



Australian Government



# AUSTRALIA'S NATIONAL MIDTERM REVIEW OF THE SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030 REPORT

---



**ARE WE SUCCEEDING AT  
MAKING AUSTRALIAN  
COMMUNITIES SAFER IN  
THE FACE OF GROWING  
DISASTER RISK?**

© Commonwealth of Australia 2022

**Creative Commons by attribution  
4.0 International Licence**

This publication is available for your use under a Creative Commons Attribution 4.0 Australia licence. With the exception of the Commonwealth Coat of Arms, the Agency logo, photographs, images, signature and where otherwise stated. This publication is licensed under a Creative Commons Attribution 4.0 International licence (CC BY 4.0), the full licence terms are available from <https://creativecommons.org/licenses/by/4.0/>.

The licence is a standard form licence agreement that allows the copying, distribution, transmission and adaptation of this publication provided it is attributed to this publication.



**Third party copyright**

Wherever a third party holds copyright in this material, the copyright remains with that party. Their permission may be required to use the material. Please contact them directly.

**Attribution**

This publication should be attributed as follows: © Commonwealth of Australia, National Emergency Management Agency, Australia's national midterm review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report – Are we succeeding at making Australian communities safer in the face of growing disaster risk?, 2022.

**Derivative material**

If you have modified or transformed the material, or derived new material from the publication the publication should be attributed as follows: Based on Australia's national midterm review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report – Are we succeeding at making Australian communities safer in the face of growing disaster risk?, 2022.

**Other uses**

Enquiries regarding the licence and any other use of this document are welcome at:

Strategic and International Policy Team  
121 Marcus Clarke Street  
Canberra, ACT, 2601  
E: [disasterriskreduction@recovery.gov.au](mailto:disasterriskreduction@recovery.gov.au)



# CONTENTS

---

<b>Acronyms</b>	2
<b>Ministers Foreword</b>	4
<b>Executive Summary</b>	6
<b>I. Introduction</b>	9
1. Purpose	9
2. Outline	9
3. Overview of the Australian context	9
<b>II. Retrospective Review</b>	13
1. Developing a national framework for Sendai implementation	13
2. The National Disaster Risk Reduction Framework	15
3. Line of enquiry: people and networks	18
4. Line of enquiry: information and decision-making	24
5. Line of enquiry: investment	31
6. Australia's international disaster risk reduction cooperation	35
7. Measuring progress on implementing the Sendai Framework and NDRRF	39
<b>III. Contextual Shifts</b>	44
1. The Australian context – 2015 to 2022	44
2. Emerging and future issues	46
<b>IV. Prospective Review</b>	49
1. The NDRRF	49
2. People and networks	51
3. Information and decision-making	56
4. Investment in resilience and risk reduction	59
<b>Conclusion</b>	64

# ACRONYMS

Full Name	Acronym
Australian Building Codes Board	ABCB
Australian Climate Service	ACS
Australian and New Zealand National Council for Fire and Emergency Services	AFAC
Australian Institute for Disaster Resilience	AIDR
Australia-New Zealand Emergency Management Committee	ANZEMC
Australia-Pacific Climate Partnership	APCP
Australian Prudential Regulation Authority	APRA
Australian Sustainable Finance Institute	ASFI
Bushfire Building Council of Australia	BBCA
Building Ministers' Meeting	BMM
Bureau of Meteorology	BoM
Black Summer Bushfire Recovery	BSBR
Council of Australian Governments	COAG
Community Outcomes and Recovery Subcommittee	CORS
Commonwealth Scientific and Industrial Research Organisation	CSIRO
Department of Climate Change, Energy, the Environment and Water	DCCEEW
Department of Industry, Science and Resources	DISR
Disaster Recovery Funding Arrangements	DRFA
Disaster Risk Reduction Package	DRRP
Emergency Management Australia	EMA
Emergency Response Fund	ERF
Enabling Resilience Investment	ERI
Insurance Australia Group	IAG
Insurance Council of Australia	ICA
Infrastructure and Commercial Advisory Office	ICAO
Indigenous Protected Areas	IPA

Full Name	Acronym
Local Government Area	LGA
Measurement, Evaluation and Learning	MEL
National Australia Bank	NAB
Nature-based Solutions	NbS
National Construction Code	NCC
National Disaster Risk Information Services Capability	NDRISC
National Disaster Risk Reduction Framework	NDRRF
National Emergency Management Agency	NEMA
National Emergency Management Ministers' Meeting	NEMMM
National Emergency Risk Assessment Guidelines	NERAG
Natural Hazards Research Australia	NHRA
National Impact Assessment Framework	NIAF
National Impact Assessment Model	NIAM
National Partnership Agreement	NPA
National Recovery and Resilience Agency	NRRA
Overseas Development Assistance	ODA
Preparing Australian Communities Program Local	PACPL
Preparing Australia Program	PAP
Prevent, prepare, response and recovery cycle	PPRR
Resilience Investment Vehicle	RIV
Recovery Support Officer	RSO
Resilience Valuation Initiative	RVI
Systemic Monitoring Evaluation and Learning System	SysMEL
Trusted Information Sharing Network	TISN
United Nations Office for Disaster Risk Reduction	UNDRR

# MINISTERS FOREWORD

Australia's disaster risk environment is complex. The recent and cascading cycle of disaster and disruption has challenged us all. As the occurrence and intensity of disasters become more pervasive, it is becoming increasingly important that we collaborate, share insights and seek to coordinate efforts to reduce disaster risk. In doing so, we will work towards building more resilient environments, communities and systems within Australia and our region.

The challenges for Australia are great, but our capacity to innovate and find new solutions through technology and research continues to grow. While there is much to be done, I am committed to working collaboratively to ensure Australia is better able to make the changes required to sustain healthy communities, ecosystems and economies while managing disaster risk. Collective efforts during the pandemic response showed us what is possible when we work together at a national and global scale.

To emphasise this commitment, from 1 September 2022, the Australian Government established a new national agency – the National Emergency Management Agency – to provide end-to-end oversight on risk reduction, prevention, preparedness, response and recovery in Australia. The establishment of this new agency is a significant step forward to strengthen Australia's ability to prepare for, manage and recover from increasing disasters, both in number and severity.

The *Sendai Framework for Disaster Risk Reduction 2015-2030* is the key international framework to drive disaster risk reduction, and seeks to achieve a substantial reduction of

disaster risk by 2030. As 2022-2023 marks the halfway point of the implementation of the Sendai Framework, Australia has been asked by the United Nations to take stock of progress to-date through a midterm review. Our national midterm review is just as much about looking back as it is about looking forward. It is an important opportunity to gain insights, identify emerging best practice and report on the achievements to-date in reducing disaster risks in Australia.

Local, state and territory, private sector and nongovernmental perspectives are essential to build a national picture of the disaster risk reduction efforts in Australia, and all sectors of society have a role to play. This is reflected in our own *National Disaster Risk Reduction Framework*, which guides domestic efforts to reduce disaster risks.

I am delighted to present Australia's national midterm review report, which outlines where we've come, as a nation, since 2015, and what overarching, transformative and coordinated actions we need to take to achieve the outcome and goal of the Sendai Framework by 2030.



Floods, bushfires, storms and cyclones will continue to impact Australian communities, businesses, and the built and natural environment. Strategic disaster risk reduction actions, investment pathways and strengthened institutional arrangements are needed to help us realise the vision of a safer Australia. Efforts need to be collectively shared and actioned to help prevent hazards from becoming disasters.

Australia is committed to ensuring disaster risk reduction is prioritised and inclusive, so that no one is left behind when faced with disaster. Together, we will continue to work collaboratively towards reducing disaster and climate risk for a safer and more resilient future for all.

## Senator the Hon Murray Watt

Minister for Emergency Management  
Minister for Agriculture, Fisheries and Forestry



# EXECUTIVE SUMMARY

---

**Disaster risk is complex.** Disasters are a product of often naturally occurring events, such as bushfires, floods and cyclones, with human actions or inactions.

The decisions we make about where to build, work and live can create or reduce risks, meaning this risk landscape is ever-changing and increasingly complex. Other factors such as climate change, a growing population and increasing urbanisation are also drivers of disaster risk.<sup>1</sup> Key to reducing disaster risk is recognising and addressing the systemic creation of risk, and how hazards intersect with vulnerability (the potential for people and the things we value to be adversely impacted by a hazard) and exposure (where people and things are located).

Within Australia, the *Sendai Framework for Disaster Risk Reduction 2015-2030* (Sendai Framework) is implemented domestically by the *National Disaster Risk Reduction Framework* (NDRRF). The release of the NDRRF, on 5 April 2019, was a transformative and important milestone in Australia's disaster risk reduction journey. The NDRRF remains a foundational building block from which national efforts to reduce disaster risk and build resilience are based.

Over the last few years, the occurrence of disasters in Australia which are beyond historical experience have increased. These events have tested national limits of response, capacity and capability. Most recently, the catastrophic 2019-20 Black Summer bushfires across south-east Australia and the flooding from January to July 2022 in Queensland and New South Wales have brought into focus the challenges in reducing the risk, impact and consequence of natural hazards on communities.

These recent events have exposed the systemic drivers of disasters and drawn attention to Australia's tolerance for loss, the limitations of current disaster management arrangements for dealing with severe to catastrophic events beyond previous experience, and the need for all levels of government, institutions, businesses, critical infrastructure providers, communities and individuals to think differently and learn from these events by doing things differently.

These events have also catalysed shifts for many levels of Government. In recognition that the context of Australian disasters is changing and the means to manage these on an event-by-event basis is no longer sustainable, the Australian Government launched two major reviews into disaster management arrangements – the Royal Commission into National Natural Disaster Arrangements (Royal Commission) and the Report into Climate and Disaster Resilience, led by the Chief Scientist and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Multiple jurisdictions also launched inquiries and reviews at the same time, which have led to transformative changes nationwide.

Recognising the increasing levels of risk in Australia, the National Emergency Management Agency (NEMA), on behalf of the Australia Government, has led Australia's national midterm review of the Sendai Framework to review our disaster risk reduction efforts nationwide. The national midterm review retrospectively analyses national implementation of the Sendai Framework from 2015 to 2022, and prospectively reviews and identifies implementation challenges, context shifts and adaptive, transformative actions to be taken from now to 2030 to achieve a substantial reduction of risk.

This review finds that while substantial effort is under way across all sectors of society and progress has been made, there is still much to be done by 2030 to reduce disaster risk in line with the vision of the Sendai Framework. Risks are increasing due to factors such as climate change, population growth, decisions on land-use planning and building and urbanisation. The pace of change and increasing rate of severe to catastrophic disasters needs to be met with the equivalent action to minimise the creation of new risks, and manage existing risks.

---

1 National Disaster Risk Reduction Framework (NDRRF), 2018

---

The impacts of disasters are first and foremost experienced at the local level, a wide range of diverse place-based local and regional-scale activities and investments will be required to reduce risk and build resilience of communities the environment and businesses. Such activities and investments would benefit from coordination at a national level, together with support and strategic direction setting. This review identifies essential elements that are primarily enabling actions which will, together, create a conducive environment for effective systemic disaster risk reduction. If Australia hopes to achieve a substantial reduction of disaster risk by 2030, these elements are considered necessary to make scaled-up, on-ground actions more coherent, coordinated and effective. These elements include:

- More inclusive and interconnected governance and collaboration networks which assist in alignment of frameworks, disaster risk reduction strategies and plans across levels of government.
- Supporting the mainstreaming of risk reduction into other sectors to achieve more harmonised systemic interventions.
- Investing in the necessary information and decision-support mechanisms to enable decision makers to address complexity and contestation in decision-making.
- Developing the frameworks, tools, data, governance and evidence-base to enable rigorous and consistent assessment of risk, and resilience benefits and returns that will enable private sector investment in infrastructure.

This review was conducted concurrent to the development of the Second National Action Plan for the NDRRF. The Second National Action Plan will identify the concrete actions to effect the changes and themes identified through the midterm review.

The disaster risk reduction and management space in Australia is complex. The Australian Government's recent commitment to invest up to \$200 million per year on the Disaster Ready Fund for disaster risk mitigation initiatives will bolster Australia's ability to reduce disaster risk. A review of the Disaster Recovery Funding Arrangements aims to streamline and build additional resilience into joint Commonwealth-State recovery programs. Further, from 1 September 2022, the Australian Government established a new national agency – the National Emergency Management Agency (NEMA) – as an enduring agency to provide holistic disaster management at the Australian Government level. NEMA brings together the former National Recovery and Resilience Agency (NRRRA) and Emergency Management Australia (EMA), and ensures that all disaster management – from risk reduction, prevention, preparedness, response and recovery – is managed through one centralised agency. The establishment of this new agency is a significant step forward to strengthen Australia's ability to reduce risk, prepare for, manage and recover from increasing disasters, both in number and severity. The substantial reduction of disaster risk by 2030 is achievable in Australia if concerted and coordinated action is taken **now**. This national midterm review report outlines a number of initiatives currently under way which, if scaled up, could see this goal become reality.



# I. INTRODUCTION

---

## 1. PURPOSE

As 2022-2023 marks the halfway point of the implementation of the *Sendai Framework for Disaster Risk Reduction 2015-2030* (Sendai Framework), UN Member States were asked to undertake a national midterm review of the Sendai Framework 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.”<sup>2</sup> The findings of all national midterm reviews will be consolidated into a global midterm review report. These consolidated findings will inform a high-level meeting of the UN General Assembly in New York on 18 and 19 May 2023, which will adopt a concise and action-oriented political declaration to renew commitment and accelerate the implementation of the Sendai Framework.

Australia’s national midterm review is just as much about looking back as it is about looking forward, and provides an important opportunity to gain insights, learn from actions, and identify emerging best practice and mechanisms to assist in accelerating the reduction of disaster risks in Australia by 2030. Local, state and territory, private sector and nongovernmental perspectives were essential to build a national picture of the disaster risk reduction efforts in Australia.

This report provides information on national disaster management arrangements for context, but focuses on the broader set of disaster risk reduction and resilience building efforts in Australia. This report also focuses principally on risk reduction in relation to natural hazards, though recognises the broader all-hazards approach of the Sendai Framework. This report adopts the Sendai Framework definitions for disaster management,<sup>3</sup> disaster risk reduction and resilience.

## 2. OUTLINE

Content provided through written submissions, surveys, virtual and face-to-face consultations, literature and desktop reviews, has been synthesised and consolidated into this report. The structure of this report was adapted from guidance provided by the United Nations Office for Disaster Risk Reduction (UNDRR),<sup>4</sup> and is laid out as follows:

- **Section I – Introduction** outlines the context in which Australia operates.
- **Section II – Retrospective Review 2015-2022** outlines Australia’s journey in implementing the Sendai Framework nationally, from 2015-2022, structured around three lines of inquiry – people and networks, information and decision-making, and investment. This section also addresses Australia’s ability to monitor implementation and international disaster risk reduction cooperation.

- **Section III – Contextual Shifts** outlines the events which have impacted Australia since 2015, as well as the emerging issues and future contexts to which we will need to adapt to achieve the outcome and goal of the Sendai Framework by 2030.
- **Section IV – Prospective Review 2022-2030** describes the process of developing Australia’s Second National Action Plan for the NDRRF and provides examples of current, transformative disaster risk reduction initiatives in Australia which address the future risk context identified in section IV. These examples are presented using the lines of inquiry identified in section II.

The information contained within this report was captured through the methodology outlined in **Annex A**, with input received through the extensive stakeholder engagement listed in **Annex B**.

## 3. OVERVIEW OF THE AUSTRALIAN CONTEXT

Disaster risks are changing in Australia, as they are across the globe. Nationally, we recognise that domestic disaster management arrangements must change accordingly to meet the increasing challenges posed by climate change, a growing population and the compounding and cascading impacts of disasters across society. Efforts to address disaster risk have been increasing over the last decade.

---

2 United Nations Office for Disaster Risk Reduction, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 Concept Note*, 2022, p 1-2.

3 Throughout the report, ‘disaster management’ is used as an all-encompassing term which includes both crisis management and emergency management.

4 United Nations Office for Disaster Risk Reduction, *Guidance for MTR SF National Consultations, Review and Reporting – Member States*, 2022.

A key catalyst for change was the 2018 establishment of the National Resilience Taskforce, which developed Australia's domestic implementation of Sendai, the [National Disaster Risk Reduction Framework](#) (NDRRF).

Since the release of the NDRRF, on 5 April 2019, changes have taken place within the Australian governance, institutional, policy and operational environments, with a number of reforms taking place following major disasters. For example, following the catastrophic 2019-20 Black Summer bushfires, the former Australian Government commissioned a major review of disaster management arrangements, the [Royal Commission into National Natural Disaster Arrangements](#) (Royal Commission), which released its final report on 30 October 2020. Following this same event, a number of jurisdictions also undertook major reviews into their disaster management arrangements.

The Royal Commission recognised that while state and territory governments have the main levers to manage and reduce disaster risk, there is a growing need for the Australian Government to support, enhance and complement state and territory arrangements. Key recommendations included the establishment of an enduring agency to provide national coordination and develop and deliver national policy, programs and funding for disaster risk reduction and resilience building, together with recovery policy, programs and funding (Recommendation 3.5). This recommendation was operationalised through the

establishment of the National Recovery and Resilience Agency (NRRRA) on 5 May 2021. Other key recommendations included the establishment of the Australian Climate Service (ACS) on 1 July 2021 (Recommendations 4.1 to 4.7), the delivery of enhancements to Emergency Management Australia (EMA) (Recommendation 3.6) and passing the [National Emergency Declaration Act 2020](#) (NED) (Recommendation 5.1).<sup>5</sup>

On 1 September 2022, the Australian Government built on this foundation (and Recommendations 3.5 and 3.6) by establishing a new national agency, the National Emergency Management Agency (NEMA), to provide end-to-end oversight on risk reduction, prevention, preparedness, response and recovery in Australia. In bringing together the NRRRA and EMA, NEMA is a significant step forward in strengthening Australia's ability to prepare for, manage and recover from an increasing number of complex, competing, cascading and compounding crises. National institutional arrangements have, until now, focused primarily on natural hazards. As NEMA sits within the [Home Affairs portfolio](#), disaster risk reduction will pivot to an all-hazards approach to managing current, emerging and future crises and disasters, which will support more holistic resilience building efforts.

All levels of government play a critical role in reducing disaster risk in Australia. Similar to that of the United States, India and Canada, and many other nations, Australia operates under a federated governmental model, comprising three layers of governmental actors

having responsibility for different elements of the prevention, preparedness, response and recovery (PPRR) disaster cycle and for broader disaster risk reduction and resilience building activities. The Australian disaster management system is complicated. Disaster risk reduction is even more so, as it is a cross-cutting concern requiring coordinated action across most areas of government beyond the traditional disaster management actors, such as the private sector, civil society and others.

In Australia, the six state and two territory governments<sup>6</sup> have primary responsibility for the protection of life, property and the environment within their jurisdictions, and are responsible for prevention and preparedness activities to mitigate disaster risk and impact, as well as response and recovery efforts when disasters do occur.<sup>7</sup> Each state and territory government has slightly different disaster governance and disaster management arrangements, which interface with and implement national frameworks and strategies differently.<sup>8</sup> Across the country, there is significant variation in the distribution of responsibilities for different hazard types. Formal disaster management arrangements differ by jurisdiction, which leads to numerous frameworks, plans, bodies, committees and stakeholders, all with varied structures and forums.

Local councils, of which there are 537 nationwide, are primarily responsible for local matters and provide services to their local communities. Local governments play a significant role in both disaster management and risk reduction, but

5 The Australian Government's response to the Royal Commission can be found within: [A national approach to national disasters](#), 2020.

6 Australian states: New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia. Australian territories: Australian Capital Territory and Northern Territory.

7 [Royal Commission into National Natural Disaster Arrangements \(Royal Commission\) Report](#), 2020, p 20

8 Royal Commission, 2020, p 76.

---

are often not sufficiently resourced to play this important role. Local governments also play a central role in land-use planning and the management of local roads, as well as the coordination of local emergency centres and the provision of emergency relief.<sup>9</sup>

The Australian Government's powers relating to disaster management and risk reduction are limited by its legislative powers in the Constitution.<sup>10</sup> These powers include insurance, weather observations, operationalising international treaties, among others. The Australian Government Crisis Management Framework (AGCMF) is the overarching policy which guides coordinated Australian Government crisis management, though it does not cover longer-term risk reduction or recovery policies. The AGCMF provides guidance for senior officials and ministers on their respective roles and responsibilities in a crisis.

In current formal arrangements, coordination of governments' responses to emergencies relies on the cooperation of all parties. Apart from some specific legislative provisions, such as activating disaster recovery payments under the Social Security Act 1991 (Cth) (Social Security Act), most roles undertaken by the Australian Government (whether internal or external) are undertaken by nonlegislated agreement.

The Australian Government provides national consistency, coordination, leadership and cooperation, and assists states and territories respond to and recover from disasters which exceed the coping capacity of the impacted jurisdiction(s). Examples include assistance with large-scale evacuations, administering the jointly-funded Commonwealth-State Disaster Recovery Funding Arrangements, enacting a National Coordination Mechanism, and the mobilisation of Australian Government resources.<sup>11</sup> The Australian Government also plays a leading role in disaster risk reduction policy. Section II contains further information about Australia's formal governance arrangements.

---

9 Royal Commission, 2020, p 20.

10 See Section 51(xxix) of the *Commonwealth of Australia Constitution Act*.

11 Royal Commission, 2020.



## II. RETROSPECTIVE REVIEW

As highlighted in the preceding section, the Australian disaster risk reduction and disaster management space is complex. There has been progress since 2015, including funding programs focused on disaster risk reduction, the establishment of NEMA and new information capabilities, and the development and nationwide implementation of the NDRRF.

Further, islands of excellence exist in which capability, knowledge and expertise are being used to reduce disaster risk. However, the creation of new and compounding disaster risk has also constrained these efforts. The nature of Australia's federated government system creates challenges for coordination and governance.

This section seeks to unpack this complexity and provides a summary of key national disaster risk reduction activities that have been undertaken since 2015 to reduce disaster risk within Australia. While this is not a comprehensive review of all activities, it provides an overview of the progress which has been made, across all sectors of society,<sup>12</sup> since 2015.

### 1. DEVELOPING A NATIONAL FRAMEWORK FOR SENDAI IMPLEMENTATION

#### 1.1. Early work to drive risk reduction in Australia

On 6 November 2008, the Ministerial Council for Police and Emergency Management – Emergency Management agreed that the future direction for Australian disaster management should be based on achieving community and organisational resilience.

To build on this work, on 7 December 2009, the Council of Australian Governments (COAG) agreed to adopt a whole-of-nation resilience-based approach to disaster management which recognised that a national, coordinated and cooperative effort was needed to enhance Australia's capacity to withstand and recover from emergencies and disasters.

A Working Group, consisting of Federal, state and territory representatives developed the *National Strategy for Disaster Resilience (Strategy)*, released in 2011. Importantly, this Strategy recognised that the application of a resilience-based approach is not solely the domain of disaster management agencies; rather, it is a shared responsibility between governments, communities, businesses and individuals. In focusing on priority areas to build disaster-resilient communities across Australia, the Strategy provides high-level guidance on disaster management to federal, state, territory and local governments, business and community leaders and the not-for-profit sector. The Strategy was a significant step in a long-term, evolving process to deliver sustained behavioural change and enduring partnerships.

