



**Te Kāwanatanga o Aotearoa**  
New Zealand Government

Aotearoa New Zealand's National Midterm Review of the  
Sendai Framework for Disaster Risk Reduction 2015-2030  
Report

## Foreword

We welcome the opportunity to discuss the ways that we have reduced risks and to explore opportunities for collaboration to better mitigate disaster risks in Aotearoa New Zealand. Since the Sendai Framework was adopted, we have faced significant, complex, and concurrent emergency events that have tested our disaster management arrangements across the '4Rs' of risk reduction, readiness, response and recovery.

Given our risk landscape, and the uncertainty of the wider domestic and global environment, it is important for us to take deliberate steps to improve our resilience. We can do much to reduce our risks, through both a risk management approach, and by building broader societal resilience. We can also ensure we have effective processes in place for responding to and recovering from emergencies and other types of disruption when they happen.

We are currently working to modernise the framework of legislation and guidance that underpins Aotearoa New Zealand's emergency management system. This effort is part of a wider programme that will deliver extensive change to our emergency management system.

Aotearoa New Zealand recognises the significant knowledge and expertise that Iwi and Māori bring to emergency management, as well as resources that are activated early in times of emergency. We are committed to ensuring that genuine partnership with Māori is incorporated at all levels and aspects of Aotearoa New Zealand's emergency management system.

Aotearoa New Zealand is committed to supporting adaptation and building resilience both domestically and internationally. Nowhere does this matter more than our own region, the Pacific, where the impacts of climate change are being felt daily and the losses from these are mounting. To support Pacific Island, and other developing countries to slow the change and cushion its impacts, Aotearoa New Zealand committed \$1.3 billion (NZD) in climate finance, announced at the 26<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change in 2021 (UNFCCC COP26).

With the severity and frequency of disasters continuing to increase globally, it is more important now than ever that countries work together towards the shared goals and targets of the Sendai Framework for Disaster Risk Reduction. Aotearoa New Zealand welcomes the efforts of all countries to reduce disaster risk nationally and globally. We need to stand shoulder to shoulder: tātou, tātou — all of us together.

Dave Gawn, Chief Executive

National Emergency Management Agency

## Executive Summary

Since the Sendai Framework for Disaster Risk Reduction was adopted in 2015, Aotearoa New Zealand has faced significant, complex, and concurrent emergency events that have tested disaster management arrangements across the '4Rs' of risk reduction, readiness, response, and recovery.

The frequency of events that Aotearoa New Zealand has experienced since 2015 and the resulting large volume of science research has increased our depth of knowledge and understanding of our risks. We have more awareness of the breadth of hazards our country is at risk from, which has led to a shift in perspective where risk management is now viewed as an essential action for creating better outcomes for communities. The lived experience has also enabled us to test our warning, response, and recovery systems, identify gaps and adjust accordingly, to ultimately increase our resilience for future events.

The Sendai Framework has been a key influence in the development of the principles and priorities of our National Disaster Resilience Strategy (NDRS). The NDRS outlines the vision and long-term goals for emergency management in Aotearoa New Zealand over the next 10 years. This Strategy is for all Aotearoa New Zealanders, and all those who live, work, or visit here. It is intended to provide a common agenda for resilience that individual organisations, agencies, and groups can align with for collective impact.

Te ao Māori (Māori world view) and mātauranga Māori (Māori knowledge) are essential in building disaster resilience in Aotearoa New Zealand. Time and time again before, during and after emergencies we have seen Māori carry out vital work in ensuring the welfare of their people, and those in the communities surrounding them. We are seeking to ensure that genuine partnership with Māori is incorporated at all levels and aspects of Aotearoa New Zealand's emergency management system. This includes the integration of mātauranga Māori in parallel with western science to inform risk decision-making.

Through inclusive and community-led participation in emergency management, our focus is on enabling and empowering individuals, households, organisations, and businesses to build their resilience. Public education is one of Aotearoa New Zealand's greatest resources for empowering communities and individuals to reduce their risk. For example, Te Rākau Whakamarumarū | National Emergency Management Agency's (NEMA) preparedness website ([getready.govt.nz](https://getready.govt.nz)) helps individuals, families, communities, schools, and businesses get ready for, respond to, and recover from emergency events. NEMA has several annual national public education campaigns, such as the New Zealand ShakeOut earthquake drill and tsunami hīkoi. These campaigns, along with other agencies' campaigns, empower our community to lead the way in being prepared for emergencies.

Since the Sendai Framework was adopted, Aotearoa New Zealand has taken action to reduce the risk from and improve how we respond to hazard events. The Government has allocated \$46.6 million (NZD) over four years from 2021 to strengthen the emergency management system and support inclusive, community-led responses to natural disasters and health events.

Furthermore, since 2015, Aotearoa New Zealand has made several key enhancements to its emergency management system. We established an autonomous departmental agency for emergency management (NEMA), a National Geohazards Monitoring Centre (NGMC), an emergency cell broadcasting system, and a 24/7 Monitoring, Alerting and Reporting (MAR) Centre. We deployed a network of Deep-ocean Assessment and Reporting of Tsunami (DART) buoys to provide early warning of tsunami threats to Aotearoa New Zealand, and to our neighbours in the South Pacific.

Alongside our emergency management system reform, several other concurrent legislative reforms will have an impact on how Aotearoa New Zealand manages and reduces its disaster risk. These include the modernisation of the Aotearoa New Zealand's Earthquake Commission (EQC) Act with the introduction of the new Natural Hazards Insurance Bill, the Resource Management Act reform, the National Climate Adaptation Plan, Local Government reform.

Aotearoa New Zealand is committed to supporting adaptation and building resilience both domestically and internationally. Our regional relationships and bilateral agreements are critical in facilitating progress in this space. Our Pacific Disaster Risk Management Programme, which sits within NEMA and is funded by Manatū Aorere | Ministry of Foreign Affairs and Trade (MFAT), is a key component of this work.

With increasing frequency and severity of events in Aotearoa New Zealand and many parts of the world, there is a case for urgent action on climate change to protect lives, incomes, homes, businesses, and infrastructure. Much of the legislative work, particularly the Resource Management Act reform and the National Adaptation Plan, deliberately reflects this narrative.

The COVID-19 pandemic has delayed and changed some of Aotearoa New Zealand's priority actions working towards the Sendai Framework Outcome and Goal, however, we have also carried forward valuable lessons from this event. Our aspiration for the remaining years of the Sendai Framework is to invest in implementing change now that we have a deep understanding of our collective aims and priorities. Aotearoa New Zealand commits to meeting the Sendai Framework Outcome and Goal and acknowledges that this work will extend beyond 2030 as part of our broader continuum of work.

This report represents a snapshot of disaster risk reduction activities within Aotearoa New Zealand. The report is not exhaustive, and there are other aspects at the regional and local levels not covered.

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## Acronyms

Acronym	Definition
APMCDRR	Asia Pacific Ministerial Conference on Disaster Risk Reduction
CDEM	Civil Defence Emergency Management
CIMS	Coordinated Incident Management System
DIA	Te Tari Taiwhenua   Department of Internal Affairs
DOC	Te Papa Ataphai   Department of Conservation
DPMC	Te Tari o Te Pirimia me te Komiti Matua   Department of The Prime Minister and Cabinet
ECOSOC	Economic and Social Council (of the United Nations)
EMA	Emergency Mobile Alerts
ESLB	Emergency Services Leadership Board
FENZ	Whakararonga Iwi   Fire and Emergency New Zealand
HRB	Hazard Risk Board
IPCC	Intergovernmental Panel on Climate Change
MBIE	Hīkina Whakatutuki   Ministry of Business, Innovation, and Employment
MDP	Whaikaha   Ministry of Disabled People
MEC	Te Tari Mātāwaka   Ministry for Ethnic Communities
MFAT	Manatū Aorere   Ministry of Foreign Affairs and Trade
MfE	Manatū Mō Te Taiao   Ministry for the Environment
MfW	Manatū Wāhine   Ministry for Women
MHUD	Te Tūāpapa Kura Kāinga   Ministry of Housing and Urban Development
MoE	Te Tāhuhu o te Mātauranga   Ministry of Education
MoH	Manatū Hauora   Ministry of Health
MPI	Manatū Ahu Matua   Ministry for Primary Industries
MPP	Te Manatū mo Ngā Iwi ō te Moana-nui-ā-Kiwa   Ministry for Pacific Peoples
MSD	Te Manatū Whakahiato Ora   Ministry of Social Development
MTR	Midterm Review
NAP	National Adaptation Plan
NCCRA	National Climate Change Risk Assessment
NCMC	National Crisis Management Centre
NDRS	Rautaki ā-Motu Manawaroa Aituā   National Disaster Resilience Strategy

NEMA	Te Rākau Whakamarumarū   National Emergency Management Agency
NEP	National Exercise Programme
NGO	Non-governmental Organisation
NHSM	Te Tauira Matapae Pūmate Rū i Aotearoa   National Seismic Hazard Model
NIWA	Taihoro Nukurangi   National Institute of Water and Atmospheric Research
NSC	National Security Committee of Cabinet
NZD	New Zealand Dollar
NZDF	Te Ope Kātua O Aotearoa   New Zealand Defence Force
NZLC	New Zealand Lifelines Council
NZTA	Waka Kotahi   New Zealand Transportation Agency
PDRMP	Pacific Disaster Risk Management Programme
PIF	Pacific Islands Forum
PTWS	Pacific Tsunami Warning System
RMA	Resource Management Act
RNC	Resilience to Nature's Challenges   Kia Manawaroa - Ngā Ākina o Te Ao Tūroa
SDG	Sustainable Development Goals
SF	Sendai Framework
SIB	Security and Intelligence Board
SPC	The Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SWA	Toi Hau Tāngata   Social Wellbeing Agency
UNDRR	United Nations Office for Disaster Risk Reduction
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNOCHA	United Nations Office for the Coordination of Human Affairs

# I Introduction

Aotearoa New Zealand has engaged in a midterm review to take stock of national progress and to work toward its commitment to achieving the goal of the Sendai Framework for Disaster Risk Reduction<sup>1</sup> and its seven global targets by 2030,<sup>2</sup> using the four identified priorities for action.<sup>3</sup>

## 1. Purpose

The Third United Nations World Conference on Disaster Risk Reduction was convened by decision of the United Nations General Assembly<sup>4</sup> from 14 to 18 March 2015 in Sendai, Japan, to review the implementation of the Hyogo Framework for Action 2005-2015 (HFA) and to adopt a post-2015 framework for disaster risk reduction. The Sendai Declaration and the Sendai Framework for Disaster Risk Reduction 2015-2030 adopted by the Conference,<sup>5</sup> were subsequently endorsed by Member States in the United Nations General Assembly (UNGA).<sup>6</sup> This provides the framework for all-of-society and all-of-State institutions engagement in preventing and reducing disaster risks posed by both natural and human-induced hazards and related environmental, technological, and biological hazards and risks.

The Third United Nations World Conference on Disaster Risk Reduction invited the UNGA to conduct a midterm review of the Sendai Framework (SF). The period to 2023 marks the midpoint in implementing the SF, as well as other related agreements, conventions and

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<sup>1</sup> United Nations Office for Disaster Risk Reduction (2015). [Sendai Framework for Disaster Risk Reduction 2015-2030](#).

<sup>2</sup> The seven global targets include: (a) Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015. (b) Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020-2030 compared to the period 2005-2015. (c) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030. (d) Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030. (e) Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020. (f) Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030. (g) Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

<sup>3</sup> Priority 1: Understanding disaster risk; Priority 2: Strengthening disaster risk governance to manage disaster risk; Priority 3: Investing in disaster risk reduction for resilience; and Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation, and reconstruction.

<sup>4</sup> 1 UNGA Resolutions A/RES/67/209 of 21 December 2012, A/RES/68/211 of 20 December 2013 and A/RES/69/219 of 19 December 2014, as well as its decision A/RES/69/556 of 5 March 2015.

<sup>5</sup> A/CONF.224/L.1

<sup>6</sup> UNGA Resolution A/RES/69/283.



agendas.<sup>7</sup> In its resolution 75/216 of 21 December 2020, the UNGA decided to “hold a midterm review of the implementation of the Sendai Framework in 2023 to assess progress on integrating disaster risk reduction into policies, programmes and investments at all levels, identify good practice, gaps and challenges and accelerate the path to achieving the goal of the Sendai Framework and its seven global targets by 2030” emphasising “that the Sendai Framework provides guidance relevant to a sustainable recovery from COVID-19 and [...] to identify and address underlying drivers of disaster risk in a systemic manner.”<sup>8</sup>

The importance of the timing of the midterm review of the Sendai Framework (SF) is that it enables recommendations for potential policy adjustments and new modes for implementation for the second half of SF. It coincides with the implementation of other international agendas and offers opportunities for integrating sectors and areas of work to limit the unsustainable augmentation of vulnerability and exposure to hazards. The UN Secretary-General recommended that progress in “integrating disaster risk reduction into development and climate policies, programmes and investment should also be assessed as part of such a midterm review.”<sup>9</sup> The Sendai Framework Midterm Review (SF MTR) further builds on activities at global platforms and regional conferences for disaster risk reduction, including the Global Platform in Bali, Indonesia in June 2022 and the Asia Pacific Ministerial Conference on Disaster Risk Reduction (APMCDRR) in Brisbane, Australia in September 2022 to take stock of progress. The findings of the SF MTR will provide valuable input to the 2023 High-Level Political Forum on Sustainable Development under the auspices of the Economic and Social Council, the Sustainable Development Goals (SDG) Summit, and the High-level Dialogue on Financing for Development at the 78<sup>th</sup> Session of the UNGA.

The [Sendai Framework for Disaster Risk Reduction 2015-2030](#) has now been in place for seven years. At this midpoint it is appropriate to review the progress to date and the actions which must be taken over the next seven years to achieve the goals of the framework by 2030. To facilitate this, UN Member States have been asked to undertake a voluntary national review of the implementation of the framework and to produce a report for submission to the UN. National reports will inform a global midterm review report which will be the basis for discussions at a high-level meeting of the UNGA to be held in May 2023.

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<sup>7</sup> Including but not restricted to sustainable development, climate change, water for development and financing for sustainable development, and is the period in which the post-2020 global biodiversity framework will be developed and adopted.

<sup>8</sup> 7 UNGA Resolution A/RES/75/216 of 29 December 2020.

<sup>9</sup> Report of the Secretary-General 2020 A/76/226.

## **2. SF MTR methodology and process**

The report was developed through a series of targeted interviews across government agencies and other relevant stakeholders. Questions were based on the standard set provided by the United Nations draft report template, filtered for questions which were relevant to the individual organisations interviewed.

In addition to the interviews, a desktop review of relevant and related documents has been conducted with highlights discussed and references included.

Due to resourcing constraints, this report represents a snapshot of disaster risk reduction activities within Aotearoa New Zealand. We were unable to engage with several of our key partners and thus, we have not detailed the successes of others where it is not appropriate, such as Māori-led emergency response initiatives. The report is not exhaustive, and there are other aspects at the regional and local levels not covered. In addition, disaster risk reduction in Aotearoa New Zealand is woven into our general legislative instruments and is challenging to report solely on disaster risk reduction activities.

## II Retrospective review

### 1. Progress towards the Outcome and Goal

**Aotearoa New Zealand shared similar goals before the Sendai Framework and have continued to progress along this path.**

Aotearoa New Zealand demonstrates considerable progress toward achieving actions against the priority areas of the Sendai Framework:

- **Priority 1:** Understanding disaster risk.
- **Priority 2:** Strengthening disaster risk governance to manage disaster risk.
- **Priority 3:** Investing in disaster risk reduction for resilience; and
- **Priority 4:** Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation, and reconstruction.

The Sendai Framework is part of the fabric of the way that Aotearoa New Zealand undertakes disaster risk reduction, rather than a stand-alone effort. Aotearoa New Zealand focuses disaster risk reduction around the ‘4Rs’ – Risk Reduction, Readiness, Response and Recovery. The Sendai Framework is most strongly reflected as a cornerstone of the National Disaster Resilience Strategy (NDRS).<sup>10</sup> The NDRS, published in 2019 for a period of 10 years, outlines the vision and long-term goals for Civil Defence Emergency Management (CDEM) to achieve a resilient Aotearoa New Zealand (see Annex One).

Integration of disaster risk reduction into legislation and policy is an effective and long-lasting approach to tackling hazards and risk, and concretises consideration of disaster risk reduction into the way that the Government undertakes business. While reactivity in disaster risk management will always be a component of a democracy responding to disasters, Aotearoa New Zealand has had some recent progression towards proactive risk management structures, particularly in the climate change space. This is a fundamental improvement in disaster risk management consistent with the goals of the Sendai Framework.

In 2022, Te Kāwanatanga o Aotearoa | New Zealand Government released the draft [National Adaptation Plan](#) (NAP) which sets out the Government’s long-term strategy for adapting Aotearoa New Zealand for climate change. The plan identifies actions that relate to system-wide issues or that align with the five domains to improve adaptation to climate change. Four priorities underpin the National Adaptation Plan:

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<sup>10</sup> Te Rākau Whakamarumaruru | National Emergency Management Agency (2019). National Disaster Resilience Strategy. <https://www.civildefence.govt.nz/cdem-sector/plans-and-strategies/national-disaster-resilience-strategy/>

- Enabling better risk-informed decisions.
- Driving climate-resilient development in the right places.
- Laying the foundations for a range of adaptation options, including managed retreat.
- Embedding climate resilience across government policy.

The NAP and subsequent plans to be prepared every six years, are implemented in accordance with this strategy. The NAP responds to the risks identified in the [National Climate Change Risk Assessment 2020](#), which was prepared under the Climate Change Response Act 2002. The National Climate Change Risk Assessment, NAP and subsequent plans will be updated according to a six-year planning cycle.

Development of the NAP involved fully collaborative inter-agency processes to address the various risks identified. Key non-governmental groups and iwi Māori were also engaged and included a public submission process. The NAP, and the review cycle it exists within, is a key example of the shift to proactive risk management in Aotearoa New Zealand.

Another example is Aotearoa New Zealand's National Risk Register and underpinning National Risk Approach, which helps the government to take a coordinated and proactive approach to managing and governing national risks. The approach supports responsible government agencies to identify, understand and assess nationally significant risks, their potential impact on the lives of New Zealanders, and the actions that can be taken to mitigate and build resilience to them ahead of time.

The approach was first developed in 2015/16, when agencies from across government came together to build the methodology, undertake the first assessment of nationally significant hazards and threats, and develop associated risk profiles which populate the National Risk Register.

The National Risk Register includes a diverse range of hazards and threats across several broad domains:

- natural hazards
- biological hazards
- technological hazards
- malicious threats
- economic crisis.

**Some aspects of Aotearoa New Zealand’s NDRS are progressing, but COVID-19 and major system reforms have caused significant disruption and plenty of work remains.**

While COVID-19 is a known disruptor globally, additionally extensive system reforms across multiple sectors in Aotearoa New Zealand are slowing progress in some areas, while bringing necessary changes to others.

