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Progress Toward Implementing the Sendai Framework, the Paris Agreement, and the Sustainable Development Goals: Policy from Aotearoa New Zealand

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Abstract In 2015, Aotearoa New Zealand became a signatory to the Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework), the Paris Climate Change Agreement (Paris Agreement), and the Sustainable Development Goals (SDGs). Since 2017 Aotearoa New Zealand has been undergoing governance reform to realign priorities and to improve the management of natural hazards and climate change. The aim of this article is to provide a review of how Aotearoa New Zealand is taking steps to improve consistency of planning across the legislative environment, thereby implementing its commitments to the Sendai Framework, the SDGs, and the Paris Agreement. It provides an overview of the national governance arrangements, with a focus on the key legislative tools; identifies how key terms are defined nationally; and provides an overview of the governance arrangements that contribute to the country's international obligations. The discussion describes how obligations are applied, and considers two “disruptive and proactive” action examples. Four recommended actions are provided to further implement these international aspirations: (1) take into account these international agreements during the development and implementation of all legislation; (2) build awareness, capability, and capacity within central, regional, and local governments to support implementation; (3) actively evaluate the progress of implementing initiatives designed to reduce vulnerability and strengthen resilience; and (4) ensure that more weight and value are given to indigenous planning documents.

Keywords Disaster risk resilience · Living standards framework · Natural hazard vulnerability · New Zealand · Sustainable development goals · National well-being

1 Introduction

Located in the southwest Pacific, Aotearoa New Zealand is a coastal country influenced by weather patterns from Antarctica, Australia, and the tropics, as well as being a very geologically active country. With the country being susceptible to every natural hazard possible, and many locations having multiple and cascading threats, it is reassuring that Aotearoa New Zealand has shown their commitment to reducing and managing risks by committing to the Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework), the Paris Agreement on Climate Change (Paris Agreement), and the Sustainable Development Goals (SDGs).

The aim of this article is to provide an overview of how Aotearoa New Zealand is taking steps to improve consistency of planning across the legislative environment, thereby implementing its commitments to the Sendai Framework, the SDGs, and the Paris Agreement. To meet this aim, a desktop assessment is provided of how Aotearoa New Zealand is changing governance arrangements and introducing new policies, and implementation progress against the priorities for risk reduction and climate change adaptation. It first outlines the hazardscape of the country and its commitment to the Sendai Framework, the Paris Agreement, and the SDGs. It then presents the legislative framework and key definitions, followed by an outline of key national strategies that provide the implementation framework to reduce and manage risks, including a focus

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on well-beings (that is, capitals) and the Living Standards Framework. Opportunities for improvement are discussed, including the development of a national policy statement for natural hazard management and climate change adaptation, and the inclusion of vulnerability into land-use planning. Examples of non-regulatory “disruptive and proactive” actions at the district and community levels are outlined, including the declaration of climate emergencies, and indigenous Māori planning linking into regulatory plans. Final recommendations are then made to further implement the three agreements.

1.1 The New Zealand Hazard Scape

Aotearoa New Zealand is a geologically active country in the Southwest Pacific located across the tectonic plate boundary of the Pacific and Australasian plates (Fig. 1). Consisting of two main islands—the North Island (Te Ika a Māui) and the South Island (Te Wai Pounamu)—the country has approximately 15,000 km of coastline and a range of landscapes from coastal plains to mountain ranges. Active faults, volcanoes, river plains, and weather influenced by Antarctica, Australia, and the Pacific, make New Zealand susceptible to every geological and weather-based natural hazard (Glavovic et al. 2010), many of which will be influenced by climate change.

New Zealand has experienced significant natural hazards—ex-tropical cyclones, floods, fires, large earthquakes, numerous coastal erosion events, landslides, volcanic eruptions, tsunamis (local and distal sources), extreme weather (high winds and rainfall intensity), geological events (subsidence and landslides), droughts, and excessive snowfall. The impacts of climate change on sea levels are already being experienced and recorded, with an average sea-level rise across New Zealand of 1.8 mm per year (over the last 100 years up to 2015) (Ministry for the Environment 2017), and in some areas tectonic subsidence will exacerbate this rise. Over the last 10 years, natural hazard events have cost the insurance industry NZD\$ 28,333 billion (inflation adjusted) (Insurance Council of New Zealand 2019).

1.2 Signatory to International Agreements

Within this dynamic environment, Aotearoa New Zealand became a signatory to the Sendai Framework, the Paris Agreement (UN 2015a), and the SDGs (UN 2015c). Over this time Aotearoa New Zealand has undergone governance reform that has resulted in realigned priorities and increased identification of the need to manage natural hazard and climate change risks. A timeline of key events, actions, and governance responses is provided in Fig. 2.

1.3 Aligning Sustainable Development, Climate Change Adaptation, and Disaster Risk Reduction

The case for aligning disaster risk reduction, climate change adaptation, and sustainable development has been successfully argued for at the international level (O’Brien et al. 2006; Mercer 2010; UNISDR 2011; Murray et al. 2017). Murray et al. (2017, p. 1) explained that “taken together these frameworks make for a more complete resilience agenda, as building resilience requires action spanning development, humanitarian, climate and disaster risk reduction areas.”

