Australian Government

Department of Climate Change, Energy, the Environment and Water

National Adaptation Plan

Cataloguing data

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Acknowledgement of Country

We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present.

Ministers' foreword

For Australians, adaptation is nothing new. First Nations knowledges, sciences and practices provide the longest continuous story of living responsively and sustainably in a continent that encompasses remarkable extremity and biodiversity across land, sea, and island Country. Modern Australia too has been characterised by extraordinary adaptation to fires and droughts and flooding rains, and to profound social, scientific, and economic developments both within and without.

Now we face the serious risks that climate change presents to virtually every aspect of Australian life. It is already affecting our communities and our environment, and this pressure will not just persist but intensify. The National Climate Risk Assessment (NCRA) tells us the frequency and severity of extreme weather events is on the rise, and that even with the Australian Government's strong emissions reduction targets and policies, impacts will be felt across all sectors, with burdens or harm falling disproportionately on those in vulnerable situations, including financially disadvantaged households, the elderly, and those with pre-existing health conditions and disability. Climate change also poses many risks to remote First Nations communities. While all these impacts may be severe and far-reaching, we know that by understanding and counteracting the key risks we can help to reduce loss and damage, and we can protect the things that matter most.

We've wasted no time in taking action. Since 2022, the Albanese Labor Government has contributed $3.6 billion to programs that are supporting Australians to adapt and strengthen their resilience in the face of a changing climate. We've also been working to make adaptation and resilience a key part of government decision-making, with around $9 billion of policies and programs out to 2030 incorporating adaptation and resilience objectives across a range of sectors and priorities.

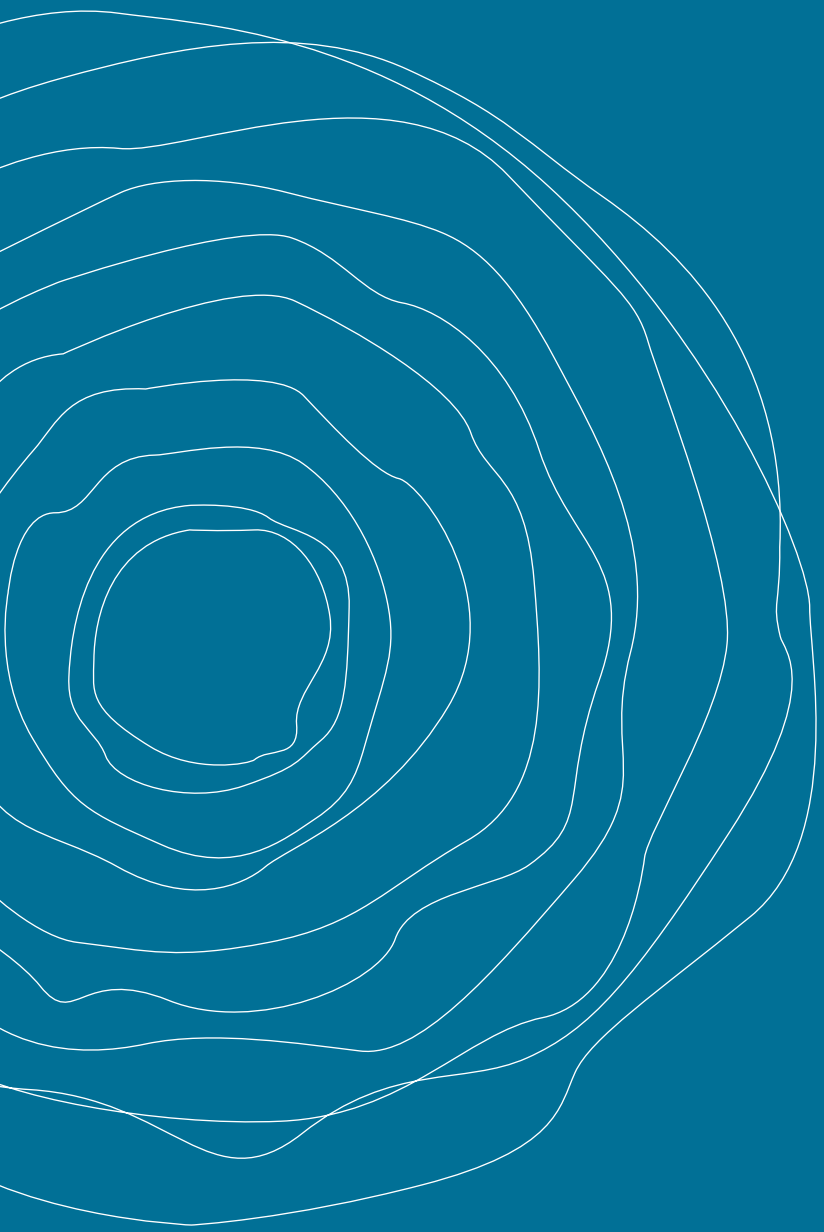
The NCRA provides us with information about how Australia is likely to be impacted by climate change to inform our adaptation planning. For the first time, it provides Australians with a comprehensive and granular picture of the most consequential risks facing the nation from climate change between now and 2090. It is an important milestone in our shared effort to build a resilient and sustainable future.

Implementing well-considered adaptation measures presents our best chance to address climate change hazards, and in many cases these measures will create other benefits and opportunities. The National Adaptation Plan draws on the evidence base provided by the NCRA to inform and drive prioritised adaptation action at a national scale that will combat the risks arising from those climate impacts that are unavoidable. Through collaboration with partner governments, industry, workers and communities, we will deliver improved resilience across the country. That is the smart and concerted effort required to protect Australia's social, economic, and environmental wellbeing.

Australia takes on this difficult but necessary task from a position of strength based on our unique natural endowments, world-class institutions, stable financial environment and our tradition of rising to the challenge in solidarity with one another. This National Adaptation Plan provides the framework through which we can leverage these strengths into timely and effective actions that protect Australia.

The Hon Chris Bowen MP
Minister for Climate Change and Energy

The Hon Josh Wilson MP
Assistant Minister for Climate Change and Energy



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Mangroves in Woy Woy, New South Wales, Australia

1. Introduction

Australians are already living with increasing impacts from climate change and these are affecting the things we value most. Our first ever National Climate Risk Assessment (NCRA) shows us that these impacts will increase and be long lasting, even with strong global action to reduce emissions.

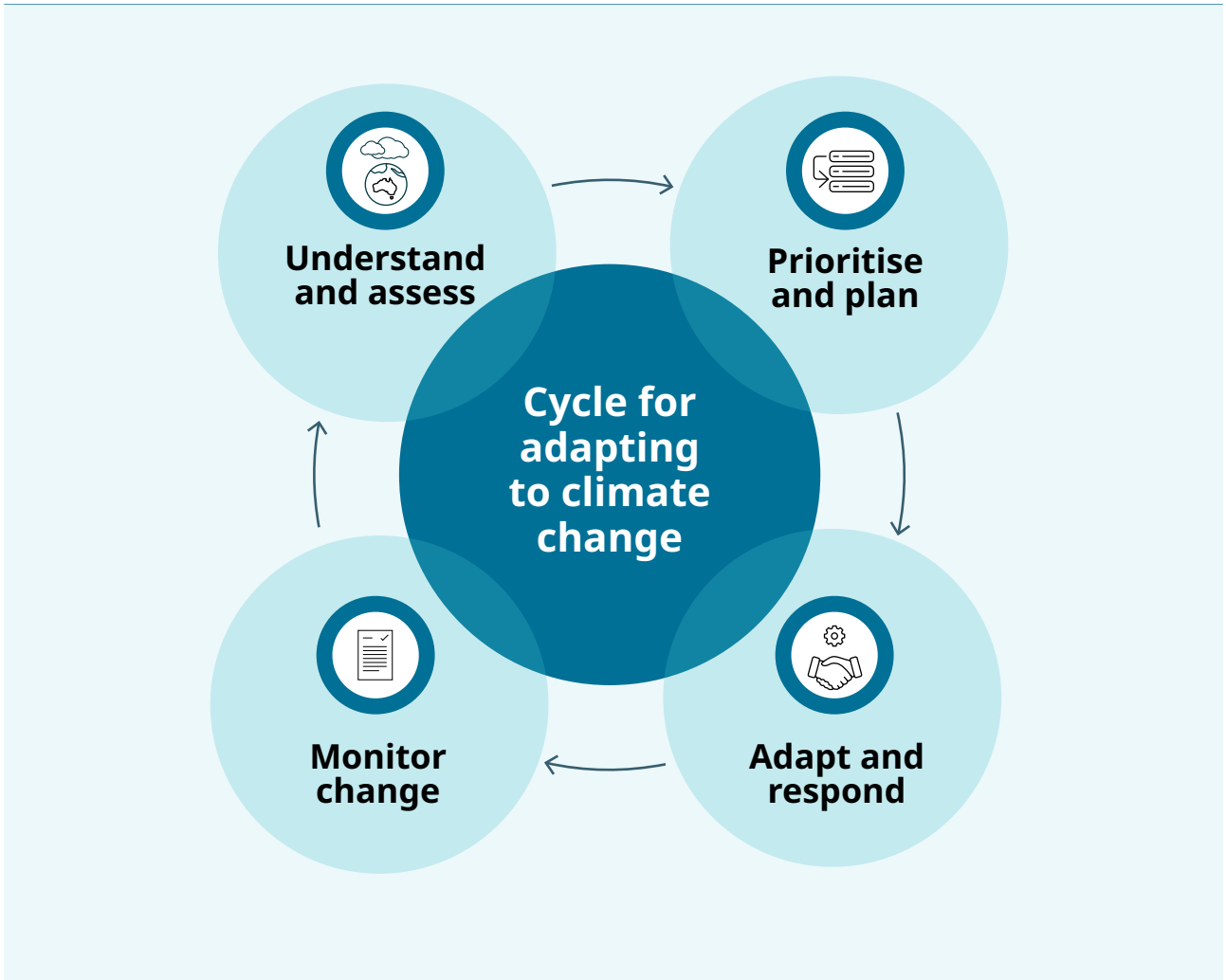
The Australian Government has committed to stronger action to address the unavoidable impacts of a changing climate. While we cannot eliminate risks from the changing climate, through well-designed adaptation policies we can reduce the risks we face.

Just as climate impacts affect all Australians, effective adaptation must involve everyone. Governments, households, industry, businesses and community organisations all have different but complementary roles to help make Australia better adapted to climate impacts and help realise associated opportunities.

Adaptation planning in Australia

Climate adaptation is the process of adjustment to actual or expected climate change and its effects. Adaptation is a complex and ongoing process, consisting of a cycle of activities, as shown in Figure 1.1. It is a process of assessing risk, planning, implementing, evaluating and adjusting.

Figure 1.1: Adaptation planning cycle



National Climate Risk Assessment

A climate risk assessment is the first step in adaptation planning and provides the evidence base for action. The NCRA represents the first comprehensive overview of the impacts Australia will face under future climate scenarios. It is based on the best available scientific evidence compiled by the Australian Climate Service, which is a partnership with the Bureau of Meteorology, CSIRO, the Australian Bureau of Statistics, and Geoscience Australia. It assessed how climate change is expected to impact our society under scenarios of 1.5°C, 2°C and 3°C of global warming by combining hazard, geospatial, climate and social data to estimate the likely impacts of climate change on the key systems fundamental to Australia's wellbeing. The NCRA:

- provides a crucial evidence base on climate risks across Australia
- consolidates our current understanding
- builds on the substantial work already undertaken by states, territories and local governments.

The evidence-base provided by the NCRA is available via the ACS website. Two key ACS documents support this National Adaptation Plan:

- Australia's National Climate Risk Assessment: An Overview (ACS 2025a)
- Australia's National Climate Risk Assessment (ACS 2025b).

A suite of technical reports is also available and forms a key component of the ACS evidence-base. Using this technical evidence base, the priority risks were evaluated to determine their severity under current and future timeframes (2050 and 2090). The climate hazard projections, exposure and vulnerability information, and projected extent, duration and pervasiveness of adverse impacts provided a basis to identify the urgency for action and inform adaptation planning (see Chapter 2 for more details).

This 'second pass' NCRA is underpinned by an extensive process over two years, including the release of a 'first pass' NCRA in March 2024 that undertook a qualitative assessment of Australia's climate related risks. The first pass assessment included a comprehensive literature scan, rapid adaptation stocktake and a series of expert elicitation workshops.

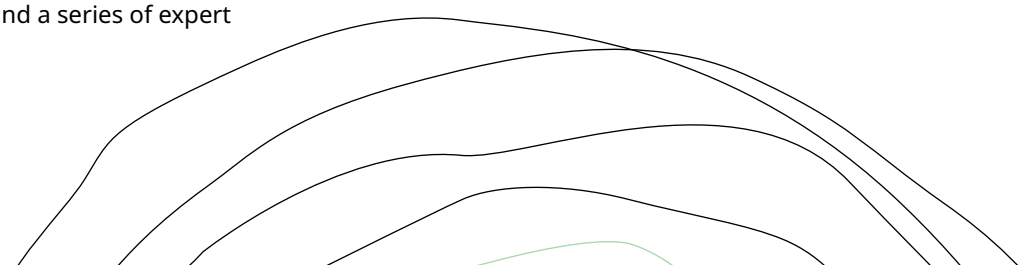
About the National Adaptation Plan

This National Adaptation Plan responds to the findings of the NCRA ('prioritise and plan' step in Figure 1.1). It outlines how the Australian Government will fulfil its national leadership role, complementing plans prepared by other jurisdictions and sectors.

The National Adaptation Plan represents a step change in the Australian Government's response to climate change. It establishes, for the first time, a framework for adapting to the physical climate risks that are nationally significant within Australia's Exclusive Economic Zone and external territories.

- **Physical risks** are those associated with all forms of impacts driven by physical climate change such as higher temperatures, bushfires, storms, floods and coastal hazards exacerbated by rising sea levels. These include any risks associated with these physical climate impacts, such as risks to mental and physical health and social cohesion.
- **Nationally significant risks** have consequences that would be severe enough to have a national impact – measured by how pervasive and prolonged adverse impacts are – and require a coordinated national response.

The National Adaptation Plan identifies priorities and actions at the national-scale and across 7 key 'systems'. The systems are economy, trade and finance; infrastructure and built environment; natural environment; primary industries and food; health and social support; communities – urban, regional and remote; and defence and national security. A chapter on Aboriginal and Torres Strait Islander peoples has also been incorporated as climate change has the potential to create disproportionate impacts on their ways of life, food and water security, and economic livelihoods. This aligns with the approach taken in the NCRA and will form an initial basis for further engagement with Aboriginal and Torres Strait Islander peoples on climate adaptation.



Mustering cattle in outback Australia

Box 1.1: Australian Government adaptation action underway

There is already extensive action occurring across the Australian Government to respond to future climate risks, with $3.6 billion committed to adaptation and resilience measures since 2022 and around $9 billion out to 2030 committed to policies and programs that are helping support broader efforts. Key actions already underway that contribute to adaptation include:

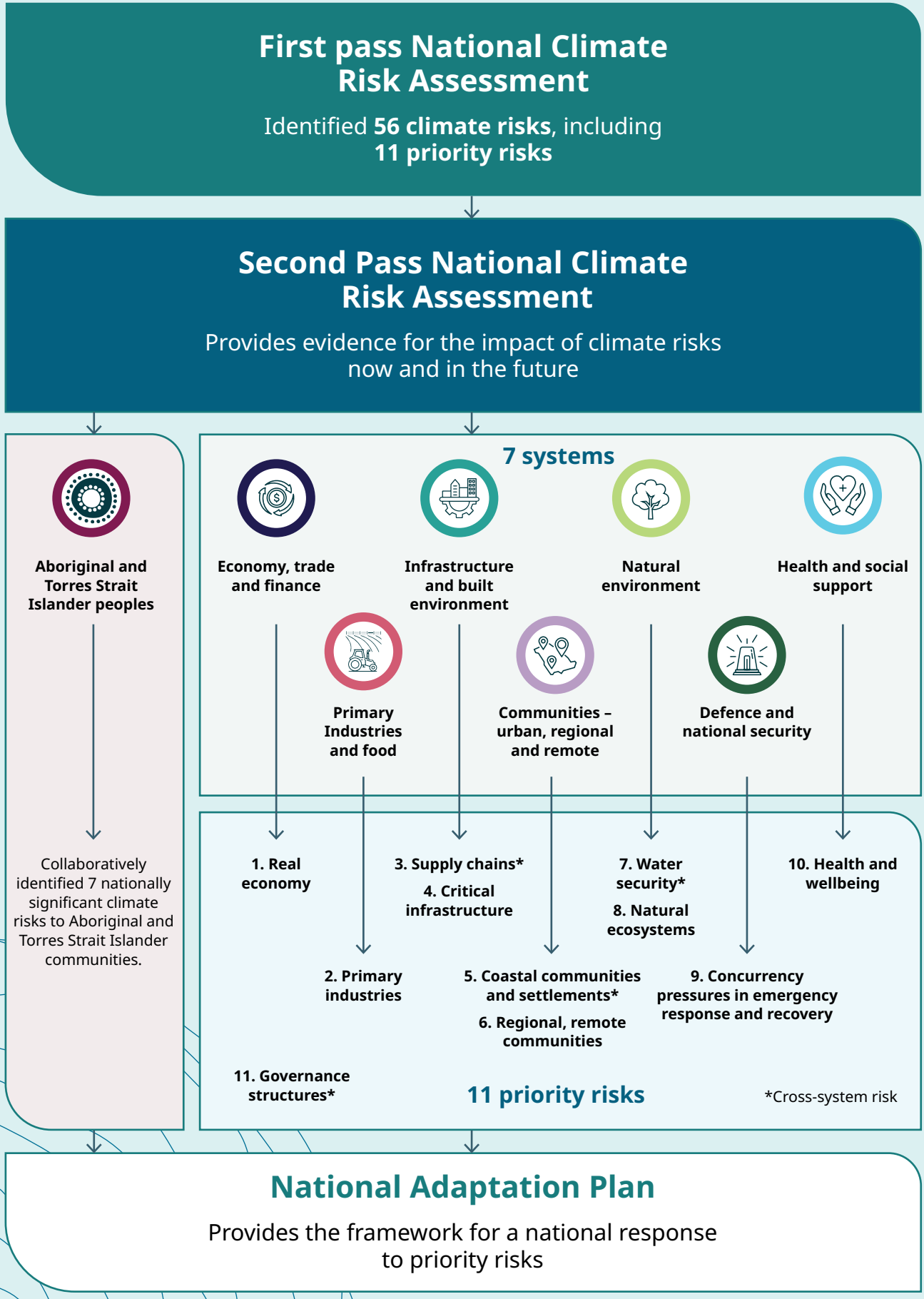
- the Disaster Ready Fund, the government's flagship initiative for disaster resilience and risk reduction providing up to $1 billion over five years from July 2023 to 2028
- continuing the Regional Investment Corporation (RIC) by providing an additional $1 billion in loan funding, and broadening the RIC's loan scope to include assistance for improving climate resilience, boosting sector productivity, and supporting agriculture to be part of Australia's net zero transition.
- investing $250 million in the Saving Australia's Bushland Program over the next 5 years to boost conservation, contributing to the 30 by 30 target
- investing in blue and green infrastructure and integrated catchment management to support urban cooling, climate resilience and flood mitigation in urban areas through the $200 million Urban Rivers and Catchments Program
- a $15.9 million Torres Strait and Northern Peninsula Area Climate Resilience Centre that will provide a coordinated response to the on-ground impacts of climate change in these areas
- $11.4 million over 4 years to support First Nations groups to participate in consent and agreement-making processes for Australian Carbon Credit Unit (ACCU) Scheme projects on Native Title lands
- implementing Australia's first National Health and Climate Strategy, and development of a Health National Adaptation Plan, led by the Department of Health, Disability and Aging

A summary of the Australian Government's key policies, strategies and plans for each system within the National Adaptation Plan (as at August 2025) can be found on DCCEEW's website.

The National Adaptation Plan reflects consultation undertaken by DCCEEW since July 2023. This includes consultation with all levels of government, communities, businesses, and organisations across Australia. Targeted engagement was undertaken with First Nations representatives. More information on the development of the National Adaptation Plan can be found on DCCEEW's website.

Figure 1.2 shows the development of the NCRA through a first and second pass, the core elements of the second pass NCRA and the relationship between the NCRA and the National Adaptation Plan.

Figure 1.2: Overview of links between the NCRA first and second pass assessments and the National Adaptation Plan



2. Climate change in Australia

Greenhouse gas emissions have resulted in global warming of air, land and oceans. The average global temperature between 2014 and 2023 has warmed by 1.2°C since the preindustrial period (1850 to 1900) (World Meteorological Organization 2024).

Australia tends to warm faster than the global average, with the latest State of the Climate Report finding that Australia has, on average, warmed by about 1.5°C since 1910 (CSIRO and BOM 2024).

Under the *Climate Change Act 2022,* Australia has legislated our greenhouse gas emissions reduction targets to contribute to the global goal of keeping the average global warming level well below 2°C, and pursuing efforts to limit global warming levels to 1.5°C. Model-based projections tell us that global temperatures are likely to continue to increase until at least mid-century and suggest it is prudent to plan for global warming levels of 2°C to 3°C by the end of this century, with temperatures in Australia likely to track higher than the global average (ACS 2025c). As global temperatures increase, we will face increasing climate hazards. Understanding these likely climate impacts further demonstrates the need for continued strong emissions reduction action alongside implementing adaptation measures.

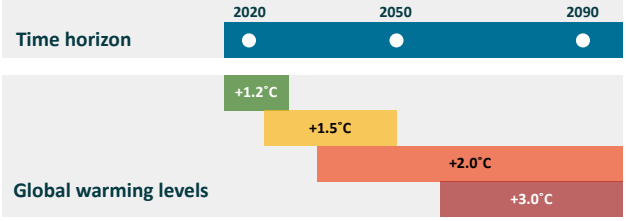
Almonta Beach, Coffin Bay National Park, South Australia

Key findings in the NCRA for future climate hazards in Australia include:

- Our climate has already changed, and will continue to change, even if global temperatures stabilise. Stabilising global temperatures at +1.5°C, +2°C, or +3°C above pre-industrial levels will reduce some, but not all, climate impacts. Changes in the oceans, for example, are locked in for centuries, as oceans will keep warming, rising, acidifying, and losing oxygen.
- Future changes in Australia's climate will not occur gradually or smoothly. They'll include more climate variability, some rapid trends, and will likely cross important thresholds.
- Tipping points are not well understood or accounted for in climate projections. With every fractional increase in global warming, there is an increased risk of triggering abrupt changes or surpassing critical tipping points that will impact Australia.

As climate hazards change in frequency and increase in severity, we are likely to experience more compounding, cascading and concurrent hazards, with greater potential impacts on Australia's health, infrastructure, environment and economy. The NCRA analysed how climate hazards in Australia have changed and are likely to change into the future. Hazards have been assessed against the current global warming level of 1.2°C, and 3 global warming levels of 1.5°C, 2°C and 3°C. Whether we reach these levels and when we do depends on global action to mitigate greenhouse gas emissions, but the approximate projected timing is presented in Figure 2.1.

