



Australian Government

Australia's Adaptation Communication

A report to the United Nations Framework Convention on Climate Change
October 2021

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Acknowledgments

The department thanks all stakeholders who were engaged for their inputs.

Acknowledgement of Country

The Australian Government acknowledges the Traditional Owners and Custodians of Country throughout Australia and recognises their continuing connection to land, waters and community. We pay respect to the people, the cultures and the elders past, present and emerging.



ARTWORK: Looking After Country
© Elizabeth Yanyi Close 2021



This artwork acknowledges the sovereignty of all Aboriginal and Torres Strait Islander people over many vast landscapes across the country — and their custodianship over that land for tens of thousands of years.

Recognition of shared histories across Australia's landscapes and acknowledging our First Nation people's sustainable practices — since time immemorial — and the place they have in contemporary landcare management and looking after country.

This work is profoundly informed by the interconnectedness of the different facets and textures of the landscape. Elizabeth's motifs and iconography speak to a concept that is central to her practice — Connection to Country.

Elizabeth Yanyi Close is a Panaka Skin Anangu woman from the Pitjantjatjara and Yankunytjatjara Language Groups, whose family links are to the communities of Pukatja and Amata in the APY Lands.



Foreword

Our climate is changing. As a party to the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, Australia recognises that addressing the causes and consequences of climate change is a global challenge. The reports of the Intergovernmental Panel on Climate Change affirm the seriousness of this challenge. Australia has a strong track record of performance under the Paris Agreement, and we are committed to continue taking action on implementing the Global Goal on Adaptation.

Australia submits this Adaptation Communication at the 26th UN Climate Change Conference of the Parties (COP26) to enhance the visibility and profile of adaptation, and to reflect on the adaptation progress Australia has made both at home and abroad. We look forward to actively contributing to global adaptation action in the years ahead, with a particular view to COP27 next year and COP28 in 2023 where we welcome a continued focus on adaptation, the Global Goal on Adaptation and the first Global Stocktake.

Based on the provisions of Paris Agreement Article 7, paragraphs 9, 10 and 11, and guidance from Decision 9/CMA.1, Australia is pleased to submit our first Adaptation Communication, which complements Australia's new National Adaptation Plan — the National Climate Resilience and Adaptation Strategy. This submission builds on Australia's previous UNFCCC submissions, including [Australia's 7th National Communication on Climate Change](#) (2017), [Strategies and Approaches Submission](#) (2018), [First Biennial Communication](#) (2020) and our second [Nationally Determined Contribution](#) (2020) where we committed to delivering an Adaptation Communication prior to COP26.

Our Adaptation Communication sets out Australia's existing policy context for adaptation and climate resilience, and is structured as follows:

- Part 1 provides an overview of Australia's national circumstances, governance arrangements and legal frameworks
- Part 2 focuses on national and subnational adaptation priorities
- Part 3 provides selected practical examples of Australia's adaptation actions at home
- Part 4 provides selected practical examples of Australia's international adaptation actions
- Additional annexes provide further non exhaustive examples of Australia's adaptation and resilience actions across sectors and subnational parties.

Where possible, hyperlinks have been provided to further sources of information.

The case studies within this submission demonstrate how Australia is taking effective adaptation action domestically and in our region. Through our development assistance program, we focus on strengthening socially inclusive, gender-responsive sustainable development in the Indo-Pacific. We believe these case studies contain examples of good practice that may be useful in advancing effective and impactful adaptation action.

Australia's commitment to practical, high quality adaptation action towards achieving the Global Goal on Adaptation is unwavering. We look forward to the continued implementation and sharing of adaptation practice through COP26 and beyond.

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The Australian Context

Australia is the planet's sixth largest country after Russia, Canada, China, the USA and Brazil. At 7,692,024 km², it accounts for 5% of the world's land area, and although it is the smallest continental land mass, it is the world's largest island.

Being surrounded by ocean, Australia is often referred to as an island continent. Australia also has a number of large islands in the Pacific, Indian and Southern Oceans and the Coral and Timor Seas as part of its External Territories.