We approach this article with the view that alignment of the Sendai Framework, the Paris Agreement, and the SDGs is achievable; countries are tasked with tailoring responses that suit their context and regulatory environment. An example of this alignment in practice is the “Framework for Resilient Development” (Pacific Community 2016) implemented by Aotearoa New Zealand’s Pacific Island neighbors.

As a relatively small country, both in area (268,021 km²) and population (~ 4.9 million) (Statistics NZ 2020), Aotearoa New Zealand has the advantage of being able to develop policy and implement it with comparative ease, with a three-tiered governance structure: central government, regional councils, and territorial authorities (district and city councils), each of which have roles and responsibilities in implementing national legislation. At the national level, during 2019/20, the first national risk assessment on climate change is being undertaken to inform the development of a National Adaptation Plan (Ministry for the Environment 2019). A National Disaster Resilience Strategy is in place (MCDEM 2019) that offers guidance for reducing disaster risk. Efforts to develop indicators for the Living Standards Framework recently produced by the New Zealand Treasury (The Treasury 2018) are well under way. Aligning disaster risk reduction, climate change adaptation, and sustainable development efforts makes sense in a country with a relatively small population that is highly prone to natural hazard events and surrounded by ocean.

Within this context, the aim of this article is to provide an overview of how Aotearoa New Zealand is taking steps to improve consistency of planning across the legislative environment, thereby implementing its commitments to the Sendai Framework, the SDGs, and the Paris Agreement. This article does not seek to compare or critique Aotearoa New Zealand’s approach against those of other nations. It meets this aim by providing an overview of the national governance arrangements and a focus on the key legislative tools that influence emergency management, urban development, and land use in New Zealand. We identify how

Fig. 1 Some natural hazards of New Zealand. New Zealand's coastline is subject to tsunami risk and coastal erosion. Extreme weather events and landslides can also impact many places, and flooding can affect catchments across the country. *Source* Glavovic et al. (2010, p. 680)

key terms are defined nationally and provide an overview of the governance arrangements that contribute to the country's international obligations. The discussion that follows describes how obligations are applied, and

considers two “disruptive and proactive” action examples: councils choosing to declare climate emergencies; and the role of indigenous (that is, Māori) planning in contributing

Fig. 2 Timeline of key events, actions, and governance responses to the growing threat of natural hazards in Aotearoa New Zealand, 2010–2020

to natural hazard and climate adaptation planning. Recommendations for future actions are then made.

2 Legislative Tools and Definitions of Sustainability, Resilience, Well-being, and Vulnerability in Aotearoa New Zealand

Aotearoa New Zealand's legislative arrangements include key terms that are focused around sustainable development or management; resilience; social, economic, and cultural

well-being; and, to a lesser extent, vulnerability (which is not explicitly included in key sections of legislation). The five primary statutes in Aotearoa New Zealand that contribute to the management of natural hazards and climate change are presented in Table 1. Their purposes show that they are well aligned with common attributes of sustainable development or management; the various forms of well-being; and health and safety.

While these statutes are well-aligned, there are opportunities in their implementation to strengthen linkages. Figure 3 shows the national, regional, and district level

Table 1 Five primary statutes that contribute to the management of natural hazard risks and climate change impacts (emphasis added to show alignment) in Aotearoa New Zealand

Statute	Purpose
Resource Management Act 1991 (RMA)	To promote the <u>sustainable management</u> of natural and physical resources. Sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their <u>social, economic, and cultural well-being</u> and for their <u>health and safety</u> while [...] avoiding, remedying, or mitigating any adverse effects of activities on the environment
Civil Defence Emergency Management Act 2002 (CDEM Act)	To improve and promote the <u>sustainable management</u> of hazards in a way that contributes to the <u>social, economic, cultural, and environmental well-being</u> and <u>safety of the public</u> and also to the protection of property
Local Government Act 2002	To provide for local authorities to play a broad role in promoting the <u>social, economic, environmental, and cultural well-being</u> of their communities, taking a <u>sustainable development</u> approach
Building Act 2004	That people who use buildings can do so <u>safely</u> and without endangering their <u>health</u> ; buildings have attributes that contribute appropriately to the <u>health, physical independence, and well-being</u> of the people who use them; and to ensure that buildings are designed, constructed, and able to be used in ways that promote <u>sustainable development</u>
Climate Change Response (Zero Carbon) Amendment Act 2019	Provide a framework by which New Zealand can develop and implement clear and stable climate change policies that contribute to the global effort under the <u>Paris Agreement</u> to limit the global average temperature increase to 1.5 °C above pre-industrial levels; and allow New Zealand to <u>prepare for, and adapt to</u> , the effects of climate change

hierarchy of strategies, policies, and plans, and where linkages could be strengthened to ensure the consistent application of tools to meet the purposes of each statute, and the coordination of climate change adaptation and natural hazard management initiatives. Support for better coherence, at the level of implementation, across the various legislative tools is required. This could be achieved by improving the understanding of opportunities to achieve consistency across common objectives, for example between each of the statutes outlined in Table 1.

3 Terminology and Inclusion in National Strategies

There are many definitions of key terms used in narratives on disaster risk reduction and climate change. Within the New Zealand context, Table 2 provides the definitions that underpin legislative interpretations and strategies.