Figure 2.1: Global warming levels used in the NCRA to assess hazards, and when we might reach them (uncertainty depends on global climate mitigation action this century)



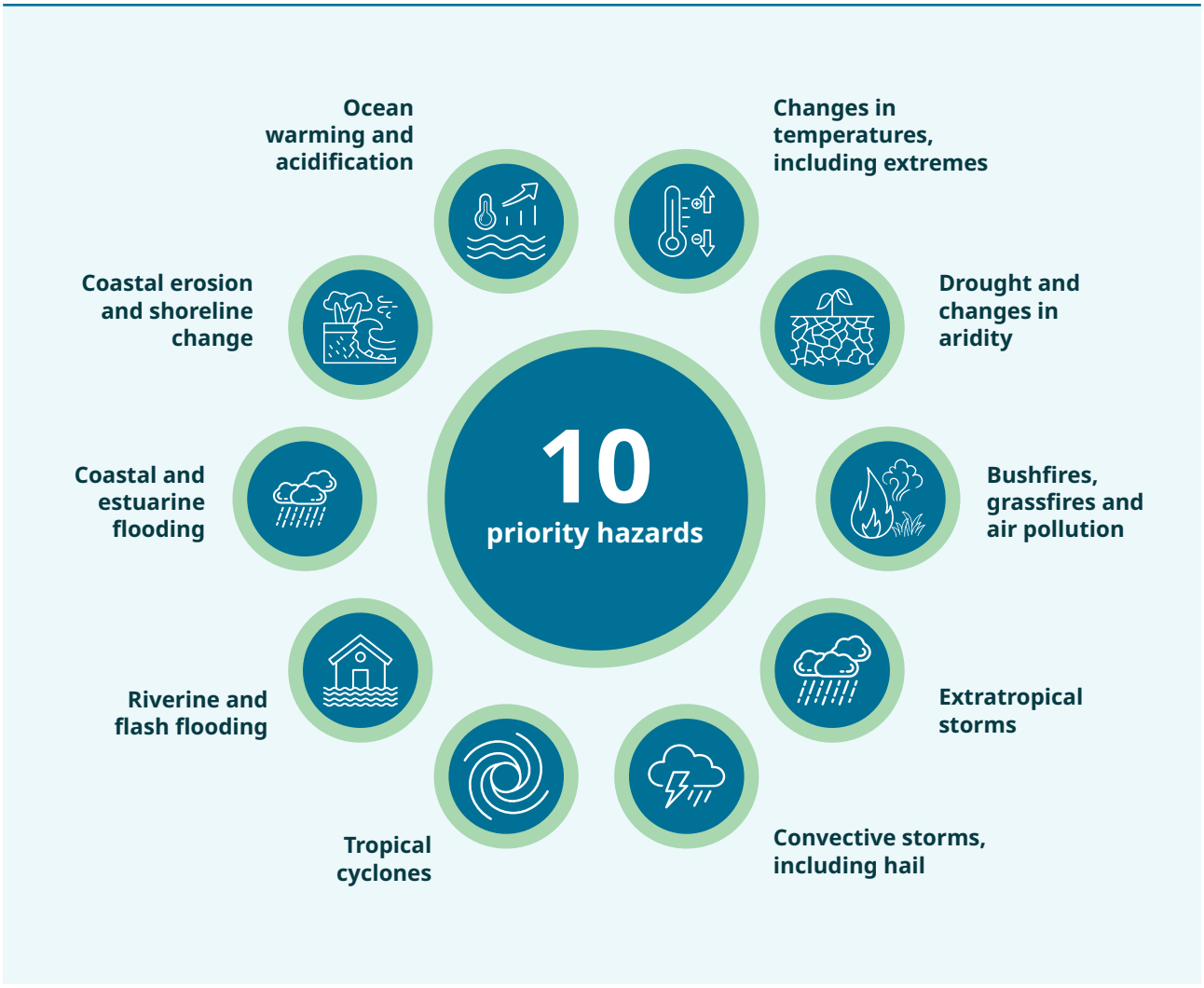
Ten climate hazards were assessed as the priority hazards likely to have the greatest impact on social, economic, built and natural environments over the next century (see Figure 2.2).

How these hazards are currently impacting Australia, and what changes are projected to occur in the future under the 3 global warming levels, is assessed in detail in Australia's Future Climate and Hazard Report (ACS 2025c).

No change will occur in isolation, and changes in one climate variable will feed back and affect many or all other aspects of our weather. Compounding, cascading and concurrent climate-related events will have far greater effects in Australia than individual events in isolation.

The NCRA has assessed how these changing hazards, along with exposure, vulnerability and current responses, are likely to impact on the 7 'systems'.[1] Key insights from hazard projections are illustrated in Figure 2.3.

Figure 2.2: The 10 priority hazards identified in the National Climate Risk Assessment



1 The systems are economy, trade and finance; infrastructure and built environment; natural environment; primary industries and food; communities – urban, regional and remote; health and social support; defence and national security as well as a chapter incorporating Aboriginal and Torres Strait Islander peoples' values and knowledges.

Figure 2.3:

Projected changes in Australia's hazards

Coastal hazards
Sea levels around Australia are expected to continue rising, leading to more frequent coastal floods, greater coastal erosion and shoreline changes. By 2090, coastal erosion events may occur 14 times more often than now.

Tropical cyclones
The frequency of tropical cyclones is likely to decrease, but the proportion of category 4 and 5 events may increase.

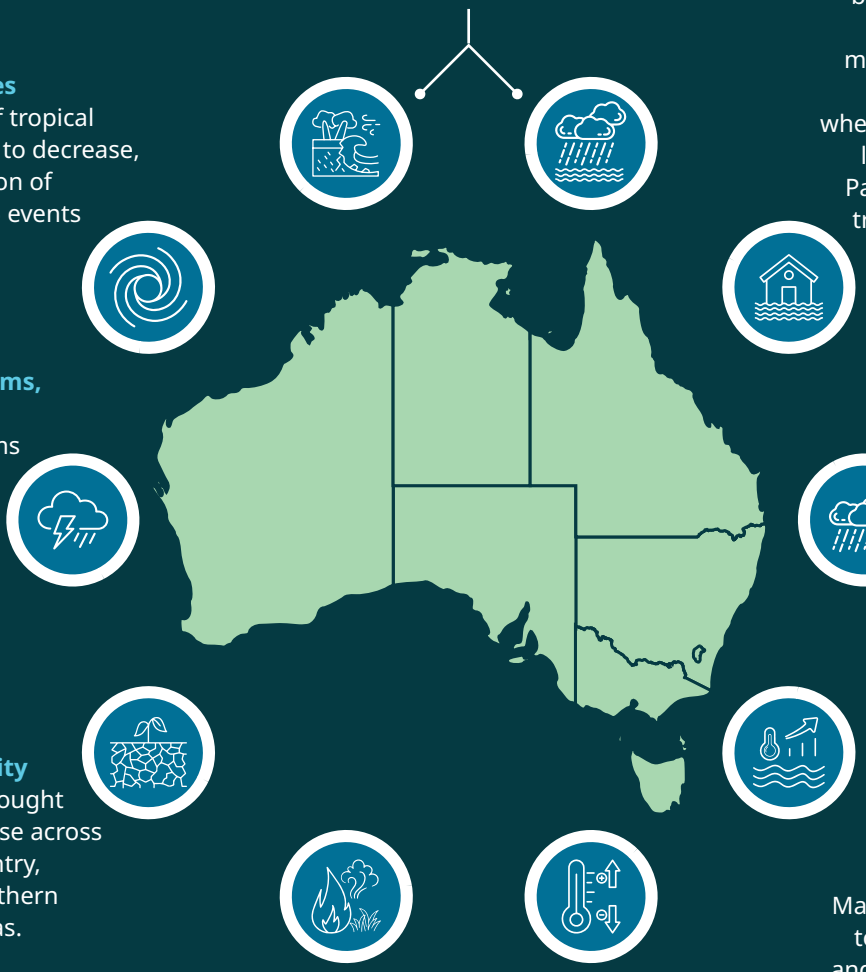
Riverine and flash flooding
Riverine floods may become less frequent due to a possible decrease in maximum daily runoff and annual runoff totals, but when they do occur, they are likely to be more intense. Parts of the east coast and tropics are likely to see an increase in heavy runoff events, which could lead to higher risks of flooding.

Convective storms, including hail
Convective storms producing large hail may increase in the east and occur further south.

Extratropical storms
Extratropical storms, including east coast lows, are projected to become less frequent but may have greater impacts when they do occur. Coastal flooding from these storms may increase.

Drought and changes in aridity
Time spent in drought is likely to increase across most of the country, especially in southern and eastern areas.

Ocean warming and acidification
Marine heatwaves are likely to become more frequent and longer, becoming more frequent especially in the Tasman Sea. Oceans around Australia are likely to become more acidic and warmer.



Bushfires, grassfires and air pollution
Higher temperatures and drier conditions are very likely to increase the risk of bushfires in most currently forested areas. Dangerous fire weather days are projected to become more frequent in southern and eastern areas with a longer fire season and the potential for more megafires.

Changes in temperatures
Extreme temperatures are very likely to increase nationwide, with the greatest increases in northern Australia, the Great Dividing Range in the south-east, and desert regions. Severe and extreme heatwaves are likely to double with +2.0°C warming and more than quadruple with +3.0°C warming.

Note: For further information on the certainty and confidence levels of each projection, see ACS 2025 (ACS 2025c)

Risk evaluation

Climate change risks arise from the interaction between climate-related hazards, vulnerability, exposure and response. These risks may be cascading and compounding, occurring across multiple systems, and/or exacerbating other risks. The NCRA is the first assessment that deeply considers how climate-driven hazards, together with exposure, vulnerability and current management responses, impact our key systems across the country.

In March 2024, the NCRA reported 56 nationally significant climate risks (DCCEEW 2024a). From these risks, 11 priority climate risks were identified for more detailed assessment and evaluation to inform national adaptation. Using the technical risk assessment evidence-base from the ACS, the priority risks were evaluated to determine their severity under current and future timeframes (2050 and 2090) based on the climate hazard projections, exposure and vulnerability information; and extent, duration and pervasiveness of adverse impacts.

Priority risks were assessed using the criteria outlined in Figure 2.4. The risk ratings assume a global warming level of approximately 2°C in 2050 and 3°C in 2090, and consider current rates of adaptation. The risk ratings, presented for each priority risk, relate to how deeply the priority risks impact a system, or systems, and the values supported by that system.

Adaptation in Australia

Climate adaptation is the process of adjustment to climate change and its effects. Actions usually aim to manage or reduce exposure and/or vulnerability to reduce the degree of risk. Effective adaptation approaches will chiefly enable us to reduce or avoid significant impacts, but also to identify and realise any opportunities associated with our changing climate.

Figure 2.4: Risk rating categories to describe the impacts and risks for systems and priority risks (ACS 2025b)

Low	Moderate	High	Very High	Severe
The impacts are minimal, with negligible effects on vulnerable communities and existing inequalities. There is minor potential for loss of life or significant property damage, and minimal disruption to community stability, livelihoods, and natural systems. The risk of long-lasting impacts to national security, resource security, and environmental health is insignificant, with no major threats to biodiversity or natural assets.	The impacts are limited to a few local regions, with minimal effects on a state or national level and on vulnerable communities. There is moderate potential for loss of life or property damage, and limited disruption to community stability, livelihoods, and natural systems. The risk to national security, resource security, and environmental health is low, with minor threats to biodiversity and sustainable resource use.	The impacts affect multiple regions within one or two states, noticeably impacting vulnerable communities and moderately exacerbating inequalities. There is a high potential for loss of life and property damage, with noticeable disruptions to community stability, livelihoods, and natural systems. National security, resource security, and environmental health face high risks, with threats to biodiversity and sustainable resource use.	The impacts are significant across multiple states, affecting safety and security nationally. Vulnerable communities face substantial impacts, exacerbating inequalities. There is a very high risk of significant loss of life and property damage, with major disruptions to community stability, livelihoods, and natural systems. National security, resource security, and environmental health face substantial threats.	The impacts are widespread across multiple states, severely affecting vulnerable communities and exacerbating inequalities. There is a major risk of significant loss of life and property damage, with severe disruptions to community stability, livelihoods, and natural systems. National security, resource security, and public health face severe threats.

Ultimately, the purpose of adaptation policy is to ensure the things we value most continue to exist, and that essential services are maintained in a future climate. Analysis consistently finds there are large, clear benefits from effective action.

- Recent work for the United Kingdom's third Climate Change Risk Assessment found that every £1 invested in adaptation could result in £2 to £10 in net economic benefits (Climate Change Committee 2022).
- Research from the Global Commission on Adaptation estimates that investing $1.8 trillion globally from 2020 to 2030 could generate $7.1 trillion in total net benefits (Global Commission on Adaptation 2019).
- Domestically, an Insurance Council of Australia report calculated that every $1 invested through resilience initiatives could result in an estimated $9.60 return on investment (ICA 2022).
- A specific kind of early action is 'betterment', or rebuilding infrastructure to be more resilient following a disaster. This kind of action is also known as 'disaster risk reduction'. This can save money overall and make recovery from future disasters less disruptive.

Box 2.1: Queensland's betterment program

Evaluation from Queensland's betterment program, joint-funded with the Australian Government, indicates the clear benefits of a betterment approach (Queensland Reconstruction Authority 2023). As of July 2023, there had been 1,173 impacts to betterment sites from 44 disaster events, with 79% suffering no or minor damage. Since 2013, Queensland betterment projects have invested $244 million in adaptation projects that have withstood subsequent disasters with no or minor damage, generating saved or avoided costs of more than approximately $988 million (Queensland Reconstruction Authority 2024).

Adaptation responsibilities

Adaptation and resilience involves everyone and needs to be integrated into decision-making at all levels. This includes governments, households, industry, businesses and community organisations. It will also be critical to co-design adaptation actions with First Nations peoples, whose knowledges, sciences and cultural practices have protected lands, seas and waterways for millennia, and created ecologically sustainable livelihoods for their communities.

The Energy and Climate Change Ministerial Council is the primary forum through which the Australian Government coordinates adaptation planning and actions with state and territory governments and the Australian Local Government Association (ALGA). The council is supported by an Adaptation Working Group, which is chaired by the Commonwealth and has members representing all Australian jurisdictions. The National Emergency Management Ministers' Meeting is the primary forum through which the Australian Government works with state and territory governments and the ALGA to focus on action to reduce disaster risk.

Roles and responsibilities for adaptation were agreed to by the then Council of Australian Governments' (COAG's) Select Council on Climate Change in 2012. These roles are underpinned by the principle that 'risks are most effectively managed by recognising and empowering those who are best placed to manage them'. The COAG agreement guides federal, state, territory and local government cooperation, and highlights the specific roles and responsibilities for each level of government and the private sector. The COAG arrangement continues under the National Cabinet arrangement.

There is scope for further clarifying and evolving the application of these principles in the context of increasing climate hazards, which will result in greater loss and damage, and thus mean stronger adaptation action is needed from all levels of government, business and the community. Chapter 3 explores responsibilities as part of the framework for prioritising adaptation action. Chapter 4 discusses the potential for new models of governance and partnerships grounded in these agreed responsibilities.

Box 2.2: State, territory and local government adaptation action

State and territory governments are already undertaking substantial action to adapt to climate change, as they deliver and administer a significant body of legislation, deliver a broad range of services and manage a substantial number of assets and infrastructure. All states and territories have published a combination of state-level risk assessments, adaptation plans, or strategies. Tasmania and the Australian Capital Territory are developing their second Climate Change Action Plan and Climate Action Strategy respectively. State and territory adaptation actions vary in scope and scale, and more information can be found in Appendix A. Local governments are similarly instrumental in adaptation as they develop local adaptation plans and manage local level assets. Local governments across Australia are working to integrate climate adaptation into their decision making to protect communities' health and wellbeing, property, infrastructure and livelihoods. For example, the South East Councils Climate Change Alliance (SECCCA) delivers a coordinated local government response to climate change across 10 local government areas in south-east Melbourne. In its 21 years of operation it has completed 46 projects, including an asset vulnerability assessment to identify climate risks to core council assets and enhancing community resilience by identifying communities that are vulnerable or resilient to the impacts of climate change (SECCCA 2025).

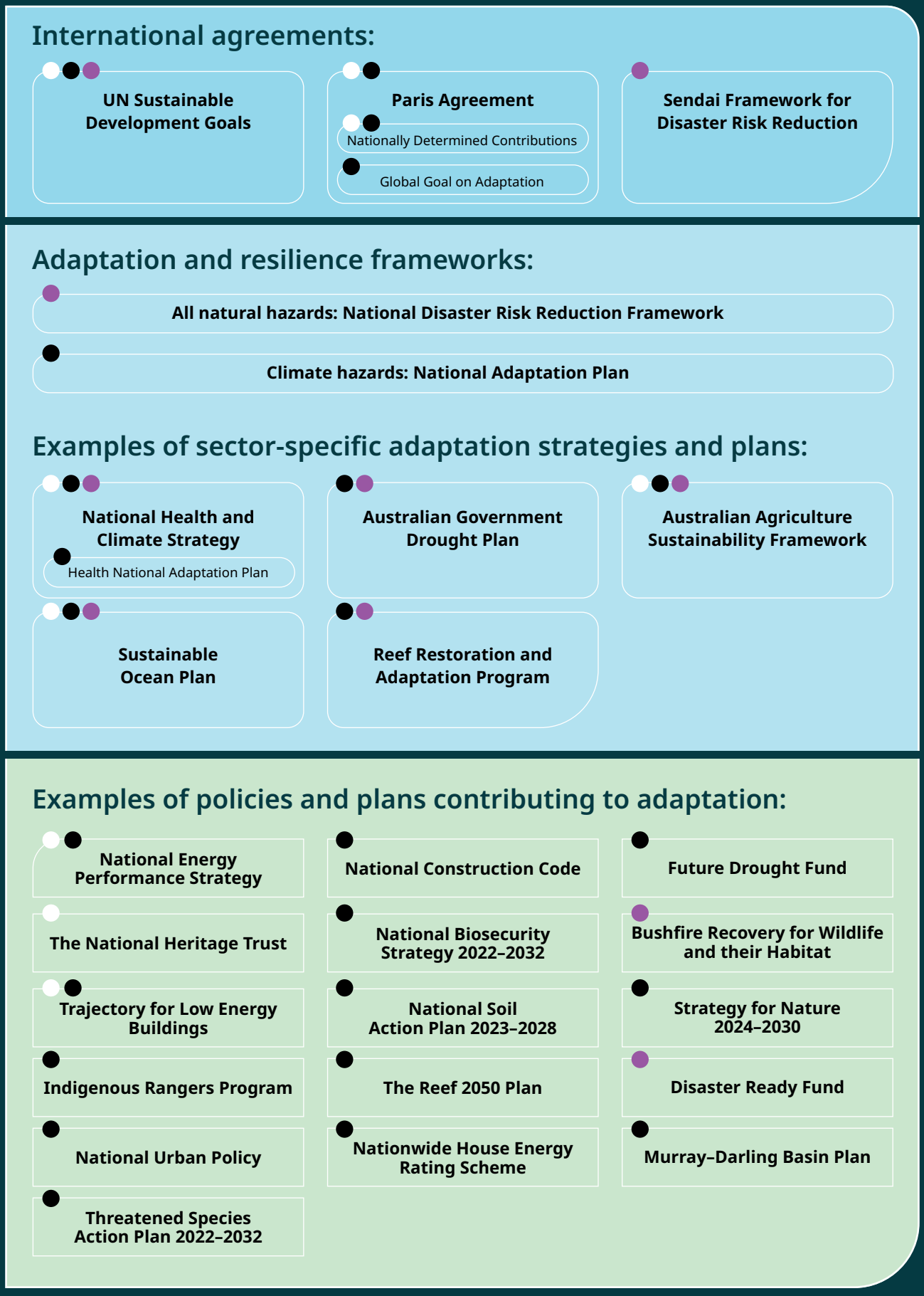
Australian Government policies

The Australian Government committed $354 million in new funding in the 2025–26 budget for adaptation measures and $632.5 million over the medium term on measures relating to adapting to climate change and improving climate and disaster resilience. The Australian Government's key adaptation policies are summarised in Figure 2.5, demonstrating the substantial amount of interlinked adaptation and climate risk policy and programs that are underway. This illustrates several key aspects of adaptation policy:

- Maximising efficiencies is critical given the scale and nature of action required.
  - 'Mainstreaming' of adaptation means incorporating adaptation considerations within existing policies and programs.
- Mitigation and adaptation need to be considered in parallel.
  - As part of developing its Net Zero Plan and 2035 emissions reduction target, the Australian Government is developing 6 sectoral emissions reduction plans for electricity and energy, transport, industry, resources, the built environment, and agriculture and land. The plans will focus on emissions reduction but will also consider climate risk and adaptation.
- Adaptation and disaster risk reduction are closely related.
  - Not all climate impacts are due to natural hazards, and not all natural hazards are exacerbated by climate change. There is a high degree of overlap, however, and it is important to anticipate and reduce natural hazard risks to prevent them from becoming disasters. Efforts to rebuild after disasters must strengthen resilience to future natural hazard risks. The Department of Home Affairs is progressing Australia's national resilience agenda, focusing on the Australian Government's role and approach to achieving better cohesion and links across policy for enhancing Australia's resilience. This complementary National Adaptation Plan focuses in more detail on one hazard class – physical climate risk.

Further information on Australian Government policies is in Appendix A and on DCCEEW's website.

Figure 2.5: Australian Government adaptation landscape



Note: Contributing policies and plans are not exhaustive but indicate the breadth of policies contributing to adaptation outcomes

Brisbane, Queensland, Australia

3. A framework for adaptation

A vision and objectives for a well-adapted Australia

Vision

Australia's economy, society, and natural and built environments, are resilient to the increasing risks of climate change. As a country, the adaptation actions we take are effective and coordinated, maximise co-benefits, and are undertaken by those most able to manage the risk – at the right level of government, business or in households.

Objectives

To reduce the impacts of climate change; to accelerate and mainstream adaptation action; to drive a substantial uplift in investment; to provide clarity on roles and responsibilities for adaptation action; and to establish support for people and communities in vulnerable situations.

Considering and managing climate risk is an instinctive and embedded practice for governments, organisations and communities across Australia.

Principles to guide Australian Government actions

Australian Government action will be guided by a set of principles that are targeted, evidence-based and collaborative. Prioritised actions will typically meet multiple principles at the same time, with these principles explained further below.

Targeted – the Australian Government will prioritise action where:

- The **Australian Government is best-placed to act** compared to other levels of government, businesses and the community, and where the action supports and/or complements – rather than duplicates, disrupts or detracts – from actions taken by others.
- Action responds to and reduces the **nationally significant risks** identified through the National Climate Risk Assessment so that resources are directed to protect the tangible and intangible assets that Australians value most.
- Action **supports groups that are disproportionately vulnerable** to the impacts of climate change and may have greater difficulties in accessing the information and resources needed to guide successful climate adaptation actions.
- Action is consistent with an effective **long-term adaptation pathway**, with individual actions complementing – and not precluding – future actions that may need to be taken, as well as building on past actions.
- Action is **efficient** by encouraging alignment and consistency between the public and private sector and/or between levels of government, and leveraging the Commonwealth's ability to take advantage of economies of scale.

Evidence-based – the Australian Government will prioritise action where:

- The **benefits outweigh the costs and represent value for money** after factoring in any cross or co-benefits, risk tolerances, intangible values and avoiding maladaptation.
- Action is demonstrably **urgent** and should not be deferred, noting all actions cannot be taken at once with finite resources, and that not all urgent actions will respond to immediate risks.

