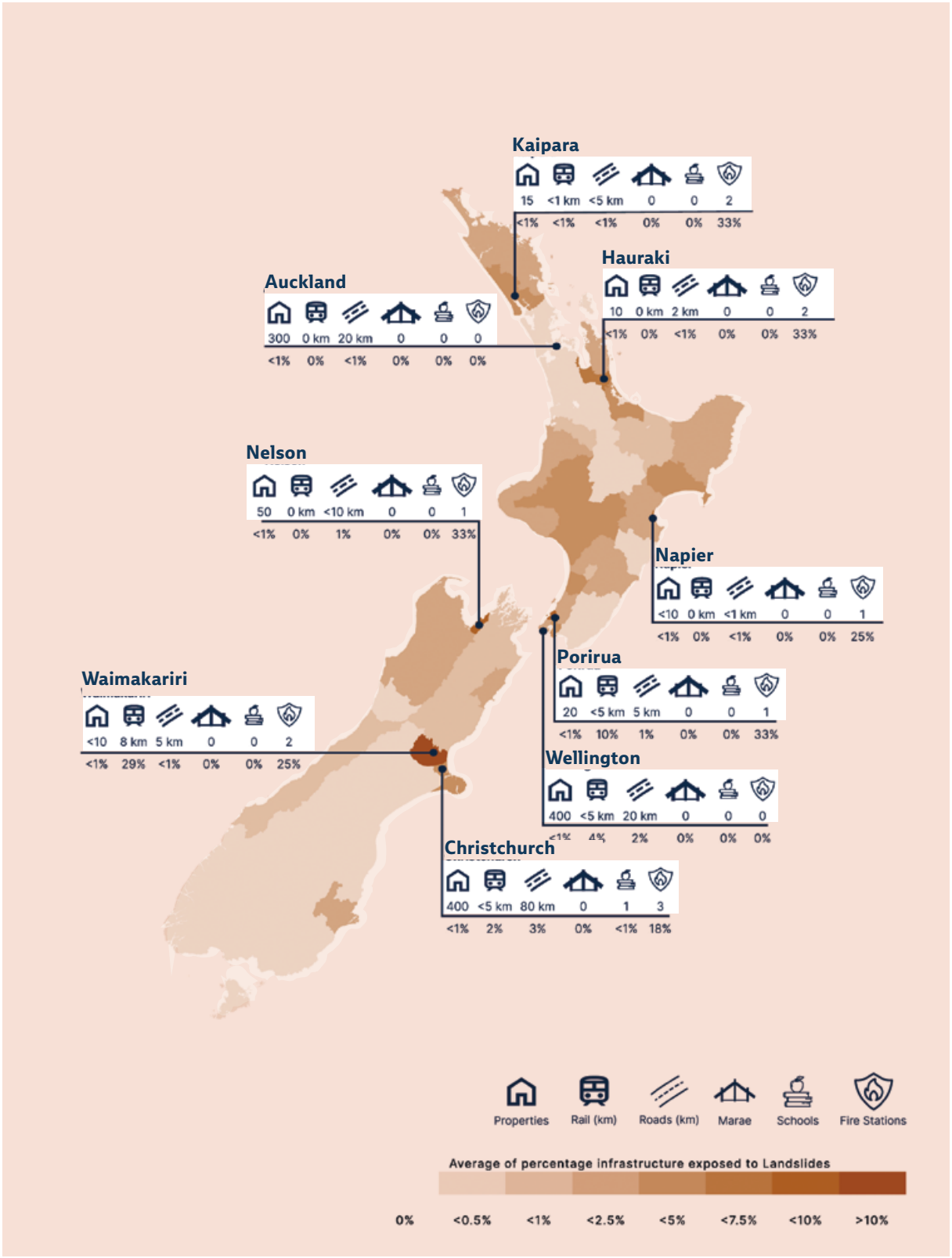
Figure 10.3: Aotearoa New Zealand's districts, shaded by the percentage of their infrastructure located in areas that, with 1 metre of relative sea-level rise, would have more than 1% probability of coastal flooding in any given year (the 1% annual exceedance probability zone)



Source: Urban Intelligence

Note: The six districts with the highest percentage exposure, along with Auckland, Christchurch, and Wellington, are shown.

Figure 10.4: Aotearoa New Zealand's districts, shaded by the percentage of their infrastructure located in areas that are exposed to landslides



Source: Urban Intelligence

Note: The six districts with the highest percentage exposure, along with Auckland, Christchurch, and Wellington, are shown.

Share of people in communities at risk of isolation

People and communities around Aotearoa New Zealand rely on a range of infrastructure to enable daily life, stay connected, and support wellbeing. Transport networks play a particularly important role in daily life because they enable the movement of goods and services, and connect people to their communities, and to essential services like emergency services, supermarkets, education, work, and cultural sites of significance (such as marae). If transport networks are damaged, people and households can be cut off from these services and become isolated.

Coastal inundation and landslides are two climate-related hazards that can cause significant damage to transport networks. Aotearoa New Zealand has a large amount of coastline and many coastal communities, with extensive transport infrastructure close to the coast. In some parts of the country, households away from the coast are also heavily reliant on coastal transport networks. This means that in some places, transport networks are more exposed to climate-related hazards than the properties they serve. In some places, people and households could become isolated years or decades before the properties themselves may be exposed.

Understanding where, when, and to what extent people and households might lose access to and from essential services can help to highlight critical vulnerabilities in the transportation network. It can also be a useful indication of potential for disruption to other infrastructure that is often co-located with roadways – such as electricity, water, and internet.