The natural environment is central to the quality of life enjoyed by Australians and to Australia's economy. It provides natural resources that are direct inputs into Australia's productive capacity and supports activity in sectors like agriculture and tourism. Australia is one of 17 countries in the world described as 'mega diverse'. In addition to its intrinsic value, biodiversity plays a critical role in maintaining the natural function of ecological systems. Healthy ecosystems with high biodiversity, and the human societies that depend on them, are more resilient to a range of pressures, including from climate change and natural hazard-induced disasters.

Australia is a land of extremes with temperatures ranging from highs above 40°C in the central desert regions to below freezing in the higher regions of the country's southeast. From its northern most point at 10° 41' 21"S on Cape York to the southern tip of Tasmania at 43° 38' 40"S, Australia has an exceptionally variable climate, with periods of drought punctuated by heavy rainfall events that can cause widespread flooding.

Climate Change in Australia

Climate change presents a significant challenge for Australia. The effects of climate change are already being observed, and, as the latest Intergovernmental Panel on Climate Change (IPCC) [AR6 Climate Change 2021: The Physical Science Basis](#) report shows, will intensify in the future.

In the past three years, Australia has experienced record-breaking heatwaves, widespread bushfires, major flooding, damaging hailstorms, and its most intense droughts since records began. Although these hazards are a natural part of Australia's environment, global climate change is shifting Australia's climate and disaster risks.

As the global temperature rises and other changes to the climate increase, Australia will face more frequent and severe events, such as extreme weather, fires and floods, and slow-onset events, such as, changing rainfall patterns, ocean acidification and sea level rise. This will impact places, sectors, and communities in diverse ways, driving structural adjustments and innovation.

Australia's adaptation action is based on and guided by the best available science. Biennial State of the Climate Reports are developed by Australia's Bureau of Meteorology (BoM) and Commonwealth Scientific and Industrial Research Organisation (CSIRO), national institutions that play an important role in monitoring, analysing and communicating observed and future changes in Australia's climate.

Australia's [2020 State of the Climate report](#) draws on global and local climate research, encompassing observations, analyses and projections to describe year-to-year variability and longer-term changes in Australia's climate. The report is a synthesis of the science informing the understanding of climate in Australia and includes new information about Australia's climate of the past, present and future.

The [2020 State of the Climate](#) reports the long-term changes, including:

- Australia's land temperature has warmed on average by $1.44^{\circ}\text{C} \pm 0.24^{\circ}\text{C}$ since 1910, leading to an increase in the frequency of extreme-heat events.
- Oceans around Australia have warmed by 1°C over the last 100 years, contributing to longer and more frequent marine heatwaves.
- There has been an increase in extreme fire weather, and in the length of the fire season, across large parts of the country since the 1950s, especially in southern Australia.
- There has been a shift towards drier conditions across southwest and southeast Australia, especially for the cool season months of April to October.
- Rainfall has increased across most of northern Australia since the 1970s.
- Oceans around Australia have become more acidic and sea levels have risen.

The Bureau of Meteorology's [Annual Climate Statement 2020](#) reported that:

- 2020 was the fourth-warmest year on record for the Australian land mass, with an annual national mean temperature 1.15°C above the 1961–1990 average. The warmest year on record was 2019 at 1.52°C above the 1961–1990 average, well above the second warmest, 1.33°C above the 1961–1990 average in 2013.
- Warmth was persistent throughout 2020, with 6 of 12 months placing in the 10 warmest on record for each of mean, maximum and minimum temperatures for their respective months.





PART ONE

National Circumstances, Institutional Arrangements and Legal Frameworks

Successive Australian Governments have committed to national action on adaptation and understood that further action is required as the climate will continue to change and impact on communities, environments and industries.

Globally, Australia has played an active role in negotiating and ratifying the United Nations Framework Convention on Climate Change (UNFCCC). Climate adaptation is a core pillar of the Paris Agreement (2015). All Parties to the Paris Agreement have agreed to the goal of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change.