- Actions can be **measured, monitored and evaluated** – with lessons learned to inform future climate adaptation actions, requiring a clear plan for how this will be done using best available science.
- Action is reflective and considers the **probability of success.** This does not preclude taking actions with low chances of succeeding if the potential benefits are significant.

Collaborative – the Australian Government will prioritise action where:

- Action is **place-based** and aimed at supporting local and community led decision-making and responses to the impacts of climate change, especially for regional communities.
- Action is **respectful and inclusive of First Nations' perspectives** through co-design and self-determination for First Nations communities, and aligned with the priority reforms and objectives of the National Agreement on Closing the Gap.
- Action is **mainstreamed** within operations of all Australian Government agencies (i.e. decision-makers across the Australian Government will need to regard the impacts of climate change as a key consideration rather than as a matter for which someone else is responsible).

Box 3.1. Australian Government roles and responsibilities for climate adaptation

The Australian Government's current roles and responsibilities for climate adaptation action compared to other levels of government are outlined in the 2012 Council of Australian Government's Select Council on Climate Change's Roles and Responsibilities for Climate Change Adaptation in Australia. The Australian Government's areas of responsibility incorporate the flexible concept of 'national leadership', which provides a broad basis for action in collaboration with other jurisdictions and sectors in areas where Commonwealth action can help guide and galvanise responses at a national scale. The issues for which the Australian Government has a leadership role may change over time in response to the evolving nature and severity of climate risks and impacts (see Chapter 2 and Chapter 4).

Re-connecting the Kimberley region with the re-opening of the Fitzroy River bridge. Credit: Main Roads Western Australia

4. Enabling adaptation

Cross-cutting enablers to strengthen effective action

The Australian Government has a clear role to play in supporting and enabling effective adaptation through:

- leadership and governance
- climate science, data and risk management information.

These cross-cutting areas enable action by all levels of government, throughout the business and community sectors, and across all the priority risks identified by the NCRA. Cross-cutting enablers are therefore a key focus for the Australian Government in strengthening national adaptation. Chapters 6 to 12 identify priorities and actions at a more granular level across specific systems.

Leadership and governance

Governance influences climate change risks by shaping how we collectively respond. Governance modes, mechanisms and instruments influence the way adaptation is viewed, planned and implemented. Good governance refers to those characteristics that enable the most effective action to be taken. Flexibility is one of the characteristics. Wariness about the possibility of maladaptation is another.

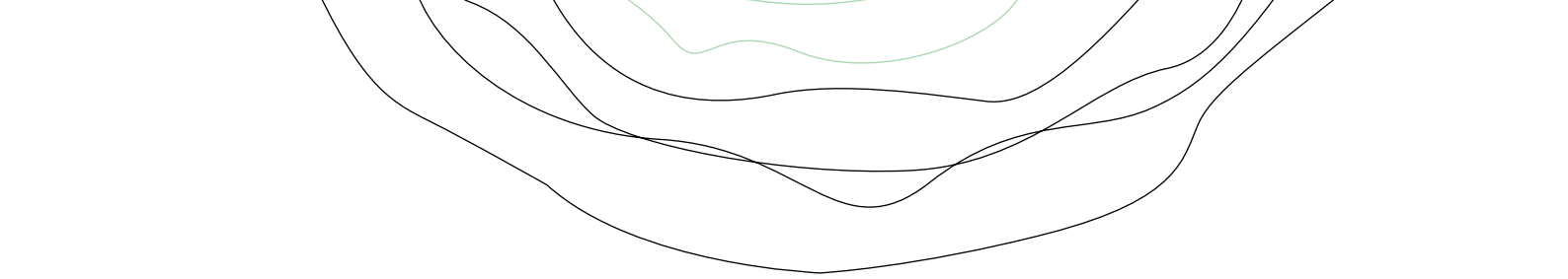
Governance includes how decisions and negotiations within and between the systems both generate and transfer risks to other systems. The NCRA identifies governance as a priority risk, and found that, within each of the systems and priority risks assessed, governance plays a crucial role in coordinating action and guiding adaptation decision-making to minimise impacts and avoid maladaptation. Governance opportunities also exist to improve outcomes, such as ensuring clear roles and responsibilities for action, and embedding Aboriginal and Torres Strait Islander leadership into decision-making structures that would support self-determination for Aboriginal and Torres Strait Islander communities.

Climate science, data and risk management information

Successful climate adaptation requires reliable and authoritative climate change information to help decision-makers prioritise areas for adaptation and choose the best responses. The government provides climate information, data and guidance tailored for a variety of users. The new, detailed NCRA information published by the Australian Climate Service represents a step change in high quality, nationally consistent, publicly available information on the impacts of climate change.

Box 4.1 Independent reviews of Commonwealth disaster funding and national natural disaster governance arrangements

The Australian Government commissioned the Independent Review of Commonwealth Disaster Funding (Colvin Review) in 2023, following the establishment of the National Emergency Management Ministers' Meeting (NEMMM) in 2022. The ministerial council chaired by the Minister for Emergency Management, commissioned the Independent Review of National Natural Disaster Governance Arrangements (Glasser Review) to improve disaster management arrangements. These reviews were in response to increasing size, scale, intensity, cost and complexity of disasters. The Colvin Review recommends that the Commonwealth should prioritise its data coordination efforts, including the provision of timely decision relevant information to assist decision-makers to manage natural hazard risks and satisfy their disaster management objectives. This includes providing disaster risk information in a format usable for decision makers (e.g. climate hazard impact, capability and capacity information and vulnerability data). The government is considering the recommendations of the reviews within its remit.



Consultation inputs

Stakeholders stressed the importance of a comprehensive evidence-base and accurate, up-to-date climate scenarios to inform adaptation planning. Stakeholders also suggested that the Australian Government make legislative changes to strengthen adaptation governance including regular national climate risk assessments and national adaptation plans.

What we are doing

National governance and institutional arrangements that support effective disclosure and management of climate risk across Australia is essential to mainstream climate adaptation. Effective climate risk management needs reliable, accessible climate information.

Key Australian Government enabling actions include:

Leadership and governance

- **Requirements for disclosure and management of climate risk**. In the public sector, the Commonwealth Climate Disclosure requires Commonwealth entities and companies to publicly report on climate risk. Led by the Department of Finance, the requirements include reporting on their exposure to climate risks, access to opportunities, as well as actions to manage risk in their annual reports. These requirements build on the guidelines in Climate Risk Management, released in February 2024 (DCCEEW 2024b). Most states and territories have or are developing similar requirements. In the private sector, large listed and unlisted businesses and financial institutions will also be required to disclose climate-related risks (see Chapter 6). When combined, mandatory requirements for climate risk disclosure and management can drive adaptation across a substantial part of our economy.
- **Providing practical support to officials at the local, state and the Australian Government levels** through the Climate Risk and Opportunity Management Program (CROMP), administered by DCCEEW. The program aims to uplift capability in climate risk management in the public sector by providing resources, tools and support services.
- **Developing and implementing the NCRA and the National Adaptation Plan**. This National Adaptation Plan consolidates and maps out a national level adaptation framework which can assist agencies to mainstream adaptation in their portfolios.
- **Improving national understanding of disaster impacts and working to increase resilience, adaptability, and preparedness to those impacts through the Disaster Ready Fund (DRF)**. The DRF is the Australian Government's flagship initiative for disaster resilience and risk reduction, administered by the National Emergency Management Agency. The program aims to support projects that address the physical and social impacts of disasters on Australian communities.
- **Coordinating with other Australian jurisdictions through the Energy and Climate Change Ministerial Council**, which brings together the Commonwealth, Australian states and territories, and New Zealand, to work together on priority issues of national significance and key reforms in the energy and climate change sectors; and drives officials-level collaboration through working groups to align and progress adaptation efforts.

Climate science, data and risk management information

- **Conducting high-priority foundational and applied climate and emissions research across national institutions and research programs**, including effort by: CSIRO, the Bureau of Meteorology, the National Environmental Science Program, the National Collaborative Research Infrastructure Strategy, Australian Research Council initiatives, Natural Hazards Research Australia, Australian Antarctic science programs, and state/territory governments.
- **Supporting the Australian Climate Service to provide institutional support for reliable, authoritative climate science and information**. The new, detailed information published through the NCRA represents a major increase in the amount of high quality, consistent, publicly available information on the increasing impacts of climate change. Over 2025 and beyond, the ACS will release more detailed downscaled climate and natural hazard information for decision-making through its online portal.

- **Establishing a Youth Advisory Group on climate change adaptation and water**. Operating over 2025 and 2026, members of the group will work with DCCEEW on projects such as providing advice on the implementation of the National Adaptation Plan to address the impacts of climate change. This will include identifying and addressing areas of climate risk that are meaningful for young people.
- **Implementing flexible, collaborative arrangements to better share climate information across all levels of government, with communities, business or researchers**. Examples include DCCEEW supporting the implementation of regional First Nations-led Torres Strait and Northern Peninsula Area Climate Resilience Centre and leading at a national level on the National Partnership for Climate Projections.

All jurisdictions are also developing measures to support adaptation action. Appendix A includes detail on state and territory action.

What we will do

The Australian Government recognises the importance of strong governance to support and strengthen adaptation action across all systems and will progress this further as part of implementing the National Adaptation Plan.

Climate adaptation actions will be closely aligned, and in some cases co-developed, with other related initiatives such as the government response to the Colvin and Glasser reviews, the Hazards Insurance Partnership, and the Sustainable Finance Roadmap. This coordinated approach will help build resilience and reduce risk across the suite of Australian Government programs.

The Australian Government will work with states, territories, and local government to create an action agenda for this Plan by the end of 2026, working through the Energy and Climate Change Ministerial Council, to give effect to priority actions identified for government at all levels of Australian society. This could be informed by economic and actuarial analysis to identify adaptation policy interventions with the highest economic benefit, designed to complement existing resilience initiatives. Effective adaptation is a continual process that will evolve as we work to harness and align the action underway across all jurisdictions, including by harmonising adaptation priorities with disaster resilience action through the Commonwealth's ongoing response to the Glasser and Colvin reviews.

Future priorities

The NCRA considered the *'risk to adaptation from maladaptation and inaction from **governance structures** not fit to address changing climate risks'* as a priority risk. There is scope for further clarifying and evolving the application of the COAG principles in the context of increasing climate hazards that will result in greater loss and damage and, consequently, the need for strengthened adaptation action from all levels of government, business and the community.

The government will also consider effective online options for disseminating information about best practice adaptation, building on work already underway across ACS and including the stocktake of adaptation actions undertaken for the NCRA.

Further reforms to the ACS will be considered, informed by the recommendations of the Independent Review of the ACS, the government responses to the review (published in June and December 2024), and user needs. These reforms will align with other government climate adaptation, risk and resilience priorities and initiatives.

5. Aboriginal and Torres Strait Islander peoples

Hancock Gorge in Karijini National Park Pilbara region in Western Australia

Climate change has the potential to create disproportionate and unique impacts on Aboriginal and Torres Strait Islander peoples' ways of life, health and wellbeing, food and water security, and economic livelihoods. This chapter recognises the interconnectedness of Aboriginal and Torres Strait Islander peoples[2] with land, sea and Country and the intrinsic links with Lore, customs, cultures and ways of being.

There have been ongoing impacts on Aboriginal and Torres Strait Islander peoples' knowledge systems and on land, sea and Country. These impacts are being amplified by climate change, increasing the threat to cultural continuity.

Aboriginal and Torres Strait Islander self-determination, cultural governance and place-based responses provide the foundation for Aboriginal and Torres Strait Islander peoples to respond and adapt to the impacts of climate change.

Key risks and priorities

The ACS collaborated with Aboriginal and Torres Strait Islander peoples to identify nationally significant climate risks to their life, health and wellbeing, food and water security, and economic livelihoods. Through this process, 7 new nationally significant risks were identified:

- risk to self-determination
- risk to land, sea and Country
- risk to cultural knowledges, practices, values and sites
- risk to health, wellbeing and identity
- risk to economic participation and social and cultural economic development
- risk to water and food security
- risk to remote and rural communities.

2 This chapter is titled 'Aboriginal and Torres Strait Islander peoples' as that was the term preferred by the Aboriginal and Torres Strait Islander authors of the chapter in the NCRA. In other chapters the term 'First Nations peoples' is also used to refer to Aboriginal and Torres Strait Islander peoples, where that aligns with the terminology used in existing policies or programs.

At the NCRA gatherings,[3] Aboriginal and Torres Strait Islander participants identified the following key opportunities in adapting to climate change:

- support Aboriginal and Torres Strait Islander peoples' self-determination
- promote Aboriginal and Torres Strait Islander governance
- integrate and value Traditional knowledges to support climate adaptation
- enhance health of Country
- build evidence and data.

The National Climate Risk Assessment Report (ACS 2025b) and the Aboriginal and Torres Strait Islander People's Overview Report (ACS 2025d) are critical resources for understanding and guiding adaptation for and with Aboriginal and Torres Strait Islander peoples. These reports are available on the ACS website.

What we are doing

The government has a range of existing programs and initiatives that engage First Nations peoples to develop solutions for First Nations peoples. While not all are necessarily adaptation-focused, they provide a pathway for future work on integrating climate adaptation across all levels of government. The following are some of the programs:

- The National Agreement on Closing the Gap provides a framework to help address agreed priority reforms, outcomes and targets around First Nations economic participation, education, health and wellbeing.
- The First Nations Clean Energy Strategy is a national framework to guide investment, influence policy, and support First Nations peoples to self-determine how they participate in, and benefit from, Australia's clean energy transition. Developed in collaboration with First Nations organisations, the strategy outlines a vision for a sustainable clean energy future for all Australians, with Country and Culture at the heart.
- The Indigenous Protected Area program supports First Nations peoples to care for their Country through voluntary agreements with the government. The Australian Government has invested $231.5 million over 5 years from 1 July 2023.
- The Indigenous Rangers Program assists First Nations peoples in managing Country according to Traditional Owners' objectives. In 2024, the Australian Government invested $355 million over 4 years to create 1,000 new Indigenous ranger roles.
- The National Strategy for Food Security in remote First Nations communities is being developed in partnership with the First Nations health organisation.
- The Torres Strait and Northern Peninsula Area Climate Resilience Centre is a $15.9 million investment over 6 years (2022–23 to 2027–28) to create a First Nations-led coordinated regional response to climate change.
- The Seawalls Program (stage 2) delivers coastal protection works in the Torres Strait to protect communities and infrastructure against climate-related inundation and erosion.
- The National Environmental Science Program (NESP) includes key Indigenous research partnerships. For example, the Resilient Landscapes Hub is undertaking a project working with Traditional Custodians to develop a culturally relevant framework for climate adaptation and resilient landscapes.
- The Future Drought Fund (FDF) First Nations Advisory Group advises on First Nations perspectives on drought and climate resilience, providing culturally safe and appropriate expertise in the design and delivery of FDF programs and activities.
- The Northern Territory Remote Housing package, delivered with the Northern Territory Government and NT land councils to improve existing dwellings and building new homes that are culturally appropriate and meet the Northern Territory's climate challenges.

3 A collaborative approach was taken to identify climate risks and potential impacts to Aboriginal and Torres Strait Islander peoples, through the holding of 2 gatherings. This was a qualitative process with the goal of describing risks; in future, a process of further analysis could be undertaken to better understand and quantify the scale, severity and potential impacts of these risks.

What we will do

First Nations peoples, communities and businesses are particularly vulnerable to the impacts of climate change. Culturally appropriate climate adaptation solutions need to be delivered through First Nations-led partnerships. Key new measures in 2025 include:

- Developing the inland waters target (Outcome 15c) under the National Agreement on Closing the Gap, which will accelerate progress towards securing Aboriginal and Torres Strait Islander legal rights and interests in inland water bodies under state and territory water rights regimes.
- Implementing the Murray–Darling Basin Aboriginal Water Entitlements Program (AWEP) to secure water entitlements for First Nations peoples of the Murray–Darling Basin.
- Delivering the Cultural Flows for Cultural Economies program, which will assist Basin First Nations to take a stronger role in the ownership and management of water, including to plan and prepare for the water security challenges of a changing climate.

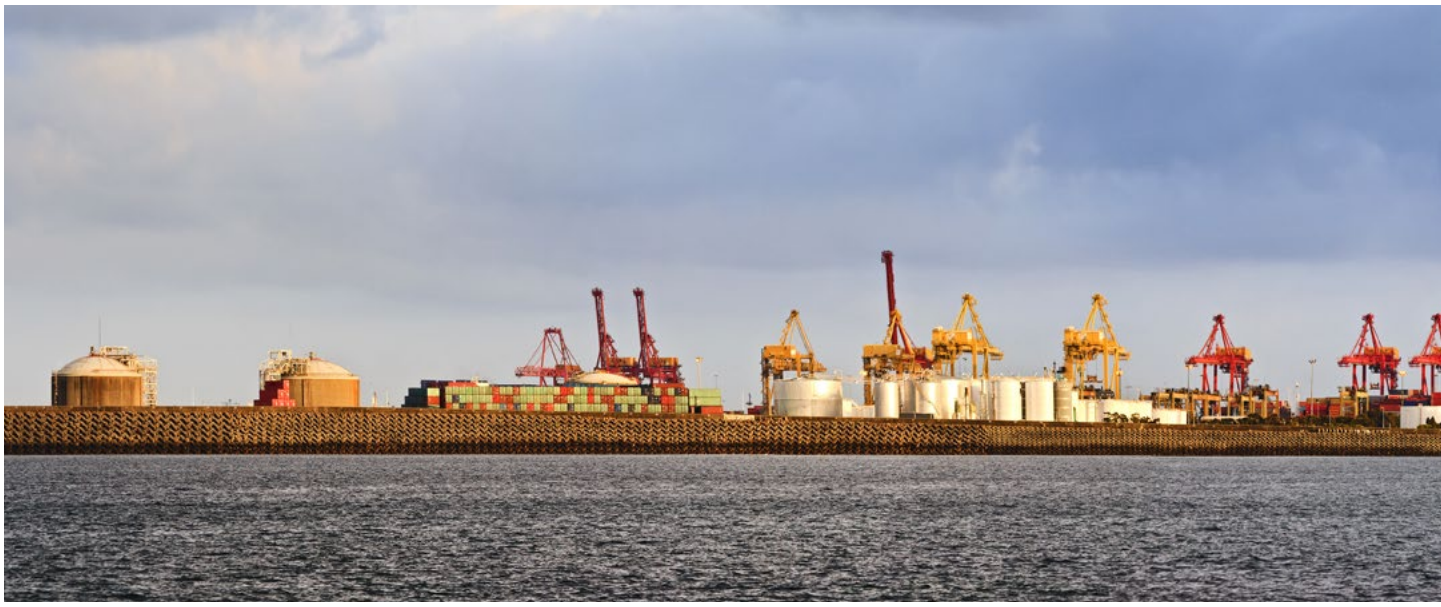
Future priorities

The NCRA provides a statement of the risks to Aboriginal and Torres Strait Islander peoples from climate change, and a broad framework on how best to develop adaptation responses. This provides a baseline for future risk prioritisation and adaptation response planning across all levels of government. It is important that this work is not rushed, to ensure it is shaped by Aboriginal and Torres Strait Islander peoples' voices and lived experiences. Key to success will be supporting Aboriginal and Torres Strait Islander leadership in the development of climate adaptation initiatives, to ensure the needs of Aboriginal and Torres Strait Islander communities, localities and regions are met.

Future directions for Aboriginal and Torres Strait Islander peoples in climate adaptation will also need to consider the priority reforms and outcomes in the National Agreement on Closing the Gap (Closing the Gap). The Closing the Gap framework sets up expectations around establishing formal partnerships and shared decision-making (Priority Reform One), sharing access to data and information (Priority Reform Four), and supporting Aboriginal and Torres Strait Islander peoples maintaining a distinctive cultural, spiritual, physical and economic relationship with their land and waters (Outcome 15).

While the arrangements for the identification of future priorities, including governance and roles and responsibilities, have yet to be settled, it will be important to consider a range of options. These could include strengthening adaptation governance, improving climate science and information, working with Aboriginal and Torres Strait Islander communities, stimulating private investment, and developing datasets of key risks to Aboriginal and Torres Strait Islander peoples and communities to assist prioritisation of private and public sector investment.

6. Economy, trade and finance



Botany Bay Cargo Port, New South Wales, Australia

System definition

The stability and strength of the economy, trade and finance system is the foundation of our shared prosperity and sustains the living standards of all Australians.

The economy, trade and finance system refers to Australia's:

- interconnected investment and insurance markets
- import and export markets
- the distribution of goods and services
- the institutional arrangements governing economic activities and trade networks.

This system has cross-cutting risks across systems and is highly interconnected with all other systems.

System vision

Our economy and financial systems continue to operate effectively in supporting the wellbeing of all Australians even as the physical risks and impacts of climate change increase into the future. Greater adaptive capacity within the system is underpinned by effective disclosure and management of climate risk, which is enabled by up-to-date, reliable and accessible climate information, guidance and supporting processes. The likelihood of disruptions to the economy and financial systems is minimised.

Consultation inputs

Consultation with stakeholders has shown the economy, trade and finance system is a key area in which the Australian Government can show leadership on adaptation. Stakeholder input on this system was focused on addressing barriers to more private sector adaptation. Stakeholders expressed concern that increasing private sector investment could be skewed towards a focus on physical assets. What is required are adaptation investments that include both traditional 'hard' infrastructure and a range of other measures such as nature-based solutions, social impact investments and investment in innovations to reduce exposure or impact of hazards. The scale, diversity and complexity of adaptation required will mean considering ways that the public and private sectors can co-invest for mutual benefit.

Priority risk

Of the 11 priority climate risks identified in the first pass assessment, there was one within the economy, trade and finance system. This was the *risk to the **real economy** from acute and chronic climate change impacts, including from climate-related financial system shocks or volatility*. The real economy refers to the part of the economy, trade and finance system that produces and uses goods and services, as opposed to the subsectors that focus directly on financial services such as banks and stock markets.

Real economy

The *risk to the **real economy** from acute and chronic climate change impacts, including from climate-related financial system shocks or volatility* is currently rated as **moderate**, as impacts from climate change are currently experienced by households and businesses in some communities, with flow-on economic impacts such as insurance costs and asset values. This risk is expected to increase in future, to **high–very high** in 2050 and to **severe** by 2090 (Figure 6.1), as impacts compound across multiple systems, and disaster costs and insurance challenges further increase.

Figure 6.1: National impact ratings for the risk to the real economy at current, 2050 and 2090 timeframes

Key impacts

Climate change is already affecting all parts of the real economy, including people and households, businesses and supply chains, and government budgets and markets. More frequent and severe extreme events such as heatwaves, bushfires and floods will impact people, homes, businesses, and infrastructure causing:

- property damage
- disruption of services
- scarcity of goods and services
- increased insurance costs
- reduced labour productivity
- loss of income
- increased commodity prices
- reduced infrastructure reliability.

The flow-on consequences of these impacts include a strain on household budgets, affecting household wealth, consumer purchasing power and economic activity. The 2023 Intergenerational Report noted that productivity impacts as a result of increased temperatures could reduce Australia's economic output by between $135 billion and $423 billion by 2063. The report also found that limiting global temperature to 2°C would save Australia up to $155 billion in gross domestic product (GDP) compared with a 3°C scenario (Department of the Treasury 2023).