The most noteworthy comparison with international usage is the Ministry of Civil Defence and Emergency Management (MCDEM)¹ development of distinct definitions for resilience and well-being versus the verbatim adoption of UNISDR's 2017 definition of vulnerability. The MCDEM (2019, p. 7) definition of resilience includes the wording "The ability to [...] resist the effects of a disruptive event"; this is a problematic notion for Gaillard

(2010) and Manyena (2006) who explained that resisting change reinforces pre-event levels of vulnerability, which contribute to the effects of disaster. Notwithstanding this, recent national strategies on resilience (MCDEM 2019) are linked to well-being in a more integrated manner than just "resistance." In creating their own definition of resilience, the MCDEM disposed of certain terms from the UNISDR definition, for example, "absorbing" or "accommodating" the impacts of hazards are not included. By contrast, the term "vulnerability," which remained unchanged in the development of the National Disaster Resilience Strategy, is used and applied in a far less practical sense. The term vulnerability is not included in the RMA nor in any of the purpose statements of the five key legislations listed in Table 1.

3.1 Resilience and Sustainability

While sustainable development or management is a focus for the statutes outlined in Table 1, resilience is not included in their purpose. Saunders and Becker (2015) suggest that resilience should be a subset of sustainability to avoid an outcome of communities being resilient in the short term but not sustainable in the long term.

The policies, strategies, and plans under the CDEM Act focus on resilience. The vision of the National Disaster Resilience Strategy is that "New Zealand is a disaster resilient nation that acts proactively to manage risks and build resilience in a way that contributes to the wellbeing and prosperity of all New Zealanders" (MCDEM 2019,

¹ During the development of this study, MCDEM was restructured into the National Emergency Management Agency (NEMA), and formally established on 1 December 2019.

Fig. 3 Legislative linkages across key legislation for management of natural hazards and climate change in Aotearoa New Zealand. PIM—Project Information Memorandum; SOP—Standard Operating

Procedure; *Iwi*—tribal group of the Māori indigenous population. Source Adapted from Saunders (2017)

p. 3). The Strategy promotes a whole-of-society approach, emphasizes that “We all have a role in a disaster resilient nation” on the title page of the strategy, and encourages a blend of bottom-up, grassroots initiatives and an enabling, empowering, and supporting policy environment at the local and central government levels (EQC 2019b). It proposes a three-pronged approach to improve the nation’s resilience to disasters, including minimizing risk, building capacity, and enabling, empowering, and supporting communities to act. Resilience is currently being considered in the reform of the RMA; this would be a new concept for RMA users to consider, if it is included in any future revision. Driving the consideration of resilience, the National Disaster Resilience Strategy states that “Policy,

plans, and practices should be aimed at pursuing equitable outcomes, as well as planning for, and taking opportunities to build back better in recovery to reduce vulnerability and improve living standards” (MCDEM 2019, p. 15). If this objective is to be realized, consistency between the resilience policies and plans under the CDEM Act and the RMA will need to be achieved.

3.2 The Living Standards Framework

Since 2018 the New Zealand Treasury has focused on using a Living Standards Framework (LSF) to assess the impact of government policies on the well-being of New Zealanders (The Treasury 2018). The LSF has been

Table 2 Definitions of key terms used in legislation and strategies in Aotearoa New Zealand

Term	Definition	Source
Risk	Likelihood and consequence of a hazard	Civil Defence Emergency Management Act 2002 (CDEM Act)
Resilience	Impact of uncertainty on objectives The ability to anticipate and resist the effects of a disruptive event, minimize adverse impacts, respond effectively post-event, maintain or recover functionality, and adapt in a way that allows for learning and thriving	Treasury (Frieling and Warren 2018) MCDEM (2019) National Disaster Resilience Strategy (p. 7)
Sustainability	Managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment	Resource Management Act 1991 (RMA)
Vulnerability	The conditions determined by physical, social, economic, and environmental factors or processes that increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards	MCDEM (2019) National Disaster Resilience Strategy (p. 7)
Well-being	Our quality of life, including: civic and human rights, culture and identity, housing, knowledge and skills, leisure and recreation, material standard of living, employment status and job satisfaction, the physical and natural environment, safety and security, health and social connectedness The human, social, natural, and financial/physical aspects of those things that affect our living standards	MCDEM (2019) National Disaster Resilience Strategy (p. 7) The Treasury (2018)

developed to consider the collective impact of policies on intergenerational and place-based well-being across four capitals—human, social, natural, and financial/physical, with 12 domains against which to assess well-being and distribution across people, place, and time/generations. Underpinning this framework is risk and resilience: how resilient the four capitals are in the face of change, shocks, and unexpected events. In terms of governance responsibility, the Treasury has an interest in education and skills, health, transport, taxes, the Maori economy, and housing, with an overarching role to provide strategic advice on the current and future Aotearoa New Zealand economy and to assist the government in achieving higher living standards for New Zealanders.