The emergency management sector itself is in a state of significant legislative reform. The final stages of these reforms aim to include the development of a system-wide ‘Roadmap’ for the full implementation of the NDRS. This will provide a benchmark for measurement of the progress of this Strategy.

Core objectives of the NDRS have been strategically progressing amongst these disruptions. Broadly, COVID-19 has placed more emphasis and pressure on Government to better manage risks and consider governance structures. Target areas of each of the ‘4Rs’ (reduction, readiness, response and recovery) are the focus of system reforms across emergency management, local and central government, and private enterprise, amplified by work to address climate change. The enablement and support of community resilience are at the centre of how Aotearoa New Zealand conducts emergency management.

**Aotearoa New Zealand has been investing in disaster risk reduction for resilience.**

Much of the action since 2015 has been focused on investment to *focus* on disaster risk reduction, in particular the prioritisation of actions to increase the capacity and capability for risk management. A significant amount of legislative reform and agency investment has been undertaken, with the proof of return still maturing.

Aotearoa New Zealand engages other countries through regional relationships and bilateral agreements that support resilience. The Pacific Disaster Risk Management Programme (PDRMP), that sits within NEMA’s International Engagement Team and is funded by Manatū Aorere | Ministry of Foreign Affairs and Trade (MFAT), provides grant funding as well as ongoing advisory and technical support. With over twenty years of engagement, the PDRMP has shifted investment from infrastructure to technical inputs, including legislative and regulation review, disaster management planning, and public awareness activities and has produced six medium- and short-term Programme outcomes:

- Strengthened community and national disaster risk management planning and implementation.
- Effective needs-based responses to emergencies.
- Increased stakeholder knowledge and awareness of DRM.
- Improved DRM frameworks.

- Strengthened Pacific National Disaster Management Office (NDMO) capacity and capability.
- Specialist emergency management capability prepared for deployment at short notice.

### **Resilience strategies align with international agreements and responsibilities.**

Many of the international agreements complement and align with the priorities of the Sendai Framework. The Sustainable Development Goals (SDGs) target areas that increase vulnerability and risk that can exacerbate the impact of hazards. The timelines of the SDGs and Sendai Framework overlap, and therefore, the mid-term reviews of these two international arrangements coincide, and in the United Nations High-Level Political Forum on the SDGs, concern has been expressed that progress has been hampered by COVID-19.<sup>11</sup> Although COVID-19 certainly highlighted existing inequalities and impeded progress in all 17 SDGs,<sup>12</sup> Aotearoa New Zealand made some progress and learned lessons to support strategic initiatives in social and community resilience (see Section II.3). Manatū Aorere | The Ministry of Foreign Affairs & Trade completed a voluntary review of Aotearoa New Zealand’s progress towards the SDGs in 2019.<sup>13</sup>

Climate change is another area in which the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) was signed in 2015 and has overlapping areas with the other agreements. Aotearoa New Zealand has continued to meet obligations through the UNFCCC by completing its Seventh National Communication in 2017<sup>14</sup> and will submit the Eighth National Communication in December 2022 that provides data and status toward meeting the agreements. This includes: policies and measures in place to address climate change; climate change impacts and vulnerabilities, and adaptation work; financial assistance and technology transfer to other countries ; research and systematic observation; education, training and public awareness; and annexes relating to New Zealand’s report on the Global

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<sup>11</sup> United Nations Economic and Social Council, 2021 session, E/2021/58. High-level political forum on sustainable development, convened under the auspices of the Economic and Social Council.

<sup>12</sup> 1. No poverty; 2. Zero hunger; 3. Good health and well-being; 4. Quality education; 5. Gender equality; 6. Clean Water and Sanitation; 7. Affordable and clean energy; 8. Decent work and human growth; 9. Industry, innovation, and infrastructure; 10. Reduced Inequality; 11. Sustainable Cities and Communities; 12. Responsible Consumption and Production; 13. Climate Action; 14. Life below Water; 15. Life on Land; 16. Peace and Justice Strong Institutions; and 17. Partnerships to achieve the Goal

<sup>13</sup>Manatū Aorere | Ministry of Foreign Affairs & Trade (2022). He Waka Eke Noa – Towards a Better Future, Together. New Zealand’s Progress Towards The SDGs – 2019. <https://www.mfat.govt.nz/assets/Peace-Rights-and-Security/Our-work-with-the-UN/Sustainable-Development-Goals/New-Zealand-Voluntary-National-Review-2019-Final.pdf>

<sup>14</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2017). New Zealand’s Seventh National Communication under the United Nations Framework Convention on Climate Change and towards implementing the Kyoto Protocol. <https://environment.govt.nz/publications/new-zealands-seventh-national-communication-under-the-united-nations-framework-convention-on-climate-change-and-the-kyoto-protocol/>

Climate Observing System (GCOS) and Tokelau's Living with Change: An Integrated National Strategy for Enhancing the Resilience of Tokelau to Climate Change and Related Hazards (2017-2030). In addition, Aotearoa New Zealand submitted its nationally determined contributions (NDCs) report<sup>15</sup> and [NAP](#).

## 2. Progress in Risk Assessment, Information and Understanding

### **Our experiences of disaster risks have driven better understanding and awareness of underlying drivers.**

Speaking about risk, particularly catastrophic risk, can often be perceived as very hypothetical. Aotearoa New Zealand's lived experiences of disaster events since 2015 (and prior with the 2010-2011 Canterbury earthquake sequence), in combination with recent scientific research, has helped to shift the focus to, and heighten the awareness of, the scale of risks that Aotearoa New Zealand is susceptible to.

Since 2015, Aotearoa New Zealand has transitioned from event to event, with emergencies produced by a broad range of perils. The 2016 Kaikōura earthquake reinforced the reality of our seismic risk and similarly, the 2019 Whakaari eruption was a timely reminder of our volcanic risk. The many flood events experienced across the country since 2015 have been persistent reminders of the high flood risk nationwide. The 2019 Christchurch terror attack significantly heightened awareness of non-natural risk. The COVID-19 pandemic demonstrated the impact of health emergencies and their impacts across broader society. Climatically, physical manifestations of change driven by climate are more visible now than ever. The scale and frequency of emergency events and their link to climate change has also become very visible. All this activity has had a cumulative effect on increasing understanding of the depth and breadth of the perils we face and furthermore, how hazards and risks coincide and cascade. It has also enabled us to have a deeper understanding of our vulnerabilities as a society and how various communities are faced with greater vulnerabilities than others.

The media have a critical role in public awareness and increasing understanding of disaster risk and because of our recent experiences, we have seen an increased media coverage on these topics, particularly climate change, in recent years. These stories are reinforced by messages by the insurance industry, emergency management agencies and hazard science research programmes across the nation.

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<sup>15</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2021). Submission under the Paris Agreement New Zealand's first Nationally Determined Contribution. <https://unfccc.int/sites/default/files/NDC/2022-06/NewZealandNDCNovember2021.pdf>.

As a result of increased experience, people now have a better understanding of aspects of the development context that drive disaster risk. For example, prominent public conversations driven by media coverage of recent scientific data relating to building in high-risk areas and long-term mitigation strategies, such as managed retreat, support increased awareness of related issues. This in turn, provides individuals with more opportunity to make conscious decisions that consider associated risks, such as avoiding building in coastal areas or flood plains. There are indications that this may frame future choices for living alongside the environment.

Lived experience has also increased the drive to manage and reduce risks at all levels (national through to community and individual level). The response to COVID-19 is an example of a strong drive to manage risk at all levels, through the drivers of preventing loss of life and reducing economic and psycho-social impacts. It has become evident that every event is of an interconnected nature and thus, a whole of government response is needed to address the events we face. There are some events we still have limited experience of, such as tsunamis, however, our lived experience has resulted in broadened awareness of hazard and risk and the importance of mitigation, along with transferable skills in responding to events.

**New science research has had an immense impact on increasing awareness, knowledge and understanding.**

Although lived experience has increased awareness of many of Aotearoa New Zealand's risks, there are still clear knowledge gaps for specific types of hazard events that we have had little experience of, as well as in geographical areas that have had minimal exposure to hazard events. The recent (2022) Taupō volcanic unrest is a useful example of an opportunity to increase awareness of a phenomenon that has had little attention in recent years, primarily due to a lack of volcanic activity in this area. This had led to a lack of public awareness of the volcanic risk and thus, a reliance on science research to increase understanding. While we endeavour to maximise the use of these opportunities, such as the Taupō unrest, to increase awareness using available science research, there is still room for the system to improve on how we do this.

Across both the international and national science communities, we are seeing a move towards multi-hazard approaches to science research that better connects research across various perils (for example, hydrological hazards and geological hazards). This development in the approach towards undertaking research allows for better understanding of cascading hazards and potential impacts of concurrent events. However, the ability for inter-agency and multi-disciplinary, multi-hazard research is limited by the siloed nature of agencies at the international and national levels. This highlights a systemic issue for consideration as we consider best practice approaches for disaster risk reduction looking into the future.



The desire to use evidence-based approaches to inform risk decision-making has had a positive impact on Aotearoa New Zealand's capacity to undertake new science research and thus, we have seen a wealth of new science research emerging post-disaster events. Two of the major science platforms enabling hazard risk research are Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (MBIE) National Science Challenges and the Endeavour Fund programmes.

Established in 2014, the [National Science Challenges](#) cover eleven core science-based issues and opportunities facing Aotearoa New Zealand, to ultimately reduce risk and increase our resilience as a nation<sup>16</sup>. One of the eleven programmes, [Kia Manawaroa - Ngā Ākina o Te Ao Tūroa | Resilience to Nature's Challenges \(RNC\)](#) seeks to enhance Aotearoa New Zealand's ability to anticipate, adapt and thrive in the face of ever-changing natural hazards. One of the qualities of this programme is its ability to fill the need for a more sophisticated view of multi-hazard risk and increase understanding of the total cost, both social and economic, of hazard disruption.

Other science challenges align with priorities of the Sendai Framework and will contribute to enhancing resilience, such as:

- [Ko ngā wā kāinga hei whakamāhorahora | Building Better Homes, Towns and Cities](#), which seeks to improve the housing stock, meet future demand for affordable housing, improve resident's well-being, and improve better systems for improved land-use decisions.
- [He Oranga Hauora | Healthier Lives](#), [Kia eke kairangi ki te taikaumātuatanga | Ageing Well](#), [Ko Ngā Kai Whai Painga | High-Value Nutrition](#), and [E Tipu e Rea | A Better Start](#)— These four challenges are aimed at enhancing the health and resilience of the population of Aotearoa New Zealand by working with significant segments of the population and targeting specific needs of related to well-being.
- [Toitū te Whenua, Toiora te Wai | Our Land and Water](#), [Ko ngā moana whakauka | Sustainable Seas](#), [Ngā Koiora Tuku Iho | New Zealand's Biological Heritage](#), and [Te Kōmata o Te Tonga | The Deep South Challenge](#) focus on environmental sustainability and ecosystem resilience.

The MBIE Endeavour Fund<sup>17</sup> encourages researchers to conduct excellent research with a focus on the highest potential impacts across a range of economic, environmental, and social

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<sup>16</sup> Ministry of Business, Innovation & Employment (2022). National Science Challenges. <https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/investment-funds/national-science-challenges/>

<sup>17</sup> Ministry of Business, Innovation & Employment (2022). Endeavour Fund. <https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/investment-funds/endeavour-fund/>

objectives, and give effect to Vision Mātauranga<sup>18</sup>. Some of the major Endeavour Fund programmes related to hazard risk management developed since 2015 include (not limited to):

- [He Mouna Puia, Puea Rū, Puea Kōrero | Transitioning Taranaki to a Volcanic Future;](#)
- [Beneath the Waves](#) (investigating hazards posed by our nearshore volcanoes)
- Mā te haumarū ō nga puna wai ō Rākaihautū ka ora mo ake tonu | Increasing flood resilience across Aotearoa<sup>19</sup>
- [Determining Volcanic Risk in Auckland](#) (DEVORA)
- Te Ao Hurihuri: Te Ao Hou | Our Changing Coast<sup>20</sup>
- [Eruption or Catastrophe: Learning to Implement Preparedness for future Supervolcano Eruptions](#) (ECLIPSE)
- [Physical processes UnderLying Slow Earthquakes](#) (PULSE)
- Hikurangi Subduction Earthquakes and Slip Behaviour<sup>21</sup>
- [Te Whakaahuatanga Tere o ngā Rū Whenua me ngā Parawhenua | Rapid Characterisation of Earthquakes and Tsunami](#) (R-CET)

Within and across these science programmes and other research initiatives, a wealth of new information has emerged about Aotearoa New Zealand's hazard risk. We see great diversity in the type of research being undertaken, from research to better understand the phenomena and hazards through research looking at risk and vulnerability. There is research that looks at the social elements of disasters, including wellbeing and vulnerability indicators and demographic and mental models that investigate the influences on how people respond to warnings and so on. The fusion of these cross-cutting themes and different disciplines has been a major advancement since 2015, with collaboration through the structure and investment approaches of the science research programmes being a key driver.

**There is greater recognition of the value of indigenous knowledge (mātauranga Māori) and te ao Māori (Māori world view) in informing decision-making, however there is still considerable work to be done to adequately integrate this into the system.**

There is increasing recognition of the resilience of Māori through history to present day and of the breadth of knowledge and learnings that can feed into risk decision-making. Furthermore,

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<sup>18</sup> Ministry of Business, Innovation & Employment (2022). Vision Mātauranga. <https://www.mbie.govt.nz/science-and-technology/science-and-innovation/agencies-policies-and-budget-initiatives/vision-matauranga-policy/>

<sup>19</sup> Taihoro Nukurangi | National Institute of Water and Atmospheric Research (2022). Mā te haumarū ō nga puna wai ō Rākaihautū ka ora mo ake tonu: Increasing flood resilience across Aotearoa. <https://niwa.co.nz/natural-hazards/research-projects/m%C4%81-te-haumarū-%C5%8D-te-wai-increasing-flood-resilience-across-aotearoa>

<sup>20</sup> Victoria University of Wellington (2022). Major \$13m project to focus on predicting impacts of sea-level rise. [https://www.wgtn.ac.nz/news/2022/09/major-\\$13m-project-to-focus-on-predicting-impacts-of-sea-level-rise](https://www.wgtn.ac.nz/news/2022/09/major-$13m-project-to-focus-on-predicting-impacts-of-sea-level-rise).

<sup>21</sup> Te Pū Ao | GNS Science (2022). East Coast LAB. <https://www.gns.cri.nz/research-projects/east-coast-lab-life-at-the-boundary/>

the recognition of the parallel and interconnected nature of mātauranga Māori and western science for research and different risk decision-making processes and approaches.

Mātauranga Māori changes the way we think about hazards and the way we work with the environment and people to reduce hazard risk. The Māori world (te ao Māori) view of risk and risk management, as a western concept, is much more holistic by nature and thus, there are many learnings from this approach for our system. Through the MBIE National Science Challenges in particular, there is a drive to increase focus on, and awareness of, the value of mātauranga Māori inclusion in science programmes and prioritisation of Māori aspirations. Resilience to Nature's Challenges, one of the eleven core National Science Challenges, has a specific workpiece within it to develop a te ao Māori perspective on risk assessment. RNC also facilitates cross-collaboration with researchers and iwi and has a strong motivation to realise Māori aspirations within its research.

Several of the MBIE Endeavour Fund large-scale science programmes with a disaster risk focus have a mātauranga Māori workstream with the purpose of ensuring that indigenous knowledge is integrated with western science knowledge. This is reflective of the increased weight placed on the value of mātauranga Māori and ensures that different perspectives and knowledge bases are being considered within these programmes. The collaborative nature of these types of science research programmes has helped with the integration of mātauranga Māori into the science system, however, it is widely acknowledged that there is still a considerable amount of work to be done. This has been recognised as a key gap in the science system, but also one of the fastest evolving spaces and one where there is huge opportunity and appetite for improvement across central, local and community levels.

An example of an initiative where te ao Māori has been successfully integrated into a prominent community risk management initiative is the installation of tsunami pou or tohu (a pole landmark)<sup>22</sup> in the Hawkes Bay and Tairāwhiti regions. These ākonga-designed pou are culturally relevant markers of tsunami evacuation points to both assist the tsunami evacuation of kura (schools) and increase awareness of tsunami hazard in local communities with high tsunami risk. The initiative enables ākonga (students) to have a proactive role in tsunami risk management while deepening rangatahi (younger generation) understanding of both western science and mātauranga Māori concepts of tsunami and risk. It also helped to build connections within the communities between kura, emergency managers, researchers, and artists, which can be utilised for future activities and during tsunami events.

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<sup>22</sup>Hawkes Bay CDEM, Tairāwhiti CDEM, East Coast LAB QuakeCore (2022). Tsunami Taumaruru Project. <https://www.civildefence.govt.nz/assets/Uploads/CDEM-Resilience-Fund/2020-21/2020-10-Tsunami-Taumaruru-Project-Report.pdf>

### 3. Progress in Risk Governance and Management

**Disaster risk reduction frameworks are in place at local and regional levels, but progress is not well measured.**

Disaster risk reduction and emergency management is coordinated regionally across sixteen CDEM Groups, who deliver coordinated activities across the '4Rs'. CDEM Groups are a consortium of the local authorities in a region, working in partnership with emergency services, and other organisations, to undertake CDEM functions within their region. This design is intended to maximise the collaboration across responsible agencies to enable effective risk reduction, readiness, response, and recovery actions.

Under the National CDEM Plan 2015<sup>23</sup> the functions of each CDEM Group are to:

- a) identify the hazards and risks in its group area that may result in an emergency that requires national-level support and coordination;
- b) undertake, where practicable, any actions to reduce hazards and risks in its group area that may require national-level support and co-ordination in an emergency;
- c) establish the means within its group area, in line with national guidelines and in collaboration with its supporting agencies, to provide timely warning of hazards, and public information about them;
- d) develop, maintain, and regularly review its capability for reduction, readiness, response, and recovery within its group area, and take part in relevant exercises under the National CDEM Exercise Programme; and
- e) appoint, develop, maintain, and delegate functions to key operational positions, including Local Controllers and CDEM Group Controllers, Recovery Managers, Public Information Managers, Welfare Managers, Lifeline Utility Co-ordinators, and operations, intelligence, planning, and logistics staff.

Each CDEM Group is required to prepare and implement a CDEM Group Plan for the management of hazards and risks relevant to their region. Plans must be developed in consultation with the public and other interested persons and are reviewed every five years.

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<sup>23</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2015). Guide to the National CDEM Plan Order 2015; Section 29. <https://www.legislation.govt.nz/regulation/public/2015/0140/latest/DLM6486453.html?src=qs%20>

## **Progress has been made in the management and governance of risks at both the national and regional levels**

### *National risk approach*

The [National Risk Approach](#) is a key national-level mechanism used across government to ensure a proactive and coordinated approach is taken to identify and manage the most significant risks to New Zealand's national security and prosperity.