Australia is resolutely committed to the Paris Agreement. In an adaptation context, Australia is committed to:

- The ‘Global Goal on Adaptation’: to enhance adaptive capacity and resilience; to reduce vulnerability, with a view to contributing to sustainable development; and ensuring an adequate adaptation response in the context of the goal of holding average global warming well below 2°C and pursuing efforts to hold it below 1.5°C (Article 7).
- Engage in adaptation planning and implementation through national adaptation plans, vulnerability assessments, monitoring and evaluation (Article 7).
- Build the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources (Article 7).
- Communicate plans, actions and support needs through an Adaptation Communication (Article 7).
- Contribute to the global stocktake to assess progress towards achieving commitments under the Paris Agreement and its long-term goals (Article 14).

Australia, like other Parties to the UNFCCC and the Paris Agreement, recognises that adaptation is a global challenge faced by all with local, subnational, national, regional and international dimensions.

Governance

Australia is a federation under the Australian Constitution.

In 2012, the Council of Australian Governments (COAG), consisting of representatives from all Australian governments, agreed on the [roles and responsibilities for climate change adaptation](#) at each level of government. All levels of government, businesses, communities and individuals have important, complementary and differentiated roles in adapting to the impacts of climate change. In line with these responsibilities, all levels of government have plans to adapt to climate change.

The [National Disaster Risk Reduction Framework](#), which was endorsed by COAG in 2020, recognises that all sectors have shared but defined responsibilities to reduce disaster risk resulting from natural hazards.

Commonwealth Government

The Commonwealth Government is responsible for national leadership on adaptation, managing Australian Government assets and services including significant investments in public infrastructure, and providing national climate science and information. It maintains a strong, flexible economy and well-targeted safety net to ensure that climate change does not disproportionately affect vulnerable groups.

A key role for government is also to ensure that it is making decisions that reduce risk, and that decisions made by the government do not increase climate risk.

In line with its responsibilities, the Commonwealth Government is working to provide national climate science information, and to manage climate risks in its policies, programs and assets.

Key responsibilities for climate change policy are currently shared between:

- The Department of Industry, Science, Energy and Resources – responsible for climate mitigation policies, including national inventory, accounting and projections
- The Department of Agriculture, Water and the Environment – responsible for climate science and climate adaptation
- The Department of Foreign Affairs and Trade – responsible for international climate change negotiations.

As a cross-cutting issue, climate change is considered across many different policy areas and all government portfolios can contribute to effective climate adaptation and resilience.

State and Territories

State and territory governments have an important role in adaptation, with significant influence through their planning laws and investments in public infrastructure. This includes key areas of service delivery and infrastructure, such as emergency services, environmental protection, health, planning and transport. They also provide science and information at local and regional scales.

Local Governments

Local governments are on the frontline in dealing with the impacts of climate change. They have an essential role to play in ensuring that local circumstances are adequately considered in the overall adaptation response, and local communities are directly involved in adaptation efforts. Local governments are well positioned to inform Australian and state governments about on-the-ground needs of local and regional communities, communicate directly with those communities, and respond to local challenges.

Australian Government Coordination

The following is a non-exhaustive list of forums used by Australian government ministers and agencies to meet and work collaboratively on issues relating to climate change adaptation and resilience.

Examples of Ministerial Forums

The [Environment Ministers' Meeting](#) (EMM) is an intergovernmental forum in which national environmental issues are progressed, as well as a forum to discuss strategic issues and agree on cross-government actions to improve Australia's environment.

EMM comprises the Commonwealth Minister for the Environment and the environment minister from each Australian state and territory. Ministerial discussions on climate change adaptation occur through the EMM.

In November 2020, the [National Emergency Management Ministers' Meeting](#) (NEMMM) was established. The NEMMM is responsible for driving and coordinating implementation of the 2020 Royal Commission into National Natural Disaster Arrangements recommendations and is supported by a number of working groups with representation across jurisdictions and the Commonwealth.

Examples of Senior Official Forums

The Australian Government Disaster and Climate Resilience Reference Group, established in 2015, is responsible for driving an Australian government coordination approach to disaster and climate resilience, risk reduction and adaptation.