A series of discussion papers have been published under the LSF, which describe the different components and dimensions of intergenerational well-being in the LSF (Frieling and Warren 2018; Ormsby 2018). Frieling and Warren (2018) started a conversation on improving the risk management and resilience of the four capitals and explored indicators of risk and resilience in the context of the LSF. Four overarching trends that have the potential to impact the capitals are considered. The key trends relevant to the Sendai Framework, the Paris Agreement, and the SDGs are climate change and environmental degradation. Frieling and Warren (2018) pointed out that “the concept

of resilience enables identification of protective factors and opportunities for dealing with risks across the four Living Standards Capitals” (Frieling and Warren 2018, p. 5). They proposed two dimensions of resilience to be incorporated into the LSF:

- An absorption capacity dimension, which comprises resistance and buffers that can reduce the depth of impact; and
- An adaptability dimension, which focuses on elements of adaptability and innovation that maximize the speed of recovery.

These proposed additions would address those aspects of the UNISDR resilience definition that were not included in the National Disaster Resilience Strategy.

In order to advance a national measure of “well-being,” and to identify opportunities for current and future improvements of well-being, the “Ngā Tūtohu Aotearoa—Indicators Aotearoa New Zealand” were developed. One of the identified merits of this tool is alignment with the Sustainable Development Goals (Stats NZ 2019). Ngā Tūtohu Aotearoa includes 100 well-being indicators, covering 22 topics. These indicators were developed for Aotearoa New Zealand specifically and mapped in terms of their alignment with the SDGs and the LSF. These indicators reflect the collection of research and data to measure

the state or condition of a particular “well-being.” The Ngā Tūtohu Aotearoa website is an interactive platform that enables information to be updated and accessible (Stats NZ 2019).

3.3 Vulnerability Under the RMA, CDEM Act, and Climate Change Response (Zero Carbon) Amendment Act

The concept of vulnerability emerged internationally in the 1970s and 1980s in an effort to highlight “the issue of how society creates the conditions in which people face hazards differently” (Wisner et al. 2004, p. 10). Social processes produce uneven exposure to risk by making some people more susceptible to harm than others, due to variables including: access to resources and services, age, caste, class, disability, ethnicity, gender, health status, occupation, political integration, and social standing (see also Bennett 2020). They have been used to explain variations of hazard impacts on different individuals and groups (Lewis 1999; Wisner et al. 2004).

Central to the Sendai Framework is a shift of focus from managing disasters to managing risk, including the reduction of the underlying drivers of risk, that is exposure and vulnerability (MCDEM 2019). In Aotearoa New Zealand there is currently tension as to who should assess and manage vulnerability. The concept is incorporated into current emergency management planning but is lacking in reference and refinement in strategic and statutory documents that guide land use planning under the RMA.

The Climate Change Response (Zero Carbon) Amendment Act 2019² requires that a National Adaptation Plan consider “the distribution of the effects of climate change across society, taking particular account of vulnerable groups or sectors” (section 5ZQ(4)(b)). In addition, the Earthquake Commission’s³ Research Investment Priorities Statement 2020–2021 has a resilience goal to “inform, enable and influence the choices and decisions that reduce vulnerability and the exposure of New Zealand’s built environment to natural hazard events” (EQC 2019a, p. 2).

While vulnerability is considered for emergency management, climate change adaptation, and insurance purposes, it is not well reflected within land use planning and resource management frameworks, national planning tools, or clearly represented or addressed in regional and district planning documents. To address this, vulnerability would need to be incorporated into the RMA, potentially as part

of a definition for health and safety (which is included in the purpose of the RMA, but not defined).

3.4 Opportunities for Improvement

Figure 4 shows where there are further implementation opportunities within the five primary statutes in New Zealand that contribute to the management of natural hazards and climate change. Responsibility for health, social development and education, and other supporting social services are spread across a range of other legislative tools and agencies. The five primary statutes provide the tools to manage land use for natural hazard risks (that is, the RMA), respond to risks (that is, the CDEM Act), and adapt to climate change (that is, the Climate Change Response (Zero Carbon) Amendment Act), all of which overlap.

There is also consistency between some national strategies and policies. The LSF influenced the framing of the National Disaster Resilience Strategy, and the National Climate Change Risk Assessment Framework that will result in the development of the first National Climate Change Adaptation Plan in 2020–2021. However, this consistency is not necessarily transferred to subsidiary policies, plans, or strategies, most obviously those setting out the national direction under the RMA (that is, National Policy Statements). Opportunities to extend these current arrangements are discussed in the following sections.

3.4.1 National Policy Statements Under the Resource Management Act (RMA)

National Policy Statements under the RMA present an opportunity to achieve integration of the concepts of risk, vulnerability, and resilience. They can also ensure an element of coherence, both vertically throughout the family of RMA documents, while strengthening horizontal alignment with initiatives under the Climate Change Response (Zero Carbon) Amendment Act and CDEM Act.

Under the RMA, National Policy Statements must be “given effect” through all regional and district plans. The discussion document on the proposed National Policy Statement on Urban Development includes limited identification of the impacts of climate change or natural hazards now, or in the future, when assessing new urban development options. In contrast, a National Policy Statement for Natural Hazards that includes the effects of climate change has yet to be realized and could provide a crucial tool for advancing concepts of risk, vulnerability, and resilience within regional and district plans.

Alignment between National Policy Statements has been identified as a matter to be addressed through the current

² <http://www.legislation.govt.nz/act/public/2019/0061/latest/LMS183736.html>.

³ The Earthquake Commission is a Crown entity that provides “natural disaster” insurance to residential property owners.