Most impacted

Climate change impacts are not distributed equally across sectors and populations:

- Low-income households may struggle to afford rising insurance premiums in high-risk areas.
- Regional communities that rely on single industries are vulnerable to the impacts of climate change.
- Outdoor workers are exposed to heatwaves, leading to lost workdays and reduced productivity.
- Small businesses are projected to face increasing climate hazards, and are likely to experience higher insurance costs and potential business closures.
- Indigenous communities are often located in remote areas. These communities face heightened risks from extreme weather events and may have limited access to national supply chains and resources for recovery and adaptation.

Connections with other systems

The impacts of climate change on the economy, finance, and trade system are highly interconnected with infrastructure, health and social support, primary industries, and communities. In particular, risks to critical infrastructure and supply chains are strongly interconnected with risks to the real economy.

Disruptions in one sector cascade to others, highlighting the need for a comprehensive approach to climate risk management. Risks to the real economy drive risks in other systems; conversely, resilience and adaptation action within the real economy builds resilience in other systems. To avoid maladaptive outcomes, adaptation measures should be tied to investment in underlying risk management and reduction.

Roles and responsibilities

The Australian Government has a regulatory and governance role in managing the alignment and differences between corporate and social interests. Australia's financial system regulators – including the Treasury, Reserve Bank of Australia, Australian Prudential Regulation Authority and the Australian Securities and Investments Commission – have an ongoing role in supporting financial market participants to manage the financial risks and opportunities associated with climate change.

Businesses are usually best placed to manage risks to their own assets and activities from climate change impacts. The benefits private parties receive from managing their own risks are a strong incentive to act. Private parties need to be aware of the risks and their responsibility for managing them. To effectively do this, they need a strong economy and supportive regulatory environment, established by governments.

Increased adaptive capacity will need to be founded on effective disclosure and management of climate risk which is enabled by up-to-date, reliable and accessible climate information, guidance and supporting processes, released by the Australia Government.

Pipeline inspection in outback Australia

What we are doing

To help mobilise private sector investment for a sustainable economy, the Australian Government published the Sustainable Finance Roadmap, which builds on the Australian Sustainable Finance Strategy. Actions under the roadmap and other key Australian Government actions underway include:

- introducing mandatory disclosure of climate-related risks for large businesses and financial institutions. This will help reporting entities and investors understand, disclose and respond to climate-related risks and opportunities
- developing best practice guidance for corporate climate-related transition planning. This will help businesses set mitigation and adaptation goals to improve climate resilience
- developing an Australian sustainable finance taxonomy in partnership with the Australian Sustainable Finance Institute. The initial taxonomy, released on 17 June 2025, establishes a framework to classify economic activities against the objective of climate mitigation for 6 sectors (electricity generation and supply; minerals, mining and metals; construction and buildings; manufacturing and industry; transport; and agriculture and land use). The initial taxonomy also incorporates 'do no significant harm' and 'minimum social safeguards' criteria
- issuing Australian sovereign green bonds to help mobilise climate-aligned capital. Australia issued $7 billion of its inaugural green bond in June 2024; climate adaptation activities are one of 3 eligible expenditure categories and considerable potential exists to expand their financing through green bonds
- continuing the Hazards Insurance Partnership between the Australian Government and the insurance industry to promote a shared understanding of hazard risk, with the aim to improve insurance affordability and availability over time
- continuing with the Cyclone Reinsurance Pool, which is backed by a $10 billion government guarantee. The cyclone pool is a reinsurance arrangement between insurers and the Australian Reinsurance Pool Corporation.

What we will do

The Australian Government is building on the substantial progress already underway through further initiatives that will support an uplift in adaptation and resilience investment, including in the following areas:

- Explore possible next steps for the Australian sustainable finance taxonomy. This could include expansion to other sustainability objectives, such as adaptation and resilience.
- Respond to the Council of Financial Regulators' report on sustainability data challenges.
- Build on the Hazards Insurance Partnership to improve the use of data already collected by the government. This could include data on the climate risks for asset locations and relevant characteristics, and current and planned resilience investments.
- Examine the merits of developing an economic and actuarial model to identify adaptation policy interventions with the highest economic benefit.

Future priorities

The NCRA identifies that strong governance is required to coordinate action in the economy and finance system across all levels of government, industry and communities. Adaptation pathways need to consider actions that build the resilience of both the financial sector and the communities it services.

Actions to address this priority risk are emerging but further action is likely to be necessary. This could include:

- co-developing an adaptation finance strategy and plan with Treasury to attract private investment into priority adaptation and resilience projects
- working with Treasury to finance eligible government funded climate adaptation projects through Green Treasury Bonds
- updating the Clean Energy Finance Corporation (CEFC) Investment Mandate Direction requiring the CEFC to consider physical climate risk and co-benefits of adaptation and resilience, where appropriate with respect to relevant new investments and asking the CEFC to publish its approach to climate risk analysis for new investments.

Melbourne city, Victoria

7. Infrastructure and built environment

Brisbane, Australia

System definition

The infrastructure and built environment system refers to the intricate networks of human-made structures across Australia. This includes physical buildings, green and blue spaces, and their supporting infrastructure such as transport, water and energy systems.

This system has strong connections with the primary industries and food; urban, regional and remote communities; and economy, trade and finance systems.

System vision

Settlements, buildings and infrastructure are resilient to the impacts of climate change and are future-proofed to ensure the health, wellbeing, safety and liveability of our communities.

Consultation inputs

Consultation with stakeholders emphasised that climate risk needs to be integrated into all levels of planning, regulation and strategy in the built environment. Planning and designing climate resilient critical infrastructure systems and buildings is key to preventing cascading climate impacts.

Adapting the built environment can also achieve other social and environmental benefits. Enhancing thermal comfort and energy performance of building stock, maintaining blue and green spaces, and investing in social infrastructure can support healthy, sustainable, low cost, and climate resilient communities, particularly for at-risk communities. Adaptation efforts should be inclusive and address the diverse needs of vulnerable groups to ensure equitable climate resilience.

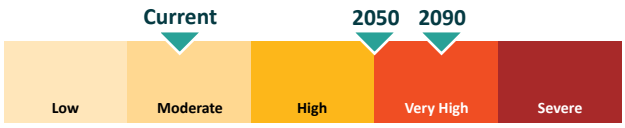
Priority risks

The infrastructure and built environment system considers 2 of the 11 priority climate risks identified in the first pass assessment, the *risk to **critical infrastructure** that impact access to essential goods and services* and the cross-system risk, *risk to **supply and service chains** from climate change impacts that disrupt goods, services, labour, capital and trade*. The NCRA considered 3 categories of critical infrastructure: the energy, telecommunications and transport sectors, since they have an influence on all other significant sectors relevant to Australia including health, housing, agriculture, manufacturing (including mining), and tourism.

Critical infrastructure

The *risk to **critical infrastructure** that impact access to essential goods and services* is currently rated as **moderate**, as acute hazards such as extreme heat, bushfires, extreme rainfall and flooding can severely impact critical infrastructure. This risk is expected to increase in future, to **high–very high** by 2050 and to **very high** by 2090 (see Figure 7.1), as these hazards are all expected to increase in frequency and/or severity in future due to climate change. There is also significant inertia in this system and a need for improved management, strategic planning and investment in resilient infrastructure.

Figure 7.1: National impact ratings for the risk to critical infrastructure at current, 2050 and 2090 timeframes



Key impacts

Critical infrastructure (e.g. transport, energy and telecommunications infrastructure) is vulnerable to most climate hazards including bushfires, heatwaves and extreme heat, coastal inundation, extreme rainfall (and associated flooding), tropical cyclones and extreme wind. All of these hazards are projected to increase in frequency and/or severity with increasing global warming.

- Telecommunications infrastructure has the greatest exposure to climate hazards, especially near coastal areas vulnerable to sea level rise.
- Energy assets are generally exposed in both urban and rural areas, and exposure is highest in southern areas of South Australia, eastern and western Victoria, and central and coastal areas of New South Wales.
- Higher temperatures due to climate change place greater demand on cooling systems and lead to more energy consumption. This increases pressure on electricity grids and the risk of disconnection during an extreme heat event, impacting safety and wellbeing of communities. These disruptions are further compounded by damage to energy infrastructure caused by fires and the increasing occurrence of megafires.
- Transport infrastructure is moderately exposed with increased exposure along transport routes and supply chains to regional centres, especially those to and from central Queensland, and northern and eastern Victoria.
- Infrastructure in coastal communities is increasingly vulnerable to the impacts of sea level rise and other coastal hazards.

Most impacted

Vulnerability to critical infrastructure disruptions is higher in regional and remote communities, including First Nations communities, where there is a reliance on limited transport routes for the supply of goods and services and limited alternative supply options for telecommunications and energy.

- Some of the most at-risk areas and communities for impacts to coastal infrastructure include urban coastal centres, particularly in Queensland.
- Pre-existing inequalities can be exacerbated by impacts to critical infrastructure, and compounding impacts associated with limited access to health services, insecure housing, and limited disaster response capabilities.

Connections with other systems

Disruptions to services or damage to critical infrastructure will have cascading and compounding impacts to most other systems with flow-on social and economic impacts, particularly:

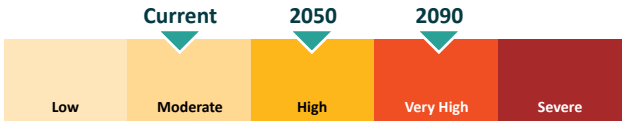
- increased pressure on energy infrastructure impacting health services and the wellbeing of populations already exposed to greater climate risks – such as the elderly and those with underlying health conditions
- damage to transport infrastructure, directly impacting supply chains, cascading to other critical services, and particularly impacting regional and remote communities with limited existing transport connectivity
- disruptions to telecommunications services impacting business operations, disaster response and reporting, and remote management of services such as water and wastewater infrastructure.

Some critical infrastructure is inherently adaptive as engineering standards and locations can change; however, these changes can be slow, complex and expensive. There is significant inertia associated with adaptation in this system, but there are opportunities to mitigate risks to critical infrastructure through strategic planning and investment in resilient infrastructure.

Supply chains

The NCRA considered the *risk to **supply and service chains** from climate change impacts that disrupt goods, services, labour, capital and trade*, which is a cross-system risk. Many of Australia's supply chains are very long – more than 2,000 km from the point of production or import to market – resulting in many points of vulnerability for any individual supply chain. This priority risk is currently rated as **moderate**, as supply chains currently experience occasional impacts exacerbated by climate change. This risk is projected to increase to **high** by 2050 and **very high** by 2090 (Figure 7.2), as they will become increasingly exposed to hazards such as flooding, which will cause severe disruptions or destruction of critical infrastructure.

Figure 7.2: National impact ratings for the risk to supply chains at current, 2050 and 2090 timeframes



Key impacts

Supply and service chains are likely to be significantly affected by acute climate hazards such as floods, storms and tropical cyclones, the impacts of which are projected to become more severe. With freight volumes and costs projected to rise across sectors, and nationwide population increases, the consequences of supply chain vulnerabilities will increase over time.

The NCRA indicated:

- sparse, long transport routes across remote Australia are notably vulnerable to climate change impacts
- increasingly severe flood events could result in supply chain detours of an average of 730 km, and over 3,000 km, by 2090 (based on the assumption that transport routes and supply chain systems will remain largely the same as they are today). This would lead to a significantly longer recovery period and a higher likelihood of communities running out of supplies
- modelling of flooding in Victoria and New South Wales (based on a 2022 event) indicated the value of blocked freight could double by 2090 compared to 2024 ($4.9 billion worth of freight blocked by flooding in 2024 compared to $9.3 billion (in today's dollars) of freight blocked by flooding in 2090)
- supply chain costs for agricultural products (i.e. food and fibre) are also modelled to increase significantly in both 2050 and 2090 relative to today
- health-related freight is projected to have the largest percentage increase in required re-routing and value of blocked freight, with projected flow on effects to the cost of medicines and other supplies. Disruption to Australia's east–west freight route may result in the doubling of medicine transport costs by 2090.

Most impacted

Supply chain vulnerability is highest in remote Australia where there are sparse and long transport networks, a higher risk of road closures from climate hazards, and limited resources to respond to supply chain disruptions. Key freight routes which are likely to be more impacted in future include the Stuart, Barrier, Eyre and Silver City highways and the trans-Australian rail line, all of which are important cross-country freight routes.

Regional and remote communities, including First Nations communities, will be most impacted by rising costs and delayed access to essential goods and services. This can exacerbate existing inequalities such as the cost of living, and access to health services and fresh produce, as well as impacting business continuity and community resilience. By 2090, the most significant cost increases will be for northern and central Australia.

Connections with other systems

Supply chains are inherently connected to all other systems. Disruptions to critical infrastructure can result in disruptions to supply chains, which then has flow-on effects to the economy, primary industries, regional and remote communities, and health and wellbeing. At the same time, impacts on the natural environment, for example, can reduce agricultural productivity, which will in turn impact supply chains.

Roles and responsibilities

Improving the climate resilience of the built environment is a shared responsibility across all levels of government, the private sector and communities. The Australian Government has a role to play in providing national leadership and coordination in implementing adaptation across the built environment. Building ministers oversee policy and regulatory matters within their jurisdiction. This role includes ensuring building safety, quality, and accessibility, as well as harmonising building regulations and standards. They work through bodies like the Australian Building Codes Board (ABCB) and the Building Ministers' Meeting (BMM) to achieve these goals.

What we are doing

Adapting our built environment will require integrating climate risk into how we plan, design, build and maintain our infrastructure, buildings and settlements.

There is significant work already underway across all levels of government and the private sector to improve the resilience of infrastructure systems and the built environment.

This includes improvements to regulations and land-use planning for future developments. In 2022, National Cabinet committed that state, territory, and local government land-use planning processes would consider climate risks. This is to ensure that new developments and built assets are not placed in areas of unacceptable risk. The Australian Government is currently working with state and territory governments to develop a framework and guidance on nationally agreed principles for natural hazard and climate risk considerations in land-use planning decisions.

Current action by the Australian Government to support resilience in critical infrastructure assets include:

- supporting critical infrastructure resilience through the *Security of Critical Infrastructure Act 2018*, the Critical Infrastructure Resilience Strategy and Plan, and frequent Trusted Information Sharing Network activities. The network facilitates critical communications of all-hazards risk from government to industry, as well as industry to government exchange of risk information
- considering climate-related hazards as part of risks to critical infrastructure through the Department of Home Affairs 'sector risk profiles' and 'all-hazards risk assessments'
- investing in energy security and resilience of the energy system to withstand future climate hazards through Rewiring the Nation, including improving integration of the energy grid and better sharing energy resources between jurisdictions.

There is work already underway across government and the private sector to improve the resilience of supply chains. Current actions by the Australian Government include:

- supporting and funding the Australian Rail Track Corporation to enhance the resilience of critical rail lines, with total investment of approximately $1.3 billion
- providing leadership and coordinating a nationally consistent approach to supply chain resilience through the National Freight and Supply Chain Strategy and new National Action Plan. The new National Action Plan will consider actions specifically in response to the findings of the Road and Rail Supply Chain Resilience Review and it incorporates resilience as one of 4 key priority areas
- working with states and territories under the recently revised Federation Funding Agreement Schedule for Land Transport Infrastructure Projects (2024–2029) to ensure major investments support a whole-of-life resilience to climate and disaster risks for land transport infrastructure
- providing a national guidance for transport agencies to undertake climate change and natural hazard risk assessments, and develop adaptation plans in transport-related assets and services through the Austroads' Climate Change and Natural Hazard Risk Assessment Guidelines.

Cross-cutting impact of infrastructure and built environment

The NCRA identified that planning and the design of infrastructure and the broader built environment has significant impacts on other systems, including risks to health and social support, the economy, trade and finance, and urban, regional, and remote communities.

How the built environment is designed and planned plays a significant role in mitigating the impacts of climate change on the health and wellbeing of Australians. Adapting the built environment provides an opportunity to support broader environmental and social co-benefits. For instance, improving the thermal comfort and energy performance of Australia's building stock is critical to supporting the health and wellbeing of at-risk individuals and communities. Social and community infrastructure also plays a critical role in supporting those disproportionately impacted by climate change. Green and blue infrastructure and nature-based solutions can provide numerous public health, wellbeing, and climate risk reduction benefits to communities.

To improve the overall sustainability and resilience of Australia's built environment and wellbeing of our communities, the Australian Government is taking the following actions:

- Expanding the Nationwide House Energy Rating Scheme (NatHERS) which currently provides ratings for new homes, to also provide ratings for existing homes. The new ratings will help Australians choose and upgrade homes that use less energy and maintain a more comfortable temperature year-round, and will provide market impetus for the upgrade of rental housing.
- Implementing the Trajectory for Low Energy Buildings to support improved energy efficiency, thermal performance and liveability for Australia's building stock, including working with state and territory governments to ensure building standards adequately consider thermal comfort and performance.
- Implementing the National Energy Performance Strategy (NEPS), to support the government's objectives to deliver net zero emissions, energy affordability and reliability by lifting the role of the demand-side of energy systems.
- Working with state and territory governments to address extreme heat hazards with plans such as the Heat Smart City Plan developed under the Greater Sydney Heat Taskforce.
- Developing the built environment sector plan, which will provide an emissions reduction pathway to 2050 and identify the barriers and opportunities to accelerate decarbonisation of the sector.
- Investing in blue and green infrastructure and integrated catchment management to support urban cooling, climate resilience and flood mitigation in urban areas through the $200 million Urban Rivers and Catchments Program.
- Funding upgrades to help improve energy performance, reduce cost of energy bills, and improve thermal comfort for social housing residents through the Social Housing Energy Performance Initiative (SHEPI) including the expansion to 2029.
- Helping homeowners fast track their transition to cheaper, cleaner energy while lowering their carbon footprint through the $1 billion CEFC Household Energy Upgrades Fund.
- Delivering the $100 million Community Energy Upgrades Fund, a targeted, competitive grant program that helps local governments make their facilities more energy efficient, cut their emissions and reduce their energy bills.
- Working with state and territory governments through the Planning Ministers' Meeting to implement principles for better climate risk assessment in making planning decisions.

What we will do

To boost adaptation action at the Commonwealth level in support of resilience in critical infrastructure and the built environment, the Australian Government will:

- strengthen guidance and requirements for considering climate risk and resilience in infrastructure investment proposals in Infrastructure Australia's Assessment Framework
- review the *Security of Critical Infrastructure Act 2018* to consider the operation of risk management plans
- work with state and territory governments to support the building ministers' commitment to include climate resilience as a specific objective of the Australian Building Codes Board (ABCB). Resilience is proposed to form an additional object of the National Construction Code (NCC) once a new Intergovernmental Agreement has been finalised, which is expected in the second half of 2025. This will give the ABCB a clear mandate to develop future NCC requirements that reduce the impact of natural hazards on housing and other critical community facilities
- work with state and territory governments through the Building Ministers' Meeting to consider current and future climates in updates to the NCC, which may include future climate files, heatwaves and thermal comfort metrics
- investigate integrating climate resilience into existing building rating schemes and energy performance programs. This may include provision for future climate files and heatwaves in rating tools under the NatHERS
- work with state and territory governments to consider minimum energy performance standards in rental properties
- work with state and territory governments to support measures to reduce the impacts of urban heat through policy and planning.

Future priorities

A well-planned and designed built environment is critical to help mitigate the impacts of climate change on health and support the wellbeing, safety and liveability of communities. Land use and regulatory planning reforms are central to reducing climate risk in the built environment and to ensuring the places we live, and the supporting infrastructure, are healthy, sustainable and resilient.

This work includes encouraging sustainable densification in lower-risk areas, and supporting liveable communities through improved access to transport and amenities while reducing exposure to climate hazards. There is a need for greater recognition and integration of First Nations' knowledges, values and practices in supporting adaptation in the built environment.

To support adaptation in the built environment, climate change considerations need to be mainstreamed and integrated across all levels of planning and design within the system. State, territory and local governments' land-use planning processes should appropriately consider and incorporate local and future risks from climate change. Future work for the Commonwealth to support this could include:

- investing in climate science and supporting the integration of climate data into technical standards, guidelines, codes and regulations for infrastructure, land-use planning, landscaping and buildings
- ensuring Commonwealth investments in infrastructure and built environment assets take a systems perspective towards addressing climate risk, to ensure investments in one asset do not increase vulnerability in another
- supporting training and capacity-building for built environment practitioners to embed knowledge of climate risk into planning and design regulatory frameworks and decision-making processes
- further integrating climate risk considerations into all national built environment policies, regulatory frameworks and decision-making processes for funding.

8. Natural environment

The Three Sisters, New South Wales, Australia

System definition

The natural environment is a key part of Australia's identity, from our beaches and coral reefs to our forests and waterways, and the species they support. This system refers to Australia's ecosystems, biodiversity, and natural processes. It includes the ocean around Australia (covering the Exclusive Economic Zone and external territories), coastal areas and shorelines, inland freshwater ecosystems including surface and groundwater, and terrestrial ecosystems such as forests, grasslands and bushland.

Importantly, Australia's natural environment supports and provides services to all other systems. It is particularly connected with First Nations peoples, urban, regional and remote communities and primary industries.

System vision

The Australian Government is supporting a natural environment that is more resilient to the accelerating impacts of climate change. Australia's natural heritage and biodiversity benefit from better protection and restoration in the future. We recognise our stewardship obligations to the natural environment for its inherent value, and support its vital ecosystem services that underpin our social, economic, and cultural wellbeing. A more resilient environment also delivers co-benefits, including sustaining industries like agriculture, fisheries, forestry, tourism and manufacturing which derive resources from nature.

Consultation inputs

Stakeholder consultations confirmed that Australians care deeply about our natural environment and want to see more action to conserve, restore and assist adaptation across the system, noting the interconnectedness of this system to others. Stakeholders emphasised the importance of local cultural values and knowledge management to protecting ecosystems and promoting ecologically sustainable practices. There was also a call for a greater focus on nature-based solutions, which can simultaneously manage natural ecosystems while also addressing social and economic challenges – such as human health, disaster risk reduction or urban infrastructure resilience.

Priority risks

The natural environment system considers 2 of the 11 priority climate risks identified in the first pass assessment, the *risk to **ecosystems, landscapes and seascapes**, ecosystem transformation or collapse, and loss of nature's benefits to people*; and the cross-system risk – *risks to **water security** that underpin community resilience, natural environments, water-dependent industries and cultural heritage*.

Natural ecosystems

The *risk to* ***ecosystems, landscapes and seascapes****, ecosystem transformation or collapse, and loss of nature's benefits to people* is currently rated as **very high**, as many of our natural ecosystems are already degraded and will be further significantly impacted by climate change. This risk is projected to increase to **very high–severe** by 2050 and remain **severe** to 2090 (see Figure 8.1), due to major changes to ecosystem composition, substantial changes to species distribution and abundance and ongoing interaction with other threats.

Figure 8.1: National impact ratings for the risk to natural ecosystems at current, 2050 and 2090 timeframes

Key impacts

Climate change is already impacting Australia's terrestrial, freshwater and marine environments. Ecosystems are place- and climate-dependent and many have limited resilience to a changing climate. Ecosystems which are already degraded or fragmented, and exposed to threatening processes such as invasive species and inappropriate fire regimes, have lower resilience to climate change.