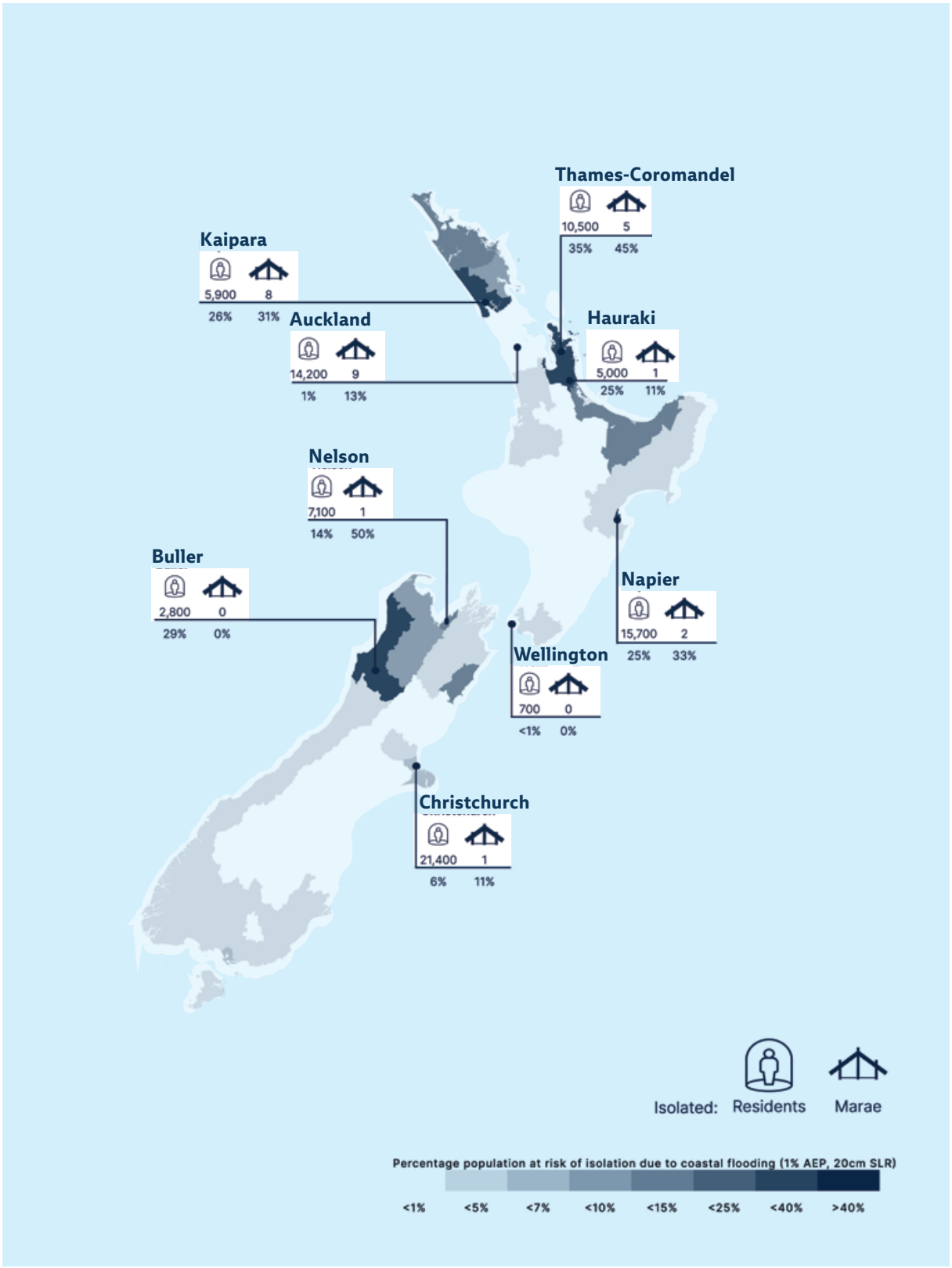
Understanding the extent to which marae are at risk of isolation is also important because damage to access roads would prevent people from coming together for cultural and other events. It would also be an indication of potential damage to surrounding sites of significance, such as urupā and mahinga kai. Marae also play a critical role as emergency hubs and provide important resilience to the local community during extreme events.

Looking at this analysis alongside the layers of social vulnerability in areas at risk of isolation can provide a picture to support the Commission's monitoring of adaptation planning and action over time, including how risk is changing.

Areas with the largest share of people at risk of isolation

Analysis by Urban Intelligence looked at districts with the largest share of population at risk of isolation from coastal flooding for coastal 1% AEP flooding events under different levels of relative sea level, and to landslides. Figure 10.5, Figure 10.6 and Figure 10.7 show districts with the largest share of the population at risk of isolation from coastal flooding for coastal 1% AEP flooding events under 20 centimetres, 50 centimetres and 1 metre of relative sea level, respectively. Figure 10.8 shows areas with the largest share of the population at risk of isolation from landslides.