A range of projects were undertaken to support the Strategy, including:

- a review of the effectiveness of disaster relief and recovery payments

- securing the Australian Government's agreement to commission a *Productivity Commission Inquiry* into disaster funding arrangements in 2015
- the development of a nationally consistent methodology for assessing disaster risk, and
- the development of key messages and a community engagement framework to strengthen community understanding and engagement in building disaster resilience.

Through consultations, it was highlighted that the Strategy underpins a number of activities and frameworks in Australia's jurisdictions.

In 2015, the Australian Productivity Commission<sup>13</sup> estimated that 97 per cent of Australian Government disaster funding is spent on post disaster relief and recovery and just 3 per cent on mitigation, preparedness and resilience combined.<sup>14</sup> As part of its Inquiry, the Productivity Commission also recommended the Australian Government establish a fund of \$200 million per year for mitigation projects.<sup>15</sup>

At the time of the Inquiry, existing funding arrangements at the Australian Government level did not take a whole-of-system approach to disaster risk reduction.

<sup>12</sup> All sectors of society includes: all tiers of government, the private sector, members of industry, academia, non-government stakeholders and community members.

<sup>13</sup> The Australian Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians.

<sup>14</sup> *Productivity Commission, Natural Disaster Funding Arrangements Inquiry Report*, 2014.

<sup>15</sup> Ibid.

For example, there were issues-based Australian Government funding programs, such as the Bushfire Mitigation Program (\$15 million from 2004-05 to 2007-08) and the National Bushfire Mitigation Program (\$15 million from 2014-15 to 2016-17), which were established to build on existing jurisdictional efforts to implement bushfire mitigation projects through land management and fuel load classification and management techniques.

As discussed below, since 2015, the Australian Government has increased its investment in disaster risk reduction and resilience building through ever-increasing sophisticated approaches.

## 1.2. The National Resilience Taskforce

Since the emergence of the Sendai Framework in 2015, several significant activities, led by the National Resilience Taskforce and its successors, have progressed Australia's national disaster risk reduction agenda. The National Resilience Taskforce was established within the Home Affairs Portfolio in April 2018 to lead national disaster mitigation reforms on behalf of the Australian Government. Through unprecedented engagement across government, private and community, the Taskforce produced several key outputs to guide disaster risk reduction in Australia, primary of which is the NDRRF.

Other key documents aimed at reducing the impact of natural hazards on Australian communities and the economy included a set of interconnected guidance documents<sup>16</sup> to support implementation of the NDRRF and the *Profiling Australia's Vulnerability* report, which encouraged new conversations about climate and disaster risk.<sup>17</sup> The Taskforce also led work to explore financing opportunities and private sector partnerships to reduce disaster risk, and laid the groundwork for the National Disaster Risk Information Services Capability (NDRISC).

The Taskforce was supported by Australia's national science agencies – the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Bureau of Meteorology (BoM) and Geoscience Australia – state and territory governments, local government and other stakeholders, such as insurance and not-for-profit leaders.

The National Resilience Taskforce concluded on 30 June 2019. During its lifespan, it provided the national direction needed to underline the importance of climate and disaster risk, and improve national resilience across all sectors in Australia. Its work led to evolving Australia's understanding of disaster risk and reduction in four important aspects:<sup>18</sup>

### 1. Systemic vulnerability needs to be addressed.

The most effective way to reduce disaster risk is to address systemic vulnerability. Australia tends to understand and manage disaster risk by focusing on individual hazards instead of systemic vulnerability. Community vulnerability is largely created by dependence on critical infrastructure and services, and the interdependencies among these.

### 2. Better decision-making is key to preventing and reducing disaster risk.

Understanding the points where risk is created is critical to reducing the impacts of disasters. The traditional focus on resilience ensures Australians can 'bounce back' from disaster – but this is the point where harm is experienced, not the point at which the risk of harm is created. Decisions taken at multiple levels by different actors – whether local, state or industry – affect disaster risk. These include decisions around land-use planning, building standards and infrastructure design, urban and regional development and asset management and investments. Failing to adequately consider future risks in early decisions facilitates further risk creation, on top of risks already embedded in society and the landscape. Continuing to focus on resilience of particular assets, or individuals and communities, who do not control many of the levers needed to reduce disaster risks, is not enough.

<sup>16</sup> *Guidance for Strategic Decisions on Climate and Disaster Risk, 2019.*

<sup>17</sup> The *Profiling Australia's Vulnerability* report takes a systems and values-based lens to understanding disaster risk. It also implemented a pilot project to explore the development of National Disaster Risk Information and Services Capability (NDRISC), leading the Australian Government to design and establish the ACS (described in further detail below).

<sup>18</sup> Croweller, Mark AFSM, *National Resilience Taskforce, Australian Journal of Emergency Management*, 2019

---

**3. A suite of options is needed to address disaster risk.**

When considering how to reduce risk, does it make most sense to harden, adapt or transform? A suite of options is important, as a particular response may work in one circumstance but may not be appropriate in another, and may not be effective over the long term.

**4. There is an interdependency between disaster risk reduction and climate adaptation.**

Disaster risk reduction and climate adaptation policies need to be developed together to comprehensively address the causes of disaster risk. Australia has predominantly focused on responding to disasters triggered by rapid-onset hazardous events, such as flooding, cyclones and bushfires.

## **2. THE NATIONAL DISASTER RISK REDUCTION FRAMEWORK**

### **2.1. Rationale and design**

The NDRRF is Australia's overarching disaster risk reduction framework and the domestic implementation mechanism for the Sendai Framework and was endorsed by all Australian Governments on 13 March 2020.<sup>19</sup> The NDRRF establishes Australia's 2030 vision, outlines a systemic approach to reducing disaster risk, and guides national efforts to proactively reduce disaster risk in order to minimise the loss and suffering caused by disasters through four priorities: 1) understand disaster risk; 2) accountable decisions; 3) enhanced investment; and 4) governance, ownership and responsibility. More information on these priority areas can be found in Figure 1 below.

The NDRRF is operationalised through National Action Plans. The [First National Action Plan](#) was released in December 2020 and is broadly acknowledged as a stocktake of existing efforts to reduce disaster risk. The [Second National Action Plan](#) is currently being developed through a series of consultations. The consultations for the Second National Action Plan informed much of the content of this national midterm review (see **Annex A** and **B** for further information).

To develop the NDRRF, the Taskforce led a forward-thinking approach to learn what makes Australia vulnerable to disasters to gain new knowledge and develop practical advice on how to better understand complex, systemic risks and engage all sectors of society in disaster risk reduction. The NDRRF was developed through unprecedented engagement across sectors (involving over 300 representatives), and included a policy sprint held over two days, and a cross-jurisdictional working group to develop the final product.

---

<sup>19</sup> [Meeting of the Council of the Australian Governments Communique, 2020](#)

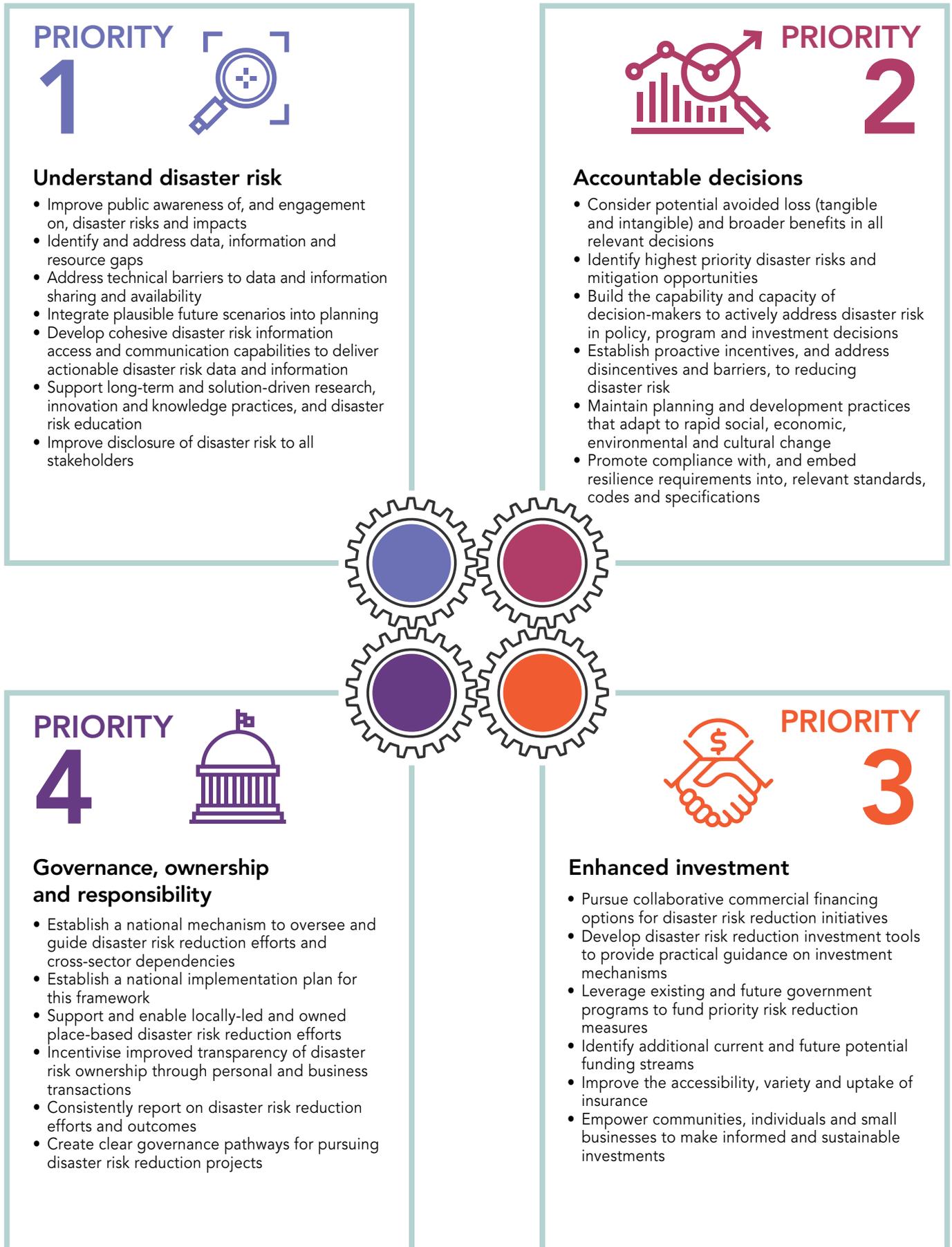


Figure 1: NDRRF priorities. Source: NDRRF, 2019, page 9.

The NDRRF seeks to drive systemic change and recognises that all sectors of society must work together to reduce disaster risk. It also highlights that although a shared responsibility, disaster risk reduction and management is often not shared equally:

- Institutional decision-making often places the risk on communities and individuals, who have varying capacity to manage it.
- While individuals and communities have their roles to play, they do not control many of the levers needed to reduce some disaster risks.
- Governments and industry in particular must take coordinated action to reduce the creation of disaster risks in order to limit adverse impacts on communities.

## 2.2. Alignment between the NDRRF and the Sendai Framework

The NDRRF is designed to guide Australia’s efforts to reduce disaster risk associated with natural hazards. It translates the first three Sendai Framework priorities into action for the Australian context. When developing the NDRRF, the fourth Sendai Framework priority was considered to be addressed through the existing *Australian Disaster Preparedness Framework*, which “gives effect to Australia’s obligations under the Sendai Framework to build Australia’s resilience, preparedness and management of severe to catastrophic disasters.”<sup>20</sup> Additionally, the National Strategy for Disaster Resilience, which preceded both Sendai and the NDRRF in 2011, is still used by many as a framework which guides national disaster risk management activities.

While the terminology differs between the two frameworks, the priorities for both are broadly aligned, as shown in Table A.

Sendai Framework Priority	Corresponding NDRRF Priority
<b>Priority 1:</b> Understanding disaster risk	<b>Priority 1:</b> Understand disaster risk
<b>Priority 2:</b> Strengthening disaster risk governance to manage disaster risk	<b>Priority 2:</b> Accountable decisions <b>Priority 4:</b> Governance, ownership and responsibility
<b>Priority 3:</b> Investing in disaster risk reduction for resilience	<b>Priority 3:</b> Enhanced investment
<b>Priority 4:</b> Enhancing disaster preparedness for effective response and to ‘build back better’ in recovery, rehabilitation and reconstruction	

**Table A:** Alignment between priorities of the Sendai Framework and NDRRF Priorities.

This report does not contain a full and complete picture of the implementation of the NDRRF, nor should this be considered a review of the NDRRF. Additionally, there are a large number of complementary disaster risk reduction frameworks and activities across all levels of government, the community and private sectors. A selection of these are highlighted in this report.

The following sections provide further details on progress since 2015 using the three lines of enquiry for the national midterm review: people and networks, information and decision-making and investment.

<sup>20</sup> *Royal Commission Background Paper: National Natural Disaster Arrangements, 2020.*

### 3. LINE OF ENQUIRY: PEOPLE AND NETWORKS

**TO BE EFFECTIVE, ACTION TO REDUCE DISASTER RISK MUST BE TRANSPARENT, SUSTAINABLE, ACCOUNTABLE AND UNDERTAKEN IN PARTNERSHIP (NDRRF, P 18).**

Choices made at multiple levels by a wide range of decision makers, such as government and industry, interact to affect vulnerability and resilience to disasters. Better decision-making, guided by new forms of systemic risk governance, assessment and management are key to mitigating and reducing climate and disaster risk.

This section focuses on the key people, networks, governance and institutions which are needed to reduce disaster risk. This section aligns with NDRRF Priority 4: *Governance, Ownership and Responsibility*, and Sendai Framework Priority 2: *Strengthening disaster risk governance to manage disaster risk*.

Complex formal and structural governance arrangements for disaster management exist at multiple levels of government, as well as within, and across, organisations.

As outlined in section I, Australia's federated system of government means that roles and responsibilities for disaster management and disaster risk reduction are not always clear, or that those with the ultimate decision-making levers, such as local government, do not have the capabilities, capacity or funding to fully meet their responsibility as outlined in the Constitution.<sup>21</sup>

Along with the formal decision-making bodies are the strategies and frameworks used to guide action. Jurisdictional boundaries and responsibilities, along with sectoral interests, determine the structure and function of governance arrangements. This has the potential to create divisions of labour which are not always aligned or complementary. The governance arrangements for disaster risk management, as opposed to disaster management are even more complex. Decisions made in different sectors and at different levels of government contribute to the creation and transfer of disaster risk. Accordingly, disaster risk reduction requires aligning and coordinating these efforts, often in the absence of clear enabling environments<sup>22</sup> and overlapping jurisdictional, policy and portfolio responsibility. In the context of increasingly interconnected, dynamic and unstable natural, social and economic systems, to address systemic risk, new, innovative approaches are required.

#### 3.1. Governance arrangements in Australia

##### 3.1.1. Australian Government disaster risk reduction policy functions

Following the National Resilience Taskforce, Australian Government disaster risk reduction functions were housed within EMA from 2019.

EMA, Australia's national disaster management organisation (at the time), had responsibility for managing the Crisis Coordination Centre (CCC), the Australian Government's 24/7 crisis management information and whole-of-government coordination facility; administering the Australian Government's disaster recovery payments; conducting critical incident planning; and administering funding for the Australian Institute for Disaster Resilience (AIDR).

Two time-limited recovery agencies were also established at the Australian Government level; the National Drought and North Queensland Flood Response and Recovery Agency (in response to flooding in Queensland in 2019 and an enduring national drought) and the National Bushfire Recovery Agency (in response to the 2019-20 Black Summer bushfires).

The Royal Commission found that "disasters have changed, and it has become clear to us that the nation's disaster management arrangements must also change."<sup>23</sup> Further, it found that Australia needs a national approach to disasters and called for "greater cooperation and coordination across governments and agencies; a greater sharing

<sup>21</sup> Royal Commission Report, 2020, Chapter 11.

<sup>22</sup> At the outset of the consultations, this concept was first referred to as an *authorising* environment. Through the deep dives, the language changed to instead refer to this as an *enabling* environment. The key difference, in our meaning, being that an *authorising* environment provides the authority in which to do something, where an *enabling* environment is more inclusive and enables diverse cohorts to meaningfully be part of the decision-making process.

<sup>23</sup> Royal Commission Report, 2020, p 22.

---

of resources across jurisdictions; an agile emergency response and recovery capability, with skills and technology that can be used across the country; and the data, systems and research to help us manage and mitigate disaster risk, efficiently and effectively.”<sup>24</sup>

As part of this enhanced approach to managing disasters, the Royal Commission recommended that the Australian Government play a greater role than it had previously. It recommended (Recommendation 3.5) that the Australian Government establish a standing national resilience and recovery agency to drive long-term resilience policy outcomes. Because recovery is a core part of resilience, it also found that such an agency should be responsible for the Australian Government’s disaster recovery work.

In response, the Australian Government established the NRRRA on 5 May 2021 to provide national leadership and strategic coordination for disaster resilience, risk reduction and preparedness for future disasters.<sup>25</sup> The NRRRA played an important convening role across all levels of government and actively supported communities impacted by disasters. It brought together disaster risk reduction and recovery functions, merging these functions from EMA, the National Bushfire Recovery Agency and National Drought and North Queensland Flood Response and Recovery Agency into one enduring stand-alone agency. Immediate response functions and coordination remained within EMA.

On 1 September 2022, the NRRRA and EMA merged to form NEMA within the Home Affairs Portfolio. NEMA is a stand-alone, enduring agency which provides holistic disaster management responsibilities to ensure that all disaster management – from risk reduction, prevention, preparedness, response and recovery – is managed through one centralised Australian Government agency. It is also the lead for disaster risk reduction policy at the Australian Government level. The establishment of NEMA is a significant step forward to strengthen Australia’s ability to prepare for, manage and recover from increasing disasters, both in number and severity, and sees a change in approach, through a move away from the previous event-based recovery agencies. The Home Affairs Portfolio also has responsibility for other national resilience policies, such as those relating to critical infrastructure, cyber security and pandemic resilience.

At present, despite similar policy responsibilities, departmental responsibility differs for climate adaptation policy and disaster risk reduction. However, the two agencies work closely together. Operating out of the newly formed Department of Climate Change, Energy, the Environment and Water (DCCEEW), the National Adaptation Policy Office (Office) works to ensure Australia can better anticipate, manage and adapt to climate change. The Office is responsible for climate change adaptation strategy and coordination, coordination of climate science activities, and provides a central point of contact and information for businesses and communities.

Collaboration between NEMA and DCCEEW is ongoing, including through governance forums such as the Australian Government Disaster and Climate Resilience Reference Group (Group). Established in 2015 and comprised of senior officials from 22 agencies from across the Australian Government, the group considers risks and challenges arising from climate change and disasters. The Group drives a whole-of-government approach to disaster and climate resilience, risk reduction and adaptation.

### 3.1.2. Formal governance arrangements

Formal arrangements between the Australian and state and territory governments have historically been managed through the COAG. In March 2020, in response to the COVID-19 pandemic, the existing arrangements were updated, and a National Cabinet was established to enable closer coordination of national efforts across all Australian Governments. National Cabinet is the forum in which the Prime Minister meets and works collaboratively with jurisdictional Premiers and Chief Ministers. In place of the former COAG, the National Reform Federation Council (NFRFC) was established to identify and drive change.

In the disaster management sector, the National Emergency Management Ministers’ Meeting (NEMMM) was established to drive and coordinate implementation of the recommendations of the Royal Commission. NEMMM is supported by the Australia-New Zealand Emergency Management Committee (ANZEMC), which was established in 2009 as the peak government committee responsible

---

<sup>24</sup> Royal Commission Report, 2020, p 23.

<sup>25</sup> *Prime Minister Transcript: Helping communities rebuild and recover from natural disasters, 2021.*

for disaster management. ANZEMC brings together senior officials from Australian, state and territory governments, and counterparts from New Zealand, to formulate disaster policy for Government consideration. It is supported by two subcommittees, the Mitigation and Risk Subcommittee (MaRS) and the Community Outcomes and Recovery Subcommittee (CORS). The formal arrangements are depicted in Figure 2 below.

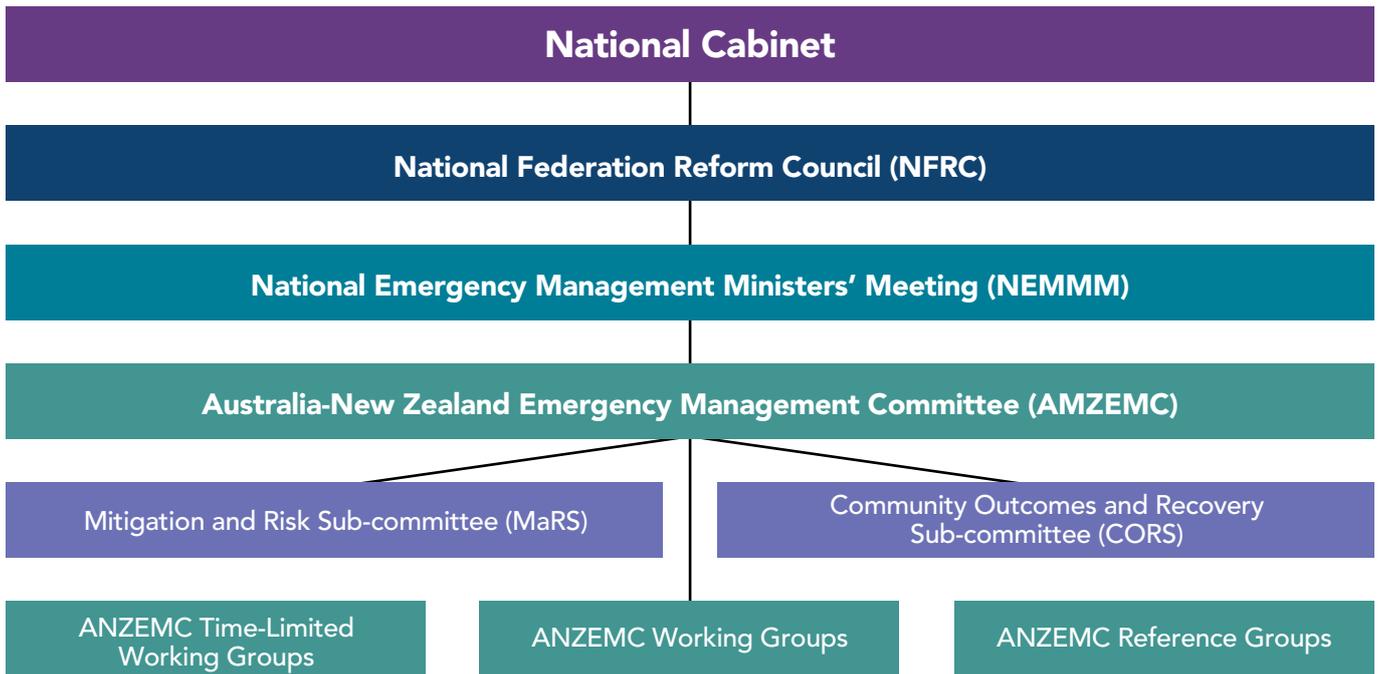


Figure 2: Formal governance arrangements in Australia.