Risk-coordinating agencies are assigned to each of the risks on the National Risk Register and lead the development of national risk profiles for their respective national hazard or threat. As part of this, agencies undertake and participate in national risk assessments and the delivery of associated advice on risk management.

Nationally significant risks are overseen by one of two Officials Committee for Domestic and External Security Coordination (ODESC) Governance Boards:<sup>24</sup> the Hazard Risk Board (HRB) which oversees hazard risk and associated initiatives; and the Security and Intelligence Board (SIB) covers external threats and intelligence issues. Risk-coordinating agencies provide the boards ongoing oversight of national risks and risk management activities across the '4Rs' of reduction, readiness, response and recovery, and highlight any key gaps, issues or opportunities across these areas. Since the inception of the approach in 2015/16, national risks have continued to be assessed with advice delivered to HRB and SIB to support their governance.

### *Climate change risk assessment*

**“The national adaptation plan supports all Aotearoa New Zealanders to adapt, live and thrive in a more damaging climate.”<sup>25</sup>**

The Climate Change Response (Zero Carbon) Amendment Act 2019 is the framework for Aotearoa New Zealand to develop and implement clear and stable climate policies to respond to the changing climate (i.e., 'adaptation'). The Act commits Aotearoa New Zealand to identify future risks and opportunities by producing a National Climate Change Risk Assessment (NCCRA) every six years. The current risk assessment draws on the latest science from the Intergovernmental Panel on Climate Change (IPCC) and builds on the recommendations of the Climate Change Adaptation Technical Working Group from 2018.

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<sup>24</sup> Te Tari o Te Pirimia me te Komiti Matua | Department of The Prime Minister and Cabinet (2020). ODESC governance boards. <https://dpmc.govt.nz/our-programmes/national-security-and-intelligence-oversight/national-security-governance-structure/odesc-governance-boards>

<sup>25</sup> Manatū Mō Te Taiao | Ministry for the Environment (2022). National Adaptation Plan. <https://environment.govt.nz/publications/aotearoa-new-zealands-first-national-adaptation-plan/>

In response to each NCCRA produced, the Minister for Climate Change must prepare a national adaptation plan to address priority risks. Priority risks have extreme or major consequence ratings in at least one of three assessment timeframes (now, by 2050, by 2100). Consequence ratings reflect the degree to which the assets and values in each domain are exposed and vulnerable to climate hazards. The NCCRA also assesses the urgency of taking action to address each risk (the ‘adaptation urgency’), to determine the degree to which further action is recommended in the next six years. The urgency ratings are based on a range of factors, particularly whether an adequate response is currently underway or planned.

The 2020 NCCRA identified 43 priority risks and outlines the ten most significant risks in natural (N), human (H), economy (E), built environment (B), and governance (G) domains with five of the areas specifically mentioning climate-related hazards (**bold emphasis added**).

These include:

- 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.
- H1: Risks to social cohesion and community wellbeing from displacement of individuals, families, and communities due to climate change impacts.
- H2: Risks of exacerbating existing inequities and creating new and additional inequities due to differential distribution of climate change impacts.
- 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**.
- E2: Risks to the **financial system from instability due to extreme weather events and ongoing, gradual changes**.
- B1: Risk to potable water supplies (availability and quality) due to **changes in rainfall, temperature, drought, extreme weather events and ongoing sea-level rise**.
- B2: Risks to buildings due to **extreme weather events, drought, increased fire weather and ongoing sea-level rise**.
- G1: Risk of maladaptation across all domains due to the application of practices, processes and tools that do not account for uncertainty and change over long timeframes.
- G2: Risks that climate change impacts across all domains will be exacerbated because current institutional arrangements are not fit for climate change adaptation.

### Regional CDEM Group risk assessment

At the regional level, with the publication of the [risk assessment guideline for CDEM Group planning](#), Groups have begun to move from the simple ranking of hazards toward granular assessment of risk, agnostic of hazard.

This Guideline provides CDEM Groups with a clear methodology for understanding the risks in their area and using that information to inform decision making regarding risk management initiatives across the '4Rs'. It provides a step-by-step methodology for Groups to better understand the specific consequences to be managed from a range of hazards and to consider not only what could happen, but also the most practical solutions for reducing and managing impacts on people, property, taonga (things of value) and services in the Group's area.

These national and regional initiatives have moved the dial on risk assessment, taking it from a simple ranking of hazards to manage, to a detailed granular assessment of risks which arise from a range of hazards, including the identification of specific consequences on particular aspects (e.g., education or healthcare facilities). This fundamental change in our approach to risk assessment and management will unlock our ability to drive mitigation of identified risks over the next seven years, irrespective of the hazard from which the risk arises.

### New Zealand Lifelines Council National Vulnerability Assessment

The New Zealand Lifelines Council (NZLC) connects national agencies and provides a coordination mechanism for Aotearoa New Zealand's lifeline utility organisations and 15 Regional Lifelines Groups to work together on risk reduction and response readiness.<sup>26</sup>

In 2017 the NZLC produced the first [National Infrastructure Vulnerability Assessment](#), updated in 2020. This report summarises the vulnerability of Aotearoa New Zealand's critical infrastructure, including both natural hazard events and risks from infrastructure interdependences. It represents knowledge from work done in regional lifelines studies, international experience, national hazards studies and expert solicitation. Importantly, the report also highlights where gaps still remain in understanding and mitigation of critical infrastructure vulnerabilities.<sup>27</sup>

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<sup>26</sup> New Zealand Lifelines Council (2022). <https://www.nzlifelines.org.nz/>

<sup>27</sup> New Zealand Lifelines Council (2020). New Zealand Critical Lifelines Infrastructure National Vulnerability Assessment Summary Report, 2020 Edition. [http://www.nzlifelines.org.nz/site/assets/files/1019/nzlc\\_nva\\_2020\\_summary.pdf](http://www.nzlifelines.org.nz/site/assets/files/1019/nzlc_nva_2020_summary.pdf)

## **Aotearoa New Zealand already had a focus on diversity in decision making, but we still need to improve.**

Diversity in decision making predominantly comes in the form of advisory groups independent to government agencies.

An example of this is the Community Panel<sup>28</sup> established by Te Tari o Te Pirimia me te Komiti Matua | The Department of The Prime Minister and Cabinet (DPMC) in 2021 to independently advise Government on the implementation and impact of the COVID-19 response system on communities. This is intended to influence medium and long-term COVID-19 strategies. Communities represented include rural, youth/aged, LGBTQ+, Māori, Pacific and other ethnic groups.

Further progress could be made in shifting from advisory partnerships to diversity in governance.

### *Social resilience progress*

Several Aotearoa New Zealand initiatives respond to social risks from poverty and structural inequalities identified in the Sendai Framework. Research demonstrates that social risks become exacerbated during time of disaster and require long-term strategies to address the issues before a disaster happens. Social vulnerabilities and inequalities were amplified during and following COVID-19 lockdowns and adjustments to new working arrangements. Aotearoa New Zealand began many programmes prior to the Sendai Framework, and continues to strive to address sociocultural, socioeconomic risks in all the relationships domestically and internationally. To build resilience, the people of Aotearoa New Zealand need to be supported to thrive in areas of socioeconomic well-being.

The following table highlights numerous advances by Aotearoa New Zealand for addressing poverty, inequalities, and inclusion. These efforts not only support commitments under the Sendai Framework, but they further complement other international commitments and binding arrangements for Sustainable Development Goals (SDGs), the Convention on the Elimination of Discrimination against Women (CEDAW), and the Paris Agreement that urge for a focus on resilience.

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<sup>28</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2022). COVID-19 Community Panel. <https://covid19.govt.nz/about-our-covid-19-response/independent-advisory-groups/community-panel/>



Program or Policy	Social Risks Addressed
<b>Health and Wellbeing</b>	
<a href="#">Our Living Standards Framework</a> (treasury.govt.nz)	The 2021 Living Standards Framework (LSF) captures many of the things that matter for New Zealanders’ wellbeing, now and into the future. The LSF is a flexible framework that prompts our thinking about policy impacts across the different dimensions of wellbeing, as well as the long-term and distributional issues and implications of policy.
<a href="#">Indicators Aotearoa New Zealand</a> by StatsNZ	More than 100 indicators aim to help all of us monitor progress around our social, cultural, economic, and environmental wellbeing. The indicators support the Government's wellbeing vision to provide a more holistic view of wellbeing and sustainable development than a purely economic measure does.
<a href="#">Te Aorerekura National Strategy to Eliminate Family Violence and Sexual Violence</a>	The Family and Sexual Violence Strategy focuses on reducing violence. In addition to addressing violence against women and children, the strategy has been translated into Te Reo Māori, Samoan, Tongan, Mandarin Chinese, and Hindi.
<a href="#">Increase in Paid Parental Leave</a> (PPL)	Increase in Paid Parental Leave (PPL) to 26 weeks in 2020, plus 52 weeks of unpaid leave. Payments increased in 2022 to match average weekly earnings.
<a href="#">The Births, Deaths, Marriages, and Relationships Registration Act 2021</a>	Work led by the Te Tari Taiwhenua   Department of Internal Affairs (DIA) to allow self-identified sex on birth certificates.
Key changes in legislation	In 2020, Manatū Hauora   Ministry of Health (MoH) worked on legislation to make abortion more accessible, and regulations better aligned for health.
<a href="#">Kāinga Ora - Homes and Communities</a> (kaingaora.govt.nz)	Kāinga Ora focuses on several initiatives to improve housing and access to housing by working through communities.
<b>Equality and Diversity</b>	
<a href="#">Whaikaha   Ministry of Disabled People</a>	Whaikaha   Ministry of Disabled People (MDP) was set up in 2022 to work in partnership with the community and Māori to transform lives. MDP works across government. Key tasks include: <ul style="list-style-type: none"> <li>• delivery of the disability support system;</li> <li>• enabling person-directed support;</li> </ul>

	<ul style="list-style-type: none"> <li>ongoing design and transformation of the disability support system, including implementation of a new approach for supporting disabled people, Enabling Good Lives (EGL); and</li> <li>operational functions to support programmes.</li> </ul>
<a href="#">Te Mahere Whai Mahi Wāhine: Women’s Employment Action Plan 2022</a>	Te Mahere Whai Mahi Wāhine features actions to improve employment pathways for women who are marginalised at work, particularly wāhine Māori, Pacific women, young and older women, disabled women, women who are former refugees and recent migrants, and women in the LGBTQIA+ community.
<a href="#">Equal Pay Amendment Act 2020</a>	This provides the legislative foundation for pay equity. The legislation aids in addressing the gender pay gap. <a href="#">Kia Toipoto: Closing Gaps</a> is the action plan that aims to close pay gaps for women, Māori, Pacific peoples, and other ethnic groups across the public service and crown entities including District Health Boards (DHBs).
<b>Leadership and Representation</b>	
<a href="#">50% women</a>	Leadership and representation improvement where there is a target of at least 50% women on public service boards. While this target has been achieved for women, there are still gaps in ethnicity with more representation from European and Māori, and less from Pacific, Asian, and other groups in Aotearoa New Zealand.
<a href="#">Bringing Gender In</a>	Manatū Wāhine’s online gender analysis tool intended to help policy makers apply gender analysis to the policy process to lead to stronger outcomes.
<b>Accessibility and Communication</b>	
<a href="#">Digital strategy</a>	Launched by the DIA, the department is improving access to digital information for the whole-of-community access, especially any marginalised communities.
<a href="#">Get Ready - Emergency preparedness in New Zealand</a>	Emergency information for readiness available in multiple languages, including English, New Zealand Sign Language, Te Reo Māori, Gagana Samoa, Mandarin Chinese (simplified and traditional characters), Tagalog, Español, Lea Faka Tonga, Japanese and Arabic.
<b>Poverty Reduction and Institutional Vulnerability</b>	
<a href="#">COVID-19 community fund for women</a>	Manatū Wāhine   Ministry for Women coordinated two rounds of a fund in response to COVID-19 targeting community groups supporting women. This was emergency, one-off funding to support immediate needs.

<p><a href="#">Wāhine: E Rere Ana Ki te Pae Hou Women's Strategy</a></p>	<p>An approach to dealing with the population of incarcerated women, who have experienced trauma, that increases risks. Three quarters of women in New Zealand's prisons have been victims of family violence, rape and/or sexual assault as a child or adult.</p>
<p>Social vulnerability and student poverty</p>	<p>Research on <a href="#">social vulnerabilities that enhance disaster risk</a> is being conducted through support from Resilience to Nature's Challenge. Social vulnerabilities include added risk to students, immigrants, minoritized groups (physical abilities, class, immigration status, ethnicity, religion, age, sexual orientation, and gender identity), homeless, drug addicted, and mentally ill people. The intent of the research is to better integrate these marginalised populations into disaster risk reduction planning.<sup>29</sup></p> <p>A <a href="#">report into student wellbeing</a> highlights that:<sup>30</sup></p> <ul style="list-style-type: none"> <li>• On average, those living in a shared flat spend 56% of their weekly income on rent.</li> <li>• Two-thirds of students regularly do not have enough money to buy food, clothing, pay bills, get health care or other basics. Disabled, Māori and Pasifika students were most likely to be in that position.</li> <li>• One in six students said their shared flat did not meet their needs but could not move because rents were too high.</li> <li>• Most students (69%) reported a decline in mental wellbeing during the COVID-19 pandemic, and some said this negatively impacted their studies.</li> </ul>
<p><a href="#">Child poverty reduction and wellbeing legislation</a> (chidyouthwellbeing.govt.nz)</p>	<p>The child poverty reduction and wellbeing legislation aims to ensure reducing child poverty and improving child wellbeing remains an ongoing priority through successive governments. This significant legislation was passed into law on 20 December 2018 with near unanimous parliamentary support. The Child Poverty Reduction Bill (which was divided into two bills at its final reading) became the Child Poverty Reduction Act 2018 and the Children's Amendment Act 2018, helping to ensure enduring commitment to reducing child poverty and improving child wellbeing.</p>

<sup>29</sup> Resilience to Natures Challenge, <http://resiliencechallenge.nz>.

<sup>30</sup> People's Inquiry into Student Wellbeing, 2022. [STUDENT INQUIRY \(nationbuilder.com\).  
https://assets.nationbuilder.com/beachheroes/pages/15978/attachments/original/1659489973/StudentEnquiryReport%28FINAL%29.pdf?1659489973](https://assets.nationbuilder.com/beachheroes/pages/15978/attachments/original/1659489973/StudentEnquiryReport%28FINAL%29.pdf?1659489973).

## **There is appetite in Aotearoa New Zealand for disaster risk to be incorporated into decision making and investment.**

Since 2015, Aotearoa New Zealand has seen a shift in understanding at our local and regional governance levels where risk management is no longer viewed as optional. It is now seen as an essential action for creating better future outcomes for communities. Science, knowledge, and experience have been instrumental in driving this change. There is now a greater understanding that nobody is untouched by hazard risk and repetitive, localised events have flow on effects for Aotearoa New Zealand as a whole nation. The shift in perspective has been critical in creating grassroots buy-in for larger strategic pieces of work and enacting change at the local community level.

However, while there is now increased appetite for widespread change, we have seen examples where the development of risk-based policy and practice through increased knowledge and awareness is slow to reduce risk. One example is the extensive work being undertaken to integrate climate change risk into policy, which has been slow to result in changes to decision-making to date. In contrast, the development of a [Carbon Neutral Government Programme](#) for public sector organisations has been a big driver for positive change, however, this is only for one small portion of the population.

Another example where we have seen slow change in implementation is in land use planning, due to a disconnect between policy change and disaster risk reduction at the local level. There is still flexibility in legislation that allows for poor decision-making in town planning and infrastructure development and little enforcement of integration of risk information in hazard risk management plans. This results in a lack of positive outcomes for future-proofing populated areas and increasing the resilience of our communities. Toka Tū Ake EQC have released` [Smart Land Use Action Plan for Risk Reduction 2021-2026](#) which his plan will promote and encourage better risk based land use planning outcomes.

Aotearoa New Zealand is conscious of scientific advances that are emerging now and will continue to unfold in years to come, along with major legislative reforms, that will inevitably drive further conversations about implementation changes. These advancements are a valuable opportunity to develop our maturity in the risk reduction space and create a flow-on effect for broader systemic change. It is recognised that many of these conversations are difficult and enacting change in implementation is a long-term process. However, there will need to be greater consideration in the future about how policy changes will drive implementation to have a measurable impact on reducing risk. We are seeing pockets of decreasing risk but not effective change in our overall approach yet. Strengthening connections across the system at all levels and working as a collective are critical to seeing improvements in this space.

## 4. Progress in Investment in Risk Reduction and Resilience

**We continue to see public investment in new science research and capability to better inform risk decision-making.**

The level of national investment in new science research in recent years highlights the recognition of the importance of knowledge in reducing risk and increasing our resilience as a nation.

Over \$680 million (NZD) is being invested in the [National Science Challenges](#) over a ten-year period as a core part of Aotearoa New Zealand's Government investment in science. Below is a breakdown of the investment in each of the challenges with a focus on hazard risk:

- Kia Manawaroa - Ngā Ākina o Te Ao Tūroa | Resilience to Nature's Challenges (RNC) – funding of up to \$59.4 million (NZD).
- Ko ngā wā kāinga hei whakamāhorahora | Building Better Homes, Towns and Cities – funding of up to \$47.9 million (NZD).
- Toitū te Whenua, Toiora te Wai | Our Land and Water – funding of up to \$96.9 million (NZD).
- Ko ngā moana whakauka | Sustainable Seas – funding of up to \$71.1 million (NZD).

The MBIE Endeavour Fund<sup>31</sup> encompasses a broad range of science programmes that undertake different hazard risk research. Cumulatively, these programmes are a multi-million-dollar public investment in risk reduction and resilience. Many of these programmes are in their early stages of development, with initial outcomes and critical findings expected to be seen over the next few years.

Over recent years, [RiskScape](#), an open-source spatial data processing application used for multi-hazard risk analysis, has seen considerable public investment through funding from Toka Tū Ake EQC, alongside NIWA and Te Pū Ao | GNS Science. The software provides a risk analysis framework for calculating consequences to people, buildings, infrastructure, the environment, and other elements exposed to any natural hazard type.<sup>32</sup> The tool is intended to assist disaster risk researchers and professionals in improving their understanding of natural hazard risk, as well as helping to inform risk-based decisions to increase risk reduction and resilience.