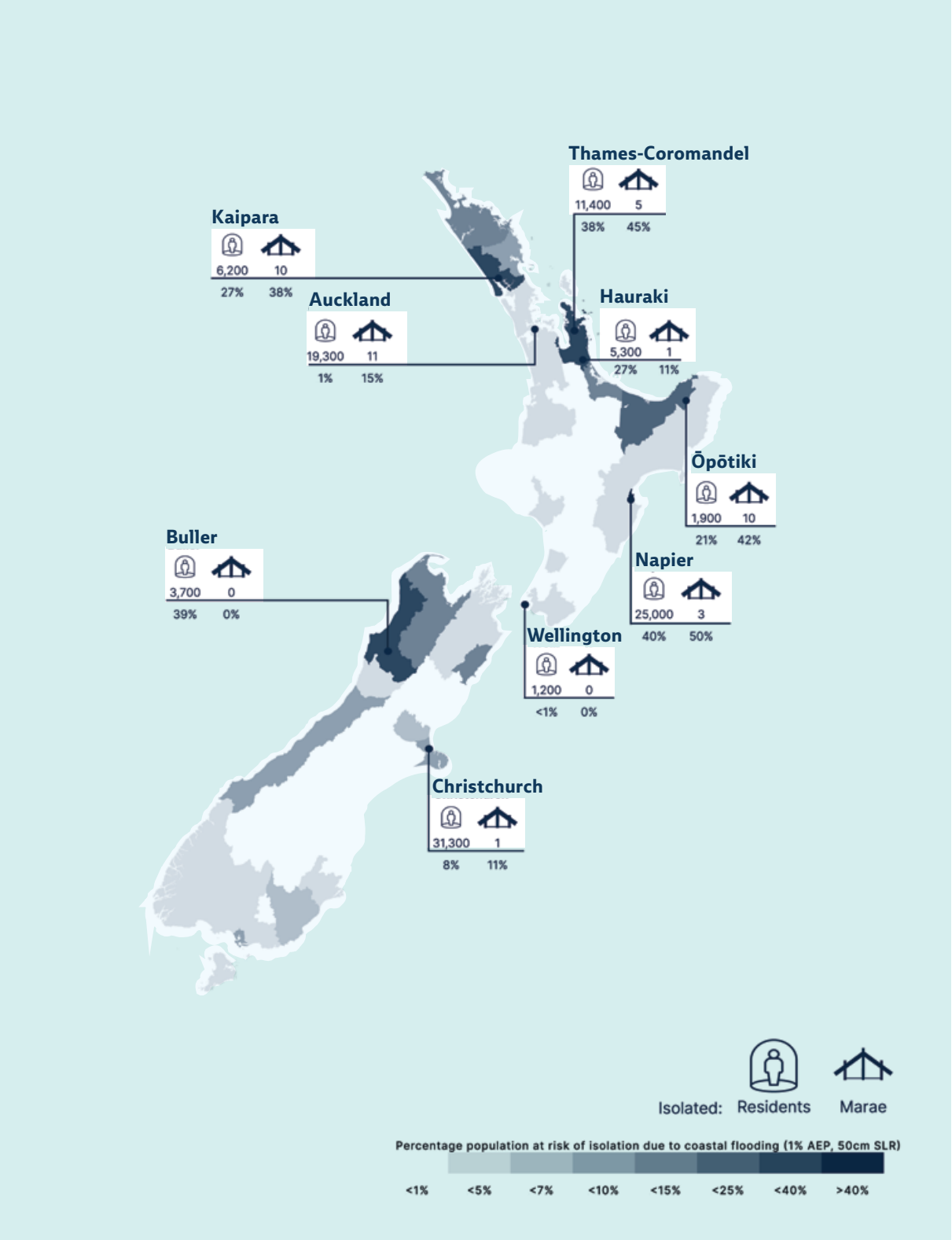
Figure 10.5: Aotearoa New Zealand's districts, shaded by the percentage of their isolated population located in areas that, with 20 centimetres of relative sea-level rise, would have more than 1% probability of coastal flooding in any given year (the 1% annual exceedance probability zone)



Source: Urban Intelligence

Note: The six districts with the highest percentage isolation, along with Auckland, Christchurch, and Wellington, are shown.

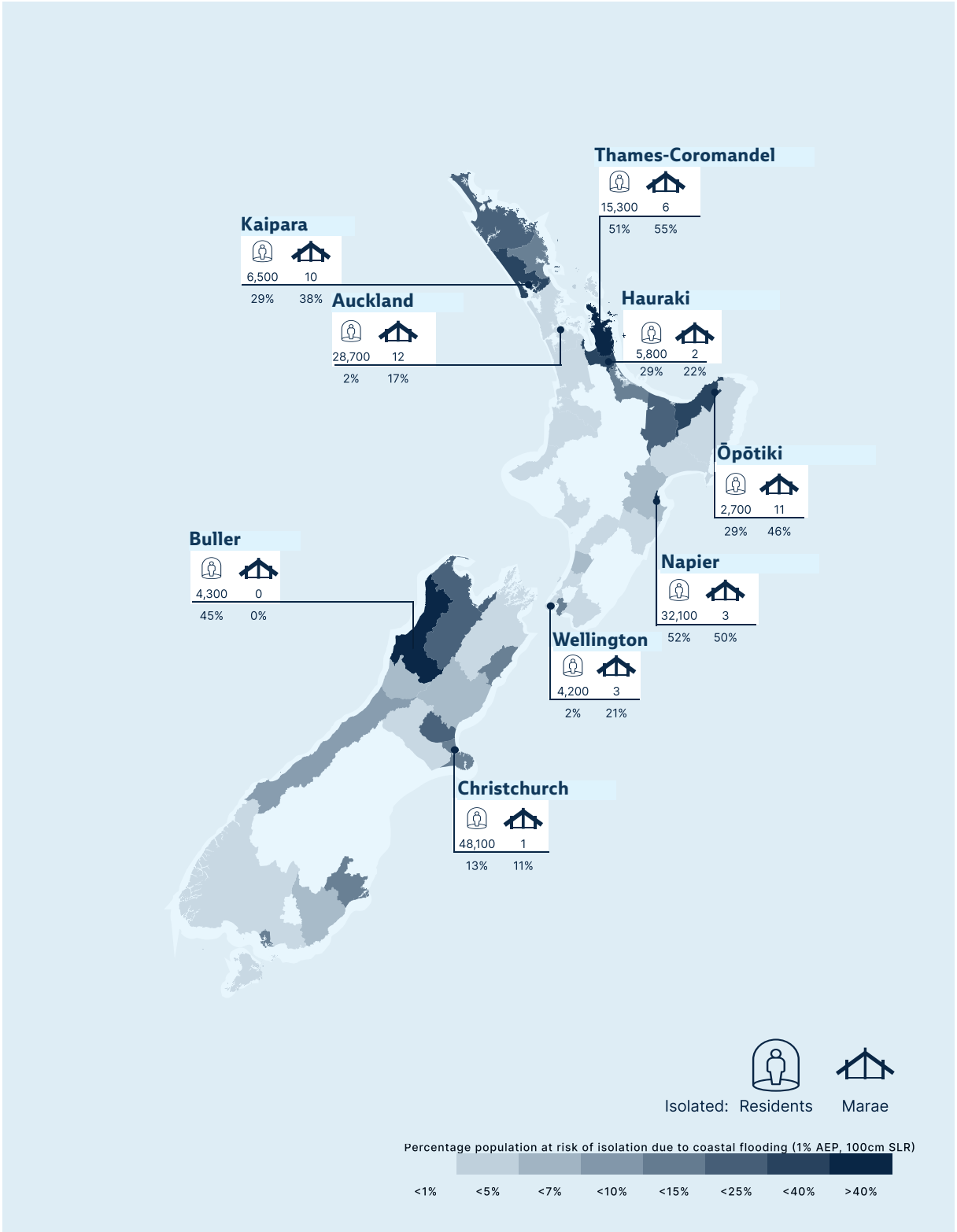
Figure 10.6: Aotearoa New Zealand's districts, shaded by the percentage of their isolated population located in areas that, with 50 centimetres of relative sea-level rise, would have more than 1% probability of coastal flooding in any given year (the 1% annual exceedance probability zone)



Source: Urban Intelligence

Note: The six districts with the highest percentage isolation, along with Auckland, Christchurch, and Wellington, are shown.