- By 2050, with around a 2°C global warming level, modelling suggests that 40% to 70% of Australia's native plant species will need to respond to the changed climatic conditions in their original range. Species will be forced to move, adapt to the new conditions, or die out.
- A changing climate will lead to major changes in species distribution and abundance, as well as substantial changes to the composition of ecosystems. Ecosystem collapse has already been documented at the local level in at least 17 of Australia's ecosystems – across marine, terrestrial and freshwater environments. Further ecosystem collapse is likely to occur with increasing climate change, and although novel ecosystems may assemble after a collapse, these assemblages will be particularly vulnerable to invasion by non-native species.
- Marine heatwaves are projected to increase with climate change, occurring for an average of 95 days of the year across Australia's marine waters under a 2°C global warming level, and 179 days of the year under a 3°C global warming level. Northern reefs, already facing degradation from ocean warming and acidification, may face annual coral bleaching events under 3°C global warming level, with increasing coral mortality.
- Temperate marine ecosystems are being disrupted by the East Australian Current extending further south and intensifying, causing 'tropicalisation', while increases in ocean acidity may disrupt Southern Ocean food webs.
- Australia's freshwater ecosystems will face changing rainfall patterns, increasing rainfall variability and more frequent droughts. This will directly affect water security and quality, with most catchments projected to become more arid and exposed to higher temperatures.
- The compounding effects of higher maximum temperatures, competition for water resources, and decreased water quality will mean freshwater organisms are increasingly stressed, which may result in decline and/or changes to species assemblages.
- Antarctica and the Southern Ocean play an integral role in the global climate system – with complex feedback processes. With the projected increased warming and loss of sea ice, there will be consequential impacts on sea level rise, marine biodiversity, and changes in ocean currents.

Most impacted

While some ecosystems are more vulnerable than others, ecosystems will be impacted across Australia, and this will be felt by nearly all sectors and groups. Impacts to ecosystems (terrestrial, freshwater and marine) are projected to be more severe in some parts of Australia, and industries which depend on the natural environment, such as primary industries and food, may be more severely impacted than others.

Mangrove, eucalypt, ecosystem, Port of Darwin, Northern Territory, Australia

The type and severity of impacts will vary according to regional climate changes and factors influencing ecosystem resilience at the local level:

- Terrestrial ecosystem resilience is lowest in historically cleared areas, including the Western Australian wheatbelt and areas west of the Great Dividing Range in Victoria, New South Wales and southern Queensland. It is highest in areas with intact ecosystems such as the south-eastern forests and Tasmania.
- Changes in freshwater ecosystems are expected to be greatest in southern Western Australia, which is projected to become more arid and thus have less runoff, along with the south coast of Australia. High-elevation streams in coastal catchments of south-eastern Australia and Tasmania are particularly vulnerable to increasing temperatures.
- Coral reefs and sea grasses around Australia's tropical and temperate regions are vulnerable to further impacts from warming, sea level rise and altered storm patterns, particularly where they are already degraded.

Aboriginal and Torres Strait Islander peoples have a deep and enduring connection to land, sea and Country. Impacts to the natural environment are impacts to Country, which is closely linked to culture and the social and emotional wellbeing of Aboriginal and Torres Strait Islander peoples.

Connections with other systems

Natural ecosystems support all other systems assessed in the NCRA, and provide key services including:

- well-managed natural ecosystems that aid climate mitigation through carbon storage and sequestration
- critical infrastructure resilience being enhanced by coastal environments – such as mangroves, saltmarsh and seagrass habitat – that help protect communities from storms and rising sea levels. They also provide habitat and nursery areas for marine species, which may support sustainable recreational and commercial fishing
- primary industries reliant on the natural environment for nutrient and water cycling and soil stability, and services like pollination
- water quality and security, which rely on the natural environment to regulate and filter water
- the provision of raw materials for many key products including building products and medicines
- health and social support systems that draw on the natural environment for nutrition, mental health, medicines and cultural services
- more than 50% of the world's GDP, which is highly or moderately dependent on nature (World Economic Forum 2020).

Water security

The NCRA considered the *risks to **water security** that underpin community resilience, natural environments, water-dependent industries and cultural heritage*, which is a cross-system risk. The risk to water security in Australia is currently rated as **high**, as some regions already experiencing drought and water security challenges. This risk is expected to increase to **very high** by 2050 and **very high–severe** by 2090 (Figure 8.2), as climate change is projected to result in declines in rainfall and runoff across southern Australia, increasing aridity and more severe droughts. This will result in decreased water inflows, reduced groundwater recharge, lower water allocations, increasing competition for water and changes to water quality.

Figure 8.2: National impact ratings for the risk to water security at current, 2050 and 2090 timeframes

Key impacts

Changes in rainfall, increasing aridity and drought, and increased evaporation from rising temperatures, are projected to cause impacts to:

- water supply
- water quality – from reduced water flows and extreme events such as bushfires and flooding
- ecological health – due to altered stream flows and river morphology, and reduced water quality, with flow-on effects to water security.

Increasing aridity and evapotranspiration[4] can result in crops and vegetation demanding more water, which in turn can increase competition for water resources and increase stress on water supply systems. Increasing aridity can also reduce groundwater recharge, reducing groundwater resources. Similarly, long-term reductions in rainfall and runoff are projected across southern Australia, leading to decreased water inflows, reduced groundwater recharge, lower water allocations, and increased competition. This will reduce resilience to prolonged periods of drought.

Most impacted

While every region across Australia is projected to face water security challenges, impacts are likely to be more severe in regional and remote areas that have limited options for alternative water supply. Those most impacted include:

- regional and remote communities that rely on rainwater, shallow groundwater or annual wet season rainfall
- primary industries reliant on rainwater supply. Perennial crops and livestock (particularly dairy) are especially vulnerable to water shortages
- areas where exposure to decreased rainfall and increased aridity is particularly high, such as the Murray–Darling Basin and southern Western Australia
- areas relying on streamflow for water supply, including Tasmania, the Murray–Darling Basin and coastal New South Wales, which have increased vulnerability to water security risks.

Water quality and quantity are essential for Aboriginal and Torres Strait Islander peoples' health, way of life, and for cultural and Caring for Country practices.

Connections with other systems

Water security is connected to all other systems, with the potential to result in cascading and compounding risks across systems:

- Water security depends heavily on the ability of Australia's freshwater ecosystems (surface and groundwater) to regulate flows and clean water. At the same time, the natural environment is projected to be most severely affected by water security issues. Changes to the hydrology, climate and water quality are fundamental drivers that influence the biodiversity of inland aquatic ecosystems and their capacity to provide ecosystem services like water filtration.
- Primary industries are exposed to drought, aridity and variable rainfall. They rely on water for productivity and have limited alternative sources.
- Remote communities are likely to face health risks due to limited water supply options and cascading risks such as reduced water quality due to drought or bushfire.

4 Evapotranspiration refers to *the movement* of water from land to the atmosphere via both transpiration (i.e. from plants) and evaporation (e.g. from waterbodies and soil surface) (BoM 2025).

- Disaster response will be strained by water security issues, and Australia does not appear to have sufficient water storage plans or capabilities to meet the increasing fire risk. Water is a crucial firefighting resource, and shortages in water supply will increase resource competition and could exacerbate the impacts of fire (e.g. infrastructure loss).
- Water security impacts are likely to be more severe in regional and remote areas that have limited options for alternative water supply. These areas often rely on rainwater, shallow groundwater and, in northern Australia, annual wet season recharge of water resources.

Roles and responsibilities

Managing the resilience and adaptive capacity of Australia's environment and natural assets is a shared responsibility across all levels of government. This collaboration is facilitated through cross-jurisdictional programs, bilateral agreements and partnerships to manage large and multijurisdictional natural assets, such as the Murray–Darling Basin and matters of national environmental significance, such as threatened and migratory species, threatened ecological communities and Wetlands of International Importance (Ramsar sites). The Australian Government is responsible for managing Commonwealth land (including the Defence estate) and Commonwealth protected areas (terrestrial and marine) through entities such as Parks Australia and the Great Barrier Reef Marine Park Authority. States and territories are responsible for the environmental management of most public land and coastal areas, and marine areas from the coastline to 3 nautical miles.

The Australian Government provides national coordination, leadership and stewardship to drive policy and law reforms to manage our water resources sustainably and productively for future generations of Australians.

State and territory governments have primary responsibility for managing water within their jurisdictions with water access, entitlements and allocations governed by jurisdictional government legislation and policies.

Private sector and non-government actors are also responsible for managing land and landscapes for biodiversity and natural and cultural heritage values, for industrial and agricultural purposes, and by First Nations peoples. Around 60% of Australia's landmass is privately owned and/or managed. There is increasing awareness of the need for businesses to consider their environmental footprint and engage in corporate reporting. This is coupled with increasing expectations that the private sector will reduce its impacts and invest in the natural resource base upon which the sustainability of business depends.

What we are doing

The Australian Government is committed to providing leadership and a nationally consistent approach to management, conservation and restoration of our natural ecosystems, for their intrinsic values and for the other systems and sectors which are reliant on them. It leads coordination on complex policy through a range of intergovernmental forums including the Environment Ministers' Meeting and Energy and Climate Change Ministerial Council.

Key adaptation measures already underway for biodiversity and ecosystems to build resilience include:

- facilitating greater private sector investment in nature through the Nature Finance Council and the Nature Repair Market, as future climate change impacts are anticipated to increase the cost of preserving Australia's natural assets and ecosystems
- addressing biodiversity decline through Australia's Strategy for Nature 2024–2030, which sets targets for action to address Australia's highest biodiversity priorities, including the 'minimise the impact of climate change on biodiversity' target, and working with state and territory governments to plan its implementation
- supporting resilience of threatened species and ecological communities and helping them to persist in the landscape and adapt to climate change by delivering the 2022–2032 Threatened Species Action Plan – Towards Zero Extinctions
- taking action now to mitigate existing threats and support recovery guided by conservation planning, heritage protection and threat abatement activities under Australia's national environmental law, which itself is undergoing a substantial reform process

- delivering on the 30 by 30 target to protect and conserve 30% of Australia's landmass and 30% of marine areas by 2030
- expanding or further developing existing environment and heritage programs and strategies including through the Natural Heritage Trust, the Saving Native Species Program, the Reef 2050 Long-Term Sustainability Plan, the Ramsar Wetland Climate Change Vulnerability Assessment and Adaptation Planning Project, and the Great Barrier Reef Blueprint for Climate Resilience and Adaptation
- delivering environmental flows by the Commonwealth Environmental Water Holder in the Murray–Darling Basin to increase aquatic ecosystem resilience.

Key adaptation actions currently underway to build water security resilience include:

- bringing the Murray–Darling Basin back to a healthy level through the Murray–Darling Basin Plan, which shares water sustainably among users
- developing a National Water Agreement with states and territories, and a Commonwealth Action Plan, to best support First Nations peoples, communities, the environment and the economy
- funding of climate resilient water infrastructure to promote water security in regional and remote communities through the National Water Grid Fund
- improving water security for the environment, First Nations peoples and all water users reliant on the Great Artesian Basin, including through the Great Artesian Basin Water Security Program which has committed up to $32 million to support strategic investments in immediate and long-term measures.

View over Goulburn River near Alexandra, Victoria, Australia.

An ongoing priority across the Australian Government is the development of cooperative working arrangements on Country with Traditional Owners and their communities for adaptation action. Genuinely working with and learning from Traditional Owners and Custodians and their communities promotes locally appropriate and culturally safe approaches to protecting vital ecosystems, enabling self-determination and ecologically sustainable practices. The Australian Government further supports traditional land management and Caring for Country, through programs such as:

- Indigenous Ranger and River Rangers Programs.
- Indigenous Protected Areas, of which there are 93, covering 106 million hectares of land and 6 million hectares of sea.
- Indigenous Land Use Agreements, with 1490 covering 278 million hectares of land area and 5 million hectares of sea (at 30 June 2024).
- Traditional Use of Marine Resources Agreements, under which more than 43% of the Great Barrier Reef Marine Park coastline is managed.
- Indigenous Land and Sea Corporations' Savanna Management Programs, which implement traditional fire management practices to protect Country and cultural heritage but also reduce greenhouse gas emissions.
- Three jointly managed Commonwealth National Parks and 60 Australian Marine Parks.

These programs have co-benefits to remote communities, the economy, and health.

In addition, and in accordance with the roles and responsibilities outlined above, many state, territory and local governments have developed, or are developing, plans to manage climate impacts on the environment and ecosystems.

What we will do

The Australian Government is building on the substantial progress already underway to ensure present day investments in environmental protection, restoration and conservation have the greatest possible impact and are resilient to the expected acceleration in future climate impacts. Key new measures in 2025 contributing to the adaptation of biodiversity and ecosystems include:

- delivering the Sustainable Ocean Plan to identify actions that help to manage, prepare for and adapt to climate challenges in our ocean
- investing $250 million in the Saving Australia's Bushland Program over the next 5 years to boost conservation, contributing to the 30 by 30 target
- developing national on-ground monitoring systems and data standards through the Ecological Monitoring System Australia to maximise value of monitoring undertaken; and store and manage biodiversity data in the centralised and linked Biodiversity Data Repository system
- delivering Ramsar Wetland Climate Change Vulnerability Assessment and Adaptation Planning Project
- reviewing the Reef 2050 Long-term Sustainability Plan, including the Climate Change Addendum 2023.

Key new measures in 2025 contributing to water security include:

- reviewing the Commonwealth *Water Act 2007* to assess its success in meeting its objectives, including improving water security for all uses of Murray–Darling Basin water resources and managing Murray–Darling Basin water resources in the national interest
- developing the inland waters target under the National Agreement on Closing the Gap (Outcome 15c) in partnership with the Coalition of Peaks to achieve better water outcomes for Aboriginal and Torres Strait Islander peoples
- implementing the Murray–Darling Basin Aboriginal Water Entitlements Program (AWEP) to secure water entitlements for First Nations peoples of the Murray–Darling Basin. This program aims to support cultural, economic, spiritual, social and environmental priorities, empowering communities to sustainably manage and benefit from water ownership
- delivering the Cultural Flows for Cultural Economies program, which will assist Basin First Nations to take a stronger role in the ownership and management of water, including plan and prepare for the water security challenges of a changing climate
- implementing the Town and City Water Security Framework, a tool which provides a detailed assessment framework of water security at different system scales. The focus of the framework is on urban resilience, and integrating climate and hydrological information to strengthen water system adaptability.

Ongoing monitoring, reporting and review of actions will assess whether actions are resulting in better outcomes for our natural environment, and all other related systems. The government will continue to do this through collaboration with state, territory and local governments, land managers and groups such as Indigenous Ranger Groups.

Future priorities

The NCRA identifies an urgent need for Australia to fundamentally reconsider our approach to protecting, conserving and restoring our natural environment in the face of climate change. An increased focus on adaptive management will be critical to building resilience over the medium term. This includes ensuring that regulatory and policy settings are responsive and support the development of innovative adaptation approaches.

The impacts of climate change on Australia's biodiversity can be reduced if we act now. Enabling ecosystems and species to adapt and build resilience to a changing climate is essential to their survival. One of the best ways to do this is to dial up management to address current threats where direct action is possible. This includes managing impacts of invasive species and improving habitat.

Where environmental conditions become increasingly challenging for resilience and persistence, targeted interventions and assisted adaptation management actions, like creating climate refuges and translocating sensitive species and populations into more suitable locations outside their historic range, will be required.

To prepare for future climate impacts on water resources and security, stronger leadership, forward planning and cross jurisdictional collaboration will be needed. This will be underpinned by improved water data monitoring, collection, modelling, management and availability. Other important actions for water security include promoting system-scale integrated water resources management, removing barriers to investment in all sources of water, investing in water-sensitive urban design and climate resilient water infrastructure, and better integration of First Nations knowledges, sciences and practices in land and water management.

Further work will respond to the development of more granular climate scenarios, drawing on the scientific data and analysis contained in the NCRA, and continuing to mainstream adaptation into existing land-use planning, natural resources management, water resource management, heritage protection planning, and decision-making frameworks. By doing this, there is a way to keep land and habitats connected, allowing climate-driven migration, which is critical to ecosystem resilience.

The resist–accept–direct (RAD) framework[5], developed by the USA National Parks Service, is an example of a system that guides responses to socio-ecological changes, including climate change, in the management of protected areas. By applying these sorts of tools, trade-offs between values and systems (such as environmental flows and water for primary industries) could be more effectively considered.

Enabling private sector investment and community-based action in restoration and conservation offers an opportunity for ongoing maintenance and monitoring, including generating accurate, scalable and robust climate data.

5 The resist–accept–direct (RAD) framework lends itself to adaptive management-based approaches. The options are: 1) resist the ecological trajectory by restoring conditions where change has occurred, 2) accept the trajectory, allowing ecosystems to drift into new conditions, 3) direct, guide, steer or facilitate transformation in ecosystems toward new states to be more concordant with emerging climates and better able to sustain biodiversity and desired ecosystem services (Schuurman et al. 2022, National Park Service (USA) 2025).

9. Health and social support

Pedestrians at Circular Quay, Sydney, New South Wales, Australia

System definition

Health and social support refers to population health and wellbeing, as well as the provision and availability of, and access to services that maintain health, wellbeing and social support. This includes services that encompass healthcare, public and preventative health, aged care, women's safety, disability services, housing support, employment and financial wellbeing, and related infrastructure. Health and social support services are provided to all communities and are dependent on critical infrastructure and supply chains.

Climate change will not affect everybody equally with the health and wellbeing of people and communities in Australia who are disproportionately at risk to the impacts of climate change being at greater risk of experiencing adverse health impacts.

System vision

The health and wellbeing of all people and communities in Australia is safeguarded and supported in a changing climate. Health and social support services are climate-resilient. Both short- and long-term climate impacts on population health are addressed. Adaptation responses promote health and social equity, and tackle the impacts of climate change on the upstream determinants of health.

Consultation inputs

Stakeholder consultations highlighted the importance of the 'Health in All Policies' approach adopted in the Australian Government's National Health and Climate Strategy. This approach acknowledges that human health and health equity are influenced by actions and decisions made in health-determining sectors – that is, sectors beyond the health system that influence the wider determinants of health and health equity – such as infrastructure and the built environment, transport, energy and agriculture. Stakeholders raised particular concerns in relation to heat, air quality, mental health, and communicable diseases and their effects on those in disproportionately at-risk situations.

Priority risk

Of the 11 priority climate risks identified in the first pass assessment, there was one priority risk within the health and social support system. The NCRA analysed the *risk to **health and wellbeing** from slow onset and extreme climate impacts*.

Health and wellbeing

The *risk to **health and wellbeing** from slow onset and extreme climate impacts* is currently rated as **moderate**, as Australia is already experiencing adverse health effects from climate change, particularly due to heatwaves, floods and bushfires. This priority risk is expected to increase to **severe** by 2050 and remain **severe** to 2090 (Figure 9.1), as these hazards are projected to increase in frequency or severity in future with climate change, further impacting human health, mental health and social cohesion. While the health sector has long-established capacity to manage emergencies and implement incremental adaptation, there is a need for transformational adaptation, including technological and cultural innovations, to address the social aspects of this risk and social disadvantage.

Figure 9.1: National impact ratings for the risk to health and wellbeing at current, 2050 and 2090 timeframes

Key impacts

Health and wellbeing are already adversely affected by climate change and will increasingly be affected in line with global warming. Climate hazards such as higher temperatures and heatwaves, flooding and bushfires, grassfires and bushfire-related air pollution will impact households and communities, causing:

- physical illness and injury
- exacerbations of chronic and other non-communicable health conditions
- increased disease burden from communicable diseases
- mental ill-health
- inability to work or study
- compromised access to medicines
- disruptions or damage to health infrastructure and health service delivery
- death.

Most impacted

The severity and nature of health impacts vary widely depending on factors such as individual health profiles, geographical location, socio-economic status and access to support:

- Outdoor workers and emergency management personnel and volunteers are likely to be increasingly exposed to heat extremes. The health impacts of such heat exposure may have economic impacts and could make it harder to respond to emergencies safely.
- Exposure to fire, and consequently air pollution, will increase in southern and eastern Australia with increasing global warming. This will amplify public health implications associated with air pollution from bushfires, with groups that are disproportionately more vulnerable at greater risk.
- Access to health care and other essential services is often limited in regional, remote and Aboriginal and Torres Strait Islander communities, compounding vulnerability to climate hazards such as extreme heat.
- Regional, remote and Aboriginal and Torres Strait Islander communities also face heightened health risks due to climate change, including from water security challenges.
- For Aboriginal and Torres Strait Islander peoples, displacement from Country may generate severe health and wellbeing impacts, including threats to cultural identity and belonging as well as increased risk of homelessness.
- Climate change and the increasing intensity and frequency of disasters may disproportionately impact people living with disability, who experience high vulnerability during disasters due to physical, informational and systemic barriers.

Connections with other systems

Risks to health and wellbeing compound – and are compounded by – all other priority risks. This is because population health underpins the functioning of all other sectors, while being affected by actions and decisions in other sectors such as infrastructure, transport, agriculture, and energy. For example, the secondary health impacts of the Black Summer bushfires, largely due to poor air quality, caused daily economic disruptions. The NCRA noted that smoke haze caused an estimated $12 million to $50 million per day in reduced productivity and absenteeism in Sydney alone.

Health services are dependent on critical infrastructure and supply chains to operate. The transport of medicines and other essential products is becoming more costly due to climate impacts on road and rail infrastructure. Disruption to the east–west freight route could increase medicine transport costs by 29% by 2050 and 100% (double) by 2090. The interplay between different climate-hazards and socio-economic factors creates a complexity that requires integrated and adaptive policy responses.

Role and responsibilities

The federal, state, territory and local governments, as well as private and non-government stakeholders, have responsibilities for different aspects of this system. Building the climate resilience of the health and social support system requires action from stakeholders in both the health system and in relevant health-determining sectors. This is in line with the 'Health in All Policies' and 'One Health' approaches adopted in the National Health and Climate Strategy, which is the main framework for health and climate actions in Australia.

Shared responsibilities between the Australian Government and state and territory governments include funding public hospital services, providing preventative services, national mental health reform and responding to national health emergencies. Many state, territory and local governments have commenced or completed the process of developing their own place-based climate adaptation plans within their respective geographical areas. All jurisdictions are involved in delivering and/or regulating systems like education, community housing and the National Disability Insurance Scheme. Local governments also play an important role by providing environmental and public health services, community-based health and home care services.

What we are doing

All levels of government are working together to support the health sector. The NCRA has identified that both incremental and transformational adaptation is required to ensure the health system can support the needs of Australians as impacts from climate change increase.

The Australian Government's policy framework for management of climate risks in the health and social support system includes:

- addressing the health and wellbeing impacts of climate change through the whole-of-government plan set out in the National Health and Climate Strategy. The strategy also addresses the contributions of the health system to climate change through the generation of greenhouse gas emissions. It encompasses public and preventive health, primary and secondary health care and aged care. The strategy outlines priorities over 5 years, as well as laying out an ongoing program of work that will continue in the decades to come. It commits the Australian Government to 23 actions related to adaptation
- supporting the implementation of effective adaptation actions and building population and health system resilience in response to climate risks to health and health systems through the Health National Adaptation Plan. The plan will be aligned with both the National Adaptation Plan and the National Health and Climate Strategy and provide a national coordinating framework for activity across all levels of government and the private and community sectors to address the health and wellbeing impacts of climate change
- identifying the need for disaster preparedness, risk management plans and public emergency responses to be inclusive for people with disability through Australia's Disability Strategy 2021–2031. This includes supporting physical and mental wellbeing of people with disability.