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<sup>31</sup> Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (2022). Endeavour Fund. <https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/investment-funds/endeavour-fund/>

<sup>32</sup> Taihoro Nukurangi | National Institute of Water and Atmospheric Research (2022). RiskScape software. <https://niwa.co.nz/natural-hazards/research-projects/riskscape>

One of the major public investments in new science research over recent years has been the revision of the [Te Taura Matapae Pūmate Rū i Aotearoa | National Seismic Hazard Model](#) (NSHM), with approximately \$10 million (NZD) being invested over the last few years through MBIE and Toka Tū Ake EQC. It calculates the likelihood and strength of earthquake shaking that may occur in different parts of Aotearoa New Zealand over specified time periods. The intended end users of the model range from practitioners to engineers, scientists, and consultants, as well as the insurance sector.<sup>33</sup>

Although established before the Sendai Framework in 2015, [GeoNet](#) continues to play a critical part in the understanding of natural hazards and the associated risks and impacts in Aotearoa New Zealand.<sup>34</sup> As well as providing near-real time hazards analysis for emergency response, the data generated by the nation-wide network is used to support multiple parties in the risk reduction system, including scientists, insurers and engineers both domestically and globally. Toka Tū Ake EQC is the largest contributor to GeoNet, investing up to \$14 million (NZD) each year.

**There has been a considerable increase in public investment in resilience because of system reforms and increased risk awareness.**

The reformation of Aotearoa New Zealand’s risk management system since 2015 has been a significant public investment and we are still in the process of undergoing considerable changes that will further enhance our ability to reduce risk and increase resilience in years to come. Since 2019 we have seen two major changes to key agencies in Aotearoa New Zealand’s risk management system.

The first was the creation of Te Rākau Whakamarumarū | National Emergency Management Agency (NEMA) in 2019, replacing the former Ministry of Civil Defence and Emergency Management (MCDEM). NEMA was established as part of the Government’s response to a Ministerial review into better response to disasters and other emergencies after 2016-2017 events.<sup>35</sup> NEMA’s status as a departmental agency, hosted by the DPMC, gives it greater autonomy than MCDEM had, an important factor as steward of the emergency management system.<sup>36</sup> Additionally, Government has allocated \$46.6 million (NZD) over four years from 2021

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<sup>33</sup> Te Pū Ao | GNS Science (2022). National Seismic Hazard Model. <https://www.gns.cri.nz/research-projects/national-seismic-hazard-model/>

<sup>34</sup> Toka Tū Ake EQC (2022). GeoNet. <https://www.eqc.govt.nz/resilience-and-research/data-and-modelling/geonet/>

<sup>35</sup> Te Tari o Te Pirimia me te Komiti Matua | Department of The Prime Minister and Cabinet (2018). Ministerial Review: Better Responses to Natural Disasters and Other Emergencies in New Zealand. <https://dpmc.govt.nz/departmental-agency/nema/ministerial-review-better-responses-natural-disasters-and-other-emergencies>

<sup>36</sup> Te Tari o Te Pirimia me te Komiti Matua | Department of The Prime Minister and Cabinet (2022). National Emergency Management Agency. <https://dpmc.govt.nz/departmental-agency/nema>

to strengthen the emergency management system and support inclusive, community-led responses to natural disasters and health events.<sup>37</sup>

The second change is still in-progress and reflects the modernisation of Aotearoa New Zealand's EQC Act 1993 and will see the introduction of the new Natural Hazards Insurance Bill to future-proof the scheme. The Bill, which was introduced to Parliament in March 2022, acknowledges Toka Tū Ake EQC's role beyond earthquakes and better reflects the broad range of natural hazards that Toka Tū Ake EQC's insurance scheme and expertise covers.<sup>38</sup>

Another critical addition to the risk management system has been the appointment of Chief Science Advisors across several key agencies, including NEMA, to lead the push for integration of science in a system-wide approach to increasing Aotearoa New Zealand's resilience. The Prime Minister's Chief Science Advisor convenes a forum of Chief Science Advisors<sup>39</sup> from across Government with the purpose of promoting a coordinated, all-of-government approach to science advice.

### *Investment in our national insurer*

Aotearoa New Zealand has one of the highest levels of residential property insurance in the world and insurance plays a critical part of a community's recovery in Aotearoa New Zealand. In 2018 a Public Inquiry into the role and work of EQC (the organisation's name at the time), was established. This followed the 2010-2011 Canterbury earthquake sequence, during which issues arose in relation to the Commission's operational practices in addressing over 583,000 claims to the Commission for damage. The report<sup>40</sup> contained 70 recommendations for improvement.

The Ministers responsible for the Earthquake Commission and for Greater Christchurch Regeneration released their response to this report in August 2020. A key outcome of the response to this inquiry has been significant investment in the internal capacity of Toka Tū Ake EQC, to improve the claims processes following a significant event. Additionally, Toka Tū Ake EQC have now established an internal readiness team that uses scenario-based planning with insurers to ensure responses to major events have a customer focus.

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<sup>37</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2021). New legislation to modernise emergency management system. <https://www.beehive.govt.nz/release/new-legislation-modernise-emergency-management-system>

<sup>38</sup> Toka Tū Ake EQC (2022). Introducing EQC's future name: Toka Tū Ake – Natural Hazards Commission. <https://www.eqc.govt.nz/about-eqc/our-maori-name/>

<sup>39</sup> Office of the Prime Minister's Chief Science Advisor (2022). Chief Science Advisor Forum. <https://www.pmcsa.ac.nz/who-we-are/chief-science-advisor-forum/>

<sup>40</sup> Te Tari o Te Pirimia me te Komiti Matua | Department of The Prime Minister and Cabinet (2020). Report of the Public Inquiry into the Earthquake Commission. [Report of the Public Inquiry into the Earthquake Commission, March 2020](#)

In 2021 the Minister Responsible for the Earthquake Commission announced that there will be an increased amount of insurance risk taken on by Toka Tū Ake EQC, doubling the insurance cap from \$150,000 to \$300,000 (NZD). This ensures private insurance cover remains available and affordable. Toka Tū Ake EQC recently secured a record level of reinsurance of \$7.2 billion (NZD) on the international market, an increase on the previous year by \$470 million (NZD). This is despite the international insurance market hardening in response to considerable losses in past years and demonstrates the benefits of the unique Toka Tū Ake EQC model.<sup>41</sup>

### Investment in earthquake-prone building remediation

A new national system for the management of earthquake prone<sup>42</sup> buildings came into effect on 1 July 2017, following the Building (Earthquake-prone Buildings) Amendment Act 2016. This introduced major changes to the way that earthquake-prone buildings are identified and managed under the Act.<sup>43</sup> The system categorises New Zealand into three seismic risk areas, which are used to set timeframes for territorial authorities to identify, and owners to remediate earthquake prone buildings. Some “priority buildings” have accelerated time frames for risk mitigation. Information about earthquake prone buildings must also be publicly displayed on the building itself and on an online register. In 2020, a Residential Earthquake-Prone Building Financial Assistance Scheme was established, allowing for owner-occupiers (of units and apartments) living in earthquake-prone buildings experiencing financial hardship to access borrowing of up to \$250,000 (NZD).<sup>44</sup>

Similarly, The Hurunui/Kaikōura Earthquakes Recovery (Unreinforced Masonry Buildings) Order 2017 was introduced in February 2017 in response to heightened earthquake risk following the November 2016 Kaikōura earthquakes. Building owners with unreinforced masonry parapets and facades that face into busy thoroughfares in Wellington, Hutt City, Blenheim, and Hurunui were given a short timeframe to undertake securing as the most effective means of managing the life safety risks during this period. A \$4.5 million (NZD) Unreinforced Masonry Building Securing Fund (URM Fund) was established to support this. Building owners were able to apply for funding to contribute towards the securing of parapets or facades, removal of non-heritage unreinforced masonry parapets and facades, or the

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<sup>41</sup> Toka Tū Ake EQC (2022). EQC continues to grow its reinsurance programme.

<https://www.eqc.govt.nz/news/eqc-continues-to-grow-its-reinsurance-programme/>

<sup>42</sup> A building, or part of a building, is earthquake prone if it will have its ultimate capacity exceeded in a moderate earthquake, and if it were to collapse, would do so in a way that is likely to cause injury or death to persons in or near the building or on any other property, or damage to any other property.

<sup>43</sup> Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (2017). Managing earthquake-prone buildings. <https://www.building.govt.nz/managing-buildings/managing-earthquake-prone-buildings/>

<sup>44</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2020). Hand up for owners of earthquake-prone units. <https://www.beehive.govt.nz/release/earthquake-prone-building-loan-scheme-eligibility-criteria-announced>



securing of large and complex unreinforced masonry buildings. Building owners could also apply for funding towards the costs of engineering assessments.<sup>45</sup>

### **Acceptance of climate change as a requirement for integration into investment and policy decision-making paves the way for integrating risk and recovery as part of due diligence.**

Government agencies and public institutions increasingly have requirements to consider and disclose climate change risks. In 2021, Te Kāwanatanga o Aotearoa | New Zealand Government passed the Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021.<sup>46</sup> The new law will require around 200 large financial institutions, including banks, insurers, investment schemes and Crown financial institutions to start making climate risk-related disclosures. This is intended to help ensure that the effects of climate change are routinely considered in business, investment, lending, and insurance underwriting decisions, improving financial resilience.

One of the most significant resilience funds announced in recent years is the Climate Change Emergency Response Fund (CERF). Established in 2021, this fund began with an initial \$4.5 billion (NZD) for climate spending, sourced from the Emissions Trading Scheme as a ‘polluter pays’ approach.<sup>47</sup> Recent investment action sourced from the CERF has been dedicated to mitigation and supporting the transition of the nation to a low-emissions economy, which is a crucial aspect of Aotearoa New Zealand’s role in the global system under the Paris Agreement. The size of the CERF is expected to increase year on year. Future investment from this fund may look towards adaptation measures that provide benefit across all hazards all risks.

In late 2021, Te Kāwanatanga o Aotearoa | New Zealand Government increased support to build greater resilience to climate change, through the new commitment of \$1.3 billion (NZD) in climate finance, announced just before the 26<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change in 2021 (UNFCCC COP26). This funding will support Pacific and other developing countries to slow the change and cushion its impacts. [Tuia te Waka a Kiwa | The Aotearoa New Zealand International Climate Finance Strategy](#) sets out how that increased funding will be deployed to best effect. The Strategy has four key goals:

- Accelerated climate change mitigation.

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<sup>45</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2018). Practical changes to unreinforced masonry securing initiative. <https://www.beehive.govt.nz/release/practical-changes-unreinforced-masonry-securing-initiative>

<sup>46</sup> Manatū Mō Te Taiao | Ministry for the Environment (2022). Mandatory Climate Related Disclosures. <https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/mandatory-climate-related-financial-disclosures/>

<sup>47</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2022). Climate Change Emergency Response Fund. <https://www.beehive.govt.nz/sites/default/files/2022-05/CERF%20investments.pdf>

- Enhanced resilience and adaptation to the impacts of climate change.
- Improved institutional capability and evidence-based decision making.
- Leveraged investment to achieve greater climate impact.

The high-level principles for investing in climate action in other countries reflect a focus on partnership; achieving a collective impact to make a difference globally; bringing a long-term perspective; and linking with like-minded partners, especially in the Indo-Pacific region.

Tuia te Waka a Kiwa | The Aotearoa New Zealand International Climate Finance Strategy sets a framework for assistance that helps countries and communities to build climate resilience on their own terms. We recognise the importance of local solutions. Many communities have been adapting to changes in their environment for decades. Aotearoa New Zealand will support indigenous-led approaches and work with communities to recognise their history, culture, and expertise as central to effectively responding to climate change.

Like targeted investment that has followed significant earthquakes in Aotearoa New Zealand, the increased scrutiny of risk associated with a changing climate provides opportune momentum to address underinvestment in resilience against and preparedness for flood, severe weather, and coastal hazards.

**Government agility and infrastructure investment is a key part of resilience, even if disaster risk reduction is not considered a primary factor in investment rationale.**

Infrastructure investment is a key resilience pathway for Aotearoa New Zealand, from the perspective of absorption capacity. However, resilience is not often the driver of investment decisions, but more often a co-investment factor. Generally, this is the result of scenario-based planning, rather than risk-based decision making at a national level.

A recent example is the \$1.25 billion (NZD) Transmission Gully Project,<sup>48</sup> one of the most significant pieces of road construction in New Zealand, which provided a key northern corridor out of the capital city Wellington. Primary investment factors included road safety, capacity and congestion, fuel consumption and economic growth, however the road was also designed to be more resistant to storm and earthquake damage. It is expected to be a critical route that can be rapidly restored following a major earthquake in the Wellington region.

Adaptability and agility of the public service is itself a critical investment to enact action during a response for better recovery. This occurred successfully during the COVID-19 response, where society needed rapid mobilisation to act, such as national and regional lockdowns and border measures. Policy action for wage support and rapid distribution of payments are another

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<sup>48</sup> Waka Kotahi NZTA, (2022). The Transmission Gully Motorway. <https://www.nzta.govt.nz/projects/wellington-northern-corridor/transmission-gully-motorway/>

example of the return on investment in capacity and established networks within and across agencies.

### *Fiscal management for resilience*

Te Pūtea Matua | The Reserve Bank of New Zealand has regulation and supervision responsibilities relating to the insurance sector, ensuring that insurance companies understand and manage their risks appropriately so the sector can remain sound and efficient. A review of the Insurance (Prudential Supervision) Act 2010 and Insurance Solvency Standards was commissioned in October 2020,<sup>49</sup> ensuring the regime is modern, efficient, and fit for purpose.

In Aotearoa New Zealand, Governments are required to set out their fiscal strategy consistent with the requirements of the Public Finance Act 1989. Unlike other countries, where fiscal rules are commonly set in legislation, fiscal rules in Aotearoa New Zealand are set by the Government of the day (i.e., the Government elected at the time). Te Tai Ōhanga | The Treasury and the Government agreed to a new set of fiscal indicators and targets in May 2022,<sup>50</sup> which included response to shocks and changes to the debt settings. These are designed for fiscal stability and sustainability for Aotearoa New Zealand.

## **5. Progress in Disaster Preparedness, Response and ‘Build Back Better’**

### **The emergency management system is in a state of extensive reform following lessons learned from the Kaikōura Earthquake in 2016**

Following on from lessons implemented from the 2010-2011 Canterbury earthquake sequence, Aotearoa New Zealand experienced several hazard events, including a gastroenteritis outbreak in 2016, the 2016 M7.1 East Cape Earthquake, the 2016 M7.8 Kaikōura Earthquake and tsunami, and the Port Hills fire in 2017. These events prompted widespread reflection on the effectiveness of the emergency management sector, “resulting in a loss of stakeholder, public and Ministerial confidence in the response system.”<sup>51</sup>

In 2017, a Technical Advisory Group (TAG) was established to provide advice to the Te Kāwanatanga o Aotearoa | New Zealand Government on the most appropriate operational and

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<sup>49</sup> Reserve Bank of New Zealand (2022). Interim insurance solvency standard further refined.

<https://www.rbnz.govt.nz/hub/news/2022/05/interim-insurance-solvency-standard-further-refined>

<sup>50</sup> Te Tai Ōhanga | The Treasury (2022). The Treasury’s analysis and recommendations for fiscal rules.

<https://www.treasury.govt.nz/sites/default/files/2022-05/guide-analysis-recommendations-fiscal-rules.pdf>

<sup>51</sup> Te Tari o Te Pirimia me te Komiti Matua | Department of The Prime Minister and Cabinet (2018). Ministerial Review: Better responses to natural disasters and other emergencies in New Zealand.

<https://dpmc.govt.nz/departmental-agency/nema/ministerial-review-better-responses-natural-disasters-and-other-emergencies>

legislative mechanisms to support effective responses to natural disasters and other emergencies in Aotearoa New Zealand.

In 2018, Te Kāwanatanga o Aotearoa | New Zealand Government [responded to the TAG findings](#) and 42 recommendations, committing to improving how New Zealand responds to natural disasters and other emergencies in five key areas:

- Putting the safety and wellbeing of people at the heart of the emergency response system.
- Strengthening the national leadership of the emergency management system.
- Making it clear who holds responsibilities, nationally and regionally.
- Building the capability and capacity of the emergency management workforce.
- Improving the information and intelligence system that supports decision making in emergencies.

This has led to significant investment and structural reform focused on the response-phase of emergencies in Aotearoa New Zealand.

#### *Establishment of a Recovery Framework*

Recovery has engendered a stronger focus with the CDEM Amendment Act 2016 establishing a legislative framework for recovery management. The majority of the Amendment Act came into place on 29 November 2016, to allow provisions to be used to support recovery from the Kaikōura M7.8 earthquake that occurred fifteen days prior.

The most significant implications include the provision of a mandate for recovery managers and strengthening the requirement to plan for recovery. These changes recognise that a key element of positive recovery is to have conversations before an event happens, to understand the values of a community. CDEM Groups are now required to actively plan for recovery, working with communities to understand consequences and determine recovery priorities.

It also established a transition notice mechanism that enable emergency powers for a specific duration at a local or national level. Work is underway at a national level to support the further development of recovery, including engendering leadership through training, and the publishing of a national recovery guidelines<sup>52</sup> which address preparedness as well as management of recovery.

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<sup>52</sup> Te Rākau Whakamarumarū | National Emergency Management Agency (2020). Strategic Planning for Recovery; Recovery Preparedness and Management. [Strategic Planning for Recovery: Directors Guideline for Civil Defence Emergency Management Groups DGL 20/17](#)  
[Recovery Preparedness and Management: Directions Guideline for Civil Defence Emergency Management Groups DGL 24/20](#)

### Coordinated Incident Management System

Aotearoa New Zealand's Coordinated Incident Management System (CIMS) was first introduced in 1998 as a framework of consistent principles, structures, functions, processes, and terminology to deliver effective incident response. It is intended to support communication and coordination across emergency management agencies, at any scale of emergency. The framework follows a review cycle of at least every five years.

In 2019, the third edition of CIMS<sup>53</sup> was published. Enhancements included:

- a strengthening of the foundational community focus of the framework;
- highlighting the importance of the inclusion of iwi and Māori in response and recovery;
- the introduction of a holistic consequence assessment approach to ensure all consequences are considered; and
- a more detailed description of recovery as a CIMS function.

### Warning system infrastructure and investment

Significant investment has been made into early warning systems since 2015. In 2016 the Government made the decision to invest in a modern cell broadcast emergency alert system called [Emergency Mobile Alert](#) (EMA). The system launched in 2017 with the support of all three of Aotearoa New Zealand's mobile phone providers. The system targets cell towers which issue the warning to connected mobile phones. The advantage of this approach is that all connected phones receive the alerts regardless of their provider. The message will also reach phones without a valid sim card, a key consideration due to the high number of foreign nationals who travel to New Zealand for tourism purposes. The broadcast approach avoids network congestion which can impact SMS based systems and allows people moving into the warning zone to be alerted as long as the warning is still being broadcast. Due to the intrusive, compulsory nature of the system, EMA messages are only sent when there is a serious threat to life, health, or property, and for annual test purposes.

A survey conducted after the 2019 nationwide test estimated that 87% of the population with access to mobile phone either received the nationwide test alert or was near someone who did receive the message.