Fig. 4 Implementation framework for the Sendai Framework, the Paris Agreement, and the Sustainable Development Goals (SDGs) in Aotearoa New Zealand. RMA—Resource Management Act; CDEMA—Civil Defence Emergency Management Act; CCR(ZC)AA—Climate Change Response (Zero Carbon) Amendment Act; MCDEM—Ministry of Civil Defence Emergency Management (now NEMA—National Emergency Management Agency); CC—climate change

RMA review and reform process. This review provides an opportunity to improve alignment and terminology across the legislation to improve consistency and outcomes. Initiatives could clarify future focused time frames for land-use decision making across short-, medium-, and long-term planning horizons—that is, 100 + years, rather than the current 10-year district plan life span.

3.4.2 The Opportunity to Include Vulnerability

The RMA reform process also offers an opportunity to include the concept of vulnerability, a complex and contested term (Manyena 2006; Gaillard 2010; Lewis and Kelman 2010; Manyena et al. 2011; Kelman et al. 2016), which is currently underapplied in national legislation and associated National Policy Statements, Regional Policy Statements, and territorial authority plans.

Kelman et al. (2016, pp. 134–135) stated that “Vulnerability to hazards such as earthquakes and vulnerability to hazard drivers such as climate change, alongside poverty, inequity, injustice, globalization, resource distribution, and lack of access to education and health opportunities—amongst many other development challenges—are linked to each other and tend to overlap to cause the most adverse impacts for those who have the fewest choices, resources, and abilities for addressing the challenges.” If the goal is to reduce vulnerability, we must first understand its processes.

Some forces that create or increase vulnerability can occur at the national or international level and can have cascading effects over time. Future livelihoods can be impacted by disasters that occur today, thus making prospective generations more insecure (Wisner et al. 2004). Past historical, political, and economic processes have

served to make entire nations more vulnerable to the impact of hazards today. The seminal work by Susman et al. (1983) referred to the process of “underdevelopment” in terms of internal and external factors that have served, over time, to increase the modern-day vulnerability of certain populations. The authors cite unequal flows of capital between developed and underdeveloped countries, exploitative land tenure and labor practices, rapid urbanization, high interest rates on loan repayments, extractive industries, and a colonial past as some of the ways Western capitalism has increased vulnerability in various places throughout the modern world. Many of these factors are also true in Aotearoa New Zealand, and are well documented in King (2012).

This gives a clear directive that policies, plans, and practices should reduce vulnerability. However, there is still a disconnect between CDEM and land use planning responsibilities for vulnerability and a lack of understanding of the role other legislative tools or strategies could play. An analysis of all land use plans (under the RMA) and CDEM plans in New Zealand was undertaken in 2014 (Saunders et al. 2014). Only 2.9% of the district plans and none of the regional plans discuss or assess vulnerable communities. While it is not a requirement to include vulnerability in land use planning assessments, this does highlight the lost opportunity to address vulnerability through plans and assessments made under the RMA. By comparison, 57.1% of the CDEM plans discussed or assessed vulnerable communities.

To align Aotearoa New Zealand’s efforts to meet obligations under the three international frameworks, a broader perspective, understanding, and application of vulnerability would prove useful in terms of where and how to direct efforts to reduce natural hazard and climate change risk. The effectiveness of any vulnerability-based policies could be informed by monitoring and initiatives catalyzed by “Ngā Tūtohu Aotearoa—Indicators Aotearoa New Zealand.”⁴

3.4.3 Living Standards Framework

As noted in Ormsby (2018), while the LSF and SDGs differ in nature (one is the Treasury’s well-being framework, the other a UN agreement), there is substantial overlap. Every SDG, except Goal 17 (Partnerships), relates either to a domain of well-being, a capital stock, or, in the case of gender distribution and reducing inequalities, a cross-cutting issue relating to each domain. One can take an SDG approach to policy by thinking about how a policy impacts each of the SDGs (Ormsby 2018); or an Aotearoa New

Zealand-specific LSF approach (which incorporates aspects of the SDG’s approach) to policy by thinking about how a policy impacts the dimensions of well-being and the four capitals.

3.5 Examples of Non-regulatory “Disruptive and Proactive” Actions at the District and Community Levels

The following two subsections provide two examples of non-regulatory initiatives that councils—driven by community pressure—and Māori communities are undertaking to prioritize climate action and natural hazard risk reduction. Notwithstanding the requirements under legislation to develop strategies, plans, and policies to manage and reduce natural hazard risk and to plan for climate change adaptation, there are initiatives under way regardless of national direction. Two examples are: (1) the declaration of climate emergencies by territorial authorities; and (2) *iwi* (Māori tribal groups) developing their own climate change strategies and plans. These could be seen as “disruptive” to the national direction, or as “proactive” grassroots responses to the increasing awareness and call for action around climate change. These local responses are encouraged within the Guiding Principles of the Sendai Framework, where engagement from all of society, and empowerment of local authorities and communities are key to reducing risk (UN 2015b). There is clear evidence of this occurring in Aotearoa New Zealand in the context of formalized national and local government capacity building, and more ad hoc and informal “disruptive” yet proactive actions.