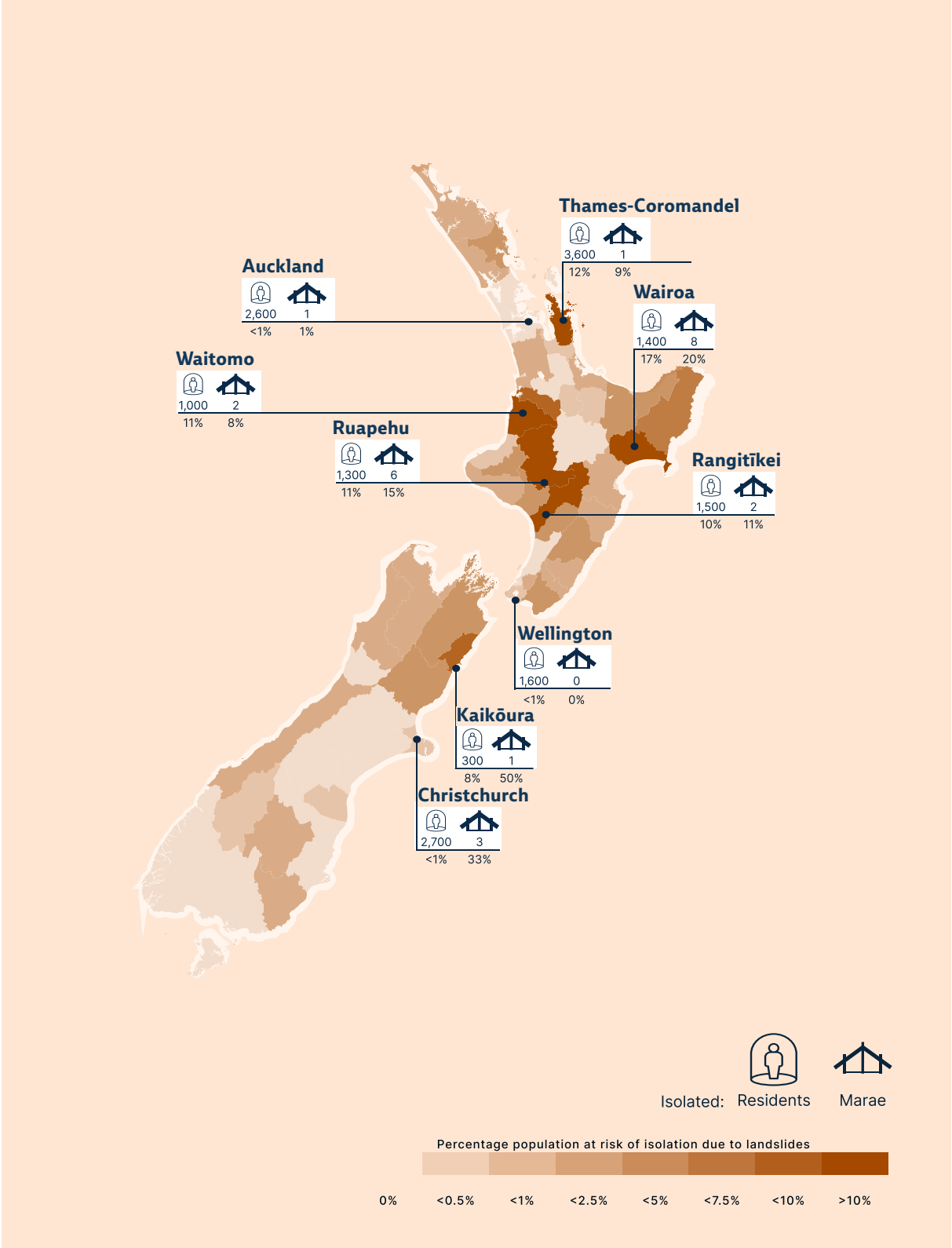
Figure 10.7: Aotearoa New Zealand's districts, shaded by the percentage of their isolated population located in areas that, with 1 metre of relative sea-level rise, would have more than 1% probability of coastal flooding in any given year (the 1% annual exceedance probability zone)



Source: Urban Intelligence

Note: The six districts with the highest percentage isolation, along with Auckland, Christchurch, and Wellington, are shown.

Figure 10.8: Aotearoa New Zealand's districts, shaded by the percentage of their population located in areas at risk of isolation from landslides