The Group:

- Includes representatives of all Australian government departments and key science and information agencies including BoM and CSIRO
- Leads the implementation of a whole-of-government approach to disaster and climate resilience
- Integrates and embeds disaster and climate considerations into planning, policies, programs, asset management and risk management frameworks of Commonwealth Government agencies
- Provides strategic guidance on the implementation of whole-of-government initiatives on disaster and climate resilience, including any pertinent recommendations, priorities and insights from relevant reports, strategies and plans.

The Commonwealth also chairs the Adaptation Working Group, a forum for Commonwealth, state and territory officials, and the Australian Local Government Association to discuss best practice approaches to adaptation and enable jurisdictions to collaborate and consult on priority matters of common interest in climate change adaptation.

The [Council of Financial Regulators](#) is made up of The Treasury, Reserve Bank of Australia, Australian Prudential Regulation Authority, and Australian Securities and Investments Commission. The Council continues to consider the risks of climate change as part of its discussions and initiatives.

Individuals, Groups and Businesses

Citizen participation and engagement has been a key feature in calls to climate action since it was included as an explicit principle in the Rio Declaration (1992).

In Australia, the role of private parties, including individuals, groups and businesses, in managing their own climate risk is also articulated in the 2012 COAG Agreement. Private parties have an important role to play in managing their own risks, for example maintaining and protecting private assets and incomes. This provides a strong incentive to act but their capacity to act will differ depending on their exposure to risk, and access to resources and knowledge.

Australian citizens are encouraged to participate in national and subnational climate policy and legislative development, with public consultation a key feature of Australia's policy development cycle. This helps to ensure public actions and policies are carefully targeted and will not undermine the incentives for, or capacity of, private parties to individually manage climate risk.

As a liberal democracy, Australia requires all citizens over the age of 18 actively participate and vote in national, subnational and local elections.

Legal Frameworks

Legal frameworks at the national and state and territory levels of government support Australia to take adaptation action in line with its commitments under the Paris Agreement.

Examples of Legal Frameworks that Support Adaptation

Australia's 7th National Communication on Climate Change provides information on the legislative foundation for action on climate change relevant to both mitigation and adaptation (current at December 2017). Legislation with objectives specific to adaptation are as follows:

- [Climate Change Act 2017](#) (Victoria)
- [Climate Change and Greenhouse Emissions Reduction Act 2007](#) (South Australia)
- [Climate Change \(State Action\) Act 2008](#) (Tasmania)
- [Climate Change and Greenhouse Gas Reduction Act 2010](#) (Australian Capital Territory).

The New South Wales [Climate Change Fund](#) has been established under the [Energy and Utilities Administration Act 1987](#) (New South Wales) to help address the impacts of climate change.

The Queensland [State Planning Policy](#) is a statutory instrument under the *Planning Act 2016* (Queensland) that requires local and regional plans to consider climate change adaptation.

The [Climate Change Authority Act 2011](#) established the [Climate Change Authority](#) which provides independent expert advice on climate change policy, including climate adaptation and resilience.

There are a number of legal frameworks that require consideration of climate risk or adaptation measures. Examples of these legal frameworks are provided below.

The [Water Act 2007](#) (Commonwealth) requires that the amount of water to be extracted from the Murray Darling Basin (set in the Basin Plan) identify the risk from the effects of climate change to water availability. The Act gives effect to the UNFCCC to the extent relevant to the management of the Basin's water resources.

The Northern Territory [Environment Protection Act 2019](#) (Northern Territory) requires that all environmental risk assessments must consider the impacts of a changing climate.

The Queensland [Environmental Protection Act 1994](#) (Queensland) includes measures for the protection of the Great Barrier Reef that improve the health of aquatic ecosystems and increase resilience to disturbances, including climate change.

The [Queensland Water Act 2000](#) requires that when preparing a water plan the water-related effects of climate change on water availability must be considered.





PART TWO

National Adaptation Plans and Decision Tools

Our Adaptation Policies, Strategies and Frameworks

In line with their responsibilities, all levels of government and many businesses have plans and strategies to adapt to climate change.