EMAs are not meant to replace other emergency alerts, or the need for the public to act after natural warnings (e.g., strong ground shaking after an earthquake). Alerts issued via EMA can

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<sup>53</sup> Te Rākau Whakamarumaruru | National Emergency Management Agency (2019). Coordinated Incident Management System (CIMS) third edition <https://www.civildefence.govt.nz/resources/coordinated-incident-management-system-cims-third-edition>

be used by other systems such as the [Red Cross Hazard app](#). This is particularly useful to alert people to potential hazards in areas without adequate cellular coverage.

### Tsunami monitoring and assessment

DART (Deep-ocean Assessment and Reporting of Tsunami) buoys are deep-ocean instruments that monitor changes in sea level. They are currently the only accurate way to rapidly confirm a tsunami has been generated before it reaches the coast. In 2019, Te Kāwanatanga o Aotearoa | New Zealand Government announced an investment in a new network of [fifteen DART buoys](#), designed to provide rapid confirmation of tsunami generation following an earthquake, in addition to supplying critical data for the modelling of tsunami impacts during an event. The DART buoys proved instrumental in decision-making during the 5 March 2021 Kermadec and East Cape tsunamis, reducing forecasting uncertainty and expediting the warning cancellation advice by as much as four hours, allowing people to return home.

The DART buoy network also provides tsunami monitoring and detection information for Pacific countries, including Tokelau, Niue, the Cook Islands, Tonga, and Samoa.

The project was led by NEMA with support from Te Pū Ao | GNS Science, NIWA and MFAT. A funding contribution towards establishing the network was also made by the Australian Government.

### 24/7 hazard monitoring centres

In 2018, Te Pū Ao | GNS Science launched the [National Geohazards Monitoring Centre](#) (NGMC). The NGMC provides twenty-four hours a day, seven days a week (24/7) monitoring of geohazards in Aotearoa New Zealand including earthquakes, tsunami, volcanoes, and landslides; the first operation of its kind in the world to monitoring all four hazards in one facility. This allows for rapid analysis and response initiation when required and is a crucial cornerstone for tsunami early warning for Aotearoa New Zealand.

Similarly, in June 2022 NEMA established a 24/7 [Monitoring, Alerting and Reporting](#) (MAR) Centre as a significant step forward in improving capability and the capacity to deliver fast and effective warnings and advisories. The MAR Centre brings increased situational awareness of emerging risks, better information sharing across the emergency management system, and faster responses to tsunami alerts.

Both the NGMC and MAR work closely together to disseminate geohazard risk information to the emergency management system and the Aotearoa New Zealand public. National warnings and advisories, disseminated by NEMA, are issued following hazard assessment and advice delivered by Te Pū Ao | GNS Science through the NGMC. The 24/7 awake capability of both

Centres allows for efficient communication via email and teleconference, for the best early-warning outcomes for Aotearoa New Zealand.

### *Communication infrastructure investment*

To aid connectivity in remote areas, the Government has invested in the expansion of mobile networks in areas which are uneconomical for commercial providers.<sup>54</sup> The blackspot programme funded by Crown Infrastructure Partners consists of additional mobile base stations at 100 key tourism hotspots and along 1,000 km of state highways. The countries' three mobile phone providers will be able to use the new infrastructure.

The Government is also investing in expanding key fibre backhaul routes. This will provide additional residential connectivity, underpin new cell base stations, and provide redundancy of key existing fibre routes on the east coast of the South Island which currently all pass through the same pinch points.

The increased connectivity provided under the blackspot programme will expand the reach of warnings including EMA. Until recently the lack of mobile coverage has prevented the use of EMA in the Chatham Islands (a group of islands off the east coast of the South Island). Recent government investments have resulted in the installation of the first cell phone network allowing people to receive EMAs for the first time. It also allows better communication and emergency coordination with the rest of Aotearoa New Zealand.

### **Lived experience has driven investment and enabled Aotearoa New Zealand to adapt our systems to respond more effectively to, and recover from, events.**

Aotearoa New Zealand's lived experience of significant events since 2015 has enabled us to test our capacity and capability in response and recovery and apply lessons from these events to improve our systems moving forward, even if the new manifestation of events is different.

NEMA is leading the development of an Aotearoa New Zealand Lessons Management System that will include capturing and applying lessons from activations and exercises more methodically. It will also support capturing institutional knowledge to build a knowledge bank that people in the across the emergency management system can draw on for future responses.

This experiential period of back-to-back events and the importance of the ability to take on board lessons and adjust accordingly has been a key part of Aotearoa New Zealand's progress in disaster risk reduction and response. Structures that were implemented during one response have been able to be rapidly adapted in support of another. The best example being

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<sup>54</sup> Crown Infrastructure Partners Limited. Mobile Blackspot Programme  
<https://www.crowninfrastructure.govt.nz/blackspots/>

the wage subsidy implemented following the 2010-2011 Canterbury earthquake sequence, redeployed as a response tool during the COVID-19 pandemic.

However, this cycle also presents the challenging environment of implementing change whilst responding to events, most clearly evidenced by the impeding nature of the COVID-19 pandemic globally.

### Public education

NEMA works with CDEM Groups and other partner agencies, such as Toka Tū Ake EQC, to educate and motivate New Zealanders to better prepare for emergencies and take the right safety actions when an emergency happens. The National Public Education Programme for Aotearoa New Zealand is a staged, targeted, evidence-based approach, which uses a range of communications channels. Within the programme there is a particular focus on reaching disproportionately impacted communities. Ranking fourth out of 58 agencies on the Kantar Public Sector Reputation Index, NEMA, together with our CDEM partners, benefit from a high level of trust from the public.

A National CDEM Public Education Representative Group, with representatives from each CDEM Group, plays a key role in developing the long-term strategy for the public education programme. NEMA also works closely on public education with other organisations such as Toka Tū Ake EQC, Te Pū Ao | GNS Science, Te Tāhuhu o te Mātauranga | Ministry of Education and Neighbourhood Support.

NEMA maintains two websites: the [Civil Defence website](#) for extensive information and resources about emergency management and the latest information on current emergencies and the [Get Ready website](#) for information about emergency preparedness. NEMA is focusing on making Aotearoa New Zealand's communications accessible and inclusive with an ongoing project to translate the Get Ready website into different languages. The website is currently available in English, New Zealand Sign Language, Te Reo Māori, Gagana Samoa, Mandarin Chinese (simplified and traditional characters), Tagalog, Español, Lea Faka Tonga, Japanese and Arabic. Additional languages will continue to be added. NEMA has also signed a memorandum of understanding (MoU) with Deaf Aotearoa in 2019 to signal its commitment to providing fully accessible information to the deaf community.<sup>55</sup> [Toka Tū Ake EQC](#) also provides public education information via its website, particularly for preparing homes and properties for natural hazard events.

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<sup>55</sup> Deaf Aotearoa (2022). Memorandum of Understanding. <https://www.deaf.org.nz/2019/09/memorandum-of-understanding/>



Following the 2016 Kaikōura earthquake and tsunami, NEMA launched the “Long or Strong, Get Gone” campaign to promote taking the right actions when a local source tsunami follows a long or strong earthquake. This has recently been reinforced up by the “[Own your Zone](#)” campaign that encourages people to take steps to identify whether they are in a tsunami evacuation zone, learn when their zone might be evacuated and what actions to take.

Since the implementation of EMA, NEMA has run a nationwide test of the EMA system each year. Prior to the test, an awareness campaign is held to raise awareness of the system, what it is used for and what to expect during the nationwide test. The last nationwide test of EMA was held on 22 June 2022.

NEMA’s most recent public campaign “Get The Flood Out (GTFO)” was launched on 9 June 2022. This nationwide campaign will be used during “peacetime” and aims to help people understand the dangers of flood water and encourages them to stay. “Get The Flood Out” will be complemented with the “Flood Water is Deep Trouble” campaign, which also raises awareness of the dangers of flood waters but has a more serious tone for use in the days leading up to expected flooding.

In June 2022, NEMA launched the 2022 New Zealand ShakeOut earthquake drill and tsunami hīkoi, which will be held on 27 October 2022. The New Zealand ShakeOut earthquake drill and tsunami hīkoi, undertaken in partnership with Te Tāhuhu o te Mātauranga | Ministry of Education and Toka Tū Ake EQC, is our annual nationwide exercise to encourage the public to practice the right actions to take in an earthquake or tsunami. More than 650,000 participants took part in the 2021 drill. East Coast LAB also leads a Tsunami Hīkoi week initiative<sup>59</sup> in March of each year, which coincides with the anniversary of the 2011 Tōhoku earthquake and tsunami. These campaigns have changed the paradigm in terms of educating from the bottom-up and empowering our rangatahi (younger generation) to lead the way in hazard risk awareness.

## **6. Collaboration, Partnership and Cooperation**

**There is greater awareness of the value Māori bring to emergencies, driving engagement with treaty partners and highlighting the importance of partnership before, during and after events.**

Since 2015 there has been increasing recognition of the value Māori bring to emergency management and the importance of partnership with Māori as tangata whenua (people of the land) of Aotearoa New Zealand, before, during and after emergencies. This comes from both increased prioritisation of being genuine treaty partners and increased acknowledgement of the value of Māori in emergencies.

Iwi and Māori have significant knowledge and expertise, as well as resources that are activated early in times of emergency such as marae, Māori wardens and other Māori whānau, hapū, and iwi networks. This has been clearly demonstrated in many events, for example the 2016 Kaikōura earthquake and the COVID-19 pandemic. NEMA acknowledges the significant role that iwi have played in Aotearoa New Zealand’s emergency responses.<sup>56</sup> It is critical to recognise that the mobilisation of iwi resources, including enablement of the use of marae as emergency locations for whānau and other community members during these events, has been paramount to increasing Aotearoa New Zealand’s resilience to the impacts of disasters.

**We are seeing more emphasis on forging relationships and maximising the benefits of collaboration within the emergency management sector.**

The importance of collaborative, open dialogue emergency management is increasingly recognised. The need for efficiency and straight-forward delivery of readiness, response and recovery actions has enabled a focus on complementation of agency value, rather than competition. This is supported using consistent methodologies, approaches, and strategic alignment through the National Security System (see Section III.2).

*CDEM Group partnerships*

Delivery of emergency management in Aotearoa New Zealand has the potential to be regionally siloed, due to the structure of the CDEM Act 2002 and sixteen CDEM Groups. In 2018, following the ‘Ministerial Review: Better Responses to Natural Disasters and other Emergencies in New Zealand’ it was agreed that a new forum be created to achieve greater alignment and collaboration. The National Emergency Management Development Group (NEMDG) now provides a forum for NEMA and the CDEM Groups to collaboratively develop and deliver effective emergency management for communities in a nationally consistent manner. The significance of this partnership for the advancement of emergency management in Aotearoa New Zealand cannot be understated.

Strengthening this relationship, a Partnership Charter between NEMA and the sixteen CDEM Groups was created and approved in 2022. This sets out a shared kaupapa | shared vision, te mahi ngātahi | partnership aspirations, ā mātou arotahinga | focus areas, and partnership principles, as well as identifying how the roles of NEMA and CDEM Groups interact.

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<sup>56</sup> Time constraints in the compilation of this report meant NEMA was unable to engage with several of our key partners and thus, we have not detailed the successes of others where it is not appropriate, such as Māori-led emergency response initiatives.

### Emergency Services Leadership Board

The Emergency Services Leadership Board (ESLB) was established during the early stages of COVID-19 response to drive an aligned and coordinated sector response to the pandemic. The board's mission is to “increase community readiness and resilience, for faster, more effective and sustainable responses and recoveries to emergencies”. Chaired by NEMA, representation includes Whakaratonga Iwi | Fire and Emergency New Zealand (FENZ), Ngā Pirihimana o Aotearoa | New Zealand Police, St John New Zealand, Kia Ora Te Tangata | Wellington Free Ambulance, Te Ope Kātua O Aotearoa | New Zealand Defence Force (NZDF) and Manatū Hauora | Ministry of Health.

This group continues to provide sector leadership to enable:

- greater awareness and mitigation of sector risks;
- stronger relationships within and external to the sector;
- empowered and resilient staff, partners, and communities;
- future fit agency strategies and operations; and
- overall greater sector efficiencies, alignment, and coordination.

### Inter-agency partnerships for government policy development

The shift into proactive adaptation and management of climate change risks (see Section II.2), and the demands that places on government and communities has required significant effort across the public services sector. Thirty agencies are referenced in the NAP alone. The breadth and interconnectivity of risks associated with climate change, as well as the public urgency for mitigation of these, has provided both opportunity and momentum for partnerships that can address risk management in a holistic and comprehensive manner.

High-level cross government forums are essential to achieving holistic and comprehensive management of risk. The HRB is an example of such a forum (see Section II.3). The board meets regularly to review emerging and intractable issues which require high level cooperation to achieve meaningful management of risk.

**A maturation of the approach to research has enabled us to improve the value of knowledge exchange between scientists and all those with a role in disaster risk management.**

Since 2015, we have seen an increase in collaborative approaches to science for emergency management. This includes trans-disciplinary and multi-institutional integration across different science programmes and strengthened networks between scientists, practitioners, and policymakers. The heightened awareness of Aotearoa New Zealand's disaster risk due to

recent lived experience of events has seen an increase in use of existing science forums and the development of several new major science programmes.

Our science advisory panels have played a key role in our response to hazard events, particularly the New Zealand Volcanic Science Advisory Panel (NZVSAP) in response to multiple volcanic unrest and eruption events: 2019 Whakaari eruption, 2022 Ruapehu unrest and 2022 Taupō unrest. NZVSAP has members from science institutions across Aotearoa New Zealand, as well as practitioners from relevant government agencies (NEMA, Department of Conservation and Toka Tū Ake EQC, MetService and NIWA).<sup>57</sup> While NZVSAP was established prior to 2015, the value of this panel within the system has been increasingly realised in the wake of more volcanic events. Aotearoa New Zealand's regional volcanic advisory groups and programmes, including the Caldera Advisory Group (CAG), the Central Plateau Volcanic Advisory Group (CPVAG), and the Taranaki Seismic and Volcanic Advisory Group (TSVAG) also have critical roles in planning and preparedness for area-specific volcanic activity.<sup>57</sup> In 2021, a parallel structure in the seismic hazard risk space at the national level was established, with the creation of the Aotearoa Earthquake Science Advisory Panel (AESAP) to improve collaborative efforts in the earthquake risk management space.

The structure and investment approach of Aotearoa New Zealand's major science programmes encourage collaboration across institutions and disciplines to maximise the value of the research to the system. The National Science Challenges bring together collaboration partners from different Crown Research Institutes, tertiary institutions, consultancies, and other public and private sector agencies. The RNC programme is one of the National Science Challenges with a focus on hazard and disaster risk and resilience. RNC is a formal collaboration between thirteen organisations that bring together the best research teams in an inter-agency, multi-disciplinary effort to accelerate Aotearoa New Zealand's resilience to disasters. The programme also provides a critical opportunity for researchers and iwi to collaborate and co-design research as partners.

The MBIE Endeavour Fund programmes are also critical platforms for enabling collaboration in science research for disaster risk reduction. This includes the cross-collaboration with Māori at iwi and hapū level across many of these programmes and partnership between national and local levels to align with community-determined needs and encourage the integration of traditional and community knowledge. See Section II.2 and II.4 for other examples of hazard risk research programmes funded by the Endeavour Fund.

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<sup>57</sup> Te Rākau Whakamarumaruru | National Emergency Management Agency (2020). New Zealand Volcanic Science Advisory Panel (NZVSAP) Terms of Reference.

<https://www.civildefence.govt.nz/assets/Uploads/publications/nzvsap-tor-sep-2020.pdf>

In 2016, [Te Hiranga Rū | QuakeCoRE: NZ Centre for Earthquake Resilience](#) was opened at the University of Canterbury after being selected for Centre of Research Excellence (CoRE) funding in 2015 by the Tertiary Education Commission and the Royal Society of New Zealand.<sup>58</sup> The aim of QuakeCoRE is to establish and link multi-institutional national research programmes that are internationally networked. The research programmes are highly integrated collaborations coordinated across the physical, engineering, and social sciences and relevant research institutions. In partnership with key sectors of Te Ao Māori, Te Hiranga Rū | QuakeCoRE has a strong drive to develop and harness mātauranga Māori perspectives on earthquake resilience, to achieve the resilience aspirations of tangata whenua. Additionally, it also has a focus on leading the development of initiatives that will nurture Te Hiranga Rū | QuakeCoRE Māori researchers and students; foster understanding and competence in kaupapa, tikanga and Te Reo Māori; and provide pathways for Māori student-led research in earthquake resilience. The centre aims to share its research with the wider community through development of a programme of Communication, Education and Engagement (CEE) that engages with industry stakeholders, researchers in the field of disaster resilience, school students, and the wider community.

[East Coast LAB \(Life At the Boundary\)](#) is one of Aotearoa New Zealand's science programmes with a targeted community-based approach to science research. The programme brokers the connection between research, emergency management, iwi, hapū and the wider community to ensure a well-coordinated, equitable, and research-based approach to building resilience. Examples of key initiatives within this programme include education roadshows, Tsunami Hīkoi week<sup>59</sup> and iwi-partnered science research.

Another major science programme facilitating strong cross-collaboration between sectors and agencies is the [AF8 \(Alpine Fault magnitude 8\)](#) programme. AF8 is best understood as an interdisciplinary partnership between research, policy and practice designed to support, build, and coordinate readiness and response capability for the next great Alpine Fault earthquake, across the South Island. It was established and continues to be led and funded by the six South Island CDEM Groups and key Alpine Fault hazard risk science partners Resilience to Nature's Challenges and QuakeCoRE: NZ Centre for Earthquake Resilience. The programme is supported by significant co-funding from NEMA to enable core strategic activities (e.g., the coordination of intelligence and planning activities), and funding from Toka Tū Ake EQC for specific public education projects (e.g., the AF8 Roadshow). AF8 aims to share the Alpine Fault hazard and impact science and preparedness information widely, through communication and

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<sup>58</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2022). Canterbury University QuakeCoRE welcomed. <https://www.beehive.govt.nz/release/canterbury-university-quakecore-welcomed>

<sup>59</sup> East Coast LAB (2022). Tsunami Hīkoi. <https://www.eastcoastlab.org.nz/getinvolved/tsunami-hikoi/>

engagement activities, to increase awareness, enable conversation and build societal preparedness to natural hazard events.

With many different science advisory groups and programmes involving representatives from many different agencies and in some cases, strong duplication of membership, it is important to ensure these programmes are connected and learning from each other. There is a deliberate effort to make sure science research is connected across Aotearoa New Zealand and that the systems and forums we have in place are effective in facilitating this.