Source: Urban Intelligence

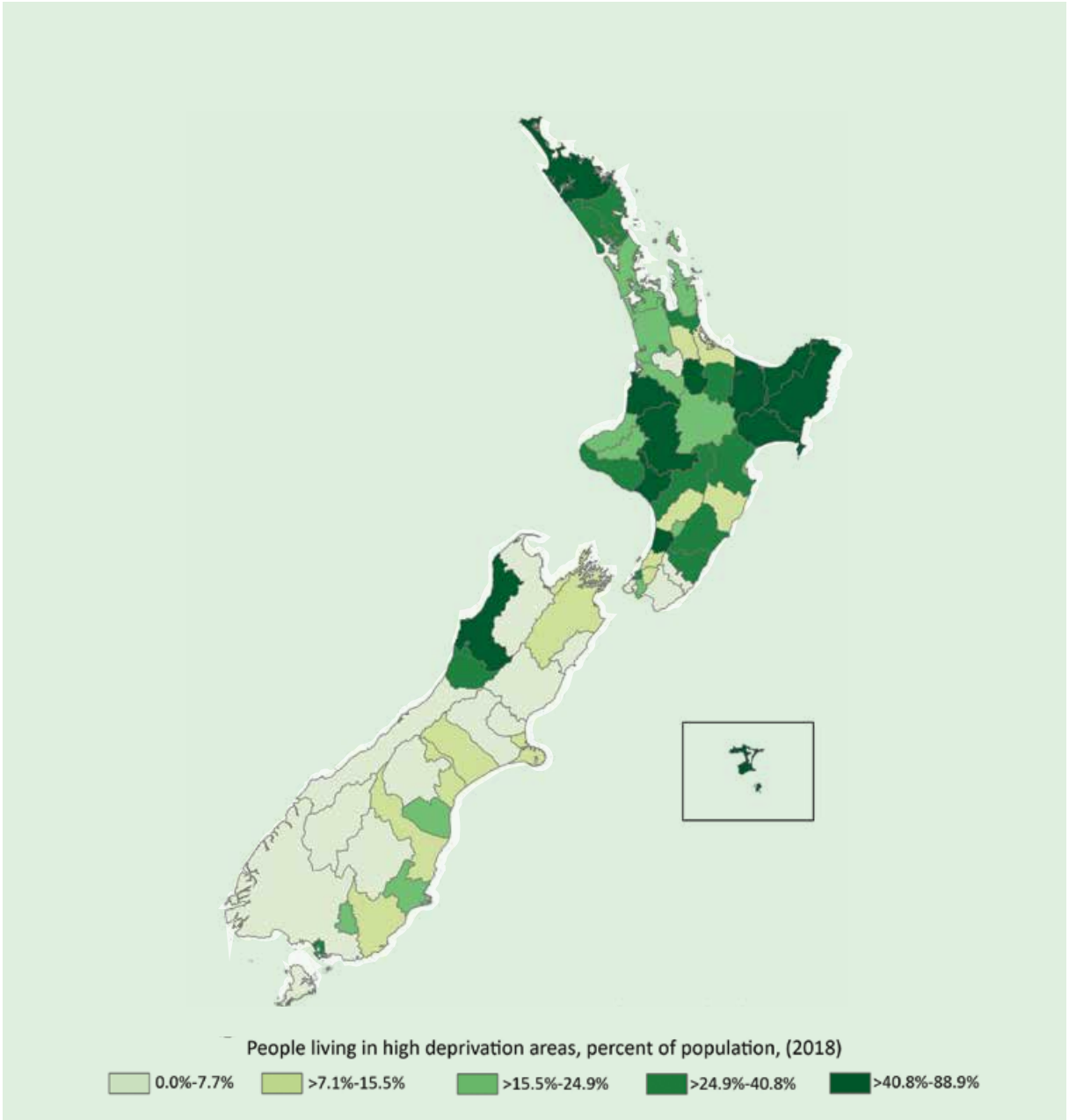
Note: The six districts with the highest percentage isolation, along with Auckland, Christchurch, and Wellington, are shown.

Dimensions of social vulnerability in exposed areas, and in areas at risk of isolation

Analysis by EHINZ shows that the impacts of climate-related risks will not be felt evenly by people. Individual circumstances will affect how people and households can prepare and plan for these risks, and how likely they will be to experience harm. Social vulnerability indicators are valuable for understanding how likely households and communities with high levels of exposure, or at risk of becoming isolated, are to be adversely affected.

For example, in areas with higher levels of socioeconomic deprivation (see Figure 10.9), people may be less likely to have the financial resources to prepare for, cope with or recover from floods or other hazard events. Children and older adults are more susceptible to negative impacts from hazard events, while other groups (such as those who live in rented dwellings, do not speak English, are without basic amenities and/or rely on natural resources for their livelihood) may also be more vulnerable to negative impacts.

Figure 10.9: Percentage of population living in areas of higher neighbourhood socioeconomic deprivation (NZDep2018 deciles 9 and 10), by district



Source: EHINZ

Many districts have large amounts of buildings and infrastructure exposed to coastal flooding under different increments of sea-level rise. These districts are spread across the country and are concentrated in coastal areas. Many districts also have a large share of the population at risk of isolation from coastal flooding, or from landslides (or both).

The districts most at risk of isolation are concentrated largely in the North Island. There is some cross over with those most at risk from direct exposure (for example, Thames-Coromandel, Buller, and Napier). However, the analysis shows that some places, people, and households could become isolated, and lose access to and from essential services, years, or decades before the properties themselves may be exposed. This shows some critical vulnerabilities in transport networks and highlights the importance for adaptation planning to consider issues around connectivity to essential services and infrastructure.

Some of the districts most at risk of isolation from landslides are coastal, while others are located far from the coast. While a small share of people and marae are directly exposed to landslide risk, a significantly larger share of households are at risk of being isolated from landslides.

Understanding a range of local characteristics alongside potential risk from direct exposure and isolation is important to inform adaptation planning and action, as well as emergency planning and response. Looking at some important indicators of potential social vulnerability for 2018 across the most exposed districts, and districts most at risk of isolation, we see some substantial differences, at a district level. It is important to note that there is significant variation within and across districts. The discussion below is focused at a district level, and the Commission is not making any comment on individual properties.[xxxi]

- **Napier** is a district with high levels of exposure of buildings and infrastructure to coastal flooding, and also to landslide risk. In Napier, about 26% of properties, 23% of roading infrastructure, and two out of six marae are exposed to coastal flooding under 20 centimetres of sea-level rise, with 54% of properties, 46% of roads and three marae exposed under one metre of sea level rise. A large share of the population is at risk of isolation from coastal flooding – 25% under 20 centimetres of sea-level rise, and about 52% under one metre of sea-level rise, along with three of the six local marae. One in five people (20%) in Napier are aged 65+ years, while 15% of households have an older adult (65+ years) living alone. The share of the population living in areas of high socioeconomic deprivation is 24%, while 34% of households live in rented dwellings.
- **Thames-Coromandel** is exposed to coastal flooding under different sea-level rise scenarios. About 10% of properties and more than one third of schools are exposed to coastal flooding under 20 centimetres of sea-level rise, with 20% of properties, 45% of schools and 180 kilometres of road (10%) exposed to coastal flooding under one metre of sea-level rise. Thames-Coromandel also has one of the highest shares of population and marae at risk of isolation from both coastal flooding (over 35% of the population and 5 out of 11 marae under 20 centimetres of sea-level rise) and from landslides (12% of people, and 1 marae), indicating that many people could become isolated years or decades before their properties themselves may be exposed. The share of the population living in areas of high socioeconomic deprivation is about 19%, almost one third of the population (31%) are aged 65+ years, and 18% of households have an older person living alone. About 27% of households live in rented dwellings. About 7% of those employed work in the primary sector, and 18% of the population of the district are Māori.

xxxi. The discussion in this section draws on the following reports: Urban Intelligence. (2024). *National infrastructure exposure and property isolation assessment*; Environmental Health Intelligence New Zealand (EHINZ). (2024). *Social vulnerability to the impacts of climate-related hazards in Aotearoa New Zealand*. Massey University.