At the jurisdictional level, each state and territory government has slightly different disaster governance and management arrangements, which integrate and implement Australia's national frameworks and strategies differently. Most state and territory governments have a ministerial level committee responsible for disaster management, which enables elected government officials to make strategic decisions about the management of disaster risk within their jurisdiction. Jurisdictional ministers are often supported by a strategic policy and/or operational decision-making committee, which considers planning, investment and policy frameworks for disasters. These decision-making committees are often responsible for the development and implementation of jurisdictional disaster management plans and frameworks. Adding to this complexity, different government agencies are responsible for different parts of the PRR cycle. There are opportunities to improve cross-sectoral collaboration to reduce disaster risks within the disaster management sector, for example by working across other sectors such as infrastructure, environment, land-use planning, social services and so on.

---

### 3.1.3. AFAC

The [Australian and New Zealand National Council for Fire and Emergency Services](#) (AFAC) is the national authority for fire and emergency services, which complements arrangements between state, territory and the Australian Governments. It also provides a trusted source of advice for the sector, through sharing knowledge, lessons and challenges and the delivery of national projects. The Royal Commission found that existing arrangements have grown organically over time to fill a void, and have largely served Australia well. For example, AFAC has led on specific areas related to fire and emergency services.<sup>26</sup> AFAC facilitates resource sharing of firefighters, specialists and aircraft, enabling a national and, where required, international response to large-scale emergency events, delivering firefighting resources through the [AFAC National Resource Sharing Centre](#) and aircraft contracted through the [National Aerial Firefighting Centre](#). The resource sharing, collaboration, and shared funding models through which AFAC operates have been cited as a successful operating model of national arrangements which could be further scaled up.

### 3.1.4 Engagement mechanisms

A range of engagement mechanisms between the different levels of government and industry exist, which are complemented by the National Coordination Mechanism (see section I for more information). One of the most successful models is the Trusted Information Sharing Network (TISN). Operating out of the Department of Home Affairs since 2003, the TISN is the Australian Government's primary engagement mechanism with industry on critical infrastructure. The TISN brings together stakeholders from across the critical infrastructure community – including critical infrastructure owners and operators, supply chain entities, peak bodies and all levels of government. Through the TISN, member organisations meet regularly to enhance the security and resilience of critical infrastructure. The TISN is further broken down into 13 [sector groups](#), which enable critical infrastructure owners and operators to share information on threats and vulnerabilities, and collaborate on appropriate measures to mitigate risk and boost resilience.

The [Department of Industry, Science and Resources](#) (DISR) facilitates a monthly Supply Chain Roundtable (SCRt) with peak bodies to hear supply chain concerns directly from industry and facilitates whole-of-government conversations to discuss policy responses to identified issues, including disaster issues, as they arise. In the monthly SCRt, DISR monitors industry supply chain disruptions and refers industry to the relevant portfolio agency based on the disruption.

Additionally, the Office of Supply Chain Resilience, within the Department of the Prime Minister and Cabinet, monitors vulnerabilities in critical supply chains and coordinates responses to improve ongoing access to essential goods.

## 3.2. The role of frameworks

Australia has multiple frameworks and strategies which guide the national arrangements across all phases of disaster management, including:

- Mitigating and adapting to disaster risk and improving resilience now and into the future through the NDRRF, the [National Climate Resilience and Adaptation Strategy](#), and the National Strategy for Disaster Resilience (see section I).
- A national approach to enhancing disaster preparedness for effective response and recovery through the [Australian Disaster Preparedness Framework](#).
- National approaches to promote interoperability between and within jurisdictions of equipment, data, information and more, for example through the [National Framework to Improve Government Radio Communications Interoperability](#).

These national frameworks and strategies were developed by consensus, with the endorsement of each of the Australia, state and territory governments. They are 'national' frameworks and strategies, rather than 'Australian Government' federal frameworks or strategies.

---

26 Royal Commission, 2020, p 74.

A number of state and territory governments have also established, or are in the process of establishing, their own localised frameworks, policies and strategies to implement the objectives of the Sendai Framework and/or the NDRRF within their jurisdiction. These include:

- *Western Australia Implementation Plan 2020 for the National Disaster Risk Reduction Framework*
- *Tasmanian Disaster Resilience Strategy 2020-2025*
- *Queensland Strategy for Disaster Resilience* and its implementation plan *Resilient Queensland*
- *South Australia's Disaster Resilience Strategy 2019-2024*
- *Victorian Preparedness Framework*.

Work to develop similar frameworks is currently being undertaken in New South Wales and the Northern Territory. The establishment of aligned local and national disaster risk reduction strategies and plans of action have been, and will remain, critical to reducing disaster risk within Australia by establishing and reinforcing best practice and unity of purpose through all levels of government.

### 3.3. Broader inclusion and participation in disaster risk reduction

The lived experience of Australians over the last few years of compounding disasters (as further described in section IV) provides an increasing recognition of the collective challenges we face as a nation, and a critical source of knowledge about how to potentially address them. This represents an important opportunity for the nation

to begin to address the system-wide changes required to effectively reduce disaster risks and be better prepared.

A common theme across all consultations was that a shift is needed in the narrative that Australian's are *stoic, tough settlers and resilient by nature*, as this idea undermines the needs of many, and ignores that fact that most individuals' capacities to cope and recover are exceeded during catastrophic disasters. Particularly as it is well understood that disasters can lead to increased violence against women and children, a variety of mental health conditions, unemployment and exacerbate existing housing crises. Recognising the shared responsibility of disaster risk reduction and management, this narrative puts too great a focus on individual responsibility, when much of the system-change required to reduce disaster risks is in the hands of public and private organisations.

### 3.4. Caring for Country – First Nations knowledge and practices in land and fire management

First Nations people have a unique relationship to Country<sup>27</sup>, with approximately 40 per cent of Australia covered by exclusive or shared native title.<sup>28</sup> Indigenous land management, also known as caring for Country, is supported by the Australian Government as a world-leading example of how local and Indigenous knowledge strengthens efforts to reduce disaster risk. Indigenous land management aims to protect, maintain, heal and enhance the health of Country and its people.

The Australian Government also recognises the criticality of First Nations knowledge in efforts to reduce disaster risk and is working towards the full implementation of the [National Agreement on Closing the Gap](#) (Agreement). However, much still needs to be done to realise this agreement. The Agreement seeks to enable First Nations people and governments to work together in genuine partnership to drive better outcomes.

Recent Australian Government investment, through the Black Summer Bushfire Recovery (BSBR) grants program and Disaster Risk Reduction Package (DRRP), have further supported First Nations knowledge and participation in disaster risk reduction. Projects funded through the BSBR grants program include a data project which integrates science, technology and Indigenous burning to build resilience for communities in Minjerribah and Mulgumpin in Queensland and a training project to certify Indigenous Fire Practitioners across Queensland and New South Wales. DRRP projects include a framework to assess the vulnerability of First Nations cultural heritage to bushfire and fire mitigation programs across multiple states and territories in Australia.

At the jurisdictional level, Aboriginal Affairs New South Wales has partnered with the former Resilience New South Wales to manage and deliver the [Aboriginal Communities Emergency Management Program Pilot](#), which aims to improve preparedness and response to disasters in First Nations communities. Under the program, four discrete First Nations communities have

<sup>27</sup> Country is the lands which First Nations people have customary ownership of, on which their cultures have evolved over tens of thousands of years.

<sup>28</sup> For more information, see [Part 5 of the Report of the National Native Title Tribunal](#).

---

been engaged to improve their preparedness and recovery, and to build stronger relationships with disaster management stakeholders. As a result of the program, communities have participated in cultural burns to reduce fire load, developed community protection plans, completed mitigation and infrastructure projects, encouraged First Nations people and non-First Nations people to be trained as emergency service volunteers, and participated in local disaster management committees and bushfire management committees to represent their community's needs. Western Australia's [Bushfire Centre of Excellence](#) is a first-of-its-kind education hub where bushfire management personnel can come together for training and learning, including the Cultural Fire Program.

The Sendai Framework and NDRRF identify that Indigenous knowledge and practices should be better integrated into research and knowledge application to address disaster risk in all of its components. The importance of caring for Country was emphasised through Recommendations 18.1 and 18.2 of the Royal Commission, on Indigenous land and fire management and disaster resilience and Indigenous land and fire management and public land management, respectively and in the CSIRO report on climate and disaster resilience.

The Australian Government is one of the largest investors in Indigenous land management in Australia. This federal recognition of Indigenous land management practices is an example of how local knowledge has successfully informed land

management for tens of thousands of years. Today, Indigenous land management maintains its traditional and cultural importance, while also leveraging technologies such as helicopters, drones and satellites.

There is also a growing public recognition of the value of Indigenous land and fire management practices as a way to mitigate the effects of bushfires. Through Natural Hazards Research Australia (NHRA), the Australian Government is funding research projects which explore how to support and empower Indigenous-led cultural fire and land management practices within current fire and land management frameworks to improve landscape management and community resilience. Through AIDR, the Australian Government is funding the delivery of initiatives, including the [Centre of Excellence for Prescribed Burning](#) and associated [resources](#), and [Aboriginal and Torres Strait Islander resources](#) as part of their [Education for Young People Program](#).

Through the National Indigenous Australians Agency, the Australian Government funds the [Indigenous Ranger Program](#) and [Indigenous Protected Areas](#) programs, which support First Nations people to combine their traditional knowledge with conservation training to protect and manage their land, sea and culture, including through cultural fire management activities.

The Australian Government is expanding the Indigenous Ranger Program to double the number of rangers. In doing so, the program will continue to build the capability

### Savannah Burning in Northern Australia

The Australian Government supports Indigenous-led early dry season savannah burning projects across Northern Australia by issuing Australian Carbon Credit Units through the Clear Energy Regulator. As at January 2022, it was estimated that there were 29 such projects under way.

As an example, the West Arnhem Land Fire Abatement project uses an innovative mix of customary Indigenous fire management techniques and contemporary technology to manage fires across West Arnhem Land. The aim of the project is to reduce the area and severity of late dry-season fires and associated greenhouse gas emissions, through targeted early dry season prescribed burning. The project receives Australian Carbon Credit Units for reductions in emissions.

As more than 50 Warddeken Rangers are involved in the prescribed burn and wildfire suppression, the project has served to re-establish an appropriate fire regime based upon traditional knowledge and responding to modern threats. The carbon credits generated provide the First Nations owned, not-for-profit company with substantial annual revenue.

of First Nations people to care for Country, bolster disaster resilience and recovery, and address unmet demand for cultural burning and other Indigenous land management expertise. The program results in safer communities as Indigenous knowledge gives insights to disaster risk reduction initiatives, such as bushfire mitigation, protection of threatened species and biosecurity compliance.

Indigenous Protected Area programs provide funding for First Nations people to manage areas of land and sea for biodiversity conservation. There are currently 81 dedicated Indigenous Protected Areas covering more than 85 million hectares of land, equivalent to more than 11 per cent of terrestrial Australia. 'Right-way' fire management<sup>29</sup> is undertaken across most Indigenous Protected Areas, resulting in less large-scale wildfires and reducing the likelihood of destructive fires impacting on people and property on the Indigenous Protected and adjacent areas.

The Indigenous Fire and Land Management Workshops grant program was developed in line with recommendations 18.1 and 18.2 of the Royal Commission. The grant program provided \$2 million to 13 First Nations organisations to deliver community-led workshops to strengthen and share traditional fire and land management knowledge. It assisted communities in improving their understanding of natural systems and develop novel approaches to collaboration within and across First Nations communities and with conventional fire and land managers.

The Australian Government, together with the Northern Territory, Queensland and New South Wales Governments, is supporting the Indigenous Carbon Industry network in building the capacity of its members to participate in savannah fire management and other carbon farming activities.

The [Aboriginal Carbon Foundation](#) and Insurance Australia Group (IAG) have partnered on a three year project to support the creation of [new First Nations-led carbon farming projects](#) across Australia. Over the course of the partnership, the Aboriginal Carbon Foundation and IAG aim to develop three Aboriginal cultural fire management and carbon farming projects across New South Wales by 2023, and expand into Victoria and South Australia by 2024. In addition to the environmental benefits, these projects may provide social, cultural and economic benefits to the communities which run them.

#### 4. LINE OF ENQUIRY: INFORMATION AND DECISION-MAKING

**ALL COMPONENTS OF DISASTER RISK – HAZARDS, EXPOSURE, VULNERABILITY – AND THEIR INTERACTIONS AND ASSOCIATED IMPACTS NEED TO BE UNDERSTOOD BY ALL SECTORS, AND ACROSS ALL LEVELS OF DECISION-MAKING, FROM INDIVIDUALS TO COMMUNITIES TO ORGANISATIONS, IN ORDER FOR THESE TO BE EFFECTIVELY MITIGATED OR REDUCED (NDRRF, P 12).**

**GREATER UNDERSTANDING OF DISASTER RISK HAS LIMITED VALUE UNLESS ACTIVELY APPLIED. DECISIONS MADE TODAY MUST RESPOND TO IDENTIFIED IMMEDIATE AND LONG-TERM DISASTER RISKS AND RELATED CHALLENGES (NDRRF, P 14).**

The NDRRF recognises that understanding and addressing the complex, systemic drivers of disaster risk is crucial to creating a resilient Australian society (NDRRF Priority 1: *Understand Disaster Risk*, Sendai Framework Priority 1: *Understanding disaster risk*). Across the system, there are a number of organisations and programs which seek to improve understanding of disaster risk. However, for the most part, these are not connected or integrated.

<sup>29</sup> 'Right-way' fire management is a method which involves traditional patterns of burning using both traditional and contemporary means.

---

A selection of these are presented below. States and territories conduct extensive activity to understand and communicate disaster risk. Aspects of these activities are described in **Annexes I to N**.

#### 4.1. A national disaster risk capability

From February to December 2019, a pilot project, led by the National Resilience Taskforce, was undertaken to demonstrate the benefits of establishing a national climate and disaster risk information capability for Australia (referred to as National Disaster Risk Information Services Capability (NDRISC) within this report). The need for a national capability was originally called for by the Australian Business Roundtable for Disaster Resilience and Sustainable Communities,<sup>30</sup> and was a priority of the National Resilience Taskforce to test.

The pilot was undertaken using several case studies linked to a current strategic policy initiative, the Freight and Supply Chain Strategy.<sup>31</sup>

Specific objectives of the pilot project were to:

- understand and specify the requirements for a national capability
- explore and propose a way forward to overcome barriers which inhibit effective access to, and use of, climate and disaster risk information, including potential pathways to develop a national capability, and
- present options for consideration by government.

The pilot project was comprised of two main activities:

- exploring the use of high-level narrative scenarios to stimulate thinking and frame discussion around climate and disaster risk for freight supply chains, and
- modelling climate and disaster risks for selected case studies based on the insights from the narrative exploration process.

NDRISC provided a series of recommendations for implementation of a national information capability and laid the foundations for the establishment of the ACS.

#### 4.2. National science agencies

##### 4.2.1. The Australian Climate Service

The Australian Government has invested \$209 million in development of the ACS, in response to Recommendations 4.1 to 4.7 of the Royal Commission, aligned to NDRISC recommendations. The ACS will provide a data and intelligence service which connects and leverages the Australian Government's extensive climate and natural hazard information into a single national view. Hosted by the BoM, the ACS brings together expertise from the BoM, CSIRO, the Australian Bureau of Statistics and Geoscience Australia to build a national capability which improves Australia's understanding of climate and natural hazard challenges and the associated impacts. An example of how the ACS synthesises climate and hazard data to inform decision-making can be found in **Annex Z**.

##### 4.2.2. The Bureau of Meteorology

The BoM is Australia's national weather, climate and water agency. Through the provision of regular forecasts, early warnings, monitoring and advice, the BoM assists Australians remain informed in times of drought, floods, fires, storms, tsunami and tropical cyclones.

##### 4.2.3. Commonwealth Scientific and Industrial Research Organisation

As Australia's national science agency, CSIRO provides significant capability to address national challenges including increasing Australia's resilience. This includes a broad range of expertise to understand the complex interacting social, economic, environmental and built systems, natural hazards and extreme weather events, and their impacts under a changing climate. CSIRO also delivers research and develops tools and approaches to assist in understanding and addressing systemic disaster risk, works with and supports communities, government and industry to apply these approaches and develops adaptation pathways to build resilient and sustainable futures.

##### 4.2.4. Geoscience Australia

Geoscience Australia is Australia's national public sector geoscience organisation and a trusted adviser on the geology and geography of Australia. Geoscience Australia provides disaster risk information to help Australians understand the consequences of hazard events.

---

30 Deloitte Access Economics, *Building an open platform for natural disaster resilience decisions. Australian Business Roundtable for Disaster Resilience & Safer Communities*, 2016.

31 *National Freight and Supply Chain Strategy*, 2019.

This includes the delivery of authoritative, current and timely national data and advice on Australia's built environment, hazard extents and the exposure of communities and assets during hazard events to support response and recovery. Geoscience Australia also works to forecast the possible impact of natural hazards to enable communities to better prepare and build resilience. Geoscience Australia also provides real-time monitoring, analysis and advice on significant earthquakes and tsunamis, to help safeguard Australian and Indian Ocean communities.

#### 4.2.5. The Australian Bureau of Statistics

The Australian Bureau of Statistics is Australia's national statistical agency and an official source of independent, reliable information. In the context of ACS, it is delivering information and expertise to assess exposure, vulnerability and impact on social and economic assets and systems in relation to natural hazards.

### 4.3. Information, knowledge networks and knowledge brokering

#### 4.3.1. The Australian Institute for Disaster Resilience

Formed in 2015, AIDR is the national institute for disaster risk reduction and resilience. AIDR provides a human and knowledge network capability to improve policy uptake and application by practitioners. AIDR is responsible for creating, growing, and supporting a range of networks; providing opportunities for learning, development and innovation; sharing knowledge and resources to enable informed decision-making and action; and facilitating thought leadership through national conversations.

AIDR manages the Australian Disaster Resilience Knowledge Hub, a national, open-source platform which supports and informs policy, planning, decision-making and contemporary good practice in disaster resilience. The Knowledge Hub highlights current and emerging themes in the resilience sector, linking national guidelines with research and fostering collaboration among leading agencies and organisations. The Knowledge Hub includes the Australian Disaster Resilience Handbook Collection, which provides guidance on national principles and best practice for undertaking disaster resilience activities. More information on AIDR can be found in **Annex E**.

#### 4.3.2. Natural Hazards Research Australia

NHRA was established in 2021 as a successor to a cooperative research centre, and is Australia's national centre for natural hazards resilience and disaster risk reduction. As a collaborative research organisation, NHRA seeks to deliver usable research and knowledge to create safer and more resilient communities by addressing the major challenges arising from natural hazards.

NHRA supports the needs of a variety of critical stakeholders across the broad disaster management and resilience sector. This includes working with partners in all states and territories, all levels of government, key industry bodies, the private and not-for-profit sectors, and research organisations. Over the next 10 years, the outcomes of NHRA's work will be used by communities and governments to build resilience and enhance capability.

#### 4.3.3. The Australian and New Zealand National Council for Fire and Emergency Services

As outlined above under 3.1.3., AFAC delivers national projects for the sector. For example, the Australian Government provided \$20 million to implement the new Australian Fire Danger Rating System (AFDRS) to improve the existing national system to better describe fire danger and risk to firefighters, land managers, governments and the community. The work of the AFDRS supports Recommendation 13.1 of the Royal Commission.

AFAC is also rolling out a national education program for the Australian Warning System (AWS), to meet Royal Commission Recommendation 13.4. Until now, there has been different warning systems for different hazard types across Australia, and different types of warning systems in different jurisdictions. The new AWS aims to provide consistent warnings to ensure Australian communities are well informed, know what to do when they see a warning, and can take appropriate action.

### 4.4. Insurance sector

#### 4.4.1. Insurance Council of Australia

The Insurance Council of Australia (ICA) is the peak representative body of the general insurance industry in Australia, and represents approximately 89 per cent of total premium income written by private sector general insurers. The ICA works with national agencies, federal, state and local governments to help shape a more resilient Australia, and is the coordinating body for the general insurance industry's collective response to severe weather events and determines the classification of events as Declared

---

Insurance Catastrophes or Significant Events. It collates and shares data among its membership on hazard and exposure, and is a strong advocate for more investment in mitigation and for collaboration across levels of government and industry. In their recent [Actions of the Sea and Future Risks Report](#) on coastal inundation and sea level rise, the ICA estimated that AU\$30 billion would be required for large-scale coastal protection and adaptation projects in Australia.

#### 4.4.2. Insurance Australia Group

IAG is Australia's largest general insurer. To help educate customers about the disaster risks which may impact them, IAG releases flood, tropical cyclone and bushfire [fact sheets](#). The fact sheets draw on insights from the [Severe Weather in a Changing Climate](#) reports, describe what makes homes more at risk from each hazards and how to mitigate the associated impacts. The fact sheets were developed in collaboration with a number of experts, including James Cook University.

#### 4.5. Risk assessments

The [National Emergency Risk Assessment Guidelines Handbook](#) (NERAG) was developed to provide a nationally consistent approach to risk assessments and prioritisation. To ensure these guidelines remain as up-to-date as possible, NERAG will be reviewed in 2022-23. As part of this review, AIDR is intending to conduct wide consultation across all levels of government.

Through stakeholder engagement, it was highlighted that the upcoming NERAG review should draw on the experiences at the jurisdictional level, thereby providing an opportunity for greater alignment between state and national views. This would also assist with incorporating vulnerability into the NERAG.

A gendered analysis will also be an important part of this review.

Most jurisdictions have developed frameworks and localised risk assessments to better understand key vulnerabilities and exposure:

- New South Wales has an [Emergency Risk Assessment Framework](#), conducted a [State Level Emergency Risk Assessment \(SLERA\)](#) in 2017 and is currently designing its next State Level Risk Assessment for implementation in 2022-23.
- Queensland has a state-wide [Emergency Risk Management Framework](#) (QERMF).
- Tasmania has just released their [2022 Tasmanian Disaster Risk Assessment](#) (TASDRA).
- The Australian Capital Territory is currently in the process of updating their [Territory Wide Risk Assessment](#).
- Western Australia has a [State Emergency Management Framework](#) and is in the process of finalising a comprehensive state risk assessment of all hazards prescribed in state legislation to highlight risk treatment strategies.
- Victoria completed regional assessments across its eight regions in 2021, and will undertake a review of the state-level risks currently outlined in the [Emergency Risks in Victoria \(2020\)](#) in 2022-23.
- Since 2012-13, South Australia has conducted biennial state and emergency management zone (regional)-level NERAG-compliant risk assessments, as outlined in the [State Emergency Management Committee Strategic Plan](#).

While the QERMF and TASDRA were informed by NERAG, both expanded their purview to also include profiling vulnerability risks. In addition to the QERMF, Queensland has developed a suite of hazard-specific risk assessments and frameworks, such as the [Queensland Flood Risk Management Framework](#) and the [Queensland Strategic Flood Warning Infrastructure Plan](#). To this end, stakeholders identified that climate change adaptation and disaster risk reduction need to be better integrated and mainstreamed into policymaking systems and practice. To do so, the interconnected relationship between climate action and disaster risk reduction needs to be more clearly recognised. Further greater recognition that disaster risk reduction is everyone's responsibility and that all sectors of society need to actively participate in reducing their risks is needed. Through all engagement, it was widely understood that this cannot be achieved without robust funding mechanisms and a significant increase in opportunities to invest in resilience.