**International partnerships are critical for ensuring Aotearoa New Zealand is implementing best practice disaster risk reduction and maintaining alignment with international agendas and frameworks.**

#### International research initiatives

There is motivation to increase international cross-collaboration in science research initiatives and Aotearoa New Zealand recognises the importance of this type of partnership. As a small island nation, we are aware of the enhanced capacity of larger countries to undertake research and improve their knowledge and the need for Aotearoa New Zealand to remain internationally connected to utilise this knowledge. International relationships also enable pooling of resources and knowledge for the development of best practice approaches to disaster risk reduction that can have widespread benefit for under resourced countries.

We have seen strong international partnerships in many of Aotearoa New Zealand's recently developed major science programmes and a general enhancement of international networks since 2015 to help to inform research. However, the ability to form effective relationships has been significantly impacted by the COVID-19 pandemic and now requires some effort to reconnect and reengage with the international community. There needs to be a clear intent and drive to stay engaged in the international science scene to avoid becoming siloed within our domestic areas of expertise. There also needs to be a commitment of resource to applying these best practice learnings to the Aotearoa New Zealand context moving forward. This will help to ensure that Aotearoa New Zealand stays relevant and continue to apply best practice to effectively reduce our risk.

Aotearoa New Zealand continues to provide leadership and support to the Pacific Tsunami Warning System (PTWS), with representation across multiple working groups in support of regional Pacific resilience to tsunami. New Zealand has also contributed an official to the UN Ocean Decade Tsunami Programme Scientific Committee, with an advisory role to the Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG).

### Disaster risk management support to Pacific Islands

As discussed in Section II.1, the PDRMP provides disaster risk management support for the Pacific Islands. Other collaborative support comes through engagement with Pacific regional organisations, such as the [Pacific Islands Forum](#) (PIF), of which Aotearoa New Zealand is a member country, the Secretariat for the [Pacific Environment](#) (SPREP), and [The Pacific Community](#) (SPC).

The PIF is the region's premier political and economic policy organisation, and as such promotes high-level dialogue and on sustainable development, growth and trade, COVID-19 and pandemics, security, and the Blue Pacific economy. The inaugural Pacific Islands Forum Women Leaders meeting held in June 2022 saw participation by the Aotearoa New Zealand Prime Minister, the Minister for Women, and the Minister for Foreign Affairs and Trade as they focused on gender issues, family violence, and fostering women's leadership, all of which contribute to building regional resilience.

The Pacific Island leaders call out climate change as an existential threat and tackle issues through regional programs that Aotearoa New Zealand supports. SPREP hosts the Climate Change Resilience Programme and supports its Pacific Island member countries in other areas, including biodiversity, ecosystem health, and waste management. SPC has programmes dealing with climate, fisheries, agriculture, food security, water, marine resources, energy, public health, disaster and community resilience, education, statistics, social development, and human rights. Aotearoa New Zealand supports both regional agencies with core funding as well as project and programme specific funding.

The [Climate Resilient Islands project](#) works to build the resilience of communities in Fiji, Tonga, Vanuatu, and Tuvalu, with the support of local teams from Live and Learn Environmental Education. The project leverages indigenous knowledge to understand the inherent strengths within communities, and to build on their existing disaster risk reduction approaches. Communities are supported to develop inclusive and accessible resilience plans for their communities, including potential disaster risk reduction, ecosystems, food security and livelihood interventions for the communities. The [Pacific Seeds 4 Life project](#) is implemented by Manaaki Whenua Landcare Research in partnership with the Pacific Community's Centre for Pacific Crops and Trees. The project, also supported by the Australian Government Department of Foreign Affairs and Trade, aims to improve climate and disaster resilience by supporting communities' food security. An example of the project supporting communities' disaster

response was after the Hunga Tonga-Hunga Ha'apai volcanic eruption and tsunami, when 1.4 tonnes of vegetable seeds were disbursed to farmers within two weeks of the event.<sup>60</sup>

**There is greater recognition of the importance of partnering with communities to foster a bottom-up approach to disaster risk management.**

Lived experience of hazard events has seen communities demanding greater action and participation in disaster risk management across the '4Rs'. Since 2015, we have seen increasing recognition of the value of local community knowledge in informing risk decision-making and the effectiveness of bottom-up approaches to disaster risk reduction.

A primary example of this in the reduction and readiness space is the community-led tsunami hīkoi events,<sup>61</sup> which enable at-risk communities to lead the testing of their tsunami evacuation routes in preparation for a tsunami event. From a climate change perspective, we see many community-led activities and council-community collaborations with the direct aim of mitigating the impacts of climate change, such as tree-planting and dune restoration projects.

In the response and recovery areas we have seen many examples of community mobilisation since 2015, reflecting a system that is becoming more flexible and adaptive to community input. A primary example of community-led response initiatives is the strong mobilisation of several iwi and Māori organisations to support community and government responses to the COVID-19 pandemic. One of the key actions undertaken by iwi and Māori organisations included sending mobile units into isolated, rural, and vulnerable communities to help them prepare and respond to COVID-19.<sup>62</sup> Localised solutions were highly effective in leading and assisting readiness and response activities during this event.

In the recovery space, a prominent example of a community collective used through multiple event recoveries is a collective named the 'Farmy Army'. The Farmy Army is organised by Federated Farmers but consists of community members and fellow farmers from unaffected or lesser affected areas. They have mobilised to assist with the recovery of many farms following recent flood events, including the 2019 Southland floods and 2021 Canterbury floods.

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<sup>60</sup> Pacific Community (2022). Strengthening food security through preserving crops and trees for the next 75 years. <https://www.spc.int/updates/blog/2022/04/strengthening-food-security-through-preserving-crops-and-trees-for-the-next-75>

<sup>61</sup> A tsunami hīkoi is a walk that takes people along their tsunami evacuation route either inland or towards high ground. East Coast LAB, a major community-focused research programme<sup>21</sup>, promotes a Tsunami Hīkoi week<sup>59</sup> in March each year to encourage people to learn and practice their tsunami evacuation route.

<sup>62</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2022). \$23.5m to support community-led Māori vaccination campaigns. <https://www.beehive.govt.nz/release/235m-support-community-led-m%C4%81ori-vaccination-campaigns>

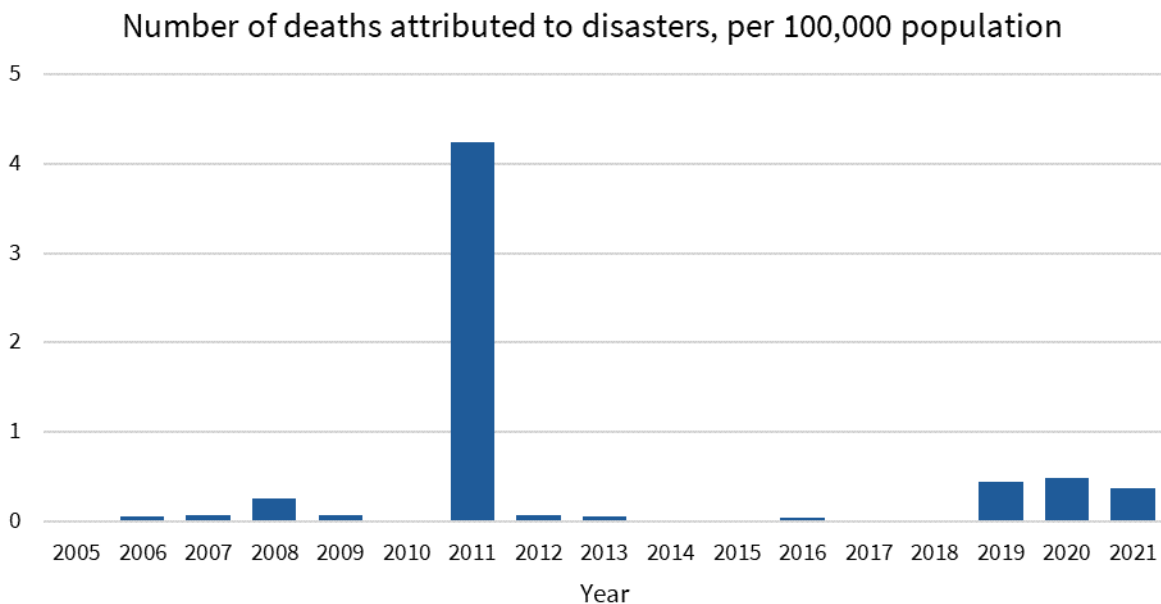


## 7. Progress in achieving the Targets of the Sendai Framework

The activities and initiatives outlined in this report demonstrate a significant progress toward achieving the goal of the Sendai Framework. While there remains significant work to do over the next seven years, many initiatives are already underway which will significantly change the country's relationship with risk. Whether that be related to the impacts of climate change, or the increased exposure related to urban growth.

Aotearoa New Zealand has consistently contributed to the Sendai Framework Monitor across all targets since 2015. In addition, mortality data has been contributed retrospectively for all years back to 2005. Further work is required to ensure Aotearoa New Zealand can disaggregate data and understand impacts by age, gender, ethnicity, and other variables.

The nature of Aotearoa New Zealand as a small country prone to large but irregular events, means that tracking long term progress based on loss statistics does not produce valuable insights in the way it might do in a larger country which experiences regular significant impacts to its population. This is well demonstrated by mortality figures available since 2004 which show low mortality in most years with significant increases related to the 2011 Christchurch earthquake and the 2019 Whakaari eruption and COVID-19.



Despite these challenges, Aotearoa New Zealand remains committed to the reporting of loss data through the Sendai Framework Monitor alongside other initiatives highlighted in this report to ensure the country is more resilient to disasters and meets the Sendai Framework goal.

### III Contextual shifts, new and emerging issues, and challenges

#### 1. Context Shifts and New Issues – Retrospective 2015 – 2022

**The emergence of the COVID-19 pandemic has produced large social and economic consequences but has also considerably changed the way we have had to work and will work for the foreseeable future.**

The COVID-19 pandemic brought significant change to Aotearoa New Zealand, as it did for much of the world. Local successes in pandemic management, risk and science communication, and new flexible business practices are mitigated by the significant economic impact, the reveal of international supply chain vulnerabilities, and the failure of global cooperation. Additionally, there is public fatigue regarding hazard information with a desire to ‘return to normal’ – even where risk awareness has progressed.

By its nature, the experience of managing a national emergency such as a pandemic was a single-peril focused effort for several years, which has disrupted focus and resources from Aotearoa New Zealand’s all-hazards approach. However, we are in a phase of revisiting aspirations delayed by COVID-19, and not only implementing those, but using the momentum and learnings from that experience to enhance the positive outcomes.

**Economic pressures are driving investment decisions that do not have disaster risk reduction in focus but do address some vulnerability factors.**

A key challenge for Aotearoa New Zealand is balancing investment in risk reduction activities with investment to address wider government priorities such as in the social system, which is facing several challenges in the current global climate. Higher inflation is driving higher costs of living, rising interest rates, tightening supply constraints, and the impacts of the Russian invasion of Ukraine are new challenges faced in 2022, compound the urgency of long-term issues such as climate change, child poverty and housing quality and affordability.<sup>63</sup>

Housing availability poses a particular challenge for disaster risk reduction. Demand is driving increased density which needs to be balanced with the consideration of natural hazard risks. Similarly, property investment is one of the main investment mechanisms in Aotearoa New Zealand. This means the public can be sensitive to any risk information or assessment that can affect pricing, such as open-data hazard portals, or the painting of tsunami evacuation ‘blue lines’ in a neighbourhood.

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<sup>63</sup> Te Tai Ōhanga | The Treasury (2022). The Wellbeing Budget 2022: A Secure Future. <https://budget.govt.nz/budget/pdfs/wellbeing-budget/b22-wellbeing-budget.pdf>

In 2019, Te Kāwanatanga o Aotearoa | New Zealand Government announced a new approach to the national Budget, with the release of the first 'Wellbeing Budget'.<sup>64</sup> This approach uses social and environmental indicators, as well as economic and fiscal ones, to guide investment and funding decisions. This broadens the focus of progression and success from economic to the success of natural resources, people, and communities. This fundamentally supports disaster risk reduction, by seeking to address inequalities and vulnerability factors for a more resilient society, even where investment appears independent from hazard and risk mitigation.

**Climate change and concurrent events have placed pressure on the emergency management system while also raising its profile.**

On 2 December 2020, Te Kāwanatanga o Aotearoa | New Zealand Government declared a Climate Emergency.<sup>65</sup> The motion recognised “the devastating impact that volatile and extreme weather will have on New Zealand and the wellbeing of New Zealanders, on our primary industries, water availability, and public health, through flooding, sea-level rise, and wildfire damage”.

Since 2015, Aotearoa New Zealand has experienced over 20 severe weather events<sup>66</sup> that have led to a declaration of emergency in at least one area, with additional responses to earthquakes, fires, and pandemic emergencies. A significant number have also occurred without a declaration of emergency. Many of these events were concurrent or repeating. The high frequency of events presents many challenges to the emergency management sector, not only in capacity and resourcing, but also in maintaining a long-term strategic focus for risk reduction as well as immediate response actions.

The TAG Review (see Section II.5) was commissioned following several high-profile event responses, including a wildfire, and the resulting focus on the efficiency and suitability of the emergency management system. While there were clear aspects of the system that required improvement, this review has driven significant investment for positive change.

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<sup>64</sup> Te Tai Ōhanga | The Treasury (2019). The Wellbeing Budget 2019.

<https://www.treasury.govt.nz/sites/default/files/2019-06/b19-wellbeing-budget.pdf>

<sup>65</sup> New Zealand Parliament (2020). Motions – Climate Change - Declaration of Emergency.

[https://www.parliament.nz/en/pb/hansard-debates/rhr/combined/HansDeb\\_20201202\\_20201202\\_08](https://www.parliament.nz/en/pb/hansard-debates/rhr/combined/HansDeb_20201202_20201202_08)

<sup>66</sup> Te Rākau Whakamarumarū | National Emergency Management Agency (2022). Declared States of Emergency.

<https://www.civildefence.govt.nz/resources/previous-emergencies/declared-states-of-emergency/>

## 2. Emerging Issues and Future Contexts – Prospective (to 2030 and beyond)

### **The risk landscape is becoming increasingly complex.**

It is clear that the planet is changing at an ever-increasing rate, driven primarily by climate change and population growth. With this increased level of change comes an increase in risk and the complexity of the challenges we face. While Aotearoa New Zealand has been well served by solid institutions and a legal framework which seeks to reduce risk, the pace of change means more active measures are now required. Where in the past measure such as land use management and building regulations reduced risk for the next generation of infrastructure, it is now increasingly becoming necessary to take more proactive steps toward mitigation through measure such as hardening of critical infrastructure and manage retreat.

### **Major strategic reforms are underway, and the proof of return will be evident in the next decade.**

Broad policy changes are being scoped that are starting to tackle the big challenges that contribute to disaster risk, as well as public service settings more generally. This will be a significant shift into future-proofing year on year improvements.

Critically, these reforms need to be intentionally aligned across sectors, objectives, and timelines, to capitalise on periods of change, and prioritise collective benefits ahead of agency specific goals.

In general terms, these reforms encompass the following:

#### Emergency management system ‘Trifecta’ reform

The Regulatory Framework Review of Aotearoa New Zealand’s emergency management system, ‘Trifecta’ Programme<sup>67</sup> is anticipated to strengthen the all agencies, all sectors, all levels, system-wide approach to disaster risk reduction. The purpose of the reform is to build a modern, fit-for-purpose and enduring framework of legislation and guidance for the emergency management system. Led by NEMA, Trifecta brings together three projects that have significant alignment. The projects are:

- Developing a new Emergency Management Bill to replace our current CDEM Act 2002.
- Reviewing the National CDEM Plan 2015 and the accompanying Guide.
- Designing a Roadmap for the NDRS.

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<sup>67</sup> Te Rākau Whakamarumaruru | National Emergency Management Agency (2022). Regulatory Framework Review (‘Trifecta’) Programme. <https://www.civildefence.govt.nz/cdem-sector/regulatory-framework-review-trifecta-programme/>

This framework will ensure that:

- Communities better understand the risks they face and are better prepared to respond to and recover from emergencies.
- Iwi and Māori participation is recognised, enabled, and valued.
- The emergency management system is well-coordinated, high-performing and enjoys widespread trust and confidence.
- The impacts of emergencies on people, the economy and the environment are reduced.

### National Adaptation Plan (NAP)

The NAP<sup>68</sup> will consider the impacts of climate change, including changing temperature and rainfall patterns, sea level rise and exacerbation of natural hazards, now and into the future, and sets out priority actions for the how Aotearoa New Zealand will adapt. The first NAP responds to the 2020 NCCRA and will respond to a new risk assessment every six years.

### Resource Management Act 1991 reform

The Government intends to repeal current legislation that governs the use of land and natural resources contained in the Resource Management Act 1991<sup>69</sup> and replace this with three new pieces of legislation:

- The Natural and Built Environment Act for the protection and restoration of the environment while better enabling development.
- The Spatial Planning Act which will require the development of long-term regional spatial strategies to coordinate and integrate decision making.
- The Climate Adaptation Act to address the complexities associated with managed retreat.

This reform is intended to better address the new challenges facing communities, including the impacts of climate change. It is expected to provide better protections for the environment, while enabling urban development to better keep pace with population growth.

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<sup>68</sup> Manatū Mō Te Taiao | Ministry for the Environment (2022). National Adaptation Plan.

<https://environment.govt.nz/publications/aotearoa-new-zealands-first-national-adaptation-plan/>

<sup>69</sup> Manatū Mō Te Taiao | Ministry for the Environment (2022). Resource Management System Reform.

<https://environment.govt.nz/what-government-is-doing/areas-of-work/rma/resource-management-system-reform/>

### 'Three Waters' reform

The Three Waters reform<sup>70</sup> intends to address decades of underinvestment for improvement and maintenance of water services (drinking water, wastewater, and stormwater). Four new publicly owned Water Services Entities are being designed to run these services, currently operated by local councils on behalf of communities. These reforms are designed to allow for financial flexibility for necessary upgrades across the country, which will improve the resilience of these systems.

### Local government reform

In April 2021 the Government announced an independent review of local government,<sup>71</sup> to account for the cumulative changes presented by several national reforms, to assess how governance and democracy may need to evolve in future. Central to this review is the improvement of the wellbeing of Aotearoa New Zealand communities and the environment, and to better embody the partnership of Te Tiriti o Waitangi.

The scope of the review accounts for not only social, environmental, cultural, and economic outcomes for communities, but roles and partnerships, representation, governance, and a future look towards financing of local government.

It is acknowledged that at present, local government does not have capacity to meet the demand that disaster risk reduction asks for. A resilient and sustainable local government system is critical for the application of risk reduction and emergency management in Aotearoa New Zealand.

### Public health system reform

On 1 July 2022 Aotearoa New Zealand began the transition to a new national health system.<sup>72</sup> The intention of this system transformation is to enable a nationwide view of planning and delivery of service, for efficiency and equitable outcomes. It is intended to use digital technology to better delivery healthcare support and reduce pressure on specialist and hospital care.