- **Buller** district is highly exposed to coastal flooding. It has 18% of properties and more than half of its schools exposed to coastal flooding under 20 centimetres of sea-level rise, and 35% of properties exposed to coastal flooding under one metre of sea-level rise. More than a quarter of the population (29%) is at risk of isolation from coastal flooding under 20 centimetres of sea-level rise. Around 42% of the population in Buller live in areas of high socioeconomic deprivation. Almost one in four people (23%) are aged 65+ years, 16% of households have an older adult living alone, and more than 32% of households live in rented dwellings. Buller also has one of the highest shares in the country of one person households (36%), and of households without access to safe running water, at 12%.
- **Hauraki** is highly exposed to coastal flooding under 20 centimetres, 50 centimetres and one metre of sea-level rise. It also has some homes and infrastructure directly exposed to landslide risk. The district has about 40% of the population living in areas of high socioeconomic deprivation, about 24% of the population is aged 65+ years, almost 16% of households have an older adult living alone, and 31% of households live in rented dwellings. In addition, a relatively high share of people employed work in primary industries (17%), while 39% of adults are not in the labour force.
- **Wairoa** is the district with the largest share of its population at risk of isolation from landslides (17% of the population, and 8 marae). The share of the population living in areas of high socioeconomic deprivation is about 77%, one of the highest in the country. It also has some of the highest rates in the country of people living in crowded households (17%). Around one in four people (24%) are under 15 years, 14% of households have an older person living alone, 39% of households live in rented dwellings, and about 24% of those employed work in the primary sector. The Wairoa district also has among the highest representation of Māori in the country, at 66% of the population (compared to about 17% nationally).
- **Nelson** is exposed to coastal flooding under 50 centimetres and one metre of sea-level rise and also has around 50 properties directly exposed to landslides. About 14% of the population live in areas of high socioeconomic deprivation, with 31% of households living in rented dwellings. Around 12% of those employed work as healthcare and social assistance workers. Just over 19% of the population is aged 65+ years, with 14% of households having an older adult living alone.
- **Ruapehu** and **Waitomo**, both far from the coast, have a significant share of the population at risk of isolation from landslides. About 11% of the population in Ruapehu and 6 marae (15%) are at risk of being cut off by landslides, with 11% of the population and 2 marae (8%) at risk of isolation in Waitomo. In Ruapehu, the share of the population living in areas of high socioeconomic deprivation is 46%, and 48% in Waitomo. Both districts have 40% of households living in rented dwellings, and about 12% of households with an older person living alone. The share of those employed working in the primary sector is 26% in Waitomo, and 23% in Ruapehu.

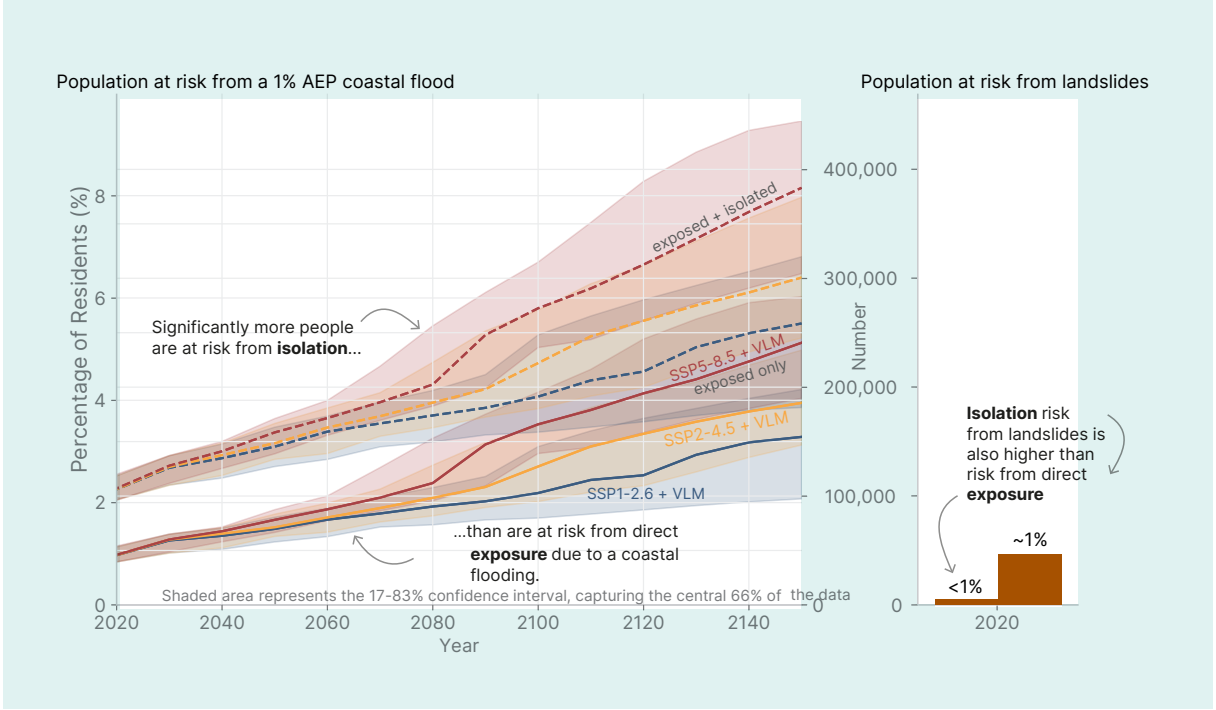
- The three main centres, **Auckland**, **Wellington** and **Christchurch** have varying levels of exposure, and risk of isolation to coastal flooding under different sea-level rise scenarios, and from landslides. In Wellington, only 5% of residents live in areas of high socioeconomic deprivation, compared with 21% in Auckland, and 14% in Christchurch. Auckland and Wellington both have high levels of renting, with about 41% of households living in rented dwellings (compared to about 37% in Christchurch) and about 8% of households with an older adult living alone (compared to 11% in Christchurch). Auckland has the highest share of residents in the country who do not speak English at 5% (compared to 2% in Wellington and Christchurch).