3.5.1 Declaration of Climate Emergencies

As of 11 November 2019, 15 local or regional authorities in New Zealand had declared a climate change emergency or variation thereof, across the country (Fig. 5). In New Zealand, the declaration of a climate change emergency has the potential to invoke links to the declaration of a state of emergency under the Civil Defence Emergency Management Act 2002 (CDEM Act). The definition of “emergency” in the CDEM Act refers to a number of singular, generally localized events that give rise to the emergency. Given that climate change is a global occurrence that is indefinitely ongoing, a “climate emergency” does not have statutory or legal implications under the CDEM Act (or any other New Zealand legislation) at this time. In November 2019, more than 11,000 scientific signatories declared clearly and unequivocally that the planet is facing a climate emergency (Ripple et al. 2019).

In declaring a climate emergency, councils generally considered climate change to relate to global temperature

⁴ <https://www.stats.govt.nz/indicators-and-snapshots/indicators-aotearoa-new-zealand-nga-tutohu-aotearoa/>.

Fig. 5 Territorial authorities who have declared climate emergencies in Aotearoa New Zealand, as of November 2019

increases, and some have identified the potential for climate change to intensify natural hazard risk. Reasons for declaring climate emergencies include:

- Reference to the Intergovernmental Panel on Climate Change Special Report (IPCC 2018), that limiting global warming to the Paris Agreement target of 1.5 degrees Celsius requires rapid and far-reaching transitions in energy, land, urban, infrastructure (including transport and buildings), and industrial systems (Environment Canterbury 2019);

- Acknowledgment of the potential for local impacts due to climate change exacerbating natural hazards; and
- The importance of local and regional councils supporting the solution (Kāpiti Coast District Council 2019).

The first climate declarations made in Aotearoa New Zealand were on 23 May 2019 (Christchurch and Kapiti Coast). Recognizing that councils were acting prior to their declarations, early indications of declared actions that are being implemented are positive. The Auckland Council has released their Climate Action Framework for public

feedback and Nelson City Council has appointed their Climate Champion. Wellington City Council (WCC) is working to implement their plan Te Atakura First to Zero (Wellington City Council 2019), while Christchurch City Council natural hazard advisors are utilizing the declaration of a climate emergency as a mandate to ensure that climate change is taken into account across council departments.

Wellington's First to Zero plan focuses on reducing emissions. It does not set out Wellington's approach to adapting to climate change impacts, but does acknowledge that adaptation is an essential element of managing the locked-in climate impacts, irrespective of how we now manage emissions (Wellington City Council 2019). First to Zero outlines that WCC will develop a separate adaptation strategy in time for the 2020 reporting cycle for the Global Covenant of Mayors. Before the adoption of an adaptation strategy, WCC is focusing on adopting the Ministry for the Environment guidance for sea-level rise (Bell et al. 2017) for planning and operative purposes, and on extending community-based consultation processes.

The purpose of Auckland Council's proposed Climate Action Framework Te Tāruke-ā-Tāwhiri (Auckland Council 2019) is to reduce emissions and increase resilience. It identifies seven climate action outcomes, including emissions reduction, resilience, human health and well-being, diversity of response, equitably or just transitions, environmental, and economic outcomes. Eleven "key moves" support the seven outcomes. Te Tāruke-ā-Tāwhiri is proposed to inform actions of the Auckland Council, which will be funded through future Long-Term (funding) Plans; it is designed to incorporate and be referenced by external stakeholders and partners. It discusses concepts of vulnerability and resilience in relation to both communities and ecosystems. Many of the "key moves" support increased resilience and focus on equity and equality for communities. This provides evidence of, and an enabling environment for, coherence at the unitary authority level, despite being less evident at the central government level.

3.5.2 Iwi Management Plans

An iwi management plan (IMP) is a document developed and approved by an iwi, iwi authority, *rūnanga* (tribal administrative group), or *hapū* (sub-tribe) to address matters of resource management activity of significance within their respective *rohe* (territory, boundary) (Saunders 2017). Legislated under the RMA, they have the potential to provide very strong guidance to users (that is, councils) by providing important guidance on their priorities, issues, actions, and engagement processes. While it is not mandatory for an iwi to produce a plan, once they are

lodged with a council they become documents that councils must take into account in a resource management setting through the development of land use plans, and when considering applications for land use and development under these plans.

IMPs address more issues than just resource management matters, although climate change-specific plans are now being developed by many iwi (for example, Te Arawa Lakes Trust 2018; Te Rūnanga o Ngāi Tahu 2018). Iwi management plans are used to express the economic, social, political, and cultural issues, in addition to any environmental and resource management issues of an iwi or hapū. For resource management matters, the IMP provides a framework for the sustainable management of natural and physical resources by providing goals, and will typically include issues, objectives, tasks, actions, and indicators of environmental health (Nelson and Tipa 2012). The sustainable management of the resources will reflect the cultural and spiritual values and aspirations of each iwi or hapū. The plan can often detail how the iwi and hapū expect to be involved in the management of resources within their district, as well as outline the expectations for engagement and participation in RMA processes.

Two examples of the depth of these plans are outlined: a specific climate change strategy from Ngāi Tahu (Table 3); and a combined natural hazard and climate change provision from Ngāti Rangitihi iwi (Table 4). There is potential for these indigenous plans to contribute to Aotearoa New Zealand's commitments and aims for integrated natural hazard and climate risk reduction and adaptation.