#### 4.6. Guidance to support systemic decision-making

##### 4.6.1. Guidance for Strategic Decisions on Climate and Disaster Risk

The National Resilience Taskforce developed a set of interconnected guidance documents to support implementation of the NDRRF. Complementing the [Profiling Australia's Vulnerability](#) report, the [Guidance for Strategic Decisions on Climate and Disaster Risk](#) were released in 2019. The Guidance are designed to help decision makers contextualise the physical impacts of a changing climate, and provide directions on how to consider climate and disaster risk into strategic long-term planning and

investment decisions. The Guidance were primarily developed to assist decision makers and risk managers in the public, private and community sectors reduce their climate and disaster risks and build the resilience of their assets and services. The Guidance are explored here due to the approach taken by the Australian Government in reducing disaster risk, and the foundational understanding they established.

The *Guidance on Governance* emphasises the need to promote local solutions to manage the physical impacts of natural hazards, and highlights that it is becoming increasingly necessary to reassess and implement governance arrangements that enable adaptive, collaborative and cross scale action. It also broadly recognised that the local level does not have the requisite capacity, capability or resources to act on these solutions. This Guidance articulated the need to clarify roles and responsibilities and to diagnose and address governance constraints in decision-making and action on the ground. Additionally, that governance needs to be multilevel and centric to ensure that localised issues and solutions are identified, and addressed, through public private partnership. It also highlighted the need for private sector, industry, community, elders, households and individual citizens – all with allied, but different, governance systems to be involved in inclusive decision-making. Finally, it identified several key tools and resources to assist in this regard.

More recently, the *Systemic Disaster Risk Handbook* has emphasised the need to build inclusive governance capacity and developed principles for inclusive governance, networked cultures and capacity building to respond to unprecedented change for which there are few tested solutions.

The other guidance documents also approach disaster risk from this more mature, systemic lens. The *Guidance on Vulnerability* focuses on ways to understand vulnerabilities to climate impacts, natural hazards and disaster. It supports growing understandings of the systemic causes and effects of vulnerability, particularly societal values and interdependent systems, for determining possible steps towards reducing them. The *Guidance on Scenarios* moves on to explain how to develop and use scenarios to think about the potential implications of high-stakes strategic and operational decisions when highly uncertain drivers of climate and disaster risk are present.

The final guidance document, on *Prioritisation*, encourages users to re-visit investment, program and project objectives by shifting the focus from 'assets' to 'services and communities.' This Guidance enables consideration of the cross-scale and multistakeholder nature of climate and disaster risks and offers a prioritisation framework to rapidly assess opportunities and pathways for creating and capturing value from investments in disaster risk reduction. It has been foundational to the later work undertaken in the Enabling Resilience Investment approach (see section IV).

#### 4.6.2. Climate Compass

Released in 2018, *Climate Compass* is designed to help Australian Public Servants manage the risks from the changing climate to policies, programs and asset management, and includes step-by-step instructions, guidance and information to develop an understanding of climate change risks. It reflects the current leading practice guidance for climate risk management and planning for long-term, uncertain, pervasive change. Climate Compass was developed as a collaborative project between

CSIRO and the former Department of the Environment and Energy and was tested by five agencies before final release. The Resilience Reference Group has led implementation of the Climate Compass framework into all agencies, though uptake has not been universal.

#### 4.7. Supply chains

The need to better understand risks to road and rail supply chains is underscored by a range of Australian, state and territory government policies. In recent years, this has been emphasised by compounding natural and human-induced shocks, including heavy rainfall flooding the East-West rail corridor, the ongoing challenges of the COVID-19 pandemic, and shortages of diesel exhaust additive AdBlue challenging fuel security. The *National Freight and Supply Chain Strategy* provides a framework to increase Australia's supply chain performance and resilience.

In March 2022 the Bureau of Infrastructure and Transport Research Economics (BITRE) commenced a *review* of Australia's road and rail supply chain resilience. This review will identify the supply chain routes which are most critical to Australian communities and businesses, the risks they face, and will carry out a stocktake of any work under way to mitigate risks. More information can be found in **Annex AE**.

#### 4.8. The built environment

Land-use planning has a critical role to play in building resilience across cities and regional communities. Further, the Royal Commission found that land-use planning is the primary mechanism that governments can use to manage exposure to natural hazards, and that decisions have far-reaching and long-lasting consequences as to how exposed

---

and vulnerable the community will be to future natural hazards. Where land-use planning decisions do not effectively incorporate natural hazard risk, the impact of future disasters will be high.<sup>32</sup>

Australia's federated system makes it difficult to influence a nationwide approach to risk sensitive and resilient land-use planning. As set out in the Constitution, the Australian Government holds limited legislative or regulatory levers to influence land-use planning decisions. Instead, land-use planning is a shared responsibility of state, territory and local governments. While state and territory governments have primary responsibility for land-use planning regulation, many relevant functions and responsibilities are often delegated to local governments.<sup>33</sup> Disaster resilient land-use planning decisions need to be contextualised and weighed against other decisions, such as cost, community values, local conditions, amenity and other priorities. Land-use planning decisions are inherently locally made, and fit within a broader system of population growth, economic forces, politics and social expectations, to name a few.<sup>34</sup>

The Planning Institute of Australia (PIA) has recognised a lack of "long-term strategic leadership" within the land-use planning system, noting there "is a fragmented policy response, and limited coordination across and between levels of government."<sup>35</sup>

National land-use planning arrangements need to be enhanced to ensure best available and

information and capability to understand future risk is accessible and used in development planning. Coupled with this, the same scientific evidence-based approach should be applied to the rapidly changing risk profile of past planning decisions, such as Australia's legacy building stock. The PIA has called for a [National Settlement Strategy](#) to address these issues strategically.

Similarly, state and territory governments are responsible for regulating building matters within their jurisdictions. The Australian Government works collaboratively with jurisdictions through the Building Ministers' Meeting (BMM). Work is being done through the BMM to incorporate resilience to natural hazards into Australia's residential and commercial buildings. The BMM oversees the work of the [Australian Building Codes Board \(ABCB\)](#), which maintains the [National Construction Code \(NCC\)](#).<sup>36</sup> The Royal Commission recommended the ABCB assess the extent to which building standards were effective in reducing risk from natural hazards (Recommendation 19.4). The ABCB, together with state and territory governments, is currently undertaking analysis to assess the adequacy of the current NCC provisions to address future extreme weather events and climate risks. This work also includes collaborative research workshops with CSIRO, Geoscience Australia, NEMA and DCCEEW to study climate risks in the NCC. The ABCB's work will be informed by scientifically based and authoritative future climate projections and climate scenarios.

Delivering resilient housing in both the planning and delivery of key equipment and manufacturing requires that processes meet new and emerging standards to withstand disasters. This is key not only to disaster mitigation, but also to establishing manufacturing and research capabilities in Australia which have broad application across our region. An example of this is the [Regional Collaborations Program](#), which build linkages in the Indo-Pacific region and facilitates greater science, research and innovation collaboration to deliver innovative solutions which address shared regional challenges – such as the [Asia-Pacific Research Network for Resilience Affordable Housing](#), discussed in the Australia's international disaster risk reduction cooperation section below.

While the current NCC established a benchmark for Australia's built environment, there is currently limited required consideration to the rationality of risk, particularly for areas at higher risk to bushfire, flood, cyclone and actions of the sea. At present, there is no real comparison or point of reference for property owners to determine what is right for them in their own preparation and/or adaptation to growing risks. To address this, the ICA has recently partnered with Standards Australia to develop critical guidance standards, which are voluntary standard shifting mechanisms to assist in developing 'optimal practice building standards.' These guides, targeted at the aforementioned risks will be split into two segments – retrofitting and new builds – with the core aim of

---

32 Royal Commission, 2020, p 70.

33 Royal Commission, 2020, p 400.

34 [Land Use Planning for Disaster Resilient Communities](#), p.29.

35 Planning Institute of Australia, [Planning in a Changing Climate](#), 2021, p 3.

36 The NCC's purpose is to address the amenity, safety and health of building occupants. The NCC is prospective in nature and only applies to new buildings and major renovations. To reduce disaster risk and built the resilience of Australia's housing stock, planning, zoning, insurance and other issues are required.

identifying best practice in building or retrofitting homes. Taking into account the regionality of risk in different parts of Australia, the guides aim to enable community and industry to better determine property level mitigation or building practice to protect their property in the event of increased extreme weather risk.

## 4.9 Examples of private sector innovation

### 4.9.1 FORTIS House

BBCA, in partnership with IAG (through their NRMA Insurance brand) and the Shoalhaven City Council, have released free architectural drawings, specifications and handbooks to make it easier and more affordable for Australians to build sustainable houses resilient to bushfires, floods, storms, heatwaves and cyclones. The resources have been developed as part of the [FORTIS House](#) project. Through the project, homeowners, builders and architects can access free architectural drawings, specifications and handbooks to make it easier and more affordable to build sustainable houses resilient to bushfires, floods, storms, heatwaves and cyclones. Prefabricated FORTIS Houses will also be available to purchase and can be constructed in as little as 12 weeks, providing another fast-track solution for rebuilding. The resources were developed through a world-first community-led design process with members of the Shoalhaven community who were impacted by floods and bushfires. More work being undertaken by BBCA can be found in section II.

### 4.9.2 YourHome

[YourHome](#) is an independent guide creating sustainable homes for the future. The guide assists consumers, designers and educators design, build or renovate homes to ensure they are energy-efficient, comfortable, affordable and adaptable for the future. While YourHome is primarily focused on energy efficiency, it has been expanded to address disaster resilience through inclusion of content on how to build in flood plains, how to build in heat wave protection through climate controls and how to reduce risks to high wind and rain events. The most recent edition also contains a dedicated chapter on bushfire preparedness.

### 4.9.3. Storm Check pilot

The [Storm Check pilot](#) run by the [Brisbane Sustainability Agency](#) and IAG (through their NRMA Insurance brand) is intended to help people in south-east Queensland make their homes more resilient to severe weather. In an initial home assessment pilot, 40 homes were assessed to identify ways to make them more resilient to severe storms and to gain insight regarding what motivates homeowners to act on expert recommendations. The program found that when homeowners are provided with clear, actionable advice from independent and trusted experts, they are more likely to act on the recommendations and implement interventions. Seventy-four per cent of Storm Check participants reported they have completed one or more of the program recommendations. Through the pilot, the group found the cost of retrofitting was a significant barrier to uptake, particularly when weighed against perceived risk and prioritisation of household spending.

## 4.10. Critical infrastructure

The Australian Government recognises the crucial role critical infrastructure provides in times of disasters, and the need to develop critical infrastructure resilience to ensure the continued provision of essential services and the sharing of information. The Department of Home Affairs is currently in the process of updating the [Critical Infrastructure Resilience Strategy](#) (Strategy), which describes the Australian Government's approach to enhancing the resilience of our critical infrastructure to all hazards. The Strategy guides the work of the TISN (see above for more information).

The Department of Home Affairs is also considering Australia's 'Climate Security', particularly the linkages between climate change and Australia's key national security challenges. This work acknowledges that climate change will have operational impacts to critical infrastructure across the country, and may impede Australia's disaster risk mitigation strategies.

At the jurisdictional level, the [Victorian Critical Infrastructure Resilience Strategy](#) (Victorian Strategy) outlines the arrangements for critical infrastructure resilience, which are founded on strong partnerships between government and industry sectors. The model within the Victorian Strategy allows for the 'criticality' of infrastructure within sectors to be assessed and ranked as vital (highest), major, significant or local. Critical infrastructure assessed as vital is subject to additional legislative requirements, including undertaking four activities within: emergency risk management planning, exercising, audits and assurance reporting.

Within New South Wales, the NSW Critical Infrastructure Resilience Strategy encourages leaders in business and government to support the New South Wales community by improving critical infrastructure resilience across New South Wales. The strategy promotes critical infrastructure that can withstand shock events to continue operating, be returned to service as soon as possible after any disruption and respond to long-term stresses. See **Annex N** for more information.

## 5. LINE OF ENQUIRY: INVESTMENT

**THE TOTAL ECONOMIC COST OF DISASTERS IS INCREASING ALONG WITH THE COST OF DISASTER RECOVERY. IN 2018, FEDERAL AND STATE GOVERNMENT SPENDING ON DIRECT RECOVERY FROM DISASTERS WAS AROUND \$2.75 BILLION PER YEAR AND INDIRECT RECOVERY COSTS MAY BE BORNE BY MANY SECTORS ACROSS MULTIPLE YEARS. UPFRONT FINANCIAL INVESTMENT IS NEEDED TO REDUCE DISASTER RISK AND CONTAIN THIS GROWING COST (NDRRF, P 16).**

### 5.1. Australian Government funding for disaster risk reduction activities

#### 5.1.1 Disaster Risk Reduction Package and the National Partnership Agreement

In the first program of its kind to focus solely on disaster risk reduction, the Australian, state and territory governments jointly committed \$261 million over five years from 2019-20 towards the DRRP, designed to reduce the risk and impact of disasters in Australia and support the implementation of the NDRRF.

The Australian Government contributes \$130.5 million to the DRRP:

- \$104.4 million to support states and territories in reducing disaster risks at the state and local levels through the National Partnership Agreement (NPA) on Disaster Risk Reduction, which is in effect for five years from 2019-20, and
- \$26.1 million to deliver national initiatives, in consultation with states and territories, which reduce disaster risk at the national level for the benefit of all Australians.

How funding is invested or distributed to achieve disaster risk reduction outcomes varies in each jurisdiction. In many cases, funds are provided to support a range of projects, such as hazard studies, mapping, warning systems and upgrades to infrastructure. Some examples include:

- New South Wales has established a Disaster Risk Reduction Fund to deliver locally-led, place-based community projects, as well as significant state-level initiatives to support the prevention, mitigation and management of disaster risks.
- Across Queensland and Victoria, DRRP funding is supporting a range of mitigation and disaster risk reduction activities that include flood studies, warning systems and upgrades to flood infrastructure.
- In Western Australia, the Telecommunications Power Resilience Improvement Research Project aims to improve telecommunications availability and reliability, and to create a strategy to address how to provide power improvements to priority locations.
- A project to map interdependencies of essential services, critical infrastructure and supply systems in the Northern Territory will enhance understanding of the impacts and flow-on effects of disasters on regional and remote communities, which are highly vulnerable to disruptions to essential services and infrastructure.
- In South Australia, Tasmania and the Australian Capital Territory, projects are underway to increase the resilience of culturally and linguistically diverse communities, improve disaster-related health outcomes for older Australians, and support people under 18 to build skills in understanding and reducing disaster risk.

DRRP funding has also been provided for national projects to equip households, communities and decision makers with the tools they need to reduce disaster risk – funding implementation of the first two lines of inquiry, including the [Bushfire Resilience Star Rating App](#) and the National Bushfire Intelligence Capability (NBIC). NBIC is co-designed as a socio-technical system which facilitates integrated risk reduction efforts by designing, producing and delivering information and mapping products. NBIC's design embodies the mandates, institutional arrangements and shared responsibility across all levels of government, the private sector and local communities. See **Annex AG** for more information.

Through the current NPA, which ceases in 2023-24, the Australian Government partners with state and territory governments to build systemic disaster risk reduction. In consultations, jurisdictions noted the limitations with this model of funding, and cited that sometimes funding is applied to existing projects, rather than to meet the strategic intent of disaster risk reduction.

### 5.1.2. Other Australian Government funding for disaster risk reduction

Recognising the increasing need to invest in disaster risk reduction, the Australian Government has committed to investing up to \$200 million per year (from 2023-24) on disaster prevention and resilience initiatives through the new [Disaster Ready Fund](#) (DRF). The thousands of Australians who face bushfires, floods and cyclones every year deserve to be protected.

The DRF will curb the devastating impacts of natural hazards by investing in important disaster prevention projects like flood levees, sea walls, cyclone shelters, evacuation centres, fire breaks and telecommunications improvements.

Recent Australian Government programs include:

- \$391 million committed through the BSBR grants program helps bushfire-impacted communities build back better by funding a broad range of recovery and resilience projects, ranging from social and wellbeing projects through to projects which support the recovery of local economies and built environments.
  - » Of the 524 funded projects, 305 approved applications had disaster risk reduction and resilience aims.
- The \$150 million [Preparing Australian Communities Program Local \(PACPL\)](#) aims to help increase the ability of communities to mitigate, avoid, withstand and/or recover from the increasing effects of tropical cyclones, bushfires or floods as a result of climate change, through activities targeting or delivering resilience. Eligible grant projects had to be aligned to one of three activity categories: planning, awareness and capacity, or infrastructure. Of the 158 approved projects, 120 had a resilience or disaster risk reduction aim.
- The Emergency Response Fund (ERF) provides funding for resilience building measures ahead of a disaster.

- » \$100 million has been committed under two rounds of the National Flood Mitigation Infrastructure Program. As an example, this program funded three kilometres of new levees to mitigate the risk of large-scale flooding in the town of Katherine, protecting between 150 to 200 homes.
- » \$50 million committed to the new Coastal and Estuarine Risk Management Program, which is aimed at reducing the often devastating impacts of coastal hazards, such as storm surges and coastal inundation.
- » The new DRF will replace the ERF.
- The \$37.1 million [Strengthening Telecommunications Against Natural Disasters](#) package, which aims to improve the resilience of Australia's communications network in bushfire and disaster-prone areas.
- Through the [Northern Rivers Resilience Initiative](#), \$150 million has been committed to priority flood resilience projects in the Northern Rivers region of New South Wales following the large-scale floods in 2022. The initiative is a partnership between NEMA and CSIRO. It seeks to understand the drivers behind the flood event in February-March 2022 and develop community-supported solutions for resilience investment.

In addition to funding at the Australian Government level, considerable investment is provided directly by state and territory governments. Further information on jurisdictional investment in disaster risk reduction and resilience building can be found in **Annexes I to N**.

### 5.1.3. Disaster recovery funding and betterment

Recovery represents a significant proportion of disaster-related costs for all levels of government and industry within Australia. These costs are anticipated to grow into the future due to the increasing intensity and frequency of disasters, coupled with a growing population and the associated increase in assets and infrastructure being exposed to natural hazards. The Sendai Framework emphasises that successful recovery is increasingly being recognised as an opportunity to prepare for, and build resilience to, future disasters by 'building back better'.

The Australian Government administers a range of recovery payments following a disaster event. The jointly-funded Commonwealth-State/Territory Disaster Recovery Funding Arrangements (DRFA) assists state and territory governments with the costs of delivering certain relief and recovery assistance to disaster-affected communities. The Royal Commission recommended the improved incorporation of betterment and resilience into existing DRFA arrangements (Recommendation 22.6), and a review of these arrangements is under way within the NEMA.

One way the Australian Government is integrating the 'building back better' principle into national recovery arrangements is through the DRFA Category D betterment funding.<sup>37</sup> Recent betterment funding includes:

- \$200 million, through the jointly-funded Infrastructure Betterment Fund, to support local governments in New South Wales restore and rebuild essential infrastructure – including roads, bridges, schools and hospitals – to a more resilient standard to ensure New South Wales is better able to withstand future natural hazards.
- \$170 million (\$150 million under DRFA Category D and \$20 million under the DRFA Efficiencies Framework's Betterment Program) for Queensland to rebuild essential public infrastructure damaged in the 2021-22 disaster season to a more resilient standard.<sup>38</sup>

Since the first betterment fund was established in 2013, more than 480 projects across Queensland – valued at more than \$240 million – have been approved, helping to create strong, more resilient communities. These projects demonstrate that upfront investment in rebuilding assets to be more resilient saves money for all levels of government in future events. A key test for betterment projects is whether they leave infrastructure and communities less vulnerable to the impacts of disasters. As at July 2021, 334 projects have subsequently been impacted by disasters. In total, there were 683 impacts to betterment sites from 33 events, with 85 per cent suffering no damage, or only minor or superficial damage. Of those betterment projects that were re-impacted, an investment of \$110 million generated approximately \$250 million in savings or avoided costs. More information on Queensland betterment programs can be found [here](#), and in **Annex Q**.

Another recent noteworthy DRFA resilience building initiative is the Severe Tropical Cyclone Seroja Recovery and Resilience Grant Program. Through this program, insured homeowners who suffered damage following Severe Tropical Cyclone Seroja in Western Australia were able to access up to \$20,000 in Recovery and Resilience Grants to help repair their homes or 'build back better.'

Following the recent 2022 rainfall and flooding events in Queensland, the newly announced \$741 million (DRFA Category D) [Resilient Homes Fund](#) program seeks to help make Queensland homes more flood resilient. Through the Resilient Homes Fund, grants will be available to assist Queensland homeowners repair or retrofit their homes to incorporate flood resilient design and to raise homes to reduce the impacts of future flood events. This is the largest home resilience program of its kind to be delivered in Australia.

37 'Betterment' involves the restoration or replacement of a damaged essential public asset to a significantly more disaster-resilient standard than its pre-disaster standard.

38 This is the largest amount made available within Queensland in a single disaster season, and is supporting impacted local governments ensure infrastructure and communities are more resilient to future disasters, while reducing future costs associated with disaster events.

## 5.2. Financing disaster risk reduction initiatives

The National Resilience Taskforce was tasked by the Australian Government to establish financing mechanisms to unlock private sector capital to invest in disaster risk reduction initiatives. This work continues, with active involvement of the Australian Government, through innovative resilience investment initiatives which seek to generate increased investments in disaster risk reduction and improved capabilities. More information on the transformative investment initiatives can be found in section IV under investment.

### 5.2.1. Resilience investment

In recognition of the need to channel investment into solutions which increase and reduce disaster risk, the [Resilience Investment Vehicle \(RIV\)](#) pilot first commenced in 2018. The pilot aims to explore how public and private capital could be directed to finance new and/or adapt existing infrastructure which builds resilience, reduces disaster risk and can derive a financial return for investors. Learnings are applied to new resilience investment projects, which are tested for scalability and replicability. The RIV pilot is a cross-sector effort between IAG, National Australia Bank (NAB), CSIRO, the NEMA, Queensland Reconstruction Authority and Resilience New South Wales.

Taking place between May and July 2022, and in partnership with the BBCA, the Bushfire Resilience Pilot retrofitted 40 homes in the Shoalhaven Local Government Area (LGA) to be more resilient to bushfires. Through this pilot, select,

eligible NAB home loan customers are able to access finance against their home loan to fund bushfire risk reduction interventions. The BBCA provides a customised assessment of the house and requested interventions, while builders conduct the retrofitting work. BBCA then certifies the completed work and provides a revised Bushfire Resilience Star Rating.<sup>39</sup>

This pilot will test the cross-sector governance arrangements, and develop the knowledge and capability around incentives and resilience dividends that drive uptake which have the potential to establish the foundations to scale-up private investment in other regions and for other hazards.

The [Resilience Valuation Initiative \(RVI\)](#) is a coalition of stakeholders from public, private and community organisations which aims to advance an accepted process with enabling methodologies for valuing the benefits and costs of a resilience-building asset, feature or activity. Improving the reliability and consistency of methodologies to value benefits of resilience, as well as avoided losses, will help to unlock investment to manage climate and disaster risks. Better understanding and quantifying the value of both avoided losses and the benefits of resilience investments will help to identify and prioritise the best-value opportunities to adapt to the impacts of disasters. The RVI is sharing learnings from the practical application of existing resilience tools and methodologies in different contexts to inform the development of agreed methodologies to value resilience.