It should be noted that social vulnerability levels may vary suburb by suburb, and indicator data for smaller geographic areas can be used to show vulnerability levels within specific exposure zones. The EHINZ indicators also primarily show individual and household-level resilience and may not reflect all aspects of community-level resilience.

Isolation has the potential to burden more properties, earlier, than direct exposure

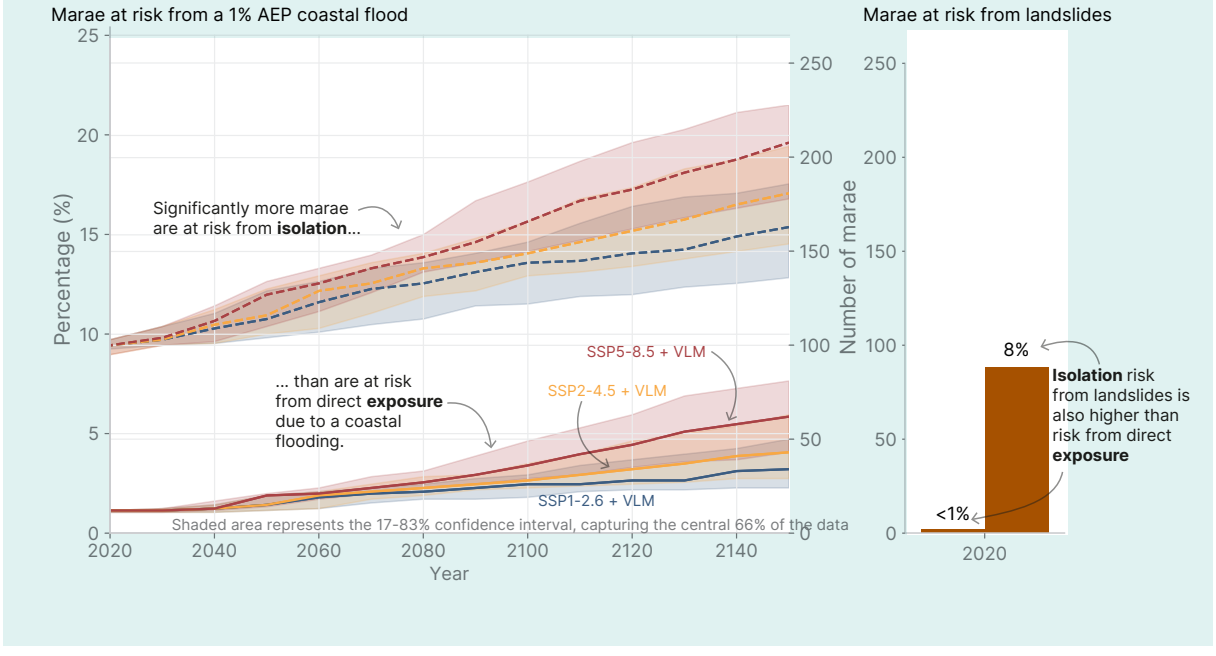
Isolation will occur for many properties and marae earlier than direct exposure, as transport routes may be more exposed and vulnerable than the properties and marae themselves. In addition, a larger number of properties and marae will be burdened by isolation than direct exposure to climate hazards (see Figure 10.10 and Figure 10.11). This has important implications for adaptation and emphasises the importance of considering isolation risks in addition to direct exposure when assessing the potential impacts of climate change on communities and infrastructure.

Figure 10.10: Share of the population exposed, versus at risk of isolation, from landslides, and from a 1% annual exceedance probability coastal flood under different sea-level rise scenarios



Source: Urban Intelligence

Figure 10.11: Share of marae exposed, versus at risk of isolation, from landslides, and from a 1% annual exceedance probability coastal flood under different sea-level rise scenarios



Source: Urban Intelligence

He iringa kupu | Technical glossary

Note: there is a te reo Māori glossary provided at the end of *Chapter 4: Te pae tawhiti, te pae tata*, which provides English contextual translation of kupu Māori used in that chapter.

adaptation	The process of adjusting to the actual or expected changes brought about by climate change. For people, and the systems people create, this means making changes to try to avoid or minimise the harm or damage from climate change and its effects – or to benefit from opportunities climate change might provide. These could be changes, for example, to laws, policies, practices, processes, as well as to physical structures and the built environment. In nature, and within natural systems, adaptation can happen by itself through ecological and evolutionary processes, or with human assistance, by helping those systems adjust to climate change and its effects.
adaptive capacity	The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities or to respond to consequences from climate impacts.
annual exceedance probability (AEP)	The probability of a certain size event occurring within a single year – for example, a 1% AEP coastal flood event has a 1% chance of occurring in any one year based on the current climate, sometimes referred to as a 1-in-100 year event.
average global temperatures	An estimate of Earth's mean surface air temperature, averaged globally.
cascading impacts	Occur when a climate-related risk or hazard generates a sequence of secondary events in natural and human systems that result in physical, natural, social or economic disruption – the resulting impact is often significantly larger than the initial impact.

climate mitigation	Human actions to reduce emissions by sources or enhance removals by sinks of greenhouse gases. Examples of reducing emissions by sources include walking instead of driving or replacing a coal boiler with a renewable electric powered one. Examples of enhancing removals by sinks include growing new trees to absorb carbon, or industrial carbon capture and storage activities.
climate-related financial disclosures	Climate-related financial disclosures provide information to investors about what a company is doing to mitigate climate change risks.
climate resilience	The ability to prepare for, respond to and capacity to cope with the impacts of changing climate without losing essential functioning and identity, including those progressive and ongoing changes that can be anticipated and those that occur as extreme events.
climate-related hazard	The potential occurrence of a natural or human-induced physical climatic event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
co-benefit	A positive effect that a policy or measure aimed at one objective has on another objective, thereby increasing the total benefit to society or the environment.
compounding impacts	Arise from the interaction of hazards, which may be characterised by single extreme events or multiple coincident or sequential events that interact with exposed systems or sectors.
displacement	The involuntary movement, individually or collectively, of persons or other species from their home or community.
domain	The first national climate change risk assessment was framed around five 'value domains' – groupings of tangible and intangible values, assets and taonga that are important to Aotearoa New Zealand. The five domains are: natural environment, human, built environment, economy, and governance.
dynamic adaptive pathways planning	A framework that supports climate adaptation decision-making by developing a series of actions over time (pathways) – it is based on the idea of making decisions as conditions change, before severe damage occurs, and as existing policies and decisions prove no longer fit for purpose.
effective adaptation	Effective adaptation reduces climate risk, anticipates and accounts for complexities, anticipates and accounts for the uncertain nature of climate change risks and impacts, and aims to avoid maladaptation.