First Nations peoples face particular systemic social and economic disadvantages. These include higher rates of poverty, poorer health outcomes and reduced access to education and employment. These disadvantages are likely to be exacerbated by climate change. The loss of sacred sites, traditional lands and environmental changes, compounded by climate change, can have profound psychological and social consequences for First Nations communities.

The Australian Government is working with First Nations communities on health and climate policy for First Nations peoples through the National Health and Climate Strategy. This will include the development of shared decision-making structures to support First Nations leadership in climate and health adaptation.

The National Aboriginal and Torres Strait Islander Health Plan 2021–2031 was developed in line with the National Agreement on Closing the Gap and in partnership with First Nations peoples. The plan recognises climate risks for First Nations peoples' physical, social, emotional and cultural wellbeing and identifies a range of priorities, including housing and food security.

What we will do

The National Health and Climate Strategy and the forthcoming Health National Adaptation Plan represent the primary vehicles for managing climate risks in the health system. The Australian Government will continue to provide national leadership and build capacity across the sector to better include climate risk considerations into planning and decision-making.

Future priorities

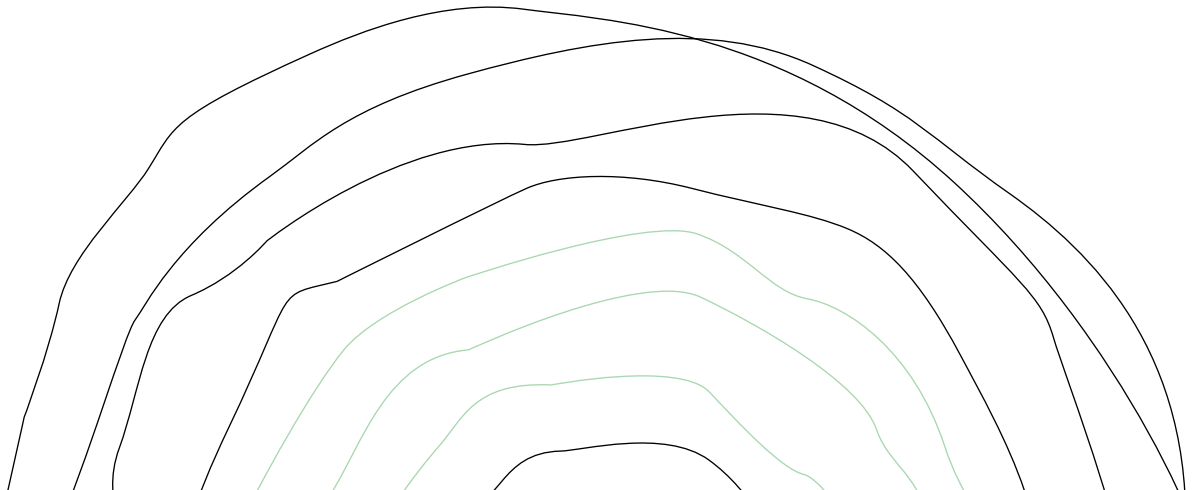
The interplay between different climate-hazards and socio-economic factors creates complex risk scenarios that require integrated policy responses.

Targeted support and adaptation measures for populations disproportionately at risk from the impacts of climate change will be essential to ensure equitable access to healthcare, emergency services, and social support during and after climate events. This also includes considering adaptation measures for older people, women and gender diverse groups and promoting gender equality, and a focus on children and youth, including their climate distress and anxiety. People from culturally and linguistically diverse (CALD) backgrounds may face additional barriers in accessing health and social support services. These may include language, unfamiliarity with warning signs, visa status, and social isolation.

Existing socio-economic disadvantage and high rates of chronic disease, rooted in colonisation, exacerbate the impact of climate change on the health of First Nations peoples and constrain First Nations communities' ability to adapt to climate change. The impacts of climate change on First Nations health are diverse, requiring community-led and place-based solutions.

People with chronic illness and disabilities face multiple challenges in extreme events (such as heatwaves, emergencies and evacuations) and require targeted interventions to ensure their safety and wellbeing. Climate-adapted services for people with disabilities should be bespoke and equitable.

The impacts of climate change, particularly higher temperatures and poor air quality, will present challenges for workers in exposed industries that are more reliant on physical effort, working outdoors and daytime work. In many jobs, there are likely to be a range of ways work can be done differently to avoid exposure, for example shifting working hours in periods of higher temperatures. It will be important that Work Health and Safety (WHS) policies and procedures for working in unfavourable conditions like extreme heat, lack of ventilation, hazardous air quality and exposure to high-risk weather continue to protect workers in a changing climate.



10. Primary industries and food

Barley harvest in Western Australia

System definition

This system refers to land, marine and estuarine commercial activities dedicated to producing food, fibre, wood and other products. It includes agriculture, aqua- and mariculture, fisheries, and forestry sectors. It spans large-scale and smallholder operations, both commercial and non-commercial, covering the entire chain from extraction to the consumer. Primary industries provide for and depend on the natural environment, regional and remote communities and economy, trade and finance.

System vision

Ensure that primary industry and food systems continue to be productive, profitable, resilient and sustainable in a changing climate, and support regional livelihoods, Australians and the economy.

Consultation inputs

Consultation highlighted that Australia's primary industry sectors have been at the cutting edge in preparing and adapting to climate-related risk. However, projected long-term climate impacts may undermine existing adaptation efforts and more action will be needed to build the resilience of primary industry and food systems.

Stakeholders want to see:

- readily available climate information that is reliable and downscaled, and which can inform decision-making at different levels
- a national picture of future food production to identify potential future vulnerable regions, critical crop shortages and barriers for specific sectors e.g. Australian fisheries
- continued upskilling of agriculture, fisheries and forestry workers, across the entire food production chain, to climate-adapted productions systems, technologies and the use of climate prediction tools
- ongoing research to continue the testing and evaluation of adaptation approaches, such as their applicability across multiple sectors and regions.

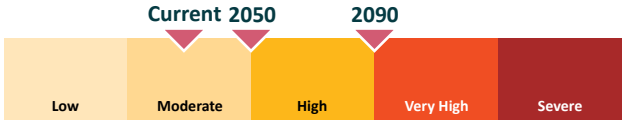
Priority risk

Of the 11 priority climate risks identified in the first pass assessment, there was one priority risk within the primary industries and food system. This was the *risk to **primary industries** that decrease productivity, quality and profitability and increase biosecurity pressures*.

Primary industries

The *risk to **primary industries** that decrease productivity, quality and profitability and increase biosecurity pressures* is currently rated as **moderate**, as primary industries are currently adapting to climate risks through technology and active management. This risk is projected to increase to **moderate–high** in 2050 and **high–very high** by 2090 (Figure 10.1), as future climate change will result in significant impacts to primary industries. This may include productivity impacts due to increasing heat and changing rainfall, and connected risks from supply chain impacts and health risks to outdoor workers.

Figure 10.1: National impact ratings for the priority risk to primary industries at current, 2050 and 2090 timeframes



Key impacts

Australia is facing increasing regional variation in climatic conditions, impacting the productivity of primary industries. Impacts are projected to become more severe with increasing global warming.

- Livestock, crops, horticulture, forestry and fisheries will all be affected by climate change, with flow on impacts to farming communities, food supply chains, food prices and security, and rural economies.
- The combination of more time spent in drought, extreme temperatures, altered rainfall patterns and marine heatwaves threaten the quality and productivity of agriculture and fisheries.
- The NCRA found that heat stress is likely to impact primary industries and animal welfare. For example, the number of cattle heat stress days is projected to increase in most regions of Australia. By a global warming level of +3°C the area expected to experience at least 150 days per year of heat stress in dairy cows and European beef cattle is expected to increase by about 30%.
- The incidence of pests and diseases will likely increase, further challenging agricultural productivity.

Most impacted

- Farming communities are at the frontline of this risk through impacts to productivity, water security, community livelihoods, outdoor work and supply chain issues.
- Regional and remote communities, especially those dependent on single industries, will be disproportionately affected.
- Aboriginal and Torres Strait Islander communities face heightened food and water security risks.
- The Murray–Darling Basin and south-west Western Australia are some of the most productive agricultural regions in the country. Projections indicate that both regions are likely to experience changes in water availability.

Connections with other systems

The impacts of climate change on primary industries are highly connected to other risks and systems including water security, communities, the natural environment, the economy and supply chains.

- Primary industries rely heavily on the natural environment, so impacts to ecosystems will also result in impacts to primary industries productivity. Native forestry and wild catch fishery industries are particularly dependent on the health of natural ecosystems, which are already stressed by the changing climate.
- Primary industries can be expected to evolve with climate change, shifting practices and their mix of produce. However, they may also need to move locations over time to more suitable climates. This could impact the viability and social cohesion of communities, especially those dependent on single industries.
- Economic impacts and workforce availability, both on farm and across the production chain, may affect stability and cohesion in agricultural communities.
- Primary industries are highly connected to supply chains and critical infrastructure, and disruptions in supply chains due to increasing frequency and intensity of extreme weather events can impact on the cost of inputs, cause spoilage and food shortages and reduce income for primary producers.

- Primary industries are particularly vulnerable to water security challenges, which in turn impact farming communities. Irrigated agriculture, while covering less than 1% of agricultural land, contributes over 25% of total agricultural value and consumes more than 60% of Australia's water resources. Water security challenges will intensify water competition and may result in reduced water allocations, and water quality risks from hazards such as bushfires and rainfall variability will further challenge agricultural productivity.

Roles and responsibilities

The Australian Government has an important role in coordinating support for primary industry, providing targeted assistance to build climate resilience and ensuring the industry can access appropriate data to support climate-adapted planning.

State and territory governments also undertake a range of actions to support communities, industries and business build resilience on farm and in regions. These include state-level adaptation plans for the agricultural sector, geographic and sector-based climate vulnerability assessments, research and analysis of adaptation technologies and strategies, and a range of programs and grants to support the testing and implementation of climate-adapted farming practices.

Primary industries have driven extensive adaptation and climate risk management to date which has resulted in significant changes in farming, fisheries and forestry. Many of the responses to climate change in primary industries are likely to continue being carried out by individual businesses and producers. Primary industries and businesses will continue to bear much of the responsibility for the viability of primary production, with key roles in research and innovation to adapt to future climate impacts.

What we are doing

The Australian Government is working with stakeholders to build climate resilience and increase the uptake of climate-smart, sustainable practices through a range of national programs and initiatives. Some of the key adaptation actions currently underway include:

- increasing agricultural sustainability and building climate resilience through the Climate-Smart Agriculture Program which invests $302.1 million to increase agricultural sustainability and build climate resilience. The program provides improved access to, and mainstreaming of, climate-smart technology and practices on Australian farms, forests and fisheries, which will be critical to building climate resilience
- helping farmers and regional communities prepare for drought and build climate resilience through the Future Drought Fund (FDF) through which $100 million is made available each year
- following the 2023 Productivity Commission review, FDF programs will consider a broader range of climatic risks and, where appropriate, opportunities to assist farmers, their communities and the broader public build climate resilience
- providing culturally safe and appropriate expertise through the FDF First Nations Advisory Group which advises on First Nations perspectives on drought and climate resilience in the design and delivery of FDF programs and activities
- acknowledging the increase in biosecurity risks resulting from climate change in the National Biosecurity Strategy (NBS). The NBS Action Plan includes activities to enhance our national surveillance and early detection arrangements to respond to changes in pest, weed and disease movement and distribution
- enabling primary industries to make informed decisions about adaptation and improve food security, through the FDF's Climate Services for Agriculture program and its online platform My Climate View, as well as the NCRA
- driving innovation in agriculture, fisheries and forestry through the 15 rural research and development corporations (RDCs), funded through a partnership of industry levies and government matching funds. The RDCs aim to, for example, encourage climate-smart practices and low-emissions solutions while supporting long-term profitability, productivity, competitiveness and sustainability
- supporting projects that avoid the release of greenhouse gas emissions or remove and sequester carbon from the atmosphere through the Australian Carbon Credit Unit Scheme. This can support and encourage practices on land that diversify income

- encouraging land management practices that improve biodiversity through a voluntary national Nature Repair Market. These projects can include planting trees on farmland, re-establishing vegetation along waterways and protecting and managing existing habitat or native vegetation
- continuing the Regional Investment Corporation (RIC) and providing an additional $1 billion in loan funding. The RIC delivers nationally consistent concessional loans to farm businesses and farm-related small businesses in financial need due to events outside their control. In August 2025, the Australian Government announced that the RIC's loan scope will be broadened to include assistance for improving climate resilience, boosting sector productivity, and supporting agriculture to be part of Australia's net zero transition. The RIC will also provide assistance for businesses and communities affected by slow-onset significant ecological events.

What we will do

More work is required to keep building the adaptative resilience of primary industries and further safeguard Australia's water security. The government will continue working with the sectors to build climate resilience and increase the uptake of climate-smart, sustainable practices:

- Develop a National Statement of First Nations in Agriculture, Fisheries and Forestry to include more experiences and perspectives of First Nations peoples in primary industries, including on adaptation.
- Consult with the Indigenous Land and Sea Corporation on their primary grant program, Our Country Our Future, and ensure assistance for acquiring and managing rights and interests in land, saltwater and freshwater Country is climate adapted.
- Continue to develop and implement climate-adapted programs in agriculture, fisheries and forestry through existing funding mechanisms, or example, the Natural Heritage Trust, Regional Investment Corporation and Future Drought Fund.
- Review the National Soil Action Plan 2023–2028 to ensure the second 5-year action plan is fit for purpose to meet the current issues in supporting soil health and resilience in the context of a changing climate.
- Support Australian Forest and Wood Innovations to deliver climate change solutions, sustainable forests for our future, and making the most of our available fibre.
- Develop a national food security strategy, Feeding Australia, to provide a long-term, whole of system plan to secure and sustainably grow Australia's food system.

Future priorities

Many primary industries have been adapting to impacts of climate change using skills learned to cope with Australia's natural annual variability. However, the NCRA findings demonstrate that existing adaptation action is unlikely to be sufficient to meet the pace and extent of future climate impacts. Governments across multiple jurisdictions will need to continue to review and amend the scope and scale of climate adaptation. This will need to also include coordinating policy-making and action across portfolios where overlapping and interdependent risks affect systems and risks other than primary industries, for example, workforce availability, disaster response and biosecurity, informed by fit-for-purpose climate information.

Key priorities for adaptation action include further research, development and investment in technological innovation, improved water use and efficiency, upskilling of the workforce in climate-adapted planning, addressing skills shortages across the entire primary industry and food systems production chain, implementing new technologies and farming techniques, and diversification of crops.

The impacts of climate change may also present new or increased opportunities for primary industries, for example, changes to bioregion suitability or diversified cropping. New overseas markets may also open up where climate change and associated adaptation strategies result in an increase to Australia's productivity compared to other countries.

Identifying adaptation co-benefits with mitigation and agricultural sustainability action can further boost Australia's market advantage with trade partners, as well facilitate greater private sector investment. Investment in adaptation research and trials can assist primary industries to identify and realise these opportunities.

11. Communities – urban, regional and remote

Coober Pedy, South Australia

System definition

Urban, regional and remote communities represent people's homes, places of business, and social and cultural hubs. Twenty-six percent of Australians live in inner and outer regional Australia, and 2% in remote and very remote areas.

This system encompasses all communities across Australia, including regional centres, towns, remote settlements and cities.

This system is closely linked to other systems such as infrastructure and built environment, the economy, and primary industries, as well as First Nations peoples who have a strong cultural and spiritual connection to traditional lands, sea and waterways.

System vision

Socially cohesive and resilient communities – whether urban, regional or remote – have the capability to adapt to a changing climate. Localised adaptation solutions are delivered using each community's unique strengths and drawing on local knowledge.

Consultation inputs

Stakeholder consultations emphasised that climate risks pose inter-connected challenges for regional communities, spanning to primary production, the natural environment, health and the management of severe natural hazards.

Increasingly severe and frequent extreme climate events, such as heatwaves, tropical cyclones and floods, are having a big impact on communities. It was acknowledged that remote First Nations communities are particularly exposed.

The poor and often declining infrastructure quality and long distance from essential services adds to the isolation of these communities and compounds the potential climate impacts.

It was also noted that there are challenges associated with temporarily moving communities to safe places during extreme events, including members of a community who cannot easily relocate during emergencies due to health, social and other factors. This is especially the case in First Nations communities for whom evacuations impact their connection to Country, and where there may be pre-existing socio-economic disadvantage, relatively high numbers of people with pre-existing health conditions, poor infrastructure and limited alternatives for relocation.

Stakeholders highlighted the need for a nationally consistent approach and coordination in managing sea-level rise and coastal planning. Sea-level rise threatens some of Australia's most valued natural and cultural heritage, as well as public and private coastal assets. There was a call for a greater focus on nature-based solutions – like mangroves and restoration of coastal wetlands – which can simultaneously enhance natural ecosystems while addressing social and economic challenges – such as human health, disaster risk reduction or urban infrastructure resilience.

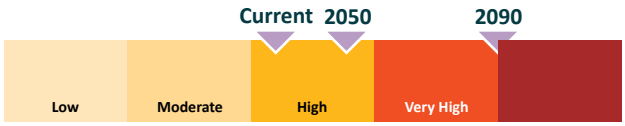
Priority risks

The communities – urban, regional and remote system considers 2 of the 11 priority risks identified in the first pass assessment, including the *risk to* ***regional, remote and Aboriginal and Torres Strait Islander communities*** *that are supported by natural environments and ecosystem services*; and the cross-system risk – the *risk to coastal* ***communities from sea-level rise*** *particularly where legacy and future planning and decision-making increases the exposure of settlements*.

Regional and remote communities

The *risk to* ***regional, remote and Aboriginal and Torres Strait Islander communities*** *that are supported by natural environments and ecosystem services* includes rural and remote communities reliant on agricultural industries, and Aboriginal and Torres Strait Islander communities with close cultural connections to Country, who still practice traditional hunting and land management. This priority risk is currently rated as **high**, as regional, remote and Aboriginal and Torres Strait Islander communities are already experiencing the impacts of climate change, such as increasing heat and drought. Additionally, these communities are particularly vulnerable to impacts to supply chains, health systems, primary industries and the natural environment. This risk is projected to remain **high** to 2050 and then increase to **very high–severe** by 2090 (Figure 11.1), due to impacts driven by increasing heat across Northern Australia and increasingly severe impacts to connected systems.

Figure 11.1: National impact ratings for the risk to regional, remote and Aboriginal and Torres Strait Islander communities at current, 2050 and 2090 timeframes



Key impacts

Regional and remote communities face increasing risks from climate change driven by compounding hazards such as floods, heatwaves, bushfires, storms and severe tropical cyclone. Resilience to hazards vary across these communities. Communities with a heavy reliance on one industry or ecosystem services are particularly vulnerable to the impacts of climate change.

- Small businesses in rural and regional communities are likely to be at risk, particularly in high-risk areas of the Northern Territory, Western Australia and northern Queensland. By 2030, an additional 40,000 small businesses are expected to be in above-average risk areas across Australia (17.9% of small businesses across Australia).
- Communities across Northern Australia (north Western Australia, Northern Territory, and northern Queensland) are most at risk to the impacts of climate change, due to their exposure to current and projected climate hazards such as heat, bushfire and tropical cyclones, and existing vulnerabilities. The NCRA found that in the Northern Territory, 67,000 people (26.5% of the estimated 2023 population) reside in high-risk areas and 110,000 (43.7%) live in very high-risk areas, while 94,000 people (85.4%) live in very high-risk areas in northern Western Australia.

Most impacted

Communities across northern Australia – Northern Territory, northern Queensland and northern Western Australia – are disproportionately impacted. Remote Aboriginal and Torres Strait Islander communities face heightened risks from climate change due to limited access to critical infrastructure, essential services and exposure to multiple hazards, particularly extreme heat and drought. The strong cultural connection to Country and relationship with the natural environment further amplifies the impacts of extreme events.

Connections with other systems

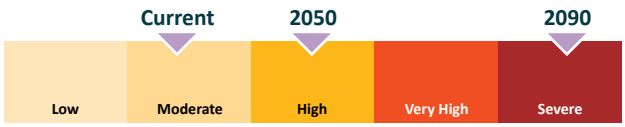
Regional and remote communities are intrinsically connected to all other systems, for example:

- Rural and remote communities are generally at greater risk of health impacts from climate change for both demographic reasons and because critical infrastructure, food and water security, and supply chains are also at risk.
- Around 34% of older Australians (aged 65 or older) reside in rural and remote areas, where access to health care and other essential services can be limited.
- Climate change can adversely affect agricultural productivity, impacting the wellbeing and livelihoods of regional and remote communities which are often centred around agriculture.
- Regional and remote communities, particularly those which are reliant on long supply chains for the provision of goods, are vulnerable to impacts from climate events on critical infrastructure such as transport and energy infrastructure.
- Ageing water infrastructure will be exposed to more frequent and severe climate hazards, leading to impacts such as water and sewer pipe damage, impacting on water security.

Coastal communities and settlements

The *risk to coastal **communities from sea-level rise** particularly where legacy and future planning and decision-making increases the exposure of settlements*, is currently rated as **moderate**, as a large proportion of Australia's population live in coastal areas which are exposed to rising sea levels and increasing coastal hazards. This risk is projected to increase to **high** by 2050 and **severe** by 2090 (Figure 11.2), as increasing numbers of people and communities will be exposed to impacts from sea level rise, coastal inundation and coastal erosion.

Figure 11.2: National impact ratings for the risk to coastal communities and settlements at current, 2050 and 2090 timeframes



Key impacts

Coastal communities within 10 km of the soft shoreline (e.g. beaches and vegetated coastlines) face the impacts of rising sea levels and increasing exposure to coastal hazards, as a consequence of legacy planning decisions.

- 73% of Australia's population live in major cities, particularly along the east coast. The NCRA found that the number of coastal communities (at SA2 level) exposed to high or very high risk from coastal hazards will increase over time; from 8% in 2030 to 18% in 2050 and may increase to 34% in 2090.
- High population densities and residential buildings close to soft shorelines increase exposure to erosion and rising sea levels. Waterfront developments along soft shorelines face risks from sea level rise and storm surges which interact with other extreme weather events.
- Communities situated in low-lying coastal areas are highly vulnerable to sea level rise, as even small increases in sea level can lead to inundation, flooding and erosion.

Most impacted

While all coastal communities face increasing exposure coastal hazards, some cohorts are disproportionately impacted:

- Low-lying coastal areas are particularly exposed and vulnerable to sea level rise. This includes communities in the Torres Strait, coastal areas in Queensland's Gulf of Carpentaria, and low-lying areas along the coast of New South Wales and Victoria.
- Exposure of residential buildings to sea level rise is expected to rise markedly in Queensland (especially north) and Victoria.
- Regions with a high percentage of small businesses at risk, such as the Northern Territory and northern Queensland, will likely require targeted support and resources for adaptation and risk-reduction strategies.
- In highly exposed and vulnerable communities, sea level rise is likely to impact liveability, which may necessitate relocation.
- Climate change may also impact social cohesion. It will be important to support building social capital in communities exposed to climate change impacts.
- Communities with low socio-economic resources are more vulnerable to climate change and have fewer resources to cope with and recover from climate impacts.

Connections with other systems

The impacts of climate change to coastal communities are interconnected to most other systems:

- Coastal hazards will impact existing critical infrastructure.
- Sea level rise and saline intrusion in groundwater are likely to result in water sources losing viability, increasing water security pressures.
- Insurance providers are becoming more selective about offering coverage in high-risk flooding or coastal erosion areas, leading to limited availability or unaffordable insurance for property owners.