## 5.3. Sustainable development

Retrofitting infrastructure to a more resilient standard will incur higher costs in the short-term. However, over the long-term, it can generate savings by reducing the likelihood of assets being re damaged in a subsequent disaster, as highlighted through the betterment projects in section II. At a national level, entities such as [Australian Sustainable Finance Institute \(ASFI\)](#) and the [Infrastructure and Commercial Advisory Office \(ICAO\)](#) further support such decision-making. More information on ASFI and ICAO can be found in section IV. At a state-level, the [Queensland Disaster Resilience and Mitigation Investment Framework \(QDRMIF\)](#) provides guidance on effective investment decision-making and prioritisation to support disaster resilience and mitigation across Queensland, looking at both infrastructure and community resilience measures. The QDRMIF seeks to provide appropriate pathways and guidance to stakeholders and the community to ensure effective and efficient investment.

### 5.3.1. Infrastructure Sustainability Council of Australia

The [Infrastructure Sustainability Council of Australia](#) is a member-based, purpose-led peak body working in Australia and New Zealand to enable outcomes in infrastructure. Their [Infrastructure Sustainability Rating Scheme](#) is the only comprehensive rating system for evaluating economic, social and environmental performance of infrastructure across the planning, design, construction and operational phases of infrastructure assets. The scheme can assess the sustainability

<sup>39</sup> The Bushfire Resilience Star Rating translates scientific research into a clearly communicated action plan for all homes. It is focused on empowering people to make informed decisions about their bushfire risk, and putting practical, evidence-based tools for improving bushfire safety in their hands. The national launch of the Bushfire Resilience Start Rating app is planned for 2023, and will be available to all Australians for free.

---

performance of infrastructure at the individual assets level, for portfolios or networks, or even at a regional scale.

### 5.3.2. Infrastructure Australia

Infrastructure Australia is Australia's independent infrastructure adviser, and has a statutory role to share knowledge, promote good practice and facilitate collaboration and leadership. Together with Infrastructure New South Wales, Infrastructure Australia developed A Pathway to Infrastructure Resilience, which recommends a whole-of-system, all-hazards approach, and recognises the need to shift focus from strengthening infrastructure assets, to considering the resilience of the broader precinct, city and region in which the infrastructure is placed and operates. It presents 10, long-term directions for transformational and systemic change in infrastructure planning to achieve infrastructure resilience, which includes improving the strategic alignment of resilience governance and improving infrastructure investment decision-making.

Several of these directions were turned into actionable and measurable recommendations in the 2021 Australian Infrastructure Plan, which is a practical and actionable roadmap for infrastructure reform for a stronger Australia, including a recommendation to 'Build community resilience to all hazards by considering systemic risks, interdependencies and vulnerabilities in infrastructure planning and decision-making'. More information on Infrastructure Australia can be found in **Annex O**.

## 6. AUSTRALIA'S INTERNATIONAL DISASTER RISK REDUCTION COOPERATION

Australia is a steadfast partner in building climate and disaster resilience in the Indo-Pacific – the most disaster-prone region in the world. COVID-19 has exacerbated the vulnerability of these countries and further tested resilience. More than four in five people affected by natural hazards live in the Indo-Pacific. Between 2000 and 2019, economic damage to developing countries in Asia ranged from 1 per cent to 6 per cent of national GDP. In the Pacific, economic damage from disasters cost 7 per cent of national GDP, even prior to the COVID-19 pandemic.<sup>40</sup> The region also has significant risk management experience, and there is a range of opportunities to further reduce risk, prevent suffering, reduce inequalities resulting from disasters, and protect development gains.

The need for greater disaster and climate resilience in the Indo-Pacific has been a strong focus of Australia's international policy engagement. This includes leveraging Australia's strong and longstanding commitment to gender equality and disability inclusion in our international policy engagement and development cooperation program. Australia's engagement is underpinned by a commitment to localisation, recognising, respecting and strengthening leadership and decision making by local and national actors.

Australia's international support for disaster risk reduction in 2020-21 was AUD301.6 million, or seven per cent of Australian Overseas Development Assistance (ODA) funding. This represented an increase of 2 per cent over the previous two years due in part to support for COVID-19 preparedness, and substantial 'build back better' components in cyclone recovery packages. Australia's disaster risk reduction funding has consistently exceeded the target recommended at the Global Platform for Disaster Risk Reduction in 2009 of one per cent of ODA.

The majority of Australian disaster risk reduction funding is integrated across all sectors of our development assistance program, which takes an **all-hazards approach** to screen for and manage climate and disaster risk. Australia also has targeted disaster risk reduction partnerships with the UNDRR and the World Bank's Global Facility for Disaster Reduction and Recovery, and dedicated disaster risk management programs working in partnership with Papua New Guinea, Indonesia, the Philippines and the Pacific region.

### 6.1. Disaster risk reduction cooperation and partnerships

Through Geoscience Australia, Australia has contributed to the increased use of scientific research and technology for understanding disaster risk in the region. Geoscience Australia participates in relevant international scientific and technical fora, resulting in substantial contributions to several of the UNDRR Words into Action guidelines. Over the past decade, Geoscience Australia has worked particularly closely with Indonesia, the Philippines and Papua New

---

40 Asian Development Bank, *Disaster Resilience in Asia - A Special Supplement of Asia's Journey to Prosperity: Policy, Market, and Technology Over 50 Years*, 2021

Guinea to build joint understanding of hazard and risk science, and to develop tools to model the impact of floods, earthquakes, volcanoes and tsunami. These impact and risk assessments have supported local governments to improve their land-use and contingency planning, and to target development investments more effectively. Australia also supports global disaster risk reduction partnerships as well as diplomatic networks and regional and bilateral disaster risk reduction initiatives.

### 6.1.1. Global partnerships

Australia has a close and productive relationship with the UNDRR (AUD10.8 million, 2018-2022). Alongside UNDRR, Australia will host and facilitate the Asia-Pacific Ministerial Conference on Disaster Risk Reduction in September 2022, the key meeting to advance efforts and action to reduce disaster risks in our region. For the first time, this regional event will formally include high-level participation of Pacific countries. Australia is also actively involved in the two global disaster risk reduction support groups, in Geneva and New York.

Reflecting our strong emphasis on the Pacific, Australia is supporting UNDRR to conduct effective consultations, reviews and reporting in the Pacific to inform the midterm review of the Sendai Framework. Since 2017, UNDRR, with Australian support, has assisted national governments to understand and predict likely disasters, implement measures to reduce damage and loss from disasters and improve their capacity to respond to, and build back better following, disasters. Australia's contribution to UNDRR supports the Women's International Network on Disaster Risk Reduction (WIN DRR). WIN DRR

is a professional network supporting women working in disaster risk reduction in the Indo-Pacific, to enhance their role in decision-making and leadership.

Australia also partners with the Global Facility for Disaster Reduction and Recovery (GFDRR, AUD16.3 million, 2017-2024), ensuring World Bank investments in our region have access to disaster risk reduction expertise. From 2015, our GFDRR investment has had a strong focus on Safer Schools. More recently our partnership has shifted to enhance disaster risk financing, the preparedness of financial systems to take early action and to respond effectively to hazards. For example, following the Hunga Tonga-Hunga Ha'apai volcanic eruption in January 2022, GFDRR is providing technical assistance to the Government of Tonga towards a more proactive and comprehensive disaster risk management approach. GFDRR is helping Tonga:

- identify and quantify disaster-related financial risks
- identify a cost-effective combination of financial instruments to support disaster risk reduction and preparedness, and
- increase government capacity in risk-informed public asset management.

The Asia-Pacific Research Network for Resilience Affordable Housing (APRAH) brings together leading thinkers from the prefabrication industry, building product manufacturers and government agencies, matching them with leading research expertise from the University of Melbourne and its partner research institutions throughout the Indo-Pacific region. APRAH facilitates the rapid development of new prefabricated building materials and systems,

which are low cost, lighter, reusable, durable, faster to manufacture and assemble, have greater energy efficiency and resilience under extreme disasters.

### 6.1.2. Diplomatic networks

Australia's Quad partnership with United States, Japan and India dates back to our collaboration in response to the December 2004 Indian Ocean tsunami. The Quad seeks to build a stronger and more resilient Indo-Pacific region through better economic, cyber, energy security and environmental and health security. Quad partners are supporting increased resilience in health systems and strengthening PRR to future crises. The Quad recently announced a new Indo-Pacific maritime domain awareness initiative, under which Quad partners will look to work with regional partners to respond to humanitarian disasters and to combat illegal fishing. In addition, a 'Quad Humanitarian Assistance and Disaster Relief Partnership in the Indo-Pacific' will help meet future humanitarian challenges more effectively. Partners have also committed to sharing satellite data and to respond to infrastructure needs in the region.

The recently announced Partners in the Blue Pacific is an inclusive, informal coordination initiative between Australia, Japan, New Zealand, the United Kingdom and the United States. We will select our lines of effort and flagship projects in response to Pacific priorities. Working together will have a greater impact to address major disaster risk reduction related challenges such as climate change, COVID-19 recovery, connectivity and transportation, maritime security, health, prosperity and education.

### 6.1.3. Regional and bilateral disaster risk reduction partnerships

Australia invests in national science and technology to ensure hazard mapping, modelling, climate projections, forecasting and early warning systems to inform local level disaster planning, preparation, response and recovery. Australia has been providing meteorological, geological, oceanographic and sea level monitoring support to the Pacific since 1991. Australia has supported two phases of the [Climate and Oceans Support Program in the Pacific Phase 2](#) (COSPPac2, AUD22.6 million, 2018-2022) drawing in expertise from Australian and regional science agencies and universities. This climate information services program provides climate and natural hazard data and information to underpin policy and program development across the Pacific and enhance capacity to manage and mitigate the impacts of climate variability and tidal events. It combines science forecasts with traditional knowledge to produce valuable products for improved decision-making, risk management and disaster prevention by communities, business and government.

The [Australia-Pacific Climate Partnership](#) (APCP, AUD33.2 million, 2018-24) supports Pacific governments to deliver climate and disaster-resilient development and low-carbon growth by brokering climate and disaster science and information services. A 2021 evaluation of APCP found there has been sustained improvement in the integration of climate change and disaster risk resilience in Australian aid investments in the Pacific over recent years. As a contribution to the Sendai Framework midterm

review process in the Pacific, APCP is working with UNDRR on a set of thematic reviews in specific technical areas, e.g. climate and disaster-resilient infrastructure and Pacific disaster data availability.

Australia and New Zealand jointly support the [Pacific Islands Emergency Management Alliance](#) (PIEMA, AUD2.4 million, 2017-2022), a network of key disaster management agencies in the Pacific, including National Disaster Management Offices, police, and fire and emergency services from 14 Pacific island countries. This support aims to strengthen the emergency preparedness and response capabilities of key national response agencies, improve interagency coordination nationally and regionally, and strategically develop and professionalise the disaster management sector in the region. The project actively ensures the representation of women, persons living with disability and youth in regional and national planning and implementation.

Australia is working with UN Women, Fiji, Kiribati and Vanuatu, to implement the [Women's Resilience to Disasters Program in the Pacific](#) (WRD, AUD13.5 million, 2021-2024). The objective is to ensure systems, plans and policies are gender-responsive, and to empower women to lead Pacific solutions to prevent, prepare for and recover from disasters. The program includes a global component to create the WRD Knowledge Hub, a web-based platform of resources and tools on gender-responsive disaster risk reduction, including Pacific resources, a community of practice exchanging blogs, case studies, webinars and training. UN Women is now expanding the WRD program to the Caribbean and Lake Chad Basin.

[Disaster READY](#) (AUD50 million, 2017-22) is a disaster preparedness program implemented by the [Australian Humanitarian Partnership](#) and their local networks in Fiji, Vanuatu, Solomon Islands, Papua New Guinea and Timor-Leste. Disaster READY aims to ensure women, youth, children, people living with disabilities and other at-risk groups are better prepared for and more resilient to disasters and climate change. In 2020 with the approach of Tropical Cyclone Harold, in Fiji, women reported that they could recall information provided in training and could better organise themselves, their families and other community members through the disaster and during immediate recovery. This included attention to vulnerable groups and ensuring safety and organisation in evacuation centres.

The [Australian Red Cross](#) (AUD50 million, 2018-2024) is one of Australia's most trusted and effective partners in disaster preparedness and response. Our partnership supports the critical role communities play in disaster risk management and strengthens the relationship between national societies and communities. National societies across the Indo-Pacific work with governments and local communities to improve knowledge, skills and practices and establish locally relevant systems that enable communities to reduce their vulnerability to disaster risks. This assists communities to better prepare for, anticipate, respond to and recover from disasters and crises. National societies are also strengthening their relationships with national meteorological services and relevant bodies, to increase their access to climate and ocean scientific data.

The Australia-Indonesia Partnership on Disaster Risk Management (SIAP SIAGA, AUD42.8 million, 2018-2024) aims to enhance Indonesia's ability to prevent, prepare for, respond to, and recover from rapid and slow onset disasters and to strengthen cooperation between Australia and Indonesia on humanitarian action in the Indo-Pacific region. SIAP SIAGA works with partners at national and subnational levels to identify bottlenecks in disaster management systems at various government and community levels and design solutions to improve the effectiveness of disaster management services.

Australia's disaster risk management partnership with the Philippines, Strengthening Institutions and Empowering Localities against Disasters and Climate Change (SHIELD, AUD18 million, 2021-2026), is working with local governments (as first responders to disasters and emergencies), to increase their resilience to frequent natural hazards and climate change risks. SHIELD is collaborating with local governments, private sector, civil society, and academic institutions to unlock financing and implement risk-informed and inclusive resilience actions at the local level. The initiative will also support the national government and work with scientific agencies in the Philippines to produce tailored and accessible information to inform locally-driven resilience actions.

## 6.2. Global governance and reporting

Australia has demonstrated its commitment to integrating disaster risk and resilience building and climate change adaptation through our constructive engagement in global governance mechanisms and frameworks, and through our development cooperation.

Consistent with Australia's interests in advancing global partnerships and cooperation on major issues which impact economic growth, global security and human development, we will advance commitments under the Bali Agenda for Resilience (agreed at the May 2022 Global Platform for Disaster Risk Reduction), the Agreed Conclusions of the 66th session of the Commission on the Status of Women (with its focus on climate, disaster risk reduction and environment), outcomes of the Asia-Pacific Ministerial Conference on Disaster Risk Reduction (September 2022, Brisbane) and agreements at other related fora (e.g. COP 27). We look forward to engaging on the midterm review of the Sendai Framework, concluding in May 2023, including consideration of the benefits of a practical Gender Action Plan.

Australia is also participating in the UN Panel to finalise a Multidimensional Vulnerability Index with Small Island Developing States and make recommendations about its potential use. The Index is an opportunity to take an evidence-based approach to vulnerability and resilience. Australia is committed to ensuring it reflects Pacific views about vulnerability and resilience.

The Pacific is the first region to take an integrated approach to climate action and disaster risk reduction in the Framework for Resilient Development in the Pacific – An Integrated Approach to Address Climate Change and Disaster Risk Management: 2017-2030. The Framework supports countries to implement global commitments such as the Small Islands Developing States Accelerated Modalities of Action (S.A.M.O.A) Pathway 2014, the Sendai Framework, the Sustainable Development Agenda 2015– 2030, the Paris Agreement on Climate Change and commitments

agreed at the World Humanitarian Summit 2016. This integrated approach may be beneficial in other regions.

Australia has gradually increased disaster risk reduction investments from 1.8 per cent of ODA in 2008-09 to 5 per cent in 2019-20, and to 7 per cent in 2020-21. Australia is demonstrating our commitment to supporting enhanced climate action in our region through increased climate finance and new partnerships in the Pacific and Southeast Asia. In 2021 at COP26, Australia announced AUD2 billion in climate finance for 2020-2025, a doubling of Australia's 2015-2020 pledge.

Accurately tracking the flow of indirect investments (i.e. where disaster risk reduction is a secondary objective or cross-cutting component of an investment) has been challenging in the absence of clear global guidance from either the OECD or UNDRR. This guidance is an area of consideration for the midterm review. It will be important that reporting requirements for climate change and disaster risk reduction against the Paris Agreement and Sendai Framework, respectively, do not inadvertently result in funding focusing too narrowly on either one.

## 6.3. Australia's commitment to the Paris Agreement

On 16 June 2022, the Australian Government lodged an enhanced Nationally Determined Contribution under the Paris Agreement, formalising Australia's strengthened 2030 target, to reduce emissions to 43 per cent below 2005 levels, and reaffirming Australia's net zero emissions by 2050 target. The new 2030 target places Australia on-track to reach net zero in 2050. Australia's action to reduce disaster risks through climate change initiatives has also been reflected through supporting capacity building programs and related international

engagement with countries in the Asia-Pacific region. In 2022, the Australian Government is committed to working closely with Pacific partners to achieve an ambitious international response to the climate crisis, including talking with them about jointly hosting a future United Nations Framework Convention on Climate Change Conference of the Parties meeting.

## **7. MEASURING PROGRESS ON IMPLEMENTING THE SENDAI FRAMEWORK AND NDRRF**

The preceding sections have provided a narrative of Australia's progress in implementing the Sendai Framework since 2015, and highlighted some of the key activities and milestones in this journey. This section provides an overview of the challenges in measuring national disaster risk reduction efforts.

### **7.1. Challenges with the disaster impact data ecosystem**

Information on actual disaster impact and consequence, alongside hazard, exposure and vulnerability, are critical to monitoring and evaluating progress towards reducing disaster risk. The scope of disaster impact and consequence information is significant, spanning social, natural, built and economic domains. In Australia, data are collected primarily through a wide range of local and state government agencies, with support from others, as part of response and recovery efforts. Data are collected and stored using classifications and definitions which have been developed at state and local government levels,

reflecting jurisdictional institutional arrangements, regulation, practices and standards, alongside some national standards.

Reporting against the Sendai Framework is fragmented and regionally disparate. Apart from high level reporting against national funding programs and grants, there is no current requirement for states and territories to report against their respective implementation of the NDRRF.

Wrangling this fragmented and complex data ecosystem to report on and produce a timely, accurate and consistent national picture of disasters for operational decision-making during and post-event is a significant challenge for Australia. These challenges are well recognised, with the Royal Commission providing a suite of recommendations (Recommendations 4.1 and 4.7) that Australian, state and territory governments should work together to develop and share consistent disaster impact information.

### **7.2. Data for NDRRF and Sendai monitoring and reporting**

Much of the data collected through response and recovery phases are critical for disaster risk reduction decision-making, and is used to report on progress against NDRRF and the Sendai Framework.

NEMA is dependent on state and territories for data on the disaster losses within their jurisdictions to report against the Sendai Framework Monitor. The Sendai Time-Limited Working Group, under ANZEMC, is the primary engagement mechanism. At this time, there is no nationally consistent mechanism through which jurisdictions collect and/or report on

disaster losses. These operational challenges impact Australia's ability to report.

In October 2018, Deloitte Access Economics was engaged to undertake a data mapping exercise for the 38 indicators across the seven targets of the Sendai Framework to assess the current suitability of Australia data for current and future reporting.<sup>41</sup> The report found that Australia:

- was able to report on 16 indicators (as shown in Figure 3)
- had 9 indicators with the majority of components required for the indicator in place, and
- had 13 indicators that were only partially or somewhat complete and was unlikely to be able to confidently report on indicators in this category.

The most significant data gaps exist in relation to Target C – economic loss caused by disasters across impact domains and Target D – critical infrastructure damage. These gaps align with three data priorities identified by NEMA:

- 1) Local economic damage and disaster costing
- 2) Damaged or destroyed infrastructure and public utilities, and
- 3) Damage to specific industries and commodities.

41 Deloitte Access Economics, Sendai Data Collection and Analysis, 2018.

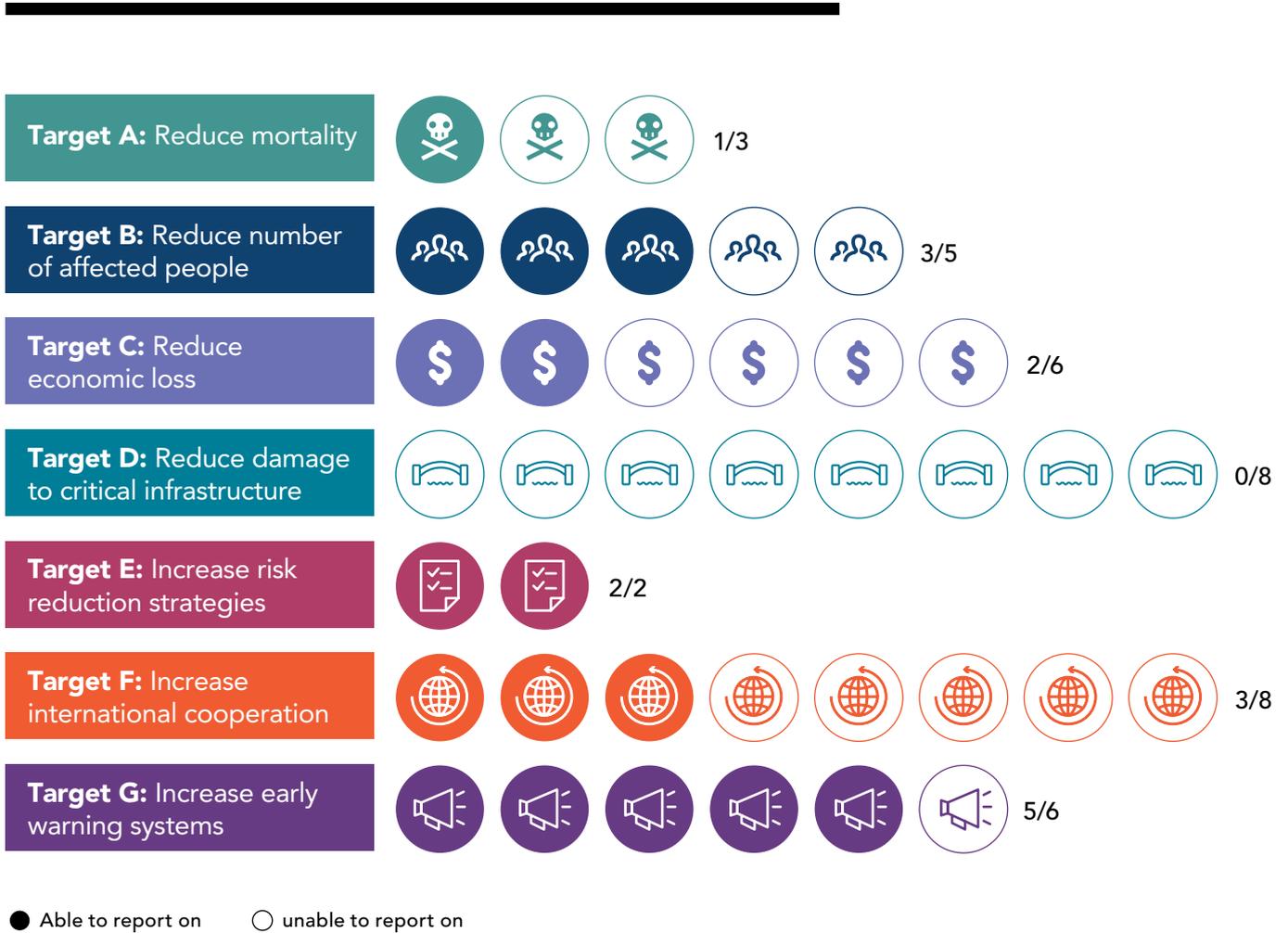


Figure 3: Identified gaps in Sendai reporting | Source: Deloitte Access Economics, 2018.