In August 2018, Ngāi Tahu, the main Māori tribe of Te Wai Pounamu (the South Island), produced their Climate Change Strategy. The purpose of their strategy is "To create Ngāi Tahu responses to the risks and opportunities presented by climate change, referencing the entire tribal structure, so that iwi, hapū, and *whānau* (extended family group) aspirations can be met in a changing world" (Te Rūnanga o Ngāi Tahu 2018, p. 8). While the strategy focuses on climate change, it also acknowledges the impacts of extreme weather on the tribal lands and communities, the interconnectedness of the environment, and the importance of resilience. Ngāi Tahu's vision is provided in Table 3 and shows the breadth and depth of their planning. The vision and associated strategy has been designed specifically to support good decision making through their tribal structure (Te Rūnanga o Ngāi Tahu 2018).

In contrast to a specific climate strategy, other iwi are including climate change and natural hazards in their IMPs, which cover a wider range of issues and aspirations (Saunders 2017). One example of this is the Ngāti Rangitihi Iwi Management Plan (Te Mana o Ngāti Rangitihi Trust 2011). The policy framework takes a risk-based

Table 3 The Ngāi Tahu Māori tribe's vision in their climate change strategy (Te Rūnanga o Ngāi Tahu 2018, p. 30–31) in Aotearoa New Zealand

TE KAITIAKITANGA ME TE TĀHUHU (Organizational development and governance)	Te Rūnanga [administrative group of Ngāi Tahu] will take appropriate action to adapt all areas of tribal interests and activity to withstand the compounding effects of our changing climate, to ensure Ngāi Tahu activities are aligned to the best projected climate change outcomes, and to make the most of opportunities, so that Ngāi Tahu <i>Whānui</i> [people] have every chance to thrive even in the most extreme scenarios
TŌ TĀTOU NGĀI TAHUTANGA (Culture and identity)	We will face the challenges of a changing climate in our <i>takiwā</i> [area] with the courage, resilience, and wisdom of our <i>tupuna</i> [ancestors], strengthened by all that makes us Ngāi Tahu, as we create a cultural legacy for those to come who must live in a changed world
TE AO TŪROA (Environment)	We will manage tribal resources wisely, continuing to protect <i>wāhi tapu</i> [sacred place], <i>mahinga kai</i> [gathering place for food], and other <i>taonga tuku iho</i> [treasures handed down] where possible, focusing on strategic restoration activities, while actively investing in places and species of likely future abundance
KO NGĀ WHAKAPĀPĀTANGA (Tribal communications)	Ngāi Tahu Whānui are well informed about all aspects of climate change relevant to their interests and well-being. They know how the tribe as a whole is responding to the risks, challenges, and opportunities, and can act with confidence within their whānau and hapū
TE WHAKAARIKI (Influence)	Te Rūnanga o Ngāi Tahu and Papatipu Rūnanga are embedded within key climate change response structures and programs, working with central and local governments and others. These programs support desired outcomes for Ngāi Tahu Whānui as a result of tribal influence and leadership
TE WHAKATIPU (Growing the future)	Papatipu Rūnanga has the resources and information necessary to generate and implement <i>marae</i> [meeting house] and community-centered climate change response strategies that are designed to meet the needs of whānau and hapū, aligned with tribal direction
WHĀNAU (Family)	Whānau needs and aspirations are central to tribal climate change response, with tribal resources targeted towards addressing fundamental challenges to <i>kāinga</i> [settlements] within the takiwā, maximizing opportunities for whānau, and assisting whānau facing climate change impacts in other parts of the country and the world
MĀTAURANGA (Knowledge)	Tribal investment in the future, focused on education and training supports Ngāi Tahu Whānui to generate and take up opportunities related to climate change response
TE PŪTEA (Investment planning)	The economic base of Te Rūnanga o Ngāi Tahu is built on leading, climate responsible, innovative, and adaptive businesses and partnerships, meeting the needs and aspirations of Ngāi Tahu Whānui while applying Ngāi Tahu values to address the business risks, challenges, and opportunities associated with climate change

approach, with a strong risk reduction theme. The key issue for natural hazards is the risks they pose to people, property, and the environment, which is consistent with the legislative well-being (Saunders 2018).

The focus on risk—rather than the hazards themselves—in the issue statement and objective is considered best practice, particularly as the RMA requires the significant risks from natural hazards to be managed. Framing the issue as a risk allows the plan to take a risk-based approach in any future actions, and allows for a consistent approach between the IMP and the RMA requirements (Saunders 2018).

The policies are considered comprehensive in the range of the hazards and issues they address. They acknowledge the role of councils, civil defence, and other agencies in managing natural hazards. Flooding or inundation is included in three policies (including unacceptable risk from flooding); coastal hazards in two policies; and a policy for the use of the precautionary principle addresses earthquakes, volcanic activity, sea-level rise, and global climatic change. The policies also address intensification of land

use; construction of mitigation/protection works; and the use of nonstructural solutions (Saunders 2018). Climate change and natural hazards are integrated, and the plan gives the iwi a voice within council decision making.