Crucial to the structure of the new system is the establishment of Te Aka Whai Ora | Māori Health Authority. The Authority will work to ensure that Māori to have a greater role in the design of health services that better meet the needs of Māori, as well as recognising that Māori

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<sup>70</sup> Te Tari Taiwhenua | Department of Internal Affairs (2022). Three Waters Reform Programme.

<https://www.dia.govt.nz/Three-Waters-Reform-Programme>

<sup>71</sup> Te Tari Taiwhenua | Department of Internal Affairs (2022). Review into the Future for Local Government.

<https://www.futureforlocalgovernment.govt.nz/>

<sup>72</sup> Manatū Hauora | Ministry of Health (2022). The future of health. <https://www.futureofhealth.govt.nz/>

communities will play an important role in ensuring the services work for Māori and the many New Zealanders accessing kaupapa Māori health services. This will improve equitable access to good health outcomes.

#### *Te Ara Paerangi / Future Pathways science system reform*

The Te Ara Paerangi | Future Pathways<sup>73</sup> intends to review and reform the strategic science research system to reflect the unique challenges and opportunities faced by Aotearoa New Zealand. It is seeking to design a modern research system that is adaptable, resilient to change, and focused on clear priorities with the best ‘public good’ outcomes. It recognises the importance of networks and collaboration between research institutions, stakeholders, and businesses, and is intended to better enable Māori aspirations within and for the science system.

Hazards and risk science have multiple cross-disciplinary dependencies. The focus of these reforms on sustainability of funding, broad collaboration, and focused investment priorities could present significant opportunities for the advancement for the understanding of risk.

#### *National Security System review*

National security in the New Zealand context encompasses more than the traditional definition of security as solely the preserve of defence, law enforcement and intelligence agencies.<sup>74</sup> While not specifically related to disaster risk reduction, the 15 March 2019 terrorist attack on Christchurch masjidain (places of worship) resulted in a Royal Commission of Inquiry which focused on the National Security System.

The Report of the Royal Commission of Inquiry released in 2020, emphasised the need for stronger leadership and direction in national security, and highlighted the importance of accountable decision-making and increased public discussion on national security issues. DPMC is developing a National Security Strategy to give effect to the intent of this report.<sup>75</sup>

The Strategy will outline national security interests, identify current and future security challenges, and describe priority areas for reform and investment. It is currently unclear what

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<sup>73</sup> Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (2022). Te Ara Paerangi | Future Pathways. <https://www.mbie.govt.nz/have-your-say/future-pathways/>

<sup>74</sup> Te Tari o Te Pirimia me te Komiti Matua | Department of The Prime Minister and Cabinet (2020). Aotearoa’s National Security System. <https://dpmc.govt.nz/our-programmes/national-security-and-intelligence/national-security/new-zealands-national-security>

<sup>75</sup> Te Tari o Te Pirimia me te Komiti Matua | Department of The Prime Minister and Cabinet (2022). Aotearoa’s National Security Strategy. [https://dpmc.govt.nz/sites/default/files/2022-07/National\\_Security\\_Strategy\\_Backgrounder\\_English\\_1.pdf](https://dpmc.govt.nz/sites/default/files/2022-07/National_Security_Strategy_Backgrounder_English_1.pdf)

impact any changes will have on the broader disaster risk reduction system in Aotearoa New Zealand.

### *Natural Hazards Insurance Bill*

The Natural Hazards Insurance Bill<sup>76</sup> is intended to modernise and update Toka Tū Ake EQC's statutory functions, resulting from the recommendations of the Public Inquiry into Toka Tū Ake EQC. This will maintain the existing insurance structures but will establish the necessary clarification of the role of the Commission and the insurance cover it will provide. Other changes will enhance the flexibility and durability of the legislation, strengthen the claims process, and enable better community recovery from natural hazards.

### **Managed retreat is becoming a more common conversation.**

While there have been cases of managed retreat in Aotearoa New Zealand in the past, the topic is still controversial and increasingly seen as a significant issue for the future. Beyond sea level rise, managed retreat has been driven by repeated severe weather exposure, and improvements in understanding of land characteristics (e.g., vacating land prone to extreme liquefaction after earthquakes).

The nature of our transport network means that the conversation is not just about property and land, but increasingly about roading. Extreme weather events are beginning to be compounded, with communities being cut off for days at a time, several times a year and the long-term viability of roads being called into question.<sup>77</sup> Decisions regarding roading retreat could change the way that people live in Aotearoa New Zealand. Associated with this is the challenge of managing expectations of service in areas impacted by disasters, particularly those which face repeated impacts.

The NAP has signalled forthcoming legislation to support managed retreat by the end of 2023.<sup>78</sup> This is intended to address the complex legal and technical issues associated with managed retreat, including governance and funding.

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<sup>76</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2022). Bill to modernise natural hazard insurance introduced. <https://www.beehive.govt.nz/release/bill-modernise-natural-hazard-insurance-introduced>

<sup>77</sup> Insurance Council of New Zealand (2022). Incoming councils must priorities climate resilience. <https://www.icnz.org.nz/media-resources/media-releases/single/item/incoming-councils-must-prioritise-climate-resilience>

<sup>78</sup> Manatū Mō Te Taiao | Ministry for the Environment (2022). National Adaptation Plan. <https://environment.govt.nz/publications/aotearoa-new-zealands-first-national-adaptation-plan/>



## **The insurance system is signalling a stronger influence in risk tolerance discourse.**

The insurance sector is increasingly starting to play a prominent role in land use decision making, in recognition of the impact natural hazard risks have on their bottom line and the need for resilience. Extreme weather insurance claims alone stand at over \$200 million (NZD) for the year to July 2022.<sup>79</sup>

Insurance availability and affordability will likely be an evolving driver for risk reduction, as providers increasingly move towards risk-based pricing for property and contents insurance. Aotearoa New Zealand's private insurers and Toka Tū Ake EQC secure reinsurance from global companies that are themselves experiencing record losses related to climate-events alone.

The Te Kāhui Inihua o Aotearoa | Insurance Council of New Zealand has urged local government to prioritise investment in community-centred climate resilience, noting that reducing climate risks will help to support the affordability of insurance.

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<sup>79</sup> Insurance Council of New Zealand (2022) 2022 extreme weather insurance claims near \$200M. <https://www.icnz.org.nz/media-resources/media-releases/single/item/2022-extreme-weather-insurance-claims-near-200m>

## IV Prospective review and recommendations

### 1. Recommendations for realising the Outcome and Goal of the Sendai Framework

**The Sendai Framework has triggered a considerable effort to look at the system and identify gaps and priorities, the remaining years (and beyond) will look more towards implementing change.**

Due to the sheer number of events Aotearoa New Zealand (and many other countries) have experienced throughout the first half of the Sendai Framework term, there has been less time to be proactive in our approach of managing our risk and more time responding to the events at hand.

However, the Sendai Framework was the trigger for many agencies to look at the system and identify key gaps and priorities. It is Aotearoa New Zealand's aspiration for the remaining years of the Sendai Framework to be invested into implementing change, now that we, as a system, are aware of what our collective aims and priorities are. It is also acknowledged that this work will push beyond the 2030 end date for the framework, as it was always intended to be part of a continuum of work.

#### NDRS Roadmap

Off the back of the establishment of the NDRS in 2019, NEMA is scoping the development of a roadmap to detail how the NDRS objectives will be achieved. The Roadmap would set out initiatives that contribute to the NDRS objectives. Instead, it would help people and organisations understand how their actions and projects fit into Aotearoa New Zealand's broader approach towards increasing our resilience. This would assist Aotearoa New Zealand with the shift from identifying gaps and priorities to actioning and implementing change as a nation for the remainder of the Sendai Framework term.

**COVID-19 has had an impact on the relevance and feasibility of achieving some of the Sendai Framework targets.**

The COVID-19 pandemic has had a devastating impact on many parts of the world and has led to realisations about the extent of our societal vulnerabilities, resulting in a reordering of priorities in many instances. Reflecting on the Sendai Framework outcome and goal, some of the action that was initially intended prior to COVID-19 is no longer feasible in a post-pandemic world. Other goals simply are not as applicable with the reality of a changing world. We acknowledge this and will work to meet the Sendai Framework outcome and goal within the new context Aotearoa New Zealand now faces.

**Adaptable resilience through high quality institutions and flexible resources will be further critical for risk mitigation at a societal level, and social capital will be foundational.**

Aotearoa New Zealand is exposed to multiple risks and hazards, and we cannot mitigate these individually. The emergence of some risks will be unknown. A recent study using the Global Health Security Index found that it was countries that did well on measures of institutional resilience that had relatively good health outcomes through COVID-19, rather than those who had high levels of preparedness.<sup>80</sup> As we continue to face more uncertainty, the more important it will be to have flexible and adaptable institutions and good decision-making processes. Te Tai Ōhanga | The Treasury's first Te Tai Waiora (Wellbeing Report) (see Section IV.4) is expected to provide analysis into the resilience of our institutions, and the role of flexible regulatory systems that allow for the rapid inclusion of technologies and practices.<sup>81</sup>

The NCCRA (see Section II2) introduced the domain of governance, in addition to the usual four domains across which risk is assessed. This was considered not just across severe weather risks, but a broad range of hazards and risks including biosecurity, biodiversity, food production, and health. Similarly, new laws requiring large financial institutions to make climate-related disclosures (see Section II4), include consideration of climate impacts to governance arrangements. This recognises the way new and evolving risks could challenge the ability of decision makers to effectively respond and present a risk to our society with regards to our social institutions and behaviours.

Social cohesion is established as a source of wealth in Te Tai Ōhanga | The Treasury's Living Standards Framework.<sup>82</sup> Social capital (trust) in information and action towards risk reduction and emergency management will be increasingly critical. Aotearoa New Zealand has high trust in its public institutions, evidenced in the initial response to the COVID-19 pandemic which had significant 'buy-in' from the New Zealand public. The Kantar Public Reputation Index is conducted annually and provides a rigorous independent benchmark for the reputation of public sector agencies. The index is consistently topped by FENZ, a key frontline emergency response agency. NEMA continues to build its reputation as a trusted agency, ranking fourth in the overall index for 2022, but significantly recognised for trust, social responsibility and

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<sup>80</sup> BMJ Global Health (2021). Analysing COVID-19 outcomes in the context of the 2019 Global Health Security Index. <https://gh.bmj.com/content/6/12/e007581>. Referenced in: 'Wellbeing in Aotearoa New Zealand 2022' Work towards Te Tai Waiora (the Wellbeing Report) <https://www.treasury.govt.nz/sites/default/files/2022-04/sp-wellbeing-aotearoa-new-zealand-12apr22.pdf>

<sup>81</sup> Te Tai Ōhanga | The Treasury (2022). Work towards Te Tai Waiora (the Wellbeing Report). <https://www.treasury.govt.nz/sites/default/files/2022-04/sp-wellbeing-aotearoa-new-zealand-12apr22.pdf>

<sup>82</sup> Te Tai Ōhanga | The Treasury (2021). Our Living Standards Framework. <https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework>

fairness in its work.<sup>83</sup> Recognition of the importance of those is captured in the aims of the ‘Trifecta’ Reform Programme (see Section III.2), so that moving into the future “the emergency management system is well-coordinated, high-performing and enjoys widespread trust and confidence”.<sup>84</sup>

## 2. Progress for Risk Assessment, Information and Understanding

### **Education is one of the best tools we have to empower individuals and communities.**

Aotearoa New Zealand has a highly diverse population that is distributed across rural and urban environments with complex topographical and societal characteristics. Some standard risk mitigation measures are not feasible or appropriate for all communities across the country due to cultural, environmental, social and/or economic considerations.

One of the risk reduction initiatives we have seen to be highly effective across the country is education. The way that public education products are delivered at national, regional, local and community levels is highly variable depending on what is deemed most effective for the intended audience. We have seen the success of this adaptable, tailored approach over the course of recent years, making it clear that education and public communication is one of our best tools for empowering individuals and communities.

There are several communities (geographical or otherwise) that are more difficult to reach using standard mechanisms and narratives, so there is work needed to be undertaken to develop further alternative educational campaigns. Some of these need to be developed under financial, technological and/or general resource constraints. As we are a small nation with limited resources, this work needs to be prioritised by agencies to effect change in this space.

Furthermore, there is more work to be done to maximise the reach of major national campaigns that have rapidly evolved in recent years such as New Zealand ShakeOut and tsunami Hīkoi. As discussed in Section II5, these initiatives have considerably lifted our generational capability in hazard risk awareness. As a result, we expect to leverage these more and grow into them in coming years as we further explore how they can be expanded.

Public education is also an excellent conduit between science and practitioners, as both science programmes and risk management agencies have a role to play in increasing public awareness. As we move towards strengthening connections between scientists and

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<sup>83</sup> KANTAR Public (2019). 2019 Public Sector Reputation Index.

<https://www.kantarpublic.com/nz/inspiration/kantar-public-reputation-index/previous-reports>

<sup>84</sup> Te Rākau Whakamarumaruru | National Emergency Management Agency (2022). Regulatory Framework Review (‘Trifecta’) Programme. <https://www.civildefence.govt.nz/cdem-sector/regulatory-framework-review-trifecta-programme/>

practitioners for more effective risk reduction, expanding work in the public education space will have benefits for enhancing this process.

With respect to the role of science programmes in educating individuals and communities, it is important that there is variation in the level at which science programmes are delivered; there needs to not only be national programmes but also programmes that are regionally and locally focused.

Although we celebrate our successes in the public education space since 2015, we acknowledge that this is an area where there are clear opportunities for expansion and improvement. We intend to take action to capitalise on these opportunities looking ahead to 2030, to further increase positive outcomes for communities in the hazard risk awareness and understanding space.

**Equitable access to information to enable risk-based decision making is a critical driver of community empowerment.**

The Sendai Framework has driven the need to collect data and understand the impact of hazard events on the country. This has driven an increased understanding across government on the need for relevant information to underpin decision making. Aotearoa New Zealand is committed to continuing to improve data collection and will work toward a national loss database to support decision making.

Aligned with the need to increased data collection to inform decisions is the need to improve the quality of data recorded. Aligned with the goal of the Sendai Framework, Aotearoa New Zealand is intending to focus on improving data disaggregation by gender, age, ethnicity, and other variables were possible.

The last seven years has seen a significant improvement of our understanding of our risk landscape. The creation of the National Risk Register and underpinning Approach, including the development of national risk profiles and assigning of risk-coordinating agencies has contributed to this.<sup>85</sup> A key feature of this approach is the ability to both understand granular level impacts of each hazard and threat as well as to look comparatively across risks to understand common consequences and identify where significant gaps or opportunities exist to mitigate risk and build resilience. An approach modelled off the National Risk Approach methodology has now been extended to the local and regional level through a guideline for

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<sup>85</sup> Department of the Prime Minister and Cabinet. National Risk Approach <https://dPMC.govt.nz/our-business-units/national-security-group/national-intelligence-and-risk-coordination>

CDEM Groups.<sup>86</sup> Over the coming years, this guideline, backed by tools and templates, will drive consistency of risk assessment at the local and regional level.

The provision of easily accessible hazard and risk information is key to empowering community and individual action. The Aotearoa New Zealand has committed to the provision of such information in an accessible manner through projects such as the recently released [NSHM](#), [Te Tai Pari O Aotearoa | NZ SeaRise map](#), and the upcoming Natural Hazards Portal being led by Toka Tū Ake EQC.

**The science system will continue to provide a strong foundation for risk management in Aotearoa New Zealand, but changes can be made to make this more integrated and effective.**

The National Science Challenges (see Section II2) have been foundational to the advancement of risk understanding, integrated across multiple disciplines and system outcomes. As these challenges draw to a close, there is need for consideration of what the future looks like beyond these programmes, and how research comes to be operationalised.

The Te Ara Paerangi | Future Pathways review (see Section III2) seeks to look towards this future, for a science system that is connected, resilient, and adaptable to the unique challenges that face Aotearoa New Zealand.<sup>87</sup> The review has indicated that there is a need to give effect to national priorities in the research system.

National priorities would build on some of the successful foundations of the National Science Challenge structure – that is targeted and proactive investment towards critical issues, and a long-term commitment of significant investment. The significant policy challenge that will need to be addressed is the balance between priorities that are flexible enough to respond to changing contexts, while ensuring that the funding is stable enough to support effective research. While there are no indications at this early stage of what these future priorities might be, initial thinking has indicated that the priorities are likely to be structured as a highly collaborative framework with close partnerships with stakeholders for research transfer.

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<sup>86</sup> Te Rākau Whakamarumarū | National Emergency Management Agency (2022). Risk assessment: Guidance for CDEM Group planning. <https://www.civildefence.govt.nz/cdem-sector/guidelines/risk-assessment-guidance-for-cdem-group-planning/>

<sup>87</sup> Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (2021). Te Ara Paerangi | Future Pathways Green Paper. <https://www.mbie.govt.nz/dmsdocument/17637-future-pathways-green-paper>

### National hazard and risk models

Hazard models are an effective way to inform land use planning and regulatory systems, which are some of the most significant tools for mitigation at a national level. National hazard models are also an excellent way to inform and engage the public on risk.

The only national model currently funded is the NSHM, which was updated in 2022. There is work underway to develop and improve this approach across other hazards, including volcano, tsunami inundation, landslide, and flooding. These models require considerable investment to be developed in the first instance but also an ongoing commitment for them to remain current and useful for decision-making.

### Targeted science for life safety outcomes

Several of Aotearoa New Zealand's science research initiatives have direct outcomes for life safety, as the science advances will have benefits for our ability to warn and respond to events. One of these programmes is an MBIE Endeavour funded programme, named [Te Whakaahuatanga Tere o ngā Rū Whenua me ngā Parawhenua | Rapid Characterisation of Earthquakes and Tsunami](#) (R-CET). This is a Te Pū Ao | GNS Science-led research project investigating new data processing methods to improve analysis of earthquake and tsunami data as it is received. By accelerating how quickly the data can be processed, it is possible to give more accurate tsunami evacuation warnings and run-up estimates. It is anticipated that the outcomes of this project may be able to feed directly into speeding up Aotearoa New Zealand's tsunami warning system, operated by NEMA.

## **3. Progress for Risk Governance and Management**

**'Locally led, regionally coordination and nationally supported' remains a compelling framework.**

Aotearoa New Zealand's primary framework for emergency management, 'locally led, regionally coordinated and nationally supported' remains a compelling framework for driving action. However, for this to be effective, there needs to be ongoing willingness and buy in to make the approach effective. Although it can be driven at the national level, it will not be successful without community leadership and empowerment of the bottom-up approach. Confinement of leadership to the national level takes away from community empowerment and control of their individual risk.

The commitment to community-empowered risk reduction and emergency management is embedded in two critical pieces of NEMA's work – the 'Trifecta' Reform Programme (see Section III2) and the implementation of the NDRS.