Differences in jurisdictional definitions, damage assessment methods, data capture, management and aggregation processes limit NEMA’s ability to produce national-level reporting indicators for input into the Sendai Framework Monitor. Further, as a nation, we are currently unable to report on any further disaggregation past hazard – such as by age or gender – as this information is often not collected in a manner in which jurisdictions can report on. Without a nationally consistent mechanism for collecting replicable data, this is unlikely to change in the short to medium-term.

Given these challenges, it is not currently possible to accurately assess Australia’s progress in achieving the Sendai targets, particularly given that changes in relation to hazard extent, intensity, frequency and duration, level of exposure and vulnerability have yet to be integrated into a national monitoring framework.

---

### 7.3. Improving Australia's reporting

Nationally, there have been a number of attempts to address this challenge. Commencing in 2012, a National Impact Assessment Framework and Model (NIAF and NIAM, respectively), was developed to enable a consistent, national approach to assessing the impact and severity of disaster events to support more efficient recovery funding program delivery. The system, which has been recently decommissioned, included a data dictionary which provides standardised definitions for impact.

NEMA also convenes the State-Federal Recovery Data Working Group, which aims to improve collaboration and two-way data sharing between the Australian, state and territory governments. This group was initially established by the National Bushfire Recovery Agency in response to the 2019-20 Black Summer bushfires, but has since expanded to cover all hazards and jurisdictions.

In mid-2021, Australia undertook the *National Disaster Impact and Consequence Information Survey* to understand the challenges and barriers for states and territories in providing disaster impact data for the indicators of the Sendai Framework. Discussion focused on aligning the collection of longitudinal disaster impact and consequence data for domestic investment and policy monitoring and evaluation, as well as international reporting. Jurisdictions interviewed as part of this review cited that Sendai reporting is often considered an administrative burden, rather than a useful data collection exercise and a definition of 'nationally significant

disaster' would assist jurisdictions to more accurately report on the implementation of the Sendai Framework at the jurisdictional level.

Addressing these challenges will require efforts to improve collaboration between all actors in the system, with further support provided by improved governance arrangements and a stronger enabling environment. It will require better alignment of operational data exchange<sup>42</sup> with reporting to turn data sharing from a cost to a benefit. As discussed previously throughout this report, the Australian Government investment in establishment of the ACS is intended to address these national data challenges.

NEMA is also establishing a dialogue with other federated UN Member States, such as the United States and Canada, to learn from challenges and opportunities of reporting on respective national implementations of the Sendai Framework.

### 7.4. Monitoring, evaluating and learning from NDRRF implementation

Currently, it is not possible to report on progress in reducing risk through implementation of the NDRRF across Australia. In 2021, a Measurement Evaluation and Learning (MEL) Framework for the NDRRF was developed in consultation with state and territory governments to monitor and evaluate and learn from efforts to reduce risk under the NDRRF.<sup>43</sup> The MEL Framework builds on and refines the logic of the NDRRF, based around a theory of change comprised of three levels:

1. The shared impact we are trying to achieve of a more resilient Australian society, environment and economy.

2. The key system-change outcomes necessary to achieve this impact, e.g. decision makers factoring all hazard disaster risk reduction into their decision-making.
3. The key strategies and enablers, such as building capacity, to understand risk and improve risk governance approaches.

The MEL Framework also defines requirements and methods for monitoring, evaluating and learning across these three levels.

Commencing in the second half of 2022, NEMA and the ACS are working collaboratively to operationalise the MEL Framework through a Systemic Monitoring Evaluation and Learning System (SysMEL) for the NDRRF. The SysMEL will baseline and monitor the state of the national disaster risk reduction system and implement a system to monitor, evaluate and learn from the implementation of the NDRRF. This project will improve the Australian Government's understanding of what types and combinations of interventions and investments work, why, and how they can be scaled up or replicated. This information will be used to inform Australian Government interventions and investments, and will inform the upcoming review of the NDRRF.

Efforts to monitor disaster impacts and consequences, an element of shared impact monitoring for the SysMEL, will be aligned with ongoing efforts for improved Sendai reporting. An approach which focuses on monitoring, evaluating and learning from system-change activities is a critical missing element required to drive effective system-wide disaster risk reduction.

---

42 Data exchange standards are often the most cost effective and practical approach to ensure that data provided by numerous agencies is interoperable and can be used to produce a timely and accurate national picture. However, the costs of compliance with standards are borne by the providers and ensuring there is incentive to bear this cost is critical.

43 Clear Horizon, National Disaster Risk Reduction Framework – Measurement, Evaluation and Learning (MEL) Framework, 2020.

## Disaster impact and consequence

Disaster impact and consequence data are a critical element of disaster and disaster risk management. These impact and consequence data are collected and used to inform policy, program and operational decision-making before, during and after events, as well as for broader disaster risk reduction interventions. For example, to understand the benefits of building resilient (green, blue or grey) infrastructure, there is a need for consistent measures of disaster impacts and consequences to model potential avoided loss and resilience benefits. The same data are also used as part of monitoring and evaluation efforts to assess the effectiveness of disaster risk reduction interventions to inform policy, program and investment decisions, and to report on progress against the NDRRF and the Sendai Framework priorities.

Disaster impact is relatively straightforward to observe and measure (e.g. building/ infrastructure damage, morbidity, mortality, and vegetation loss in relation to a specific event), although aggregating the data nationally is still a challenge. The consequences that flow from these impacts of disasters is more challenging to assess. Consequence is often hidden, hard to measure and sometimes intangible, with negative effects on individuals, community, business and the natural environment experienced over long timeframes and areas beyond those directly impacted by disasters. Addressing gaps in our understanding of disaster consequence is significantly more challenging than addressing our understanding of disaster impact.

It is anticipated that in many cases, impact data challenges can be addressed through data harmonisation or standardisation and improved data sharing arrangements enabled through agreements and governance. For disaster consequence data, the situation is primarily a knowledge rather than a data gap (i.e. a limited understanding of how complex interconnected socioeconomic, built and ecological systems work). An understanding of these systems is not possible through the use of quantitative data alone. Instead, understanding disaster consequence in any given location will require deeper qualitative engagement and research. Through an understanding of these complex systems, it may be possible to identify key measures of, and indicators for, disaster consequence for aspects of these complex systems which could be used to quantify consequence, and inform recovery, resilience-building and broader disaster risk reduction efforts.

At the CORS 2019 Recovery Planning for Catastrophic Crisis workshop, participants recognised the need to better differentiate between disaster impacts, consequences and recovery needs, noting that recovery needs (and consequences) are very different from an assessment and mitigation of the more direct impacts. This led to the commissioning of a project to develop national guidance on recovery needs assessments and to refine the understanding of consequence data. Additionally, the CORS has been developing guidance on decision-making around prioritisation and allocation of finite recovery resources and capabilities within the context of a national catastrophic crisis event. The ability to provide real-time or on-demand information and intelligence products pertaining to disaster impacts from a catastrophic disaster, and evidence-based identification of first, second and third order consequences at a national scale to decision makers is considered a critical input into this process. Jurisdictional representatives cited CORS as a useful mechanism for promoting cross-jurisdictional constructive discussions and cooperation to achieve meaningful outcomes.



## III. CONTEXTUAL SHIFTS

The National Resilience Taskforce<sup>44</sup> recognised the changing context of disasters in Australia, and noted that the significance of drivers for action require genuine national coordination, information and guidance to ensure all relevant decision makers have the decision-support tools necessary to meet this challenge.

The Taskforce identified key drivers for action, including:

- natural hazards are more frequent and intense
- essential services are interconnected and interdependent
- people and assets are more exposed and vulnerable
- disaster impacts are long-term and complex
- the costs of disasters are growing, and
- the momentum to address the financial impacts of a changing climate is building.

### 1. THE AUSTRALIAN CONTEXT – 2015 TO 2022

Australia's climate is changing, which is leading to increasing frequency and intensity of extreme weather.<sup>45</sup> Although floods and bushfires are part of Australia's natural ecology, alongside other natural hazards, they cause significant damage to property infrastructure, lives and livelihood. As the frequency, intensity, and duration of events like bushfires, droughts and floods increases, so too does the likelihood of multiple events coinciding. This leads to the impacts of those events compounding on each other – as seen in Australia over the past seven years.

These compounding, cascading events are testing Australia's capacity to cope. The Royal Commission report found that "Australia needs to be better prepared for these natural disasters. They may not happen every year, but when they happen, they can be catastrophic. The summer of 2019-2020 – in which some communities experienced drought, heatwaves, bushfires, hailstorms and flooding – provided only a glimpse of the types of events that Australia may face in the future."<sup>46</sup>

In 2017, Australia entered a dry period with the three years from January 2017 to December 2019 being the driest on record for any 36-month period.<sup>47</sup> This culminated with 2019 being the driest year since records began in 1900, and Australia's warmest year with an annual mean temperature 1.52°C above average.<sup>48</sup>

The combination of this hot, dry weather, and vegetation conditions (the abundance and dryness of vegetation as fuel load in the landscape) contributed to the catastrophic 2019-20 Black Summer bushfires. These were the world's worst bushfires to-date, burning more than 24 million hectares.<sup>49</sup> From January to July 2022, Australia experienced some of the worst flooding in its recorded history, which impacted much of the east

coast (primarily Queensland and New South Wales). The floods in late February and early March 2022 caused \$4.8 billion in insured damages, and are now the third most-costly extreme weather event in Australia's history.<sup>50</sup> The floods not only affected the local areas, but Australia's centre and west were subject to supply chain crises due to temporary closure of the Trans-Australian Railway Line and the Stuart Highway from floods.

Like all Member States, Australia has been severely impacted by COVID-19, straining health and human services, significantly disrupting economic activity and negatively impacting every facet of life. This has revealed significant vulnerabilities in our interconnected social and economic systems. The impacts of COVID-19 have exacerbated and further compounded the impact of extreme weather events, and, in turn, relief and recovery efforts. Supply chain shortages, rising costs of materials, housing shortages for those internally displaced by disasters and for workers involved in recovery and the erosion of the social, economic, and environmental capital of communities have significantly impacted recovery efforts and resulted in long term consequences for community wellbeing and resilience.

44 Crosweller, Mark AFSM, *National Resilience Taskforce, Australian Journal of Emergency Management*, 2019.

45 *State of the Climate Report*, 2020.

46 Royal Commission, 2020, p 22.

47 Bureau of Meteorology, *Historical Droughts*, 2022.

48 Bureau of Meteorology, *Annual Climate Statement*, 2019.

49 Royal Commission, 2020.

50 *Insurance Council of Australia, 2022 flood now third costliest natural disaster ever*, 2022

---

Previously within Australia, October to April was referred to as high-risk weather season. However, the increased frequency and duration of extreme weather in the past few years has demonstrated that there is no longer an 'off season' to disasters and puts pressure on resource sharing between northern and southern hemispheres with now overlapping fire seasons.<sup>51</sup>

To-date, disaster management arrangements within Australia have primarily focused on preparing for, responding to, and recovering from specific hazards and events. There is an increasing recognition that traditional disaster management approaches are insufficient as communities are, in some cases, locked in a continuous cycle of hazard response and recovery.

The increasingly coincident, recurrent and multiple hazard types are compounding the impacts and consequences experienced by some communities. Compounding and cascading disaster impact are increasingly the lived experience, as witnessed by communities such as the Bega Valley, or the Hawkesbury Nepean. As identified by representatives from the New South Wales Government, within the last year alone, LGAs within New South Wales such as the Hawkesbury-Nepean and Northern Rivers, have been impacted by 'one-in-100-year' floods four times. This is driving increased public awareness of risks from natural hazards and clear signals to government to address this need.

There is a realisation by those working at all levels across all sectors that new approaches to addressing disaster risk are required, as envisaged in *Profiling Australia's Vulnerability*. Stakeholder engagement has also reiterated this pervasive message of the need to move to a more holistic, systemic way of addressing disaster risk, through a more inclusive, all-hazards approach.

The Royal Commission also specifically looked at addressing the systemic nature of risk creation, which requires systemic change, by reducing underlying vulnerabilities such as through reforms in social policy, land-use planning, construction, building codes, environmental management, finance and the insurance industry. National cooperation across all levels of government is essential to increase Australia's resilience to disasters. Such a national approach also calls for a greater sharing of resources across jurisdictions, an agile emergency response and recovery capability, with skills and technology that can be used across the country, and the data, systems and research to help Australia effectively and efficiently manage and mitigate disaster risk. The Royal Commission found that Australia's national arrangements for coordinating disaster risk reduction require an overhaul to ensure they are equipped to cope with increasing, cascading and concurrent disaster events. Further, the Royal Commission also found that such arrangements need to be supported by a robust and accountable national coordination mechanism.

In response to the 2019-20 Black Summer bushfires, CSIRO was tasked, in January 2020, by the former Prime Minister to deliver an independent study recommending practical ways in which Australia could increase its climate and disaster resilience. One of the key themes of the [report](#) was the need for a more harmonised and collaborative national approach. Further, the technical report (section 3) highlighted hindrance caused by the proliferation of frameworks, the fragmentation of disaster risk management responsibilities, the consequent ineffective consideration of climate and disaster risk reduction and resilience in existing decision processes, and the shortfalls in coordination of efforts to manage these.

To address these challenges, a structured, systems-based approach which broadens the focus from hazard event oriented disaster management around PPRR to a more integrated system-wide approach was proposed, together with some key recommendations. These recommendations included:

- Harmonising concepts, framings, language, and processes as the basis for raising awareness and building shared thinking and understanding across sectors and jurisdictions.
- Aligning and integrating climate and disaster resilience and adaptation considerations with other societal, technological and ecological trends and mainstreaming these into economic development plans.

---

51 Royal Commission, 2020, p 219.

- Supporting community-led approaches to imagining and defining desirable futures which provide the motivation and guidance for coordinated and strategic responses.
- Building public service capabilities to undertake and translate systems-based evaluations of climate and disaster risks and possible interventions into coordinated policy responses.
- Strengthening and mainstreaming monitoring, evaluation and learning processes and underpinning knowledge-management platforms and governance to assess the effectiveness of cross-sector and cross-scale responses, and capturing lessons for supporting the transfer or scaling-up of successes together with a series of recommendations to address these challenges.

For effective disaster risk reduction, more needs to be done to address the systemic cause of risk creation and the resultant disasters. Disaster management is still a critical part of the move away from looking at short-term, reactive hazard-specific events, to instead addressing the system as a whole.

While it is acknowledged that disaster management response and recovery is critical, more is required to shift the dial towards prevention and mitigation, and to take a systems approach to disaster risk reduction. While Australia has made national steps in the right direction, as outlined throughout this report, it has been identified throughout the engagement process that concerted

effort is needed **now** to achieve Australia's 2030 Vision and the overall outcome and goal of the Sendai Framework.

A recurrent theme heard through nearly all engagement was that there is a recognised need for the Australian Government to provide both national coordination and an enabling environment for accelerated transformative action. This echoes the findings of the Royal Commission, which recognised the leadership role the Australian Government needs to play.<sup>52</sup> It was further emphasised that trust in the system and true national leadership is crucial. Trust is broadly understood to be an essential building block to enabling the shared accountability needed to reduce systemic disaster risk.

## 2. EMERGING AND FUTURE ISSUES

The growing trend of concurrent and cascading disasters identified above is anticipated to continue, and in many cases, increase. Overwhelmingly, through consultations, climate change driving extreme weather was cited as the most prevalent emerging issue that will impede and limit Australia's ability to achieve the outcome and goal of the Sendai Framework by 2030.

Although the focus of this report is on natural hazards, it is recognised that other hazard types coinciding with extreme weather events are anticipated to increase. In particular, these include biosecurity<sup>53</sup> hazards with animal and human diseases, and cyber security threats, particularly in relation to critical infrastructure<sup>54</sup>

and the services it supports (more information on critical infrastructure can be found in section II). Alongside increasing hazards, decision-making about social, economic, natural, and built systems are driving (or can reduce) exposure and vulnerability. These are deeply interconnected and a decision made in one system will have cascading effects and potentially unintended consequences in others. Decisions made about where and how we live, and what we value, need to be informed by an understanding of systemic risk.<sup>55</sup>

Several emerging issues were identified through the reducing disaster risk in Australia survey (see **Annex D** for more information) and jurisdictional interviews, such as:

- Increasing vulnerability of remote and regional communities due to compounding emergency events and disasters, which are further exacerbated when remote locations are susceptible to annual closure due to weather conditions. This emerging issue was cited as a specific problem by representatives of the Northern Territory and Western Australian Governments, which have significant numbers of remote and isolated communities.
- Population growth and urbanisation in high-risk areas, causing unchecked risk creation through poor housing design and unsustainable development with limited inclusive engagement, resulting in inappropriate disaster risk reduction strategies when implemented at the local level.
- Increasing fiscal challenges in prioritisation of investment in disaster resilience, particularly within small jurisdictions with

<sup>52</sup> Royal Commission, 2020, p 21.

<sup>53</sup> *National Biosecurity Strategy*, 2022.

<sup>54</sup> See <https://www.cisc.gov.au/what-is-the-cyber-and-infrastructure-security-centre/critical-infrastructure-resilience-strategy> for more information.

<sup>55</sup> Croweller, Mark AFSM, *National Resilience Taskforce, Australian Journal of Emergency Management*, 2019.

---

finite resources. These challenges are often exacerbated by competition with other programs addressing societal challenges, such as violence against women, crime, homelessness and public health, which often causes the funding of disaster resilience to be deprioritised.

- An increasing issue with insurance affordability and availability issues, such as increasing insurance premiums and growing un-insurability of regions and disaster-prone areas.
- Projects which address the current risk context, but may not adequately address the future risk ecosystem. Adequate risk assessments which factor in climate change to ensure that the projects and investment today account for the climate we will face in the future is critical.

## 2.1. What Australia has learned on improving disaster risk reduction impact internationally

Overall, more investment is required before crises occur, along with better integration of humanitarian, resilience and development investments. Australia has focused on disaster risk reduction in international engagement and development programming for many years. Experience over the past five years points to the following lessons and key themes to improve approaches to disaster risk reduction internationally:

- 1) **Dedicated focal points/teams for disaster risk reduction programming and policy advice.** Since 2016, Australia has progressed important internal efforts to support integration of climate adaptation and disaster risk reduction, including issuing guidance notes, providing

training and ensuring internal quality processes prompt active consideration of disaster risk reduction in development cooperation programs and aid investments. In addition, the formation of the APCP Support Unit has ensured the availability of regular, technical advice to program managers and partners, particularly important at the stage of program design.

- 2) **Disaster risk financing.** Strengthening risk financing mechanisms and financial preparedness for disasters is an important component of work in the region. It helps improve the resilience of governments and vulnerable communities on the financial and economic impacts of disasters. Promising initiatives include the Pacific Insurance and Climate Adaptation Program, adaptive or shock responsive social protection mechanisms (a core component of COVID-19 response and recovery) and anticipatory action pilots.
- 3) **Gender-responsive and disability-inclusive disaster risk reduction.** Australia has a focus on inclusive disaster risk reduction across partnerships. Women and girls are leaders, frontline responders and agents of change. They are also disproportionately affected by disasters. The capabilities, networks and insights of people with disabilities and other marginalised groups are critical for effective and equitable policies and resilient communities. Recent research shows large gaps in disaggregated quantitative data at a global level. Renewed international commitments to inclusive disaster risk reduction are critical. See **Annex AC** for further information.

- 4) **Resilient infrastructure.** Australia supports quality infrastructure investment which meets regional needs. Australian-built infrastructure is high quality, supports disaster-resilient service delivery, and makes a practical difference to the lives of people in partner countries. Australia will continue to support efforts to increase sustainable and transparent financing options which enable well-informed decisions, deliver high-quality, sustainable infrastructure and provide resilient economic development. There is opportunity to ensure that post-disaster activities result in greater resilience, and 'build back better.'
- 5) **Localisation and Indigenous knowledge.** Supporting localisation ensures efforts are informed by, and protect, local and Indigenous knowledge, support local priorities, represent value for money, eliminate parallel systems and strengthen (not hollow out) local institutions.
- 6) **Nature-based solutions.** Nature-based solutions (NbS) can be cheap, effective and scalable, and help governments address the growing challenges of climate change, biodiversity loss and disaster risks. Investment in natural capital and NbS provide benefits including boosting biodiversity, sequestering carbon and making communities more resilient. Australia has launched a new [Climate Resilient by Nature](#) program which will work with local communities to conserve and rehabilitate ecosystems to address climate change in the Pacific.



# IV. PROSPECTIVE REVIEW

Having unpacked the complexity of Australia’s disaster management sector, as well as the contextual shifts and emerging issues in disaster risk reduction, this final section presents key themes where action is required to reduce disaster risk in line with the Sendai Framework. It also presents several examples of activities, initiatives and innovative best practice which, if scaled up nationally, will contribute to the solution. Through this review, it has been identified that a range of activities across the broader disaster risk reduction ecosystem will be required to realise the 2030 visions of the NDRRF and the Sendai Framework.

This section does not provide a list of recommendations. It is anticipated that a series of actions will be identified as part of the Second National Action Plan for the NDRRF.

## 1. THE NDRRF

### AUSTRALIA’S 2030 VISION

**IN AUSTRALIA, WE ARE ENABLED AND SUPPORTED TO ACTIVELY REDUCE DISASTER RISK AND LIMIT THE IMPACTS OF DISASTERS ON COMMUNITIES AND ECONOMIES. ALL SECTORS OF SOCIETY UNDERSTAND AND RESPOND TO SOCIAL, ENVIRONMENTAL, TECHNOLOGICAL AND DEMOGRAPHIC CHANGES WHICH HAVE THE POTENTIAL TO PREVENT, CREATE OR EXACERBATE DISASTER RISKS.**

#### ALL SECTORS OF SOCIETY:

- **MAKE DISASTER RISK-INFORMED DECISIONS**
- **ARE ACCOUNTABLE FOR REDUCING RISKS WITHIN THEIR CONTROL, AND**
- **INVEST IN REDUCING DISASTER RISK IN ORDER TO LIMIT THE COST OF DISASTERS WHEN THEY OCCUR (NDRRF, P 8).**

In establishing Australia’s 2030 vision, the NDRRF outlines three national disaster risk reduction goals:

- take action to reduce existing disaster risk
- minimise the creation of future disaster risk through decisions taken across all sectors, and
- equip decision makers with the capabilities and information they need to reduce disaster risk and manage residual risk.<sup>56</sup>

In 2023, the NDRRF will be reviewed and updated to ensure it remains current in a rapidly changing risk context across the remaining years to 2030. Monitoring, evaluation and learning arrangements, such as the SysMEL, will help to inform this review and its effectiveness. More information on the SysMEL can be found in section II and below.