4 Conclusion

While Aotearoa New Zealand is putting into action its obligations under the Sendai Framework, the SDGs, and the Paris Agreement, there are opportunities to improve their implementation. The legislative requirements for emergency management, land use planning, and climate change mitigation and adaptation are all in place, and have common themes of well-being, sustainability, resilience, and to a lesser extent, vulnerability. Although well-aligned at a legislative level, the implementation of actions for each of these concepts is inconsistent. Neither vulnerability nor resilience is explicitly included within the RMA and sustainability, resilience, and well-being are not included in

Table 4 Combined natural hazard and climate change provisions in the Ngāti Rangitihi Iwi Management Plan (Te Mana o Ngāti Rangitihi Trust 2011, p. 34–36) in Aotearoa New Zealand (emphasis added)

KO TE PAPA – KO TĀWHIRIMĀTEA – KO TANGAROA

Resource	Issues
Natural hazards—tsunami, earthquake, volcanic eruption—Ngā rū whenua, parawhenua	Natural hazards pose a risk to people, property, and the environment

Objectives	Policies	Methods ^a
To avoid, remedy, or mitigate the adverse effects of natural hazards on human life, property, and the environment, while minimizing the adverse effects of measures implemented to reduce the risks of natural hazards	<p><u>Natural hazard management is an important role of Councils, civil defence, and other agencies</u></p> <p>Before provision is made enabling significant development or redevelopment of land that will result in intensification of land use, <u>any flood hazards and measures to avoid or mitigate their adverse effects shall be identified</u></p> <p>Development shall not be permitted if it is likely to accelerate, worsen, or result in inundation of other property, unless it can be demonstrated that the adverse effects can be avoided or mitigated</p> <p>Construction of mitigation works shall be encouraged only where people, property, and the environment are subject to <u>unacceptable risk from flood hazards</u></p> <p>In the coastal environment, new subdivision, use, or development should be located and designed, so that the need for hazard protection measures is avoided</p> <p>Where existing subdivision, use, or development is adversely affected by a coastal hazard, coastal protection works should be permitted only where they are the best practicable option for the future</p> <p>The abandonment or relocation of existing structures and the use of nonstructural solutions should be considered among the options</p> <p>A <u>precautionary approach</u> shall be used in avoiding, remedying, or mitigating the adverse effects on development, of <u>earthquake, volcanic activity, sea level rise, and global climatic change</u></p>	<p>[The Regional Council] will coordinate the management of natural hazards throughout the Region by setting standards and ensuring consistency among [local councils]</p> <p>The [Regional Council] and [local councils] will jointly advocate methods to avoid, remedy, or mitigate the adverse effects of natural hazards on the environment</p> <p><u>Ngāti Rangitihi will promote a comprehensive catchment-wide approach to flood management</u></p> <p>[Local councils] will ensure that any required hazard mitigation works are undertaken, and that they are adequately maintained</p> <p>[The Regional Council] will implement objectives, policies, and rules with respect to coastal hazards in the coastal environment, through the provisions in the Regional Plan—Coastal, which will encourage subdivision, use, and development in the coastal environment to locate in appropriate areas</p> <p>[Local councils] will ensure that current information about known hazards is available to all persons</p>

^aIn the original table, named councils were included. To simplify for this article, specific council names have been replaced with the more generalized “local councils” and “regional council”

the Climate Change Response (Zero Carbon) Amendment Act 2019. These gaps need to be addressed in current legislative reviews.

The development of the non-statutory LSF and associated Ngā Tūtohu Aotearoa—Indicators Aotearoa New Zealand, supports the ability to measure and understand well-being across current and future populations. Further consideration of the “processes” of vulnerability is

required to identify groups that policymakers, scientists, and practitioners need to be working alongside and learning from. These insights could then serve to guide the creation of future policy development and implementation actions that reduce risk for those groups most adversely affected.

Non-regulatory district, community, and iwi level actions have become a frequent occurrence across

Aotearoa New Zealand. Indigenous iwi groups have instigated climate change action in direct recognition that climate change has the potential to affect their rohe, cultural, and commercial activities in the future. Efforts to support these actions with national and subnational level policies are required in order to ensure coherence of effort and to influence the future development of statutory documents and measures of well-being.

The importance of these local-level plans cannot be overstated, as this is the level where the effects of climate change and natural hazards are inequitably experienced and where action needs to occur in order to reduce risks in all its manifestations. These plans and actions have the potential to align established and sometimes siloed processes that occur in existing legislative tools, and they reflect a growing empowerment of local authorities and local communities to address climate change and natural hazard challenges. This approach of simultaneous top-down and bottom-up efforts to reduce risk resonates with the rhetoric of the Sendai Framework. There is clear evidence of this occurring in Aotearoa New Zealand, in the context of formalized national and local government capacity building, and through more traditional mechanisms for community governance.

Taking these findings into account, we recommend four key actions to further the implementation of the Sendai Framework, the SDGs, and the Paris Agreement through the five statutes addressed in this article. The need and ability to achieve coherent implementation across a range of governance tools requires: (1) that these three international agreements are taken into account during the development and implementation of all legislation, and are required to be included in lower-order policies, plans, and strategies (noting the need for consistency regarding key concepts); (2) building awareness, capability, and capacity within central, regional, and local governments to support implementation and understanding of key concepts of the Sendai Framework, the SDGs, and the Paris Agreement at the local level; (3) active evaluation of the progress of implementing initiatives designed to reduce vulnerability and strengthen resilience to the myriad risks our population faces; and (4) ensuring that more weight and value are given to indigenous planning documents.

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