NEMA continues to work towards a goal of “strengthening the resilience of the nation by managing risks, being ready to respond to and recover from emergencies, and by enabling, empowering and supporting individuals, organisations, and communities to act for themselves and others, for the safety and wellbeing of all.”<sup>88</sup>

**An ongoing key priority for the science system is increasing the integration of mātauranga Māori and partnership with Māori to inform and guide hazard risk management in Aotearoa New Zealand.**

It has been clearly communicated by the leaders of the major science programmes, science agencies and institutions that the integration of mātauranga Māori to be parallel with western science is a key priority within their work programmes. However, with this prioritisation comes a demand for researchers with the required expertise and knowledge to feed into this work. This needs to be matched with prioritised funding and adequate support networks for Māori researchers and acknowledge the value that this research adds in informing and guiding hazard risk management in Aotearoa New Zealand.

There have already been initiatives that incorporate mātauranga Māori into western risk management concepts and successfully implemented in communities (see Section II2). There are further similar initiatives planned to be implemented at the local and community levels in the coming years and work to ensure that national guidelines and direction heavily supports this.

One of the reform themes of Te Ara Paerangi | Future Pathways (see Section III2) is “exploring how the research system can best honour Te Tiriti obligations and opportunities, give life to Māori research aspirations and enable mātauranga Māori”.<sup>89</sup> Crown Research Institutes are beginning to recognise the value and social responsibility of promoting better and more frequent engagement with Māori. For example, Te Pū Ao | GNS Science has recently implemented a Māori engagement strategy and framework across the organisation and reviewed existing fundamental services such as GeoNet and the NSHM to direct where partnerships with Māori should be incorporated or improved. This is an emerging priority across the system, however follow-through to promote actual change will need to be reflected in coming years.

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<sup>88</sup> Te Rākau Whakamarumarū | National Emergency Management Agency (2019). National Disaster Resilience Strategy. <https://www.civildefence.govt.nz/cdem-sector/plans-and-strategies/national-disaster-resilience-strategy/>

<sup>89</sup> Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (2021). Te Ara Paerangi | Future Pathways Summary. <https://www.mbie.govt.nz/dmsdocument/17634-future-pathways-green-paper-summary>



In 2020, Toka Tū Ake EQC provided funding to Te Kunenga Ki Pūrehuroa | Massey University to establish Te Toi Whakaruruhau o Aotearoa (a new centre for mātauranga Māori research).<sup>90</sup> This funding was secured from Toka Tū Ake EQC's 2020-2023 University Research Grant Programme and is based on the delivery of a three-year research programme that aligns with Toka Tū Ake EQC's Resilience Strategy. From July 2022, the funding for Te Toi Whakaruruhau o Aotearoa was changed to non-contestable funding, to reflect progression into an ongoing partnership. The new research hub is progressing the development and leveraging of mātauranga Māori by Māori researchers and Māori community research partners to enable Aotearoa New Zealand's resilience to natural hazards.

#### 4. Progress for Investment in Risk Reduction and Resilience

**National investment strategies will increasingly consider relationships between risk, resilience, and sustainability.**

*Te Tai Ōhanga | The Treasury's Te Tai Waiora (the Wellbeing Report)*

It is now a requirement under the Public Finance Act 1989 for Te Tai Ōhanga | The Treasury to produce Te Tai Waiora (national Wellbeing Report).<sup>91</sup> This will examine the state of wellbeing in Aotearoa New Zealand, how this has changed over time, the sustainability of, and any risk to, the state of wellbeing. The report will also establish consistent measures of wellbeing and deepen understanding of the state and drivers of it in Aotearoa New Zealand. The first Te Tai Waiora (the Wellbeing Report) is due to be published in late 2022.

This report will be one of the four stewardship documents prepared by Te Tai Ōhanga | The Treasury, which will together orient future policy and financial decisions in the long term, including investment priorities. This report will assist with integrating the consideration of a diverse range of physical and societal risks, including vulnerability factors, directly into national investment decision making.

*National Infrastructure Strategy*

In June 2022 Te Waihanga | New Zealand Infrastructure Commission published the first national infrastructure strategy,<sup>92</sup> identifying challenges and opportunities for transforming Aotearoa New Zealand's infrastructure over the next 30 years. The Strategy recognises the

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<sup>90</sup> Te Kunenga Ki Pūrehuroa | Massey University (2020). EQC grant for Mātauranga Māori research centre at Massey. <https://www.massey.ac.nz/about/news/eqc-grant-for-m%C4%81tauranga-m%C4%81ori-research-centre-at-massey/>

<sup>91</sup> Te Tai Ōhanga | The Treasury (2022). Work towards Te Tai Waiora (the Wellbeing Report). <https://www.treasury.govt.nz/sites/default/files/2022-04/sp-wellbeing-aotearoa-new-zealand-12apr22.pdf>

<sup>92</sup> Te Waihanga | New Zealand Infrastructure Commission (2022). Rautaki Hanganga o Aotearoa New Zealand Infrastructure Strategy. <https://strategy.tewaihanga.govt.nz/strategy>

criticality of investing in resilience planning for recovery across multiple risks, as well as the need to invest in social infrastructure to reduce vulnerabilities.

One of the five objectives of the Strategy is focused on ‘strengthening resilience to shocks and stresses by taking a coordinated and planned approach to risks based on good quality information’. Four recommendations that relate directly to this objective are:

- Increase the resilience of critical infrastructure.
- Improve infrastructure risk management by making better information available.
- Prepare infrastructure for the impacts of climate change.
- Support the security of supply of essential materials, goods, and services to build, operate and maintain infrastructure.

The response from the Government highlights the role of resilient infrastructure as an economic enabler and key to wellbeing. Several of the recommendations from the Strategy have already been addressed in key upcoming national reforms and work programmes, and a further \$61.9 billion (NZD) of infrastructure investment is committed over the next five years.<sup>93</sup> A detailed Action Plan and Reporting Programme will follow to monitor progress of implementation.

The NAP also set out direction for Te Tai Ōhanga | The Treasury to direct explicit integration of risk and adaptation relating to climate into investment management decisions and systems by 2027.<sup>94</sup> This will ensure that “planning for new assets, renewals, and major upgrades will:

- Include climate risks in the strategic case, and early assessment of the options.
- Include options to build adaptive capacity.
- Incorporate the full cost of adaptation over the life of an asset into decision-making.
- Set up durable investment management systems to respond to, fund and finance climate action.”

## 5. Progress for Disaster Preparedness, Response and ‘Build Back Better’

### **Te Rākau Whakamarumarū | National Emergency Management Agency continues to work towards a system that is resourced and response ready.**

NEMA continues to invest considerable resources into enhancing its capacity in disaster readiness, response, and recovery. Several of NEMA’s priorities for 2022-2023 are centred

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<sup>93</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2022). Government response to Rautaki Hanganga o Aotearoa New Zealand Infrastructure Strategy. <https://www.treasury.govt.nz/sites/default/files/2022-09/govt-response-nz-infrastructure-strategy-sep22.pdf>

<sup>94</sup> Manatū Mō Te Taiao | Ministry for the Environment (2022). National Adaptation Plan. <https://environment.govt.nz/publications/aotearoa-new-zealands-first-national-adaptation-plan/>

around readiness, response, and recovery activities, including planning for major events, improving our national warning systems and processes and continuing work to coordinate government financial assistance to support the Buller flood recovery following major flood events in 2021 and 2022 in the Buller district.<sup>95</sup> The recent additional Government funding of \$10 million dollars (NZD) to assist the Buller district underscores the Government's prioritisation of helping vulnerable communities to recover from emergencies and build longer-term resilience.<sup>96</sup> These priorities, along with others across these work areas, are intended to contribute to Aotearoa New Zealand's national resilience to impacts of future events.

### *National Tsunami Strategy*

One of NEMA's critical forward-facing projects for disaster risk management is the National Tsunami Strategy. This Strategy intends to align all tsunami-related projects being undertaken across the CDEM Sector by outlining a set of mutual goals and outcomes. The ultimate purpose of this work is to increase Aotearoa New Zealand's resilience to tsunami. This Strategy will be co-created by national and local organisations and implemented sector-wide to use our knowledge and resources more effectively, to reduce our risk as a nation. The Strategy will be in development during 2022-2023, with the aim of implementation at the end of 2023. The Strategy will have a lifetime of seven years (2030), at which time the priorities will be re-evaluated.

### *System Capability Investment*

One of the driving factors behind recent investment in the growth of NEMA is to support the emergency management sector with deepening capability and develop assurance that the system is fit for purpose. This is a significant work programme within NEMA that is crucial to the readiness of the system.

Core aspects of this work programme include:<sup>97</sup>

- Valuing, recognising, and supporting Māori workforce development as key partners in emergency management response and recovery.

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<sup>95</sup> Te Kaunihera O Kawatiri | Buller District Council (2022). Flood Recovery. <https://bullerdc.govt.nz/district-council/your-council/flood-recovery/>

<sup>96</sup> Te Kāwanatanga o Aotearoa | New Zealand Government (2022). Government supports Buller flood recovery and longer-term resilience. <https://www.beehive.govt.nz/release/government-supports-buller-flood-recovery-and-longer-term-resilience>

<sup>97</sup> Te Rākau Whakamarumaruru | National Emergency Management Agency (2022). What is System Capability. <https://www.civildefence.govt.nz/cdem-sector/capability-development/what-is-system-capability/>

- Developing and implementing a range of workforce development initiatives to support professionalisation of the workforce in partnership with local, regional, and national stakeholders.
- Developing national pathways and providing national learning and assessment products.
- Establishing standards and providing training to NEMA staff to strengthen our capability as the lead agency for natural hazards.
- Supporting performance improvement activities and testing plans, capability, relationships, governance, resources, structures, processes, and doctrine through national and regional exercises.
- Building resilience within the system including with business, non-governmental organisations (NGOs), networks and professional bodies.
- Looking to the future and leveraging off opportunities to build coherency and tackle the complex challenges.

Professionalising the response and recovery workforce will ensure the workforce grows its capability and capacity. This multi-agency work programme will continue to require significant stakeholder engagement and buy in.

**We need to further empower a bottom-up approach to recovery in Aotearoa New Zealand to thrive in the new environment.**

While Aotearoa New Zealand has successfully implemented many learnings from responses to previous events, our ability to effectively recover from events and apply learnings from past recoveries is still evolving. In earlier years, the recovery aspect of Aotearoa New Zealand’s ‘4Rs’ approach did not receive as much attention, in terms of capacity-building, as some other areas. However, there has been a conscious effort in recent years to enhance our capability to recover.

We have acknowledged that our approach to recovery needs to be different to that of response; hierarchical top-down structures are not effective for community recoveries. Quick, effective recoveries require a bottom-up approach, and we have many learnings from previous events that can help us to improve how we empower communities to undertake this approach. We also must consider how our environment is changing and what we must now incorporate into recovery planning to adapt and thrive in this new and constantly shifting context. Thus, we anticipate considerable work in this space in years to come to enhance Aotearoa New Zealand’s communities’ capacity to recover following future hazard events, through increased community empowerment and resilience-building initiatives.

## 6. Progress for Collaboration, Partnership and Cooperation

### **Partnership with Māori is critical not just for response, but for all aspects of emergency management.**

Although we have seen an increase in partnership with Māori during responses to recent events, there is much work to be done to ensure these partnerships are present in all stages of emergency management: before, during and after events. It is recognised that relationship-building needs to occur before events take place and while there are pockets within the system where these relationships are strong, there are many areas where this needs to be further prioritised. Tangata whenua face more vulnerabilities during emergency events than many other communities in Aotearoa New Zealand, so it is critical that relationships with Māori are strong to support whānau-led emergency management.

The Regulatory Framework Review ('Trifecta') Programme (see Section III2), has a series of key outcomes; one of which is around strengthening Māori participation in emergency management. This ensures that the government is working in partnership with iwi and Māori to improve the emergency management system, build resilience and support the safety and wellbeing of all people.

NEMA has recently implemented Te Kāhui Mataara, NEMA's Māori Capability Programme. The programme was developed to support Māori capability across NEMA, with wider benefits for the emergency management sector. The programme seeks to ensure that Māori participation in emergency management is better recognised, enabled, and valued. This is a critical piece of work for Aotearoa New Zealand's emergency management as NEMA is steward of our emergency management system. Te Kāhui Mataara allows NEMA to identify what our position is in respect of Te Ao Māori and Te Tiriti, and our future goals to realise Māori participation in emergency management.

The prioritisation of developing strong partnerships with Māori across the system is only becoming more prevalent and it is expected to gain much momentum in coming years with the planned work programmes and partnership efforts. It is hoped that this movement will assist with the recognition of Māori within emergency management and add to the process of integration of mātauranga Māori and western science. This aspiration is community-based but has strong national intent behind it, to promote an all-sectors, all-levels drive towards genuine, effective partnership with Māori to improve Aotearoa New Zealand's emergency management system.

**Scientists, practitioners, and policymakers need to ‘walk the bridge’ together to ensure new knowledge and a systemwide perspective is being factored into decision-making and major legislative reforms.**

One of the key movements required to actualise change within the system is the connecting of scientists, practitioners, and policymakers to enable them to ‘walk the bridge’ together. This includes developing clear information management processes to integrate new science knowledge into decision-making, particularly into major legislative reforms. A systemwide perspective is critical for enabling strong consideration of implications for policy and for future-proofing legislation. It is also necessary for information to be able to flow up to directorate level to be impactful within major decision-making forums. However, developing these processes is challenging; scientists often operate on a different timescale to risk managers and policymakers and priorities are not always aligned. Our current processes do not always maximise efficiency of information exchange nor communication of specific needs. The siloed nature of government agencies does not lend itself to focusing on systemwide priorities and while there is progress to ensure cohesion across agencies, we have considerable work to do to improve this in the coming years. Legislative reforms and progress in risk governance capability is expected to aid this process.

Several major scientific advances in understanding Aotearoa New Zealand’s hazard risk have occurred over recent years and in present day, including the release of the updated NSHM, for example. There is now the need for collective effort to consider implications and implementation of this new knowledge to create more risk-based policy and decision-making. This responsibility falls across the entire system, and the work we do to ensure we are connected, as a collective, will be paramount to how this evolves in the coming years.

**International partnerships and strategies extend through 2030.**

While COVID-19 and subsequent variants of the pandemic revealed much about the connectedness of the Pacific Island countries, several initiatives were underway to address climate and related hazards in the Pacific Islands region. Aotearoa New Zealand continues to participate in activities of the PIF (see Section II6) towards realising a 2050 Strategy for the Blue Pacific Continent.<sup>98</sup> This coincides with the efforts regionally to build resilient communities.

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<sup>98</sup> Pacific Island Forum (2022). 2050 Strategy for the Blue Pacific Continent <https://www.forumsec.org/2050strategy/>

# Annex One: Rautaki ā Motu Manawaroa Aituā | National Disaster Resilience Strategy (NDRS)

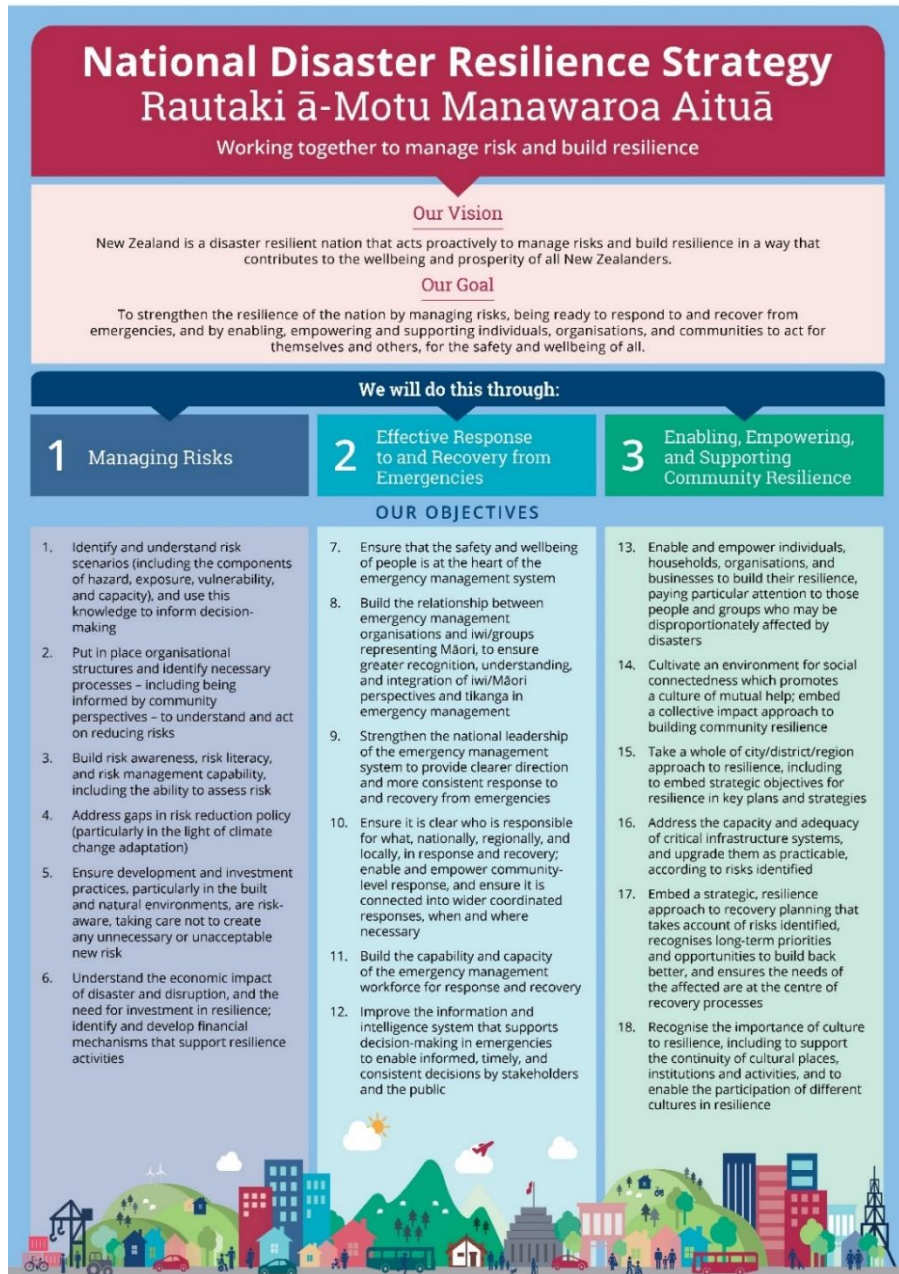


Figure 1: Rautaki ā Motu Manawaroa Aituā | National Disaster Resilience Strategy (NDRS)<sup>99</sup>

<sup>99</sup> Te Rākau Whakamarumarū | National Emergency Management Agency (2019). National Disaster Resilience Strategy. <https://www.civildefence.govt.nz/cdem-sector/plans-and-strategies/national-disaster-resilience-strategy/>