Coastal town, Tasmania

Roles and responsibilities

The Australian Government works with all levels of government to respond to challenges facing urban, regional and remote Australia from a range of natural hazard types. This includes the equitable delivery of critical services, even during emergencies and extreme events. State, territory and local governments have localised responsibilities for adaptation planning and service delivery, with defined roles in asset management and land-use planning. Local governments often provide guidance on climate adaptation action to their communities.

First Nations peoples have particular rights and interests in land and waters under the *Native Title Act 1993* (Cth) and other Australian, state and territory government legislation and arrangements. The relevant governance arrangements, roles and responsibilities for these areas will depend on the particular legislation and the rights and interests held. In some First Nations communities, local government functions may be performed by Indigenous Councils or organisations. Various community organisations may also be involved in service and infrastructure provision.

The Australian Government acts as both the Commonwealth and state-level government in non-self-governing territories. In these territories, responsibilities extend from managing Australia's ongoing strategic policy interests, to the provision of state-type services, such as education, water, electricity generation and distribution, community services and wastewater.

What we are doing

The Australian Government has various policies, programs and initiatives focusing on improving economic and community resilience in urban, regional and remote Australia:

- Increasing disaster resilience and risk reduction from disasters caused by climate change and other natural hazards through projects delivered by the DRF. The Australian Government is providing up to $1 billion through the DRF. The funding runs over five years from 1 July 2023.
- Recognising the potential of northern Australia to build on its comparative advantages of natural resources, strategic location, unique environment and cultural heritage, and resilient communities through the Northern Australia Action Plan 2024–2029.
- Providing a consistent approach across the breadth of Commonwealth investments that impact on regional Australia through the guiding principles set out in the Regional Investment Framework.
- Ensuring growth in our diverse cities and suburbs is sustainable and equitable through the National Urban Policy.
- Helping communities and farmers recover from past flooding and prepare for future severe weather in northern Queensland with the $91.8 million North Queensland Recovery and Resilience Package.

The government has a range of programs to assist regional and remote First Nations communities, including:

- addressing supply chain issues through the cross-jurisdictional Remote Food Security Working Group that involves remote retailers, wholesalers, freight and distribution companies
- improving existing dwellings and building new homes that are culturally appropriate and meet the Northern Territory's climate challenges with the Northern Territory Remote Housing package, delivered with the Northern Territory Government and NT land councils. The Australian and Northern Territory governments have committed $4 billion over ten years to this work
- working in partnership with regional leaders and Traditional Owners to co-design, establish and deliver the Torres Strait and Northern Peninsula Area Climate Resilience Centre
- delivering coastal protection works in the Torres Strait with stage 2 of the Seawalls Program, to protect communities and infrastructure against climate-related inundation and erosion. This is a $40 million project co-funded by the Australian and Queensland governments.

These measures are part of an ongoing dialogue and support for First Nations remote communities to implement adaptation actions that work for them.

What we will do

The Australian Government is building on work already underway by working with states, territories and the Australian Local Government Association to develop a National Coastal Hazards Management Framework, incorporating an integrated coastal management vision, goals and principles. The framework will consider climate change scenarios, sea-level rise and nationally consistent guidance for risk-based decision-making in integrated coastal management.

Future priorities

The NCRA highlights priority risks for rural, remote and First Nations communities, and coastal communities – which include Australia's highest population densities. While some adaptation is underway, more action is needed to plan and implement measures that avoid critical or irreversible impacts in the future. Strong governance will be needed to ensure a cohesive approach to improve planning and development decisions across Australia. Strategies will be needed to manage displacement and relocation of people, and planning is required to minimise impacts to critical infrastructure and other connected systems. Mainstreaming climate risk considerations into planning and development requires tailored guidance and capacity-building.

Regional areas have a role to play in micro-manufacturing and creating sustainable business opportunities that do not rely on single industries or natural environments and ecosystems. Where practicable the Australian Government will work with state and territory governments and regional and local bodies to consider improvements to place-based adaptation planning and enable better access to climate information to assist with local risk management and risk reduction.

As climate change events become more frequent and severe, the risk that individuals and entire communities become displaced for extended periods of time, multiple times, or permanently, will continue to grow. Displacement will result in diminished social cohesion, which impacts community and individual resilience, negatively affecting the livelihoods, security, health, culture and wellbeing of individuals and communities. This gives rise to a specific policy need around the planned relocation of whole communities. For example, in the Queensland town of Grantham, federal and state governments provided $18 million to support the relocation of 90 families away from a flood plain and on to higher ground. Successful relocation requires a coordinated approach between the impacted communities, the federal, state, territory and local governments and local organisations. It will also need ongoing engagement with affected remote communities and First Nations peoples.

12. Defence and national security

Queensland Rural Firefighter inspects bush fire

System definition

The defence and national security system refers to the structures and functions dedicated to safeguarding Australia's domestic stability and international interests, including disaster readiness and risk reduction. It includes all emergency management services, workforce and volunteers, and the role of the military in domestic disaster response while being prepared to defend Australia and its national interest. This system has strong interdependencies with the provision of essential services and associated social cohesion impacts, communities, economy, trade and finance, and critical infrastructure.

System vision

In a climate-adapted defence and national security system, the Australian Government has undertaken appropriate climate mitigation actions and disaster preparedness activities that lessen the risks and ensure response and recovery capabilities are in place to manage domestic climate-related disaster events so that the Australian Defence Force (ADF) is only used as a force of last resort.

The Australian Government supports regional security and stability, including climate adaptation and resilience efforts.

Consultation inputs

Stakeholder consultation raised issues related to the role of the ADF and communities, the importance of reliable data and information, and consideration of international and regional impacts, such as community displacement. Stakeholders emphasised that climate adaptation and resilience for the defence and national security system is critical to ensure Australia has the appropriate disaster preparedness, response and recovery capabilities. There were calls for community-based adaptation approaches and building local capacity. Fostering community engagement was seen as vital to address climate change impacts. The displacement of individuals and communities is an important issue, and broader Pacific regional impacts will need to be managed and supported by Australia with care and respect.

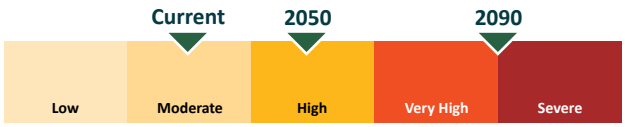
Priority risk

Of the 11 priority climate risks identified in the first pass assessment, there was one priority risk within the defence and national security system. This was the *risk to **domestic disaster response and recovery assistance** from the competing need to respond to multiple natural hazard events, resulting in concurrency pressures and overwhelming the capacity of all levels of government to effectively respond and to do so without reliance on the Australian Defence Force*.

Concurrency pressures in emergency response and recovery

The *risk to* ***domestic disaster response and recovery assistance*** *from the competing need to respond to multiple natural hazard events, resulting in concurrency pressures and overwhelming the capacity of all levels of government to effectively respond and to do so without reliance on the Australian Defence Force* is currently rated as **moderate**. This risk is moderate because climate change is increasingly challenging Australia's disaster preparation, response, relief and recovery operations. This risk is projected to increase to **high** by 2050 and **very high–severe** by 2090 (Figure 12.1) as increasingly frequent, severe and concurrent climate hazards such as bushfires, intense rainfall and flooding, and severe heat, will place pressure on our limited disaster response and recovery capabilities.

Figure 12.1: National impact ratings for the risk to domestic disaster response and recovery are at current, 2050 and 2090 timeframes



Key impacts

The increasing frequency and intensity of disaster events, and compounding and concurrent events which have occurred in recent years, has stretched state and territory emergency capacities, and volunteers, necessitating Australian Government assistance. The increasing frequency of climate events will place higher demands on the ADF for humanitarian assistance and disaster relief operations, placing greater stress on ADF capability, capacity and infrastructure.

- By 2050, the likelihood of compounding severe weather events, that is, concurrent, consecutive and cascading disasters (e.g. tropical cyclones followed by floods or heatwaves) is expected to increase. Coupled with coastal erosion and rising sea levels, disaster impacts and response challenges will be compounded, overwhelming emergency management systems.
- By 2090, ineffective responses to frequent and escalating events may lead to a breakdown of social capital and cohesion, reductions in volunteer participation, increased risk exposure in response and recovery work, and heightened tensions over climate-induced domestic migration (movement of people within Australia due to climate impacts in some communities and regions). Reductions in volunteer participation and breakdowns of community cohesion would impact social capital and emergency and disaster response capacity.

As the 2024 National Defence Strategy highlights, building national resilience requires the Commonwealth to work with states and territories to develop alternative capabilities for crisis response and recovery so that the ADF is only used as a force of last resort.

Most impacted

Many communities across the country face increasing exposure to climate-driven events, with many already exposed to floods, storms and bushfires.

- Communities in the Northern Territory, northern Queensland and northern Western Australia are the most exposed to floods, storms and bushfires. Significant percentages of the populations in these regions, including First Nations communities, face increased exposure to these climate hazards.
- Increasing frequency and/or severity of climate events will also increase pressure on Defence personnel, emergency management services, workforce and volunteers, and Defence and emergency management assets.

Connections with other systems

Most systems depend on disaster response and recovery to minimise disruptions and maintain stability. In turn, adequate disaster response and recovery relies on other systems, such as food and water security and infrastructure stability. Key connections include:

- Fiscal pressure is expected across all levels of government, particularly through demands for recovery funding. Treasury analysis indicates that average Commonwealth expenditure under the Disaster Recovery Funding Arrangements in 2090 could increase by up to 500% under a global warming level of 2°C, and 600% under a global warming level of 3°C.

- Food and water scarcities will likely affect logistical support including the ability to sustain emergency management operations in remote and isolated communities.
- Increases in climate-sensitive infections and communicable diseases which heighten health risks to those exposed to extreme events, including emergency management personnel and volunteers.

Geographic scales, increasing costs for recovery and resilience and the likelihood of simultaneous extreme events make effective adaptation challenging.

Roles and responsibilities

Australia's domestic disaster response is primarily the responsibility of state and territory governments within their jurisdictions. It relies on emergency management services, a dedicated workforce of volunteers as well as private and non-governmental organisations in the affected communities. The capacity and adaptability of the workforce, particularly volunteer services, are essential for effective all hazard risk reduction, disaster response and recovery. In the event the capacity of state and territory governments are overwhelmed, in line with the Commonwealth's broader strategic and operational capabilities, assistance can be requested in line with the Australian Government Crisis Management Framework, Defence Assistance to the Civil Community guidelines and associated national plans.

The ADF is frequently made available to contribute to domestic disaster relief efforts. However, as the 2023 Defence Strategic Review outlined, Defence is not structured or appropriately equipped to act as a domestic disaster recovery agency concurrently with its core function of defending Australia and its national interests. As such, alternative capabilities for disaster response and recovery are required to support local and state and territory-led responses to crises to ensure the ADF is only used as a force of last resort.

What we are doing

Effective preparedness across government agencies and communities is essential for reducing the impacts of not only climate-related disasters, but all hazard events. Strengthening, in the short to medium term, multi-agency coordination between all in the emergency management system – including the Australian Government, emergency management services, and state, territory and local governments – will ensure a cohesive, rapid response to disasters. Engaging new volunteers, especially from diverse communities, will be essential in maintaining a robust emergency workforce capable of meeting the growing demands of climate-related disasters and relieving workforce concurrency pressures.

The Australian Government and the National Emergency Management Ministers' Meeting (NEMMM) commissioned independent reviews into Australia's disaster management that recommend a new approach designed to manage the climate impacts on natural hazards.

Box 12.1: Independent reviews into disaster management

The Independent Review of Commonwealth Disaster Funding (Colvin Review), commissioned by the Australian Government, considered the growing costs and pressures on Australia's disaster management system due to climate-driven risks. The report emphasised a need for proactive approaches that focus on resilience, improved coordination, and targeted risk reduction funding to manage future disasters more sustainably.

The Independent Review of National Natural Disaster Governance Arrangements (Glasser Review), commissioned by the NEMMM, examined Australia's natural disaster governance in light of increasing climate risks. Key findings recommend overhauling national decision-making mechanisms to focus on strategic challenges, and to enhance resilience and the delivery of nationally significant programs.

Adaptation has a key role to play in strategically important areas where ADF operations may be expanding, such as northern Australia. The 2024 Integrated Investment Program is investing $14 billion to $18 billion to ensure a logistically connected and resilient set of bases, ports and barracks across Australia's north. Climate resilience measures will be essential to maximise the effectiveness of this program, noting the overlap between areas of Australia exposed and vulnerable to climate change and areas of strategic importance for Australia's national security.

The Australian National Action Plan on Women, Peace and Security 2021–2031 seeks to support women's leadership and participation in climate policy decision-making. Designing gender-responsive interventions will also help with the delivery of security sector responses that meet the needs of women and girls' needs.

A whole-of-government effort is underway to better understand, prepare for and respond to climate-driven risks to national security. Security and emergency management agencies are working collaboratively to embed climate-risks considerations into decision-making on national security matters. Key efforts focus on ensuring that robust legislation, policies and operational frameworks are in place to manage increasingly complex, cascading and concurrent all-hazard disaster events, including climate-driven events, domestically and internationally. Current Australian Government actions include:

- investing $38.3 million over 4 years from 2022–23 in Disaster Relief Australia to increase the capability of the nation's volunteer workforce and ensure additional support to states and territories when disasters occur
- delivering a sophisticated, flexible aerial capability that can respond to a range of disasters, as an alternative to the ADF, supported in the 2024–25 Budget
- further investment in the National Emergency Management Stockpile of assets ready to deploy to disaster areas when requested by states and territories
- consulting widely on the findings and recommendations of the Colvin Review to inform the Australian Government response, including with states, territories, the Australian Local Government Association, First Nations peoples, disproportionately impacted cohorts and the not-for-profit and private sectors.
- working with states and territories to implement the Glasser Review recommendations within the remit of emergency management ministers, with seven recommendations implemented to date. Implementing these recommendations has strengthened the strategic focus of NEMMM and the Australia–New Zealand Emergency Management Committee (ANZEMC) on national challenges, and increased attention to resilience and risk reduction
- ensuring timely and accurate communication of disaster risks to communities by leveraging early warning systems and investing in the expansion and modernisation of early warning mechanisms, such as the National Messaging System and Public Safety Mobile Broadband
- engaging with all levels of government, with groups representing at-risk communities to support the measures to enhance disaster resilience; representing Australia's interests in global forums hosted by the United Nations Office for Disaster Risk Reduction; and the provision of Australian data under the Sendai Framework
- undertaking Commonwealth Climate Disclosure requirements to better understand and respond to climate risks to Defence
- working in partnership with First Nations peoples to develop national policy and deliver actions under the National Agreement on Closing the Gap to reduce disaster risk and support culturally appropriate response and recovery.

What we will do

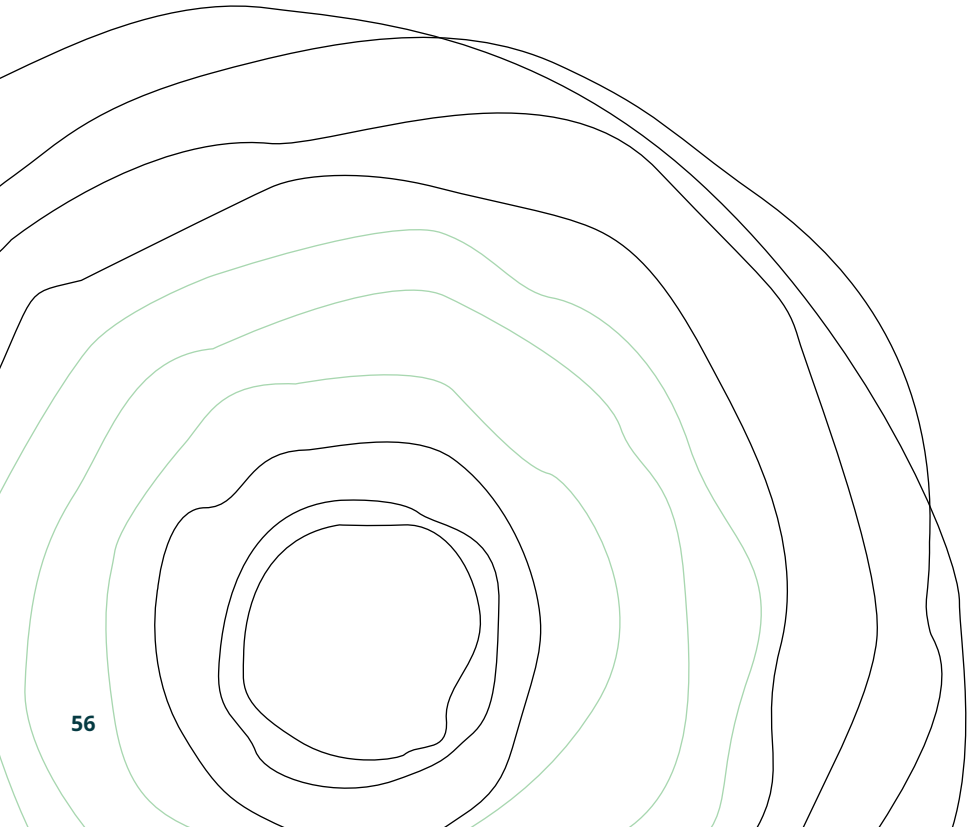
In line with the 2024 National Defence Strategy, the Commonwealth will work with states and territories to develop alternative capabilities for crisis response and recovery so that the ADF is only used as a force of last resort. The Australian Government is building on the substantial progress already underway in this system to ensure that our society and communities are resilient to the expected acceleration in all future hazard events, including climate impacts. In addition, further climate data and modelling in future risk assessments will support unpacking the impact of international and transboundary risks on Australia and our region.

Future priorities

The NCRA identifies that new approaches to disaster management will be required as well as increased investment, resilience and adaptation. This is supported by the findings and recommendations of the Colvin and Glasser reviews. There is a need for proactive approaches that focus on resilience and risk reduction, strengthened coordination across all levels of government and with non-government organisations and the private sector, and targeted outcomes-driven funding to manage future disasters more sustainably.

It will be important to embed a risk-based approach into Australian Government decision-making with the development of a national natural risk profile, to support evidence-based investments that reduce disaster risk and build resilience to future events.

Including First Nations communities in disaster response decisions offers an opportunity for community empowerment and preparedness that accounts for cultural context, leverages existing community capacities, and helps reduce the risk of displacement.



13. Monitoring, evaluation and learning

A monitoring, evaluation and learning (MEL) system for the National Adaptation Plan will be developed and implemented following the release of this plan.

Adapting to climate risk is an ongoing and iterative process. Successful implementation of the National Adaptation Plan will require action and accountability across all levels of government, the private sector and the community.

Principles and timing

MEL systems track implementation and effectiveness of adaptation actions to inform future policy development. Development and delivery of an Australian Government MEL system will involve consultation and stakeholder engagement to ensure monitoring, evaluation and learning is effective and transparent. A best practice MEL system for the National Adaptation Plan would:

- assign roles and responsibilities to stakeholders in monitoring, evaluation and learning
- monitor, evaluate and report on adaptation progress, the achievement of objectives and intended outcomes
- ensure transparency and accountability in implementation of the plan
- evaluate the effectiveness of the National Adaptation Plan program and its influence on adaptation action across Australia by key stakeholders at dedicated review points
- establish processes to integrate new information and lessons into future National Adaptation Plan cycles and broader adaptation action
- focus on Australian Government progress and action, but develop a method in consultation with states, territories and local government to encompass the considerable work by sub-national jurisdictions and other stakeholders
- embed mechanisms for communicating and reporting from the MEL into the overall framework, so that findings and gaps are regularly communicated to all stakeholders.

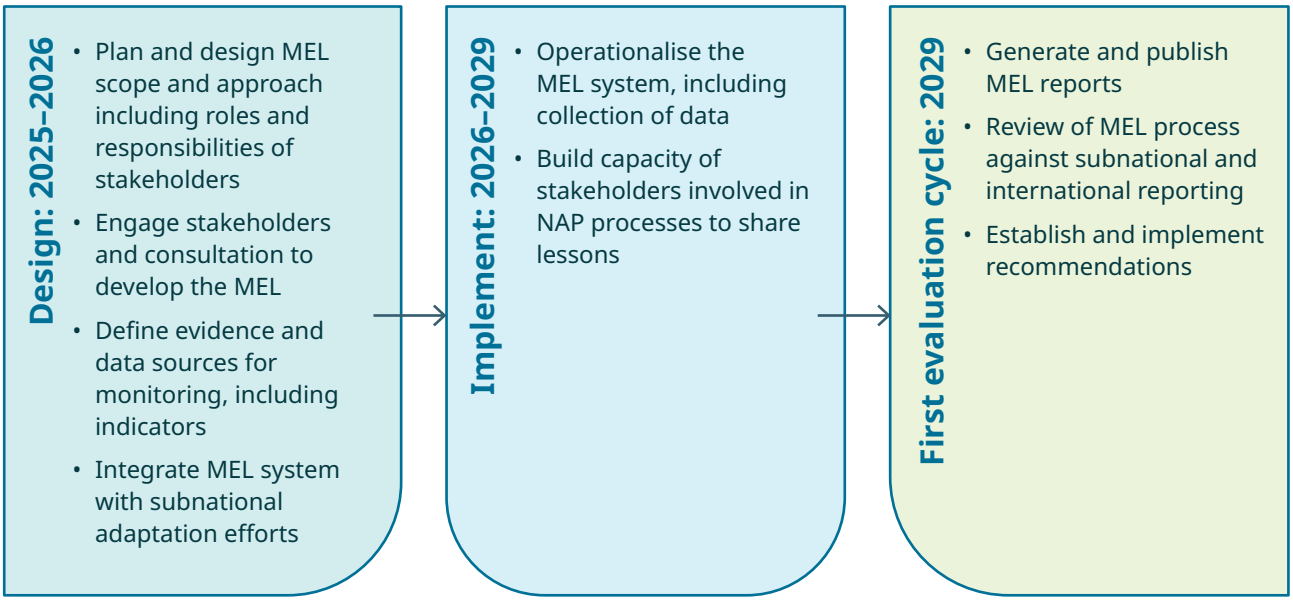
Wave Rock, Western Australia

The MEL system will be implemented across the lifecycle of the National Adaptation Plan as shown in Figure 13.1, as is international best practice. The MEL system will be flexibly designed, so it can be improved, built upon and repeated for any future similar processes. It will be designed to not replicate existing reporting processes and seek to be developed collaboratively with other jurisdictions to complement their adaptation MEL systems.

In its 2024 Annual Progress Report, the Climate Change Authority recommended implementing regular reviews of the National Adaptation Plan and National Climate Risk Assessment. The government agreed in principle with this recommendation, noting that the Authority, as an independent advisory body, is well placed to contribute to monitoring and evaluation. Roles and responsibilities for MEL will be considered further in 2025.

Internationally, even countries with advanced adaptation planning systems face challenges in monitoring adaptation progress. We expect the maturity of Australia's MEL system to build over time. The Australian Government's adaptation MEL system can draw on international best practice in its development. It can use reviews and feedback to provide a robust and iterative approach to addressing any challenges. In the early stages, we expect to monitor more 'output based' measures of progress while robust 'outcomes based' measures are developed.