There are many relevant adaptation plans and priorities in Australia. The following are some key national, subnational and international examples.

Examples of National Policies, Strategies and Frameworks

Australia's [2015 National Climate Resilience and Adaptation Strategy](#) brought a national focus to climate change adaptation. The Strategy reflected agreements by the Council of Australian Governments that all levels of government, businesses, communities and individuals have important, complementary and differentiated roles in adapting to the impacts of climate change.

The new [2021 National Climate Resilience and Adaptation Strategy](#) positions Australia to better anticipate, manage and adapt to climate change. The Strategy is designed to support governments, communities and businesses to engage in enhanced adaptation action, recognising that adaptation is a shared responsibility that requires sustained and ongoing efforts.

The [National Disaster Risk Reduction Framework](#) was co-designed between the public, private and academic sectors and endorsed by all governments. Launched in April 2019, the Framework sets out the foundational work required nationally, across all sectors, to proactively reduce systemic disaster risk associated with natural hazards to minimise the loss and suffering caused by disasters. The Framework identifies initial strategic outcomes, over the 5-year period 2019–23, to inform decision-making across various sectors.

The priorities align with Australia's commitment to the [Sendai Framework for Disaster Risk Reduction 2015–2030](#), endorsed by the United Nations General Assembly as an international agreement on targets and priorities for action.

The Framework explicitly acknowledges that resilience and risk reduction is a shared responsibility, but often not equally shared. While individuals and communities have their roles to play, they do not control many of the levers, such as policy and regulation that are needed to reduce disaster risks. Governments and industry must take coordinated action to reduce disaster risks within their control to limit adverse impacts on communities.

Examples of Subnational Policies, Strategies and Frameworks

All state and territory governments have developed climate change adaptation strategies.

- [NSW Climate Change Policy Framework](#)
- [Victoria's Climate Change Strategy](#)
- [Queensland Climate Action Plan](#) that includes the [Queensland Climate Adaptation Strategy 2017–2030](#)
- [South Australian Government Climate Change Action Plan 2021–2025](#)
- [Western Australian Climate Policy](#)
- [Tasmania's Climate Change Action Plan 2017–2021](#)
- [Northern Territory Climate Change Response: Towards 2050](#)
- [ACT Climate Change Strategy 2019–25](#)

Examples of International Policies, Strategies and Frameworks

The [2017 Foreign Policy White Paper](#) shows Australia to be focused on our region, determined to realise a secure, open and prosperous Indo-Pacific, while also strengthening and diversifying partnerships across the globe. It shows how we are meeting the challenges of an uncertain future, including the challenges posed by climate change.

Released in November 2019, the [Climate Change Action Strategy](#) guides delivery of our climate change assistance over coming years. The Strategy aims to ensure that Australian development assistance supports the goals of the Paris Agreement to address climate change, while strengthening socially inclusive, gender-responsive sustainable development in our region.

Further information on Australia's international adaptation efforts can be found in Part Four.

Understanding our Climate Risks Together

Australia's adaptation action is supported by best practice approaches to assessing climate risk.

In 2018, the Australian Government released the Climate Compass climate risk management framework for Commonwealth agencies. Since 2018, other frameworks have been developed to support risk assessment by state and local governments and some examples are presented below. These frameworks are being used to identify risks associated with future climate change and their consequences and to prioritise adaptation actions.

The work of Australia's financial regulators to support climate risk management is discussed in [Annex A](#).

Examples of Climate Risk Frameworks

The [Climate Compass](#) framework helps Australian public servants manage climate risks to public policies, programs and asset management. Climate Compass reflects the current leading practice guidance for climate risk management and planning for long-term, uncertain, pervasive change. This framework is being used by Commonwealth government agencies to identify climate risks and management actions.

The [Guidance for Strategic Decisions on Climate and Disaster Risk](#) is designed to assist primary decision makers across governments, industry and communities in contextualising the systemic physical impacts of a changing climate. In particular, the Guidance provides direction on how to navigate high levels of uncertainty to consider climate and disaster risk in strategic long-term planning and investment decisions.