### 1.1. National action plans for risk reduction

While the First National Action Plan was a critical step in Australia for national recognition that reducing disaster risk is beyond the sole responsibility of the traditional disaster management sector, its development was not commensurate with the broad engagement and co-design approach adopted for the NDRRF, as discussed in section II.

Having been developed in a very short period of time by a time-limited working group, the First National Action Plan was primarily a list of a range of projects, correlated to the four priorities of the NDRRF.

Feedback from stakeholders indicated that the Second National Action Plan needs to be targeted, strategic, and forward-looking, and identify nationally significant lead actions to achieve strategic, enduring and systemic improvements which deliver on the NDRRF’s five year outcomes and overall progress towards the 2030 Goal of the Sendai Framework. It was further identified the Second National Action Plan will need to have clear priorities, along with a mandate for action and change, while also promoting advice for collaboration across sectors and outlining priorities for investment.

While a lot of work has occurred since March 2015, it is broadly acknowledged that, nationally, we need to accelerate progress towards reducing risk and creating a nation which is resilient to disasters. Acknowledging that the foundations have been established through the development and adoption of the NDRRF, translating this into coordinated action is challenging. The Second National Action Plan will be an important next step in driving change required for effective disaster risk reduction.

56 NDRRF, 2018, p 8.

## 1.2. A staged approach

Considerable change is required to adequately address systemic risk, which needs to be appropriately sequenced. At the Catalysing Change workshop, to build a collective vision for achieving disaster risk reduction in Australia, participants were guided through a multistage process designed to facilitate deep conversations to develop a series of 'end-state' descriptions focused on three specific time horizons – zooming out first to 2050, then back to 2025 and finally considering where we need to be by 2030.

### 1.2.1. Goal for 2025 – Alignment across the system

The goal for the first time horizon (2025) is to achieve better *alignment across the system* – alignment of organisations, work and people – to coordinate across scales and enable the connections which are needed to catalyse change. Critical elements required to achieve this alignment are:

- more open and inclusive dialogue and governance mechanisms
- a broad understanding of the shared responsibility of disaster risk reduction across all of society, and
- active implementation of actions.

A need for greater and meaningful inclusion within decision-making processes was identified as an important foundation. Australia is a melting pot of diversity. Data from the 2021 Census indicates that 27.6 per cent of the Australian population was born overseas and 3.2 per cent identify as First Nations, 25.2 per cent of our population is aged between 10 and 29 years old, and 17.7 per cent of Australians are living with a disability.<sup>57</sup>

We need to ensure that all diverse groups are included in decision-making processes, and recognised and empowered as agents of change as they are best placed to understand their unique needs.

By 2025, we also need a shared national vision which embeds Indigenous knowledge and wisdom. In Australia, we are fortunate to have a rich history dating back more than 60,000 years. As our First Nations communities have been living on and caring for Country since this time, we need to better embed, respect and uphold Indigenous knowledge into current thinking.

Integration of diverse perspectives and First Nations knowledge systems cannot be delivered without open, inclusive dialogue and governance, to identify and make decision about how to create safe, sustainable communities while reducing disaster risk. We also need greater commitment across all of society to long-term thinking which enables risk-informed decision-making, and associated investment and action which contributes to sustainable development.

### 1.2.2. Goal for 2030 – Unity to create the final vision

Broadly summarised as *unity to create the final vision*, the next horizon (2030) describes transformation from alignment to a more unified way of working. This unity is based on stronger connection through aligned effort and cross-government collaboration which provides clear direction. Critical elements to achieve the 2030 unity objectives include:

- collaborating and mainstreaming the shared responsibility of disaster risk reduction across all of society
- embedding the voices of vulnerable groups in a respectful and consequential manner, and
- mainstreaming climate and disaster risk information into governance mechanisms and decision-making.

To achieve this unity, cross-sectoral collaboration and integration will need to become the business as usual approach to all decision-making. Embedding localised risk assessments into all levels of government decision-making is also critical.

### 1.2.3. Goals for 2050 – Realising our vision – sustainable disaster risk reduction and net zero

The final horizon (2050) represents the realised effort of 25-years of sustained and unified work. Broadly summarised as *realising our vision – sustainable disaster risk reduction and net zero*, the final horizon describes the achieved economic, environmental and social balance where 'doing differently' is the norm, as well as the achieved implementation of understanding across all sectors of society that disaster risk reduction is everyone's business within a sustainable and resilient society. Key characteristics of the system included:

- national cohesion between public and private sectors
- a self-sustaining and mutual reinforcing disaster risk reduction system, and
- a high national capability of risk understanding, response and recovery.

<sup>57</sup> See <https://www.abs.gov.au/census/find-census-data> for further information.

A defining feature of the 2050 horizon is that key systemic issues are actively addressed in cross sectoral fora, such as land-use planning, insurance, environmental management and social policy. Further, that climate and disaster risk considerations are mandated into all decisions, and supported by disaggregated data and robust evidence.

To achieve this realisation, it was identified that a clear and coordinated strategy to lift all national capability of risk understanding, response and recovery is needed, irrespective of hazard type. Additionally, as a nation, we need to move towards an operating environment of sustainable development, which is risk-informed, inclusive and guided by community need.

### 1.3 Monitoring evaluating and learning – the SysMEL

The development of the SysMEL through which to measure the implementation progress of the NDRRF is commencing in the second half of 2022 (see section II for more information). When fully developed and implemented, the SysMEL will comprise:

- An agreed set of measures and methods to monitor and evaluate strategic actions, system change and impact on disaster risk and resilience.
- A joined-up, sustained approach to engagement with relevant stakeholders and collection of required information, and its synthesis, to enable monitoring, evaluation and learning across all levels of the SysMEL. This will also support Sendai reporting and operational program and policy decision-making.
- An established toolbox of methods for ongoing monitoring, evaluation and learning.

- A knowledge-management function, comprising:
  - » a growing knowledge-base of information and evaluation case studies to guide and inform future disaster risk reduction decisions actions and investment under the NDRRF, and
  - » a capability to evaluate, extract learnings and curate and share knowledge, and interface with communities of practice to support its application.
- A reporting function to provide:
  - » access to data for program and policy decision-making (e.g. a national disaster risk reduction project tracker)
  - » annual outcomes and learning reports which synthesises place-based learning
  - » publication of place-based and thematic evaluation case studies, and
  - » point-of-time evaluation reporting (e.g. biennial state of the system report).

The SysMEL will be an important mechanism through which to measure the effectiveness of Australia's efforts to mainstream disaster risk reduction and determine, through measuring, whether we are truly reducing national disaster risk.

## 2. PEOPLE AND NETWORKS

Future effort will be required to catalyse, build and maintain networks and communities of practice within and across sectors, levels of government and the private sector which bridge the currently siloed and fragmented approaches to disaster risk reduction. Strengthened, more inclusive and better connected

governance mechanisms are required to align disaster risk reduction strategies, policies and plans across all levels of government. These need to be harmonised with broader social, environmental and economic sectors strategies and plans (through disaster risk reduction and adaptation mainstreaming). These networks are also required to build shared understanding and trust to drive collective outcomes. Key aspects of this are described below.

### 2.1. Shared understanding

In order to meaningfully take collective action to reduce systemic disaster risk, all sectors and individuals alike need to fully understand and acknowledge the creation and drivers of disaster risk, and have the capacity to take responsibility for reducing this risk. To achieve this, there needs to be a broader understanding that disaster risk reduction is not solely the responsibility of the disaster management sector, and that disaster risks result from decisions taken across multiple sectors. Better policy integration and effective governance which encourage responsible disaster risk reduction and climate change adaptation is needed.

Representatives from the Western Australian Government emphasised the importance of working with local government to promote and embed the shared responsibility of managing disaster risk, and making the Sendai Framework relevant to both the local context and the broader domestic disaster risk reduction system. Representatives from the Australian Capital Territory Government recommended that this is undertaken through the upcoming review of the NDRRF in 2023.

It was also suggested that this shared understanding of disaster risk could be furthered through the establishment of a national, community-focused network which enables and fosters knowledge sharing, peer support, capability building and influencing, such as through a network of resilience and recovery hubs, at local, regional and national scales. Such an informal network could provide all of society ownership and allow for the breaking down of silos and scaling-up of place-based initiatives. These mechanisms would also help to support and develop social capital, and strengthen the coping capacity of the given community.

As part of the [National Capability Package](#),<sup>58</sup> (NCP) the Australian Government is developing two pilot Regional Resilience Hubs, which will host Australian Government, state and local government officials and nongovernment stakeholders to build resilience and recovery capabilities in regional communities. They will act as a coordination point to regularly draw all partners in a region together to share knowledge and experience to strengthen local disaster management and mitigation capability. Western Australia's [Bushfire Centre of Excellence](#) is a first-of-its-kind education hub where bushfire management personnel can come together for training and learning, including the Cultural Fire Program.

Another NCP project, the [Regional Recovery Exercising Toolkit](#), works to strengthen collaboration and coordination at the local level to build recovery capability across government, community-based organisations and the private sector. The Exercising Toolkit will be a national resource to support recovery planning and capability

development through discussion exercise workshops. The Toolkit will support creation of a shared understanding of recovery and key challenges, and be a companion document to the Managing Exercises (2017) and Community Recovery (2018) Handbooks, found within the [Australian Disaster Resilience Handbook Collection](#).

## 2.2. Governance

Improved governance – the mechanisms and process for making decisions to steer collective efforts – is a key enabler of risk reduction efforts. A recurrent theme through engagement was that friction can exist between levels of government. This is largely attributed to differing priorities and responsibilities for different aspects of disaster risk reduction and management, and, in some cases, the absence of a clear enabling environment and limitations in existing mechanisms for bridging different stakeholder communities within the decision-making context.

This friction was identified as a critical emerging issue which will impede Australia's ability to achieve the outcome and goal of the Sendai Framework by 2030. The first step to address this is to broadly acknowledge that each jurisdiction has different levels of maturity and understanding of their localised disaster risks. Additionally, it was recommended that governance and institutional arrangements contain a degree of flexibility to account for this required localisation. This point was supported by the representatives from the Australian Capital Territory Government, who highlighted the need for frameworks to be less rigid to be able to account for the dynamic nature of risk.

There is a need for greater collaboration across all of society, which is supported by the strategic direction set by the Australian Government. This echoes the findings of Royal Commission, which emphasised the need for the Australian Government to provide greater leadership across the disaster management sector. As individuals and communities do not control many of the levers needed to reduce some disaster risks, coordinated action from government and industry is needed to reduce risks within their control to limit adverse impacts on communities.

An enabling environment with a mandate to make and implement meaningful change is crucial. It is broadly acknowledged that the contributions of local government in reducing disaster needs to better inform the decisions being made across all levels of government, as local governments are with communities before, during and after disaster events. However, no one level of government can achieve progress in isolation, and a coordinated and collaborative way to sustainably and substantially reduce the risk to Australian communities is needed.

To truly enable accelerated and transformative action to reduce disaster risks, stakeholders identified that there needs to be longer-term planning, rather than planning by season and/or election cycles. It was also identified that we need greater cohesion across all sectors of society, and greater clarity on the roles of relevant individuals. This role clarification is increasingly important given systemically reducing disaster risks remains the primary responsibility of the states and territories, often with funding provided by, or with co-contribution from, the Australian Government.

58 The National Capability Package is aimed at strengthening Australia's recovery and resilience capability at the local, regional and national levels.

---

One way to improve societal trust in institutional arrangements is by ensuring government decision making processes, activities and achievements to reduce risk are as transparent as possible. To achieve this, better integration across all three levels of government, as well as greater visibility of the work being undertaken to avoid duplication of effort, is needed.

Through consultations, a recurrent topic of conversation was the need to have fluid governance arrangements in the time of disasters which enables the removal of bureaucratic red tape and the immediate redirection of capacity and resources to those who need it most.

### 2.2.1. A Strategic Advisory Group

The Royal Commission recommended that an advisory group responsible for strategic policy and operational advice on disaster risk reduction would be a valuable addition to Australia's current governance arrangements for disaster management (Recommendation 3.2). Such a group could provide ministers with a clearer understanding of the short, medium and long-term impacts of decisions, and their flow-on implications to other areas of policy, such as education, health, community development and essential services. This recommendation was broadly supported through the engagement undertaken to inform this review, which further identified that governance and coordination mechanisms which span government, private and community sectors are critical.

A governance review will commence in Australia in late 2022, which will examine the structure of such an advisory group, as well as the broader governance arrangements between the Australian state and territory governments.

### 2.3. Inclusion – nothing about us without us

To ensure no one is left behind, stakeholders identified the need for innovative, place-based approaches to be developed which apply an inclusive, community development lens to reducing systemic disaster risk. This includes meaningfully engaging with diverse cohorts to make decisions about how best to reduce their risk based on their, potentially, unique needs. Diverse cohorts should be recognised as agents of change who best understand their individual circumstances. One way in which this inclusion is taking place within the Australian Government is through [Australia's Disability Strategy 2021-2031](#). This Strategy outlines a vision for a more inclusive and accessible Australian society where all people with disability can fulfil their potential as equal members of the community.

Within the Northern Territory, the [Aboriginal Resource and Development Services Aboriginal Corporation](#) is reducing disaster risk by enhancing messaging in local language through Yolŋu Radio, which is a key channel for emergency information across East Arnhem Land. [Queensland Remote Aboriginal Media](#) has been offering a similar service in Queensland, by boosting the radio and communications infrastructure of remote First Nations communities to ensure there is reliable access to information before, during and after tropical cyclones.

As cultural and language differences present a significant challenge in the effective communication of risk, it is recommended that similar initiatives, which provide disaster risk information in local languages, are scaled up throughout Australia.

#### 2.3.1. First Nations knowledge

On 19 July 2022, the DCCEEW released the [2021 State of the Environment Report](#), which analyses environmental pressures, impacts, management effectiveness and outlook. For the first time, a First Nations co-authorship model was used to ensure First Nations knowledge, values and perspectives were incorporated. This co-authorship contributed to all 12 environmental thematic chapters. This model of incorporating and elevating knowledge should be more widely applied across disaster risk reduction policies and reports.

In the second-half of 2022, there has been a concerted effort by the Australian Government to formally recognise First Nations people within both the Australian Parliament and Constitution, such as through the recent release of a proposed draft change to the Constitution to recognise First Nations Australians with a voice in the Australian Parliament. Together with further implementation of the Closing the Gap initiative, this will assist to bring together relatively disparate pieces of work relating to First Nations people in disaster risk reduction.

### 2.3.2. Youth

Children and young people need to be provided with the skills they will need in an ever-changing climate, as well as support in developing innovative ideas and problem-solving skills to survive and thrive into the future. The inclusion of disaster resilience education into the Australian curriculum has the potential to spark a cultural and generational change in the way Australians interact with hazards and think about vulnerability. Until this is operationalised, as a nation, Australia could look at scaling up place-based organisations which look to embed the tenets of disaster resilience.

**Recommendation 4 from the Victorian Inspector-General for Emergency Management's Evidence from Experience: Young people's perspectives on the effectiveness of Bushfire Relief and Recovery report**

"That education and knowledge around natural disasters is focused on the risk factors, environmental context and preparedness planning of local communities. Education and training for natural disasters should be locally focused and continuous across the curriculum, delivered annually to all year levels and building on previous knowledge. Education and training should be embedded within all education and youth-relevant organisations, not limited to the [Department of Education and Training] system. The aim is to ensure that all young people, not just those who attend school, are informed about their local community's disaster planning and response" (p. 6).

One such program, run by Sustainability Victoria, is ResourceSmart Schools. Running since 2008, the free program provides practical support, through a suite of modules, to Victorian schools to reduce physical and financial resource use, integrate sustainability into the curriculum and share learnings. A similar program focused on disaster risk reduction could prove beneficial at furthering the incorporation of disaster resilience education into Australian schools.

It was further emphasised that supporting youth and their education post-disasters must provide short and medium-term strategies, due to the potential for later onset impacts, as well as the need to consider children and youth who are not embedded into the formal educational systems (such as troubled and transient youth).

In partnership with Bushfire Recovery Victoria and the Victorian Department of Education, Youth Affairs Council Victoria (YACVic) works with young people in fire-affected areas to understand their experiences, collect their ideas for community recovery and resilience, and develop resources to facilitate young peoples' seats at the table in disaster recovery. Through their two-year *Future Proof: Young People, Disaster Recovery and (Re)building Communities* BSR grant, YACVIC is supporting place-based, local recovery outcomes for fire-affected young people and communities across eastern Victoria, such as through funding local youth workers and young peer workers to support youth-led activities; creating local youth advisory groups; training for young people and youth workers; and establishing a community of practice for workers to support and learn from each other.

Through their internationally recognised Pillowcase Program, the Australian Red Cross works with children in Years 3-4 (ages 8-10) in a one-hour workshop, where children engage in discussions and interactive activities to better understand and discuss the importance of being prepared, how they can manage their own stress, who they can go to for assistance, and how to identify what is important to them.

Within the Australian curriculum, there is no overarching strategy for disaster resilience education, which is impacting young learners understand the nature of risk in their local environment and their role in reducing exposure and vulnerability to harm. The Royal Commission made recommendations relating to incorporating disaster resilience education into the Australian curriculum, with Recommendation 10.1 stating "State and territory governments should continue to deliver, evaluate, and improve education and engagement programs aimed at promoting disaster resilience for individuals and communities."<sup>59</sup>

Between April and July 2021, the Australian Curriculum, Assessment and Reporting Authority, held an open, public consultation process in which the entirety of the Australian curriculum was open for review and comment. As part of their submission to this review, AIDR made a number of recommendations, primarily focused on the need to incorporate disaster resilience education, cross curriculum priorities, and a more expansive humanities and social sciences curriculum. The incorporation of disaster resilience education into the Australian curriculum would see young people more actively engaged in disaster risk reduction through formal

<sup>59</sup> Royal Commission, 2020, p 251.

---

educational mechanisms.

Through its NRMA Insurance brand, IAG partnered with Minecraft to develop Climate Warriors, a first of-its-kind educational game designed to help educate and engage the next generation of young Australians in understanding the importance of preparedness against the increasing risk of disasters.

States and territories also have plans and strategies which recognise the importance of incorporating disaster resilience education into the broader Australian curriculum. Queensland's State Disaster Management Plan recognises the significant influence that engagement and preparedness have on developing resilience and that school-based programs have a large role to play. The Tasmanian Emergency Management Arrangements recognises schools and school communities are one of the key partners in reducing disaster risk, and that they have a responsibility in disaster management and resilience. Western Australia's State Emergency Management Plan acknowledges student contribution to the development of disaster management plans is key to their success.

As a national initiative of AIDR, the Disaster Resilience Australian and New Zealand Educational Network (DRANZEN) is made up of more than 750 members and brings together education, emergency services, community organisations, researchers and others working with young people to develop knowledge, skills and solutions for a disaster-resilient future. The activities of DRANZEN are guided by the Disaster Resilience Education Strategy Group (DRESG), which is comprised of representatives from policy, research, education, disaster management at both state/territory and federal level. The Australian Red Cross is an active member of the DRESG.

### 2.3.3. Gender

No holistic approach to gender in disasters has been implemented to-date in Australia. Integrating gender into the design, funding, implementation, monitoring and evaluation of policies and programs will seek to mitigate against the disproportionate impacts on women and girls. This includes the use of gender-responsive investment, equal and meaningful participation of women in leadership and the collection and reporting of gender disaggregated data associated with disaster. The Australian Government, through the Office for Women within the Prime Minister and Cabinet portfolio, is establishing gender-responsive budgeting and gender impact analysis which will support a gendered approach to policy development including in disaster mitigation, management and recovery.

Using AIDR's National Gender and Emergency Management Guidelines, the Australian Government is funding a four-year (2021-25) National Gender and Disaster Recovery initiative to develop capacity building activities for frontline responders and service providers so they are better able to support the safety of women and children experiencing or at risk of violence when disasters strike. Gender and Disaster Australia also delivers training to local communities and organisations to reduce violence and the harms of gendered expectations in disasters – something which could easily be rolled out nationwide. More information about Gender and Disaster Australia and gender-responsive disaster risk reduction can be found in **Annex Y** and **AC**, respectively.

### 2.4. Networks for risk reduction

Representatives from the Queensland Government recommended the establishment of a Disaster Risk Reduction Coordinator (or similar) position within each jurisdiction to assist with linking key stakeholders in disaster risk reduction and management, as well as to act as a conduit for cross-sectoral resource and capability sharing. This recommended function is not dissimilar to the District Emergency Management Advisers (DEMAs) who operate out of the Western Australian Government's Department of Fire and Emergency Services. Covering the entirety of Western Australia, eight DEMAs work with local governments to provide advice on emergencies and disasters and identify gaps. A similar capability exists within South Australia and Victoria. In South Australia, through the Regional Climate Partnerships network, 11 regional, cross-sectoral groups deliver practical action to strengthen the climate resilience of their communities, economies and natural and built environments. In Victoria, the Victorian State Emergency Management Plan outlines several coordination functions at each tier of emergency, such as through the dedicated coordinators for Incident Emergency Response, Municipal Emergency Response, Regional Recovery, Regional Emergency Relief, State Emergency Relief and State Recovery. In New South Wales, the State Emergency and Rescue Management Act and the State Emergency Management Plan provides for the appointment of emergency controllers, management committees and functional area subcommittees to develop disaster management policy and oversee action across the PPRR spectrum at state, regional and local level.

Within the Australian Government, a similar capability exists within NEMA through the work of Recovery Support Officers (RSOs). RSOs are employed locally, and lead on-the-ground Australian Government engagement for recovery, preparedness and disaster risk reduction. RSOs provide an ongoing connection between the Australian Government, local governments and communities. A key component of their role is to collect and collate information on disaster preparedness and resilience needs, and inform disaster recovery. Additionally, they provide a valuable source of information to communities following disasters on how to access Australian Government programs and find information on assistance that will suit their individual needs. More information about the localised work of the RSOs, as well as the key partnerships and initiatives towards disaster risk reduction which have recently been undertaken can be found at **Annex AA**.

A similar, collaborative approach has been taken within the Australian Red Cross, through the Community-led Emergency Resilience Project. More information about this work can be found in **Annex AD**.

### 3. INFORMATION AND DECISION-MAKING

#### 3.1. National information capability

As identified as a critical emerging issue, nationwide, the disaster management sector is critically under resourced, in capacity, capability and funding. One way to lift national capability is by providing guidance and principles for community-based risk reduction, and coordination

across all of society. To do so, there is a need for more resourcing at the community level, as well as expanding upon lessons learned from past approaches.<sup>60</sup> There is also a need to better address the gaps in the coping capacities and social, natural, financial, cultural, political, built and human capitals, and bolster these essential mechanisms from which communities and institutions draw on during disaster events. Similar to coping capacities, we need to better address the adaptive capacities of the system.

As mentioned in section II, the ACS has been established to enhance national capability in predicting and analysing climate and natural hazard risk and impacts. In the coming years, the work program of the ACS aims to build a consolidated national capability plan – across all levels of government, communities and sectors – and align this with intelligence on climate and natural hazard risks and impacts to signal to all actors where there is a need for action. If achieved, this approach will be a step change in Australia's collective approach to capability, and will enable greater coordination and efficiency of activities and provide clear guidance for decision makers at all levels.

#### 3.2 Data sharing

Information sharing and capability development is essential. As mentioned in section II, there is currently no formal mandate, mechanism or enabling environment through which the Australian Government can collect disaster loss and impact data to report on the implementation of the Sendai Framework, but, more importantly, to quantify the levels of support needed by jurisdictions.