emissions	Greenhouse gases released into the atmosphere. The Climate Change Response Act 2002 covers the following greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride.
emissions reduction plan	A plan setting out the policies and strategies for meeting an emissions budget, as required by the Climate Change Response Act 2002.
equity	The principle of being fair and impartial, and a basis for understanding how the impacts and responses to climate change, including costs and benefits, are distributed in and by society in more or less equal ways.
exposure	How much of value is present in the face of a particular hazard – the people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected.
extreme weather event	An event that is rare at a particular place and time of year. Definitions of 'rare' vary, but an extreme weather event would normally be as rare as, or rarer than, the 10th or 90th percentile of a probability density function estimated from observations. By definition, the characteristics of what is called extreme weather may vary from place to place in an absolute sense.
good adaptation outcomes	Good adaptation outcomes minimise different forms of harm, minimise harm across different time frames, maintain flexibility in the face of uncertain risks and impacts, and avoid creating inequities or making existing inequities worse.
green infrastructure	An interconnected set of natural and constructed ecological systems – such as planted and remnant native vegetation, soils wetlands and green spaces – that can provide a range of services such as air purification, temperature management and flood protection.
grey infrastructure	Constructed physical structures and systems – such as buildings, roads, networks of pipes and wires – that provide a range of services.
indicator	A sign or signal that shows something exists and its level of progress.

impacts	The consequences of realised risks on natural and human systems, which result from the interactions of climate-related hazards (including extreme weather events), exposure and vulnerability. They are generally effects on human lives, livelihoods, health and wellbeing; ecosystems and species; economic, social and cultural assets; services (including ecosystem services); and infrastructure. They can be harmful or beneficial. Also known as consequences or outcomes.
inundation	The condition of being flooded – for example, coastal inundation refers to flooding from the sea.
insurance retreat	When the cost of insuring for a particular hazard gets so great an insurer may withdraw insurance for a home or asset altogether.
lifeline utility	Entities that provide essential infrastructure services to the community – including water, wastewater, transport, energy and telecommunications.
loss	Damage to, and/or destruction of, homes, natural and constructed assets, property and livelihoods by climate-related hazards.
maladaptation	When negative outcomes result from adaptation actions. This could include, for example, actions that may lead to increased risk of adverse climate-related outcomes, including increased greenhouse gas emissions, increased vulnerability to climate change impacts and/or reduced welfare, now or in the future. Maladaptation is usually an unintended consequence.
managed retreat	An approach to reduce or eliminate exposure to intolerable risk, by enabling the relocation of assets, activities and sites of cultural significance away from areas at risk from climate change and natural hazards.
moral hazard behaviour	The act of increasing one's exposure to risk for private gain, knowing that others will bear the costs of that risk.
nature-based solutions	Approaches to addressing societal challenges, such as climate change, by integrating, protecting, sustainably managing, and restoring natural ecosystems. For example, using vegetation (e.g. street trees or green roofs) or water elements (e.g. rivers or water treatment facilities) can help reduce heat in urban areas or support stormwater and flood management.
ocean acidification	The process through which, as concentrations of carbon dioxide in the atmosphere increase, more is absorbed into oceans, making them more acidic.

Paris Agreement	An international treaty under the United Nations Framework Convention on Climate Change (UNFCCC) adopted in 2015 to address climate change, which covers climate change mitigation, adaptation and finance.
proactive adaptation	Adaptation that takes place before the impacts of climate change are observed, with the goal of minimising future costs and impacts.
projections	Estimated value of a future quantity (such as emission levels, or sea-level rise extents) based on a prescribed set of assumptions.
reactive adaptation	Adaptation that is undertaken in response to an effect of climate change that has already been experienced. Example: Individual houses that are upgraded to new building standards only after a cyclone destroys their roofs.
residual risk	The level of risk related to climate change impacts that remains after adaptation, and after efforts have been made to mitigate risk.
risk (climate risk / climate-related risk)	The potential for adverse consequences, for human or ecological systems, recognising the diversity of values and objectives associated with such systems. In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change. Adverse consequences may affect human lives, livelihoods, health and wellbeing; economic, social and cultural assets and investments; infrastructure; services (including ecosystem services); and ecosystems and species.
risk assessment	The scientific estimation of risks, which may be either quantitative or qualitative.
risk management	The process of making plans, actions, strategies or policies to reduce the likelihood and/or scale of potential adverse consequences, based on assessed or perceived risks.
risk of isolation	Risk of communities, households or people being cut off from essential services like emergency services, supermarkets, education, work, and cultural sites of significance (such as marae) if transport networks are damaged.
sea-level rise	Increases in the height of sea levels over time, which may occur globally or locally.
sensitivity	The degree to which a system or species is affected, either adversely or beneficially, by climate variability or change.
social cohesion	Describes the sense of belonging, connection and solidarity among groups in society.

social licence / social mandate	The perceptions of local stakeholders that a policy, a project, a company, or an industry that operates in a given area or region is socially acceptable or legitimate.
socioeconomic deprivation	A state of observable and demonstrable disadvantage relative to the local community, or to the wider society or nation to which an individual, family or group belongs.
thermal expansion	The increase, or decrease, of the size (length, area, or volume) of a body due to a change in temperature.
UNFCCC (The United Nations Framework Convention on Climate Change)	The major foundation global treaty focused on climate change. It was signed in 1992 at the Earth Summit in Rio de Janeiro.
vulnerability	The conditions that determine how climate change impacts may affect an area, system or community – it includes sensitivity to harm, and the ability to cope and adapt (adaptive capacity).

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