Figure 13.1: Best practice approach to monitoring, evaluation, and learning system



Appendix A:

Australian adaptation legislation, strategies and policies – state of play

Governments, households, industry, businesses and community organisations all have a role to play in helping Australia adapt to climate impacts, and much action is already underway. The Australian Government's role in adaptation is to provide national leadership and information to help others adapt, while managing the risks to its own assets, services and programs.

State and territory governments also undertake a range of actions to support communities, industries and business to build resilience to climate change. They deliver and administer a significant body of legislation, deliver a broad range of services and manage a substantial number of assets and infrastructure.

Under the COAG agreement, the focus for state and territory governments is on ensuring appropriate regulatory and market frameworks are in place, providing accurate and regionally appropriate information, and delivering on adaptation responses in areas of policy and regulation that are within the jurisdiction of the state. State and territory adaptation actions vary in scope and scale.

Intergovernmental arrangements

There is a substantial amount of policy work underway in the Australian Government and state and territory governments. Table A.1 summarises key aspects of the adaptation policy architecture at these levels of government. A comprehensive update on adaptation action by the Australian Government and states and territories is in Australia's first Biennial Transparency report, part of Australia's international reporting under the Paris Agreement (DCCEEW 2024c).

Canberra, Australia

Box A.1: Council of Australian Government (COAG) 2012 Roles and Responsibilities for Climate Adaptation in Australia

Roles and Responsibilities for Climate Change Adaptation in Australia were agreed to by the then Council of Australian Governments' Select Council on Climate Change in 2012 (COAG 2012). These roles are underpinned by the principle that risks are most effectively managed by recognising and empowering those who are best placed to manage them. The document guides federal, state and territory government cooperation and highlights the specific roles and responsibilities for each level of government and the private sector.

The roles and responsibilities are summarised as:

Australian Government

- Provide leadership on national adaptation reform.
- Manage Australian Government assets and programs, including embedding climate change impacts into existing risk management frameworks and working with all governments to manage climate risks to nationally significant public assets.
- Provide and manage national science and information that is high quality and includes national and regional climate projections to allow Australia to effectively adapt.
- Maintain a strong, flexible economy and a well-targeted social safety net to ensure resources are available to respond to climate change and climate change does not disproportionately affect vulnerable groups.

State and territory governments

- Deliver adaptation responses in their areas of policy and regulation. This includes service delivery and infrastructure. For example, emergency services, health system, the natural environment, planning and transport.
- Provide local and regional science and information through collaboration with all governments to develop and implement a consistent approach.
- Working with the Australian Government to implement national adaptation priorities and monitoring and evaluation arrangements.
- Encouraging climate resilience and adaptive capacity.

Local governments

- Deliver adaptation responses that align to state and Australian Government legislation to promote adaptation as required including the application of relevant codes, such as the Building Code of Australia.
- Provide information about relevant climate change risks and contribute appropriate resources to prepare, prevent, respond and recover from detrimental climatic impacts.
- Inform other levels of government about the on-the-ground needs of local and regional communities.
- Manage risks and impacts to public assets owned and managed by local governments and to local government service delivery.

All governments

- Help build the adaptive capacity of individuals, groups and businesses, in particular vulnerable communities.
- Provide accurate climate information for private parties to adapt.
- Ensure that regulatory arrangements and policy settings do not distort private incentives and market signals and facilitate climate change adaptation.
- Provide public goods and services and manage public assets.

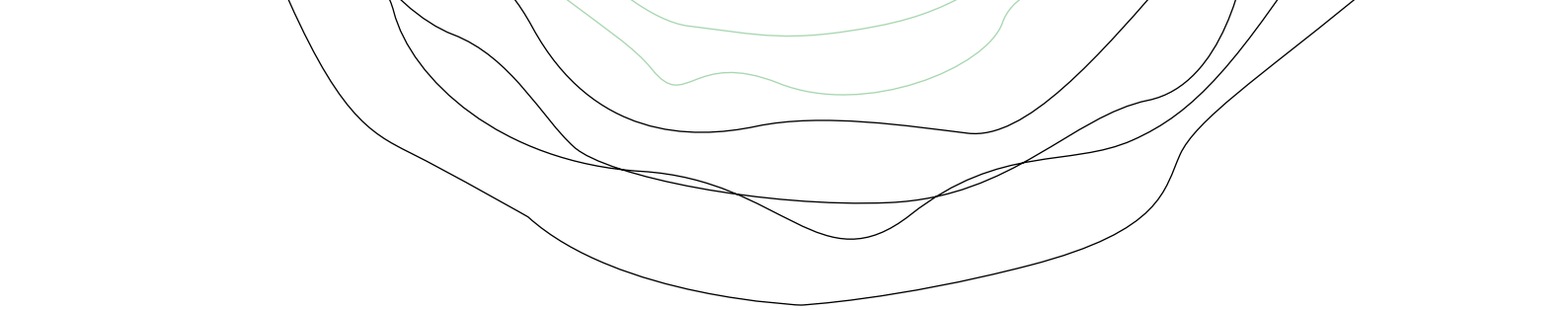
Private parties

To manage risks from climate change impacts, private parties should:

- be aware of the risks and their responsibility for managing them
- take steps to understand the magnitude and nature of the specific risks to their assets and activities
- develop and implement strategies and actions to manage the risks.

Table A.1. Adaptation policy architecture in the Australian Government and state and territory governments

Climate legislation	Climate risk assessments	Climate adaptation plans & strategies	What is next
Australian Government			
Climate Change Act 2022 Requires that the Minister's annual climate change statement to Parliament report on risks to Australia from climate change impacts, such as those relating to Australia's environment, biodiversity, health, infrastructure, agriculture, investment, economy or national security.	First National Climate Risk Assessment completed in 2025.	This National Adaptation Plan replaces the National Climate Resilience and Adaptation Strategy.	The National Climate Risk Assessment and this National Adaptation Plan will serve as a baseline for future adaptation action.
Australian Capital Territory			
Climate Change and Greenhouse Gas Reduction Act 2010 An objective of the Act is to facilitate the development of policies and programs to address and adapt to climate change.	The Climate Change Risk Assessment for the ACT, published in 2022, assists the ACT government to prioritise climate adaptation and resilience initiatives across priority risks.	The ACT Climate Change Strategy 2019–25 prioritises an integrated approach to climate change policy by bringing together adaptation, resilience and emissions reduction measures.	The ACT will continue implementation of the ACT Climate Change Strategy 2019–2025. The ACT is developing a new Climate Change Strategy.
New South Wales			
Climate Change (Net Zero Future) Act 2023 The objects of the Act include that NSW establishes guiding principles for action to address climate change; sets an objective to be more resilient to a changing climate; and establishes the Net Zero Commission to independently monitor, review and report on progress towards the targets, the adaptation objective and other matters.	The NSW Climate Change Adaptation Strategy commits the NSW government to publish a climate change risk and opportunity assessment at least every 5 years. The first climate change risk and opportunity assessment is being developed. Once complete, findings of the assessment will be used to inform the review of the current adaptation action plan in 2026 and future plans.	The NSW Climate Change Adaptation Strategy sets out the NSW government's approach to climate change adaptation, supported by funding of $93.7 million over 8 years. The NSW Climate Change Adaptation Action Plan 2025–2029 was published in October 2024.	NSW Climate Change Adaptation Action Plan 2025–2029 outlines timeframes for delivery of actions under the plan.
Northern Territory			
No climate change legislation. The ***Environment Protection Act 2019*** includes *the impacts of a changing climate* as a factor to be taken into account by development actions that may have a significant impact on the environment.	A whole of NT first-pass climate change risk assessment was completed and is being used for NT government policy considerations and development.	The NT government's climate action has been guided by the Three-Year Action Plan: Delivering the Climate Change Response, Towards 2050 (2020–2023).	The NT is developing the next stage of its climate change policy.



Climate legislation	Climate risk assessments	Climate adaptation plans & strategies	What is next
Queensland			
Clean Economy Jobs Act 2024 The Act sets emissions reduction targets and requires development of sectoral emissions reduction plans, an annual progress statement and an expert panel to advise on matters relating to achieving legislated targets.	The Queensland Future Climate Science program provides high-resolution climate projections, analysis of climate extremes, and regionally specific summaries of climate risks and impacts for Queensland. The Climate Risk Management Guideline for Queensland Government Departments was delivered in partnership with Griffith University's Climate Ready Initiative to assist Queensland government departments to consider and manage climate risks that are relevant to them. The Climate Change Risk Management Tools for Queensland Households and for Small Businesses were developed to assist households and small businesses in assessing their climate risks.	The Queensland Climate Adaptation Strategy 2017–2030 (Q-CAS) provides a framework for climate resilience and climate risk management in Queensland's communities. It outlines actions to build climate resilience in communities, governments and businesses through adaptation.	The Queensland government has announced it will deliver a net zero roadmap that outlines the overall vision and priorities to achieve net zero emissions by 2050, and set out adaptation priorities to ensure industries and communities are resilient, reflecting a coordinated approach to climate action.
South Australia			
Climate Change and Greenhouse Emissions Reduction Act 2007 An objective of the Act is to promote commitment to action on climate change, including adaptation action. The Act outlines requirements for government planning, risk assessment, action and reporting on climate change. This includes the discretionary ability for the Premier to direct agencies to prepare an agency or sector-based adaptation plan. ***Environment Protection Act 1993*** The terms 'climate change adaptation', 'climate change mitigation' and 'greenhouse gas emissions' are included in the objects of the Act.	SA's first state-wide Climate Change Risk Assessment is underway to be completed by second half of 2025, with 5 yearly review. Additionally, the Guide to Climate Projections for Risk Assessment and Planning in South Australia 2022 provides a summary of the likely changes to key climate variables, such as temperature, rainfall, evapotranspiration, days of severe fire danger and sea level rise, under different greenhouse gas emissions scenarios.	The SA government is delivering a range of actions to support effort across all levels of government, business and the community through the Climate Change Resilience and Adaptation Actions. South Australia – Responding to Climate Change outlines the priority actions that the SA government will be focusing on in the near term to build a strong, net zero emissions future and adapt to climate change.	The SA government will consider its response to the first state-wide Climate Change Risk Assessment. The EPA is developing an environment protection policy focused specifically on climate change mitigation and adaptation.

Climate legislation	Climate risk assessments	Climate adaptation plans & strategies	What is next
Tasmania			
Climate Change (State Action) Act 2008 Under the Act, a risk assessment and a Climate Change Action Plan are required every five years. Under the Act, a statewide climate change risk assessment, sectoral emissions reduction and resilience plans, and a climate change action plan are required every five years.	Tasmania's first Risk Assessment for Climate Change was published in November 2024. The response to the Risk Assessment, Managing Tasmania's Climate Risks and Opportunities, was released at the same time.	The Climate Change Action Plan 2023–25 outlines the government's plans for action on climate change until 2025. Sectoral emissions reduction and resilience plans for six industry sectors and a cross-cutting roadmap were also published in November 2024. The plans and roadmap detail a range of resilience focussed actions for each industry sector.	Tasmania continues to deliver a range of activities under Tasmania's Climate Change Action Plan 2023–2025, the response to the Risk Assessment, and the 2024 Emissions Reduction and Resilience Plans and Roadmap. Tasmania is also currently progressing its legislated 4-yearly independent review of the Climate Change (State Action) Act 2008, to be completed in 2025. The next climate change action plan is due to be developed by 2028. Note: the future work program may be subject to change by the incoming government.
Victoria			
Climate Action Act 2017 The Act establishes a 5-yearly framework including a climate science report, climate change strategy, emissions reduction pledges and adaptation action plans. The Act also establishes guiding principles for climate action, requires that decision-makers have regard to climate change, and sets a target of net-zero emissions for Victoria by 2045, with legislated interim targets of: • 28–33% below 2005 levels by 2025 • 45–50% by 2030 • 75–80% by 2035.	Victoria's Climate Science Report 2024 provides up-to-date evidence-based information about Victoria's changing future climate. This report, along with supporting regional summaries, tools and Victoria's Climate Science Report 2019, will inform the development of Victoria's updated Climate Change Strategy and adaptation action plans. The Victorian Government Climate-Related Risk Disclosure Statement provides information about Victoria's whole-of-Government approach to climate-related risks and opportunities. Victoria's Financial Reporting Directions also require public sector agencies to provide information on climate risk and opportunities in their annual reports.	Victoria's Climate Change Strategy (2021) sets out Victoria's response to climate change, including emissions reduction targets and adaptation priorities. These priorities informed Adaptation Action Plans (AAPs) for 2022–2026, targeting 7 systems across Victoria that are vulnerable to climate impacts or critical to building Victoria's climate resilience, as summarised in *Building Victoria's Climate Resilience* (2022): • Built Environment AAP • Education and Training AAP • Health and Human Services AAP • Natural Environment AAP • Primary Production AAP • Transport AAP • Water Cycle AAP	Victoria's next Climate Change Strategy and emissions reduction pledges are to be prepared by 31 October 2025. The next set of adaptation action plans are to be prepared by 31 October 2026.

Climate legislation	Climate risk assessments	Climate adaptation plans & strategies	What is next
Western Australia			
No climate change legislation. The Western Australian Climate Policy sets out the WA government's plan for a climate-resilient community and a prosperous low-carbon future. The ***Climate Change Bill*** introduced November 2023 has lapsed, and timing for re-introduction is unknown at time of publication.	The WA government is developing a Climate Risk Framework that will guide state agencies on the assessment, management and disclosure of climate risk. The framework is expected to be delivered in 2026.	The Climate Adaptation Strategy aims to ensure WA's communities, environment and economy are resilient to future climate change. It sets out 4 priorities to support and accelerate climate adaptation across the state.	The Climate Adaptation action plan contained in the Climate Adaptation Strategy outlines timeframes for delivery of actions in the strategy.

Adaptation in Australian Government policies

The government is delivering a set of policies and programs to address the risks facing Australia by strengthening our adaptation, mitigation and disaster risk reduction action. Mainstreaming and strengthening adaptation are central to Australia's collective adaptation action. Many policies will contribute to adaptation without necessarily being called 'adaptation' policies, including those described in Chapters 6 to 12 and Figure 2.5.

A summary of the Commonwealth's key policies, strategies and plans for each system within the National Adaptation Plan can be found on DCCEEW's website. It includes the major policies discussed in the National Adaptation Plan Issues Paper and in the main body of the National Adaptation Plan. The list is not intended to be exhaustive and includes a broad range of Commonwealth initiatives which are expected to further adaptation outcomes, complementing the NESP Australian Adaptation Database published in May 2025.

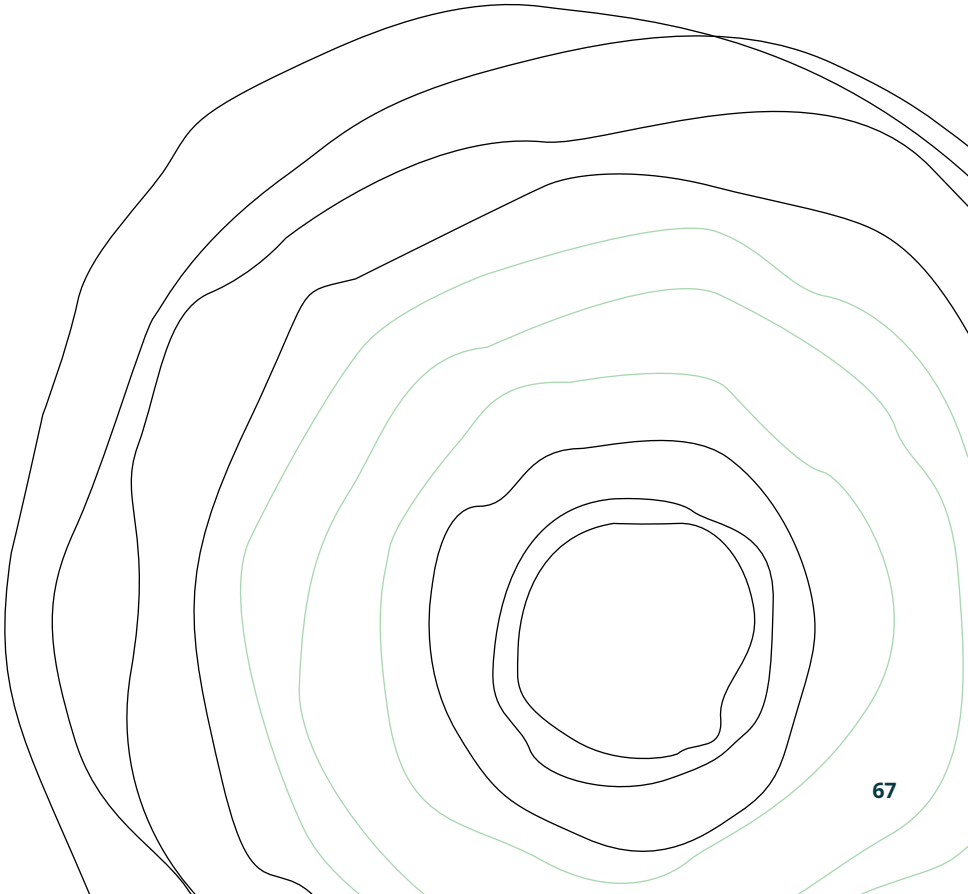
Kimberley, Western Australia

Glossary

Term	Definition
Adaptation (climate)	In human systems, the process of adjustment to actual or expected climate change and its effects, to moderate harm or exploit beneficial opportunities. In natural systems, adaptation is the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.
Adaptive capacity	The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Adaptive capacity is determined by the combination of strengths, attributes and resources available within an organisation, community or society to manage and reduce disaster risks and strengthen resilience.
Betterment	For the purposes of the Disaster Recovery Funding Arrangements, infrastructure 'betterment' is considered to be the restoration or replacement of a damaged essential public asset to a significantly more disaster resilient standard than its pre-disaster standard.
Climate change (anthropogenic)	A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods.
Climate Change Authority	An independent body established under the *Climate Change Authority Act 2011*. The Climate Change Authority's function is to provide expert, independent advice to the Australian Government on climate change policy.
Climate risk	The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. Risks can arise from impacts of climate change as well as human responses to climate change. Relevant adverse consequences include those on lives, livelihoods, health and wellbeing, economic, social and cultural assets and investments, resources, infrastructure, services (including ecosystem services), ecosystems and species.
Communicable diseases	Diseases that can be spread from person to person.
Critical infrastructure	Those physical facilities, supply chains, information technologies and communication networks, which if destroyed, degraded or rendered unavailable for an extended period, would significantly impact the social or economic wellbeing of the nation, or affect Australia's ability to conduct national defence and ensure national security. For the purpose of the National Adaptation Plan, the National Climate Risk Assessment considered three categories of critical infrastructure: the energy, telecommunications and transport sectors.
Decarbonisation	Removal or reduction of carbon dioxide (CO_2) and other greenhouse gases into the atmosphere from processes such as manufacturing or the generation of energy.
Disaster	A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.
Disaster risk reduction	The prevention of new, reduction of existing, and management of residual disaster risk. These risk reductions contribute to strengthening resilience and achieving sustainable development. Disaster risk reduction is the policy objective of disaster risk management, and its goals and objectives are defined in disaster risk reduction strategies and plans.
Emergency management	Utilisation of established plans, structures and arrangements to bring together the normal endeavours of government, voluntary and private agencies in a comprehensive and coordinated way to deal with the whole spectrum of emergency needs including prevention, response and recovery. The term 'emergency management' is sometimes used interchangeably with the term 'disaster management'. While there is overlap between the terms, an emergency can relate to hazardous events that do not result in the serious disruption of the functioning of a community or society, and which therefore are not disasters.
Energy Performance	Energy performance is the broad management of energy demand, including energy efficiency, electrification or fuel switching and demand flexibility.

Term	Definition
Exclusive Economic Zone	The Exclusive Economic Zone (EEZ) is an area beyond and adjacent to the territorial sea. In the EEZ, Australia has sovereign rights for the purpose of exploring and exploiting, conserving and managing all natural resources of the waters above the seabed and of the seabed and its subsoil together with other activities such as the production of energy from water, currents and wind. Jurisdiction also extends to the establishment and use of artificial islands, installations and structures, marine scientific research, the protection and preservation of the marine environment, and other rights and duties.
Exposure	The presence of people and assets in locations or situations that could be adversely affected by hazards. For example, those living in a flood zone are exposed to the hazard of flooding.
Greenhouse gases	Any gas (natural or produced by human activities) that absorbs infrared radiation in the atmosphere, leading to warming effects. Greenhouse gases include carbon dioxide, methane and nitrous oxide.
Hazard	A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Hazards may be natural, anthropogenic or socio-natural (produced by both anthropogenic and natural influences) in origin.
Intergovernmental Panel on Climate Change (IPCC)	The United Nations body for assessing the science related to climate change.
Mainstreaming adaptation	Addressing climate change within regular development planning, sectoral decision-making and budgeting processes, rather than as stand-alone measures or a separate sector.
Maladaptation	Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased vulnerability to climate change, or diminished welfare, now or in the future. Maladaptation is usually an unintended consequence.
Mitigation (climate change)	A human intervention to reduce the sources of, or enhance the sinks for, greenhouse gases in an effort to lessen or minimise the adverse impacts of climate change.
Nationally significant climate risks	Risks identified under the National Climate Risk Assessment as nationally significant climate-related risks for Australia. These are risks whose consequences would be pervasive and prolonged, and thus will require a coordinated national response.
Natural hazard	A natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.
Net zero emissions	An overall balance between greenhouse gas emissions and removals.
Paris Agreement	An international agreement adopted under the United Nations Framework Convention on Climate Change in 2015. Under the Paris Agreement, the global temperature goal is to keep warming to 'well below' 2°C compared with pre-industrial levels, and to 'pursue efforts to limit the temperature rise to 1.5°C'.
Place-based approaches/ adaptation planning	Collaborative, long-term approaches to build thriving communities delivered in a defined geographic location. These are ideally characterised by partnering and shared design, shared stewardship, and shared accountability for outcomes and impacts. Place-based approaches are often used to respond to complex, interrelated or challenging issues.
Resilience	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.
Risk management	The systematic application of policies, procedures and practices to the tasks of identifying, analysing, evaluating, treating and monitoring risk. Plans, actions, strategies, or policies to reduce the likelihood and/or magnitude of adverse potential consequences, based on assessed or perceived risks (IPCC 2022)

Term	Definition
Statistical Area Level 2 (SA2)	Statistical Areas Level 2 in the Australian Statistical Geography Standard (ASGS). These are medium-sized, general-purpose areas built from whole Statistical Areas Level 1 (SA1s). SA2s aim to represent a community that interacts together socially and economically.
Sequestration	The process of storing greenhouse gases in a carbon pool such a biological ecosystem, underground geological formations or in manufactured products.
Stress (ecological)	Any environmental influence that causes a discernible ecological change, especially in terms of a constraint on ecosystem development. Ecological stress can be exerted either chronically or episodically.
Sustainable finance taxonomy	Consistent, scientifically rigorous criteria to evaluate whether economic activities are aligned with, or contribute to, climate and other sustainability outcomes.
Systems	A complex network or networks of interconnecting and related rules, structures and mechanisms that work towards a common goal.
United Nations Framework Convention on Climate Change (UNFCCC)	The United Nations convention that supports the global response to climate change, with the ultimate aim of preventing dangerous human interference with the climate system.
Vulnerability	The susceptibility and propensity to be adversely affected by a hazard. Vulnerability encompasses a variety of concepts and elements, including sensitivity to harm and the extent of capacity to cope and adapt.



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