Further, there is no nationally consistent data collection process, so all data collected from the states and territories is varied and disparate.

However, some states have sophisticated data collection systems – such as Queensland's Damage Assessment and Reconstruction Monitoring – which could be leveraged by other jurisdictions to support their data collection efforts. There is an opportunity to take best practice at the jurisdictional level and scale this up to the national level, while also creating a two-way information exchange system through which states and territories provide data to the Australian Government, and receive data in return. Through consultations, it was identified that Australia should develop a nationally comprehensive list of what data is currently available, and create an open data sharing platform as a mechanism to share data across sectors and jurisdictions.

It was further identified that we need to establish a national baseline through which to measure whether we are succeeding at reducing disaster risks within Australia. As stated by representatives of the Australian Capital Territory Government, what is not measured, cannot be managed. To enable the establishment of accurate national baselines, national-level risk assessments are recommended. An initial assessment of risks from natural hazards would set an accurate baseline to monitor progress of risk reduction over time. Such baselines and risk assessments are required to quantify and prove that investments in disaster risk reduction and resilience are financially beneficial, particularly in the face of the evolving and cascading nature

<sup>60</sup> Through consultations, it was identified that we need to change the way in which we use the concept of 'lessons learned', as a lesson is truly only learned once it has been implemented.

---

of natural hazards. Further, there are additional opportunities for a consistent, national community disaster resilience measurement framework, aligned to the Sendai Framework, which includes indicators to track outcomes and impacts. Such a mechanism would greatly improve decision-making on where and how funding is directed, and support collaboration across funding bodies.

As extreme weather grows, so do the challenges with the affordability and availability of insurance and the risk to the wellbeing of Australian communities, homes and infrastructure. Robust, national hazard data which is accessible to the Australian public, industry and all levels of government will play a critical role in improving and standardising Australia's understanding of climate risk and how we prepare for it. Such data should consider the full spectrum of possible event occurrence, be nationally consistent, publicly available and useable by the Australian public, financial services sector and all levels of government.

### 3.3. Supporting decision-making

Information on potential hazard and impact does not on its own lead to improved risk reduction decision-making. More support for decision makers is required to assist them in factoring disaster risk into decision-making. This includes developing decision-support tools and methods which assist in addressing uncertainty, developing and considering options and dealing with the different values, needs and perspectives of stakeholders in disaster risk reduction decision-making.

A number of innovative examples of building place-based capability and capacity for decision-making and action were identified through this review. These examples incorporate aspects of knowledge sharing and advice in relation to hazards, and their mitigation:

- [All West Australians Reducing Emergencies \(AWARE\)](#) is a Western Australian Government initiative to build disaster management capacity and knowledge at both the local and district levels.
- [Get Ready Queensland \(GRQ\)](#) is a year-round, all-hazards, resilience building initiative to help communities prepare for disasters by providing \$2 million per year to Queensland's Local Government Areas (LGA) for place-based preparedness activities. Projects funded through GRQ include disaster dashboards, sandbag machines and continuity training for local business. Since the program commenced in 2013, the number of Queenslanders with an emergency plan has grown by 40 per cent.
- New South Wales' [Climate Risk Ready](#) program builds the capability of state and local governments to assess and manage climate change risks to protect government assets, infrastructure and services. The program delivers the [Climate Risk Ready NSW Guide](#) and nationally accredited training.
- New South Wales' [Get Ready Program](#) gives councils targeted information, resources and support to help their local communities build resilience and prepare for disasters through a Business toolkit, community kit and online resource for community service workers.

- The Australian Red Cross' flagship preparedness program, [Emergency RediPlan](#), is a four-step, person-centred approach designed to assist individuals and households create their own personalised emergency plan and prepare themselves for the longer-term psychosocial impacts of an emergency. The [RediCommunities Guidelines and Toolkit](#) supports individuals, volunteers and community groups build localised capacity and capability for community-led resilience for emergencies.

Representatives from the Western Australia Government emphasised the importance of working with local governments to best understand local capacity and capability. One way in which the state is doing so is through the annual local capability survey, which is based on the [Western Australia State Capability Framework](#). The [Australian Disaster Resilience Index: building safer, adaptable communities](#) provides a snapshot of the capacities for disaster resilience in Australian communities, was also cited as a helpful nationwide resource.

### 3.4. Innovation

Through all consultations, it was identified that improved understanding is critical to addressing systemic disaster risk, and that this cannot be done without proper governance mechanisms and the political inclination. There is also a need to have a greater understanding of how to navigate risk, its associated complexities, and how to nationally monitor and evaluate adaptation processes. A number of examples of how this is actively being addressed nationwide are as below.

The South Australian Fire and Emergency Services Commission (SAFECOM) is using [Wicked Lab](#) to apply a complexity-based approach through an online tool which tracks systemic change in relation to resilience building in South Australia by highlighting the impact of projects funded by disaster resilience and risk reduction grants, aligned to the [Stronger Together grant program](#). SAFECOM's next step is to track a broader range of resilience and risk reduction work across the state, to identify progress and gaps.

NHRA's current [Disaster Challenge](#) similarly proposes innovative ideas and approaches to disaster risk. This type of work should be encouraged, where possible, to break silos between sector groups and find new approaches to the wicked problems within the disaster management sector.

### 3.5. Climate change

The Australian Government recognises climate change as a key driver of disaster risk in Australia. Climate change will increase the frequency and intensity of weather-related hazards, change exposure patterns, and increase vulnerabilities such as by reducing livelihood opportunities. Australia will need to adapt to the effects of legacy emissions over the next 30 years, as well as the effects of present and future emissions. To help address this, Australia is implementing a substantial and rigorous suite of new policies across the economy to help drive transition to net zero by 2050, achieve the 2030 target to reduce emissions by 43 per cent below 2005 levels, and meaningfully contribute to the global effort to achieve the Paris Agreement goal to substantially reduce the effects of climate change.

Such initiatives can be found in **Annex AF**. In addition to initiatives at the Australian Government level, considerable action is being taken by state and territory governments. Examples of such initiatives can be found in **Annexes I to N**.

#### 3.5.1. Integration of disaster risk reduction and climate change adaptation

Across Australia, and the rest of the world, disaster risk reduction and climate change adaptation are converging at both conceptual and practical levels. The Queensland Government recently updated their [State Disaster Risk Report](#) to note that climate change is no longer treated as a driver of disaster risk. Instead, disaster risk is equivalent to climate risk, with forward projections of disaster risk based on best-available climate projections.

At the policy level, as the two domains converge, there are increased opportunities for, and benefits of, an integrated approach which includes an enhanced knowledge-base, more efficient use of financial and human resources and improved planning tools and streamlined processes for more effective preparedness, response and recovery to climate change and disaster risk. Further, this coherence will contribute to the aims of both the Sendai Framework and the Paris Agreement. Current actions which put this integration into practice include:

- Coordinating the National Partnership for Climate Projections, in collaboration with all states and territories, to develop the next generation of national and regional climate change projections, which ensures a shared approach

across federal, state and territory governments and agencies. The ACS Climate and Hazards program is developing the next generation modelling and downscaled projections that play a key role in understanding disaster risk now and in the future.

- Consulting with business groups and all levels of government to develop National Climate Scenarios to guide users and facilitate access to national, authoritative climate data and risk information for use by governments, businesses and communities. Project partners include [Climate-KIC](#), CSIRO, BoM and the ACS.
- Researching future climate risks through initiatives such as the Australian Research Council's [Centre for Excellence for Climate Extremes \(CLEX\)](#),<sup>61</sup> which seeks to reduce Australia's economic, social and environmental vulnerability by leading vital climate science and predictions, train climate science leaders and prepare Australia for future climate extremes.
- Applying climate science and climate models into decision-making, such as through the [National Environmental Science Program's Climate Systems Hub](#) and a cross-cutting Climate Adaptation Initiative, which will incorporate climate adaptation research across all four of the new hubs. The Climate Systems Hub will advance understanding of Australia's climate hazards, including the drivers of climate-related disasters, such as bushfires, droughts, storms and extreme rainfall and temperature events in Australia. All hubs will draw on this research to

<sup>61</sup> The CLEX Centre is one key part of Australia's climate science enterprise, which includes research being carried out in university research groups, government agencies including CSIRO and the BoM, and in research areas ranging from the Great Barrier Reef to the Antarctic.

develop decision-making tools and information to help prepare Australia to manage emerging risks.

- Undertaking scenario analysis of climate-related physical risk for buildings and infrastructure, through the [Climate Measurement Standards Initiative](#).<sup>62</sup> The Initiative is related to the set of recommendations set by the Task Force on Climate-Related Financial Disclosures (TCFD), which companies can use to disclose information about climate risks. More than 120 industry experts, including CSIRO and the BoM, supported the Initiative through the provision of hazard projection information and expert advice.
- Similarly, in line with the Paris Agreement, the Australian Prudential Regulation Authority (APRA) publishes findings of its climate risk self-assessment survey, which was conducted across the banking, insurance and superannuation industries. The voluntary survey, is designed to provide insights into how APRA-regulated entities are aligning their practices with the expectations set out in Prudential Practice Guide CPG 229 Climate Change Financial Risks. Released last November, [Climate Change Financial Risks](#) provides APRA-regulated entities with guidance on managing the financial risks and opportunities that may arise from a changing climate.
- Creating sector-specific information bases from which businesses can assess the effects of changing climate on their own physical risks, as has been done via the [Electricity Sector Climate Information](#) portal (ECSI). ECSI is a collaboration between the

former Department of Industry, Science Energy and Resources, the Australian Energy Market Operator, the BoM and CSIRO.

## 4. INVESTMENT IN RESILIENCE AND RISK REDUCTION

Without increased investment to make Australian homes, businesses and communities more resilient, coupled with a change in approach which seeks to address systemic risk creation (such as what we build and where we build it), the risk profile of communities will not change. The political, social, economic and policy landscape surrounding disaster risk reduction is changing, with increasing recognition of the need to build resilience now to prepare for a future shaped by climate change.

The NDRRF recognises that all levels of government, communities and the private sector already make significant investments to reduce disaster risk. The financial sector increasingly recognises the need to better align with sustainable development needs. Jurisdictional input emphasised the urgent need to move towards sustainable development in a systems approach, which integrates risk reduction into all land-use planning, investment and decision-making processes. It was further emphasised that, nationally, we need to be more forward-thinking and actively work to prevent disaster risk creation, rather than retrospectively reducing risk.

The most effective ways to do this is through increased public and private sector collaboration and investment in infrastructure to enable resilience, influencing broader behavioural and investment decisions to account for climate and disaster risk and

helping to prevent new risk and manage existing risk. Funding and financing mechanisms should enable individuals, communities, and businesses to proactively make the changes required to sustain healthy communities, ecosystems and economies. While financing mechanisms take place at the national level to meet the scale required for the investment needed, all disaster risk reduction activity inherently needs to be place-based.

### 4.1 Place-based activity

Increased investment in mitigation measures is required to reduce the impacts of hazards on communities, the economy and the environment, delivered through locally-driven, place-based disaster risk reduction activity for adaptation and resilience building. This includes activities such as:

- Conducting local and regional risk assessments, building risk awareness and management capacity.
- Supporting the development of business cases for major investment (such as infrastructure).
- Supporting community-focused regional resilience management projects.
- Investing in grey infrastructure and green-blue infrastructure (NbS).

Any place-based actions need to be locally-led, and involve a range of local and state-level stakeholders. The Australian Government has a role in supporting, convening and enabling these activities. As many of the causes of increasing risks are systemic, a coordinated system-wide response that creates the space for effective disaster risk reduction is required.

<sup>62</sup> The Initiative is an industry-led collaboration with significant assistance from the scientific research community to improve the consistency and comparability of climate-related disclosures.

Place-based, local and regional action will determine the local vision for the future, but local action alone will not be sufficient. There is a critical need for funding and other enablers to be in place, wherever that source comes from. The system needs to fundamentally change to support communities which are in a constant cycle of overlapping disasters, and have no time to recover from, let alone reduce future risks, of disasters. Systemic approaches which enable disaster risk actors to better harmonise efforts across levels of government and sectors, beyond disaster risk reduction, to address the root causes, and not just the symptoms of risk, are required.

National efforts will need to focus on creating an enabling environment through people and networks, information and decision-making, and enhanced investment – particularly in infrastructure. These are required to address identified barriers to effective actions on the ground in relation to governance and enabling environments, sectoral silos, coordination challenges, misaligned strategies, policies and rules that constrain the ability to make decisions and act effectively to make the changes for risk reduction. Furthermore, specific barriers to incentivise and enable the private sector, and potentially community, investment in disaster risk reduction and resilience need to be addressed. These include:

- Activities to mainstream disaster resilience and climate adaptation into infrastructure investments by governments at all levels by ensuring infrastructure investment strategies and plans are informed by climate and disaster modelling, and improving guidance and templates for business cases.

- Developing the necessary tools, frameworks, governance mechanisms and policies to incentivise and catalyse investment in disaster risk reduction by the private sector, and potentially community themselves (e.g. through cooperatives).
- Funding trials of business cases which explicitly consider the costs and benefits of different climate and resilience options, as proofs of concept.

#### 4.2. Finance sector mechanisms to apply at scale

ASFI has been established to realign the Australian financial services system so that more money flows to activities which will create a sustainable, resilient and inclusive Australia. In their *Roadmap*,<sup>63</sup> ASFI made a number of recommendations aimed at aligning Australia's financial system with a sustainable, resilient and prosperous future for all. Several of these recommendations were aimed at enabling communities to be more resilient in the face of increasing disasters and threats, and identifying the data and other enabling services needed to better inform decision-making. More information can be found in **Annex AB**.

Similarly, the **ICAO**, located within the Department of the Treasury, seeks to improve Australian Government infrastructure and commercial investments. As part of this realignment, the Australian financial sector is actively seeking opportunities to invest in resilience. This presents a significant opportunity for public and private sectors to work together to identify and leverage the broader economic value and opportunity created by investments in disaster risk

reduction and resilience. To realise this opportunity, there is a need to find and develop projects along with financing and funding pathways which address existing high priority risks across all environments. NEMA has been involved as a government partner in a number of such initiatives.

On an international scale, the Australian Government, through the APRA and Reserve Bank of Australia, has also joined the Network for Greening the Financial System (NGFS), a group of central banks and supervisors willing, on a voluntary basis, to share best practice and contribute to the development of environment and climate risk management in the financial sector to mobilise and mainstream finance to support the transition towards a sustainable economy. The Australian Government is also a member of the Coalition for Climate Resilient Investment (CCRI), a private sector-led initiative which supports investors and policy officers make, understand and manage physical climate risks. CCRI brings together industries and leaders across the finance and investment world to pioneer solutions which are both innovative and practical to ensure all infrastructure investment incorporates physical climate risks and advances climate resilience.

#### 4.3. Enabling Resilience Investment approach

Developed by CSIRO and Value Advisory Partners, the Enabling Resilience Investment (ERI) approach is used to generate place-based risk mitigation options for communities in cities, suburbs and rural and regional Australia. The ERI approach allows users to identify the beneficial outcomes of the options such as

<sup>63</sup> The Roadmap represents the collective output of more than 140 participants from over 80 organisations across Australia's financial systems, including financial institutions, civil society, academia, regulators and government, who came together to form ASFI.

---

jobs, infrastructure, social cohesion, economic activity and incomes which supports the case for funding and potential investment. In doing so, the approach supports communities, regions and economies to recover, transition, and develop towards sustainable, well-adapted and disaster-resilient futures while also incorporating value creation and systemic risk mitigation into the design and delivery of current and future investments.

The pilot Strategic Pathways to Resilience Investment (SPRInt) projects in [Port Adelaide Enfield](#) and the Bega Valley demonstrate the Australian Government's commitment to the ERI approach. In Port Adelaide Enfield, project partners have been collaborating with local stakeholders to develop potential investment opportunities which would create value and reduce climate and disaster risk. Such opportunities included identifying new value creation and funding strategies, evaluating expanded community benefits and beneficiaries, and facilitating collaborative and coordinated partnerships which create social, economic and environmental value. Further details on this project can be found in **Annex P**.

In the [Bega Valley](#), the ERI approach has shown the possibilities and potential for amplifying existing efforts by local and regional stakeholders to collaboratively do disaster recovery differently. In doing so, this work has contributed to building a sense of agency in creating future opportunities and generated some high-level investment options, which have the potential to reduce disaster risks, create and realise new value, and enable transitions towards well-adapted and disaster-resilient futures. Pilot outcomes within both Port Adelaide Enfield and the Bega Valley form a solid basis for ongoing

collaboration in the application of the ERI approach.

#### 4.4. Funding and financing mechanisms

Through the Discovery Discussions and Catalysing Change Workshops, it was identified that improved understanding is critical to generating increased investment for disaster risk reduction and resilience building activities. Further, there is a need to generate a better understanding of the associated financial benefits at the political decision-making level.

Often, funding packages released following hazard events only support building back to what was, rather than building back better, or differently, with in-built resilience mechanisms. Given infrastructure's long operational lifetime and the magnitude of government investments, embedding resilience into infrastructure plans, strategies and frameworks is an important opportunity to drive disaster risk reduction outcomes across Australia. Systemic thinking shifts the focus from the resilience of a built asset to, instead, the contribution that asset makes to the resilience of the broader network, provision of critical services, supply chains and cross-sectoral systems.

A recurrent theme through engagement with local government representatives was that the current funding mechanisms, primarily being competitive grants, are often not achieving the intended outcome of ensuring that funding goes to the communities most at need. This is due to a number of reasons, but largely comes down to the capacity and capability of the relevant councils most at need – with some only having a few key staff to deliver a range of essential services, including disaster risk reduction and mitigation initiatives and applying for new funding.

To alleviate this pressure, it was recommended that governments experiment with new funding models which directly invest in community priorities. For example, the findings of the [Resilience Investment Vehicle](#) seek to unlock private sector investment into resilience projects. Learnings to-date from this project note that in order for the private sector to invest, projects need to be at scale – either large enough or smaller projects bundled. See section II for further information.

One model suggested by stakeholders was to trial participatory granting, whereby giving the communities most at need the authority to determine who and what to fund. Single year funding allocations also prove to be an inhibitor to implementing robust, multiyear resilience building activities and greater access to affordable insurance is also required. The BSBR program, as highlighted in section II, provides another example of how to deliver grant programs differently. The BSBR program was established to address unmet needs within the communities affected by the 2019-20 Black Summer bushfires. Although it still undertook grant assessments, it was unique in that recipients told the Australian Government how much they needed to recover.

Engagement with community organisations echoed a similar sentiment, highlighting that limited access to discretionary funds at the immediate outset of an event impacted them from rapidly delivering services. Access to such discretionary funding would provide greater opportunities to build the capacity of the local communities, such as through the employment of local community members as opposed to bringing in workers from interstate who do not have local knowledge.

An influx of workers from out of area was also cited to create flow-on effects to the local community, most commonly exhibited through accommodation pressures, particularly in the most adversely impacted communities.

While there is considerable work underway nationally, a stronger enabling environment and endorsement from senior decision-makers is needed to fully implement innovative programs which provide the blueprints for the transformative actions needed to achieve the outcome and goal of the Sendai Framework by 2030.

#### **4.5. Nature-based Solutions – the critical role of green and blue infrastructure**

There is increased recognition of the role NbS can play in helping to address systemic challenges, such as climate change, biodiversity loss, disaster risk, ecosystem degradation, water and food security and human health. NbS are actions which sustainably manage and restore natural and modified ecosystems to address these societal challenges, effectively and adaptively, while simultaneously providing human wellbeing, ecosystem services, resilience and biodiversity benefits.

The natural environment fulfils a number of important functions which reduce disaster risk. Through regulating services, ecosystems such as wetlands, forests and coastal systems can provide cost effective natural buffers against natural hazards, mitigating their impacts and reducing conditions of exposure (e.g. mangroves can reduce the velocity and volume of coastal inundation).

Through provisioning, regulating, habitat and cultural services, ecosystems can reduce conditions of vulnerability (e.g. livelihoods like agriculture and tourism which are supported by these services).

Where those natural buffers are destroyed or degraded, it can, in turn, increase disaster risk. Australia is considering options to build the resilience of the natural environment alongside our disaster risk reduction investments, and options to fund environmental rehabilitation and resilience following extreme events through our disaster recovery arrangements. One such example is through the restoration of coastal blue carbon (mangrove, seagrass and saltmarsh) ecosystems. Healthy blue carbon ecosystems have the capacity to provide a natural barrier which can reduce the impact of storm surges and reduce coastal inundation, prevent infrastructure damage and protect coastal communities.

Australia has invested \$30.6 million in the [Blue Carbon Conservation, Restoration and Accounting Program](#), which will help pave the way for scaling-up investment in coastal blue carbon ecosystems, support management decisions, and contribute to global goals for climate and the environment. This includes the domestically focused Blue Carbon Ecosystem Restoration Grant and Environmental-Accounting in Australia, as well as the internationally focused Blue Carbon Accelerator Fund.

Additionally, the [Climate-ready Restoration](#) pilot is a joint effort between Greening Australia and the World Wildlife Fund which seeks to improve the resilience of landscapes and reduce bushfire risk by establishing a better understanding of how planting designs can mitigate bushfire risk. Through the pilot, Greening Australian and the World Wildlife Fund are working with traditional owners, Indigenous rangers, community groups and land managers on Australia's east coast to determine the most effective management interventions to deliver bushfire resilience, as well as potentials to scale-up this pilot nationwide.



# CONCLUSION

---

The preceding pages outline the barriers and enablers to Australia's ability to implement the Sendai Framework from 2015 to 2022, and what overarching, transformative and coordinated actions are needed to achieve the outcome and goal of the Sendai Framework by 2030. Examples of innovative best practice are woven throughout, and stand out as islands of excellence within an increasingly complex and evolving disaster risk management environment.

The National Action Plans under the NDRRF will continue to define priority national actions for risk reduction and resilience building in Australia. The next National Action Plan will further identify and undertake strategic enabling actions to achieve the system-change and collective impact required. Themes will support:

- More inclusive and interconnected governance and collaboration networks which assist in alignment of frameworks, disaster risk reduction strategies and plans across levels of government.
- Supporting the mainstreaming of risk reduction into other sectors to achieve more harmonised systemic interventions.
- Investing in the necessary information and decision-support mechanisms to enable decision makers to address complexity and contestation in decision-making.
- Developing the frameworks, tools, data, governance and evidence-base to enable rigorous and consistent assessment of risk, and resilience benefits and returns that will enable private sector investment in infrastructure.

Together these themes and actions are intended to create a conducive environment for systemic disaster risk reduction, together with regional and local, place-based on-the-ground actions so that efforts are most effective and can be scaled.

The Systemic Monitoring Evaluation and Learning System will provide a mechanism for monitoring, evaluating and further refining efforts to achieve the system change necessary and support learning from system-change activities.

Improvement in disaster impact and consequence data will support operational, policy and program decision-making and enabling assessment of overall trends in disaster risk reduction to guide national efforts and support Sendai reporting.





Australian Government

# AUSTRALIA'S NATIONAL MIDTERM REVIEW OF THE SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030 REPORT

Are we succeeding at making Australian communities safer in the face of growing disaster risk?