The [Climate Risk Ready NSW Guide](#), based on Climate Compass and developed by NSW, helps state government staff manage risks and opportunities associated with climate change. The Guide offers a 4-step process to conduct or revise a climate change risk assessment aligned to NSW risk management guidelines and includes [Australia's first nationally accredited training program](#) for climate risk practitioners.

[Queensland Climate Resilient Councils](#) is a 5-year program working with Queensland local governments to review and strengthen internal council decision-making processes to respond to climate change. It includes a draft [Climate Risk Management Framework for Queensland Local Government](#).

The [QCoast2100](#) program supports Queensland's coastal councils in their progression from identifying coastal hazards and climate change risks through to the decision-making and implementation phases.

[Queensland Climate Ready](#) is a multi-year program delivering a consistent, whole-of-government approach to climate risk management across policies, processes, investments, services and actions.

The [Climate Resilient Councils Project](#) assists Western Australian local governments to prepare for the impacts of climate change by strengthening their frameworks for climate resilience planning.

The Tasmanian local government's [Climate Resilient Councils Project](#) improves understanding and management of their climate-related risks when making strategic and financial decisions.

The [Electricity Sector Climate Information](#) (ESCI) project provides high resolution climate projection data across the National Electricity Market (NEM) and a climate risk assessment method, guidance material and case studies to help the sector consider climate risks alongside other business risks.

The [Considering Climate Change and Extreme Events in Water Planning and Management module](#), a supporting document to the National Water Initiative Policy Guidelines for Water Planning and Management, was developed by the Commonwealth and state and territory governments in 2017. The module provides guidance to jurisdictions on how to consider and incorporate possible impacts from climate change and extreme events in water planning and management. It provides a suite of options for managing climate risks.

[CoastAdapt](#) is an online tool to support local governments and businesses to identify, assess and respond to climate risks in the coastal zone.

Examples of Climate Risk Assessments

Australia has completed a range of climate risk assessments of sectors and regions, and some examples are listed below.

Australia's 2021 National Climate Resilience and Adaptation Strategy includes a commitment to develop and deliver national assessments of climate impacts and adaptation, and to monitor and independently evaluate progress.

A climate [vulnerability assessment](#) has been completed for the Murray-Darling Basin, the largest and most complex river system in Australia covering 1,000,000 km². This assessment considered how the objectives of the [Basin Plan](#) (which sets limits on the amount of water taken from the Basin) may be vulnerable to the impacts of climate change. It considered objectives relating to Basin communities, water-dependent industries, water markets, ecological outcomes and Aboriginal and Torres Strait Islander peoples.

New South Wales has completed an [assessment of regional vulnerabilities](#), and developed adaptation transition pathways for all New South Wales planning regions. The project has engaged more than 1700 regional stakeholders and identified adaptation priorities across a range of systems including energy, circular economy, water security and natural environment.

Victoria is conducting impact and vulnerability assessments for a range of potential risks based on the latest climate change science and projections on [Victoria's future climate](#). These assessments, such as for [water](#), are identifying how future climate will impact certain sectors and enable targeted adaptation responses.

The [Queensland Government](#) has high resolution projections of climate change, and has produced a [State Heatwave Risk Assessment](#) and case studies on climate risks associated with heatwaves and water security. It provides tools for assessing climate risk through the climate change risk management matrix and specific risk assessment guides for households and small businesses.

South Australia completed [regional climate change adaptation plans](#) for all state government regions in 2016. The regions developed their adaptation action plans through integrated vulnerability assessments, which identified the key risks and then prioritised adaptation options with the community, including their regional values. Eleven Regional Climate Partnerships are now working collaboratively to manage climate risks.

Western Australia has published [Coastal Hazard Risk Management and Adaptation Plans](#) to improve community knowledge and awareness of coastal hazards.

A comprehensive assessment of the impacts of climate change on the Northern Territory are provided in a [report](#) by the [National Environmental Science Program \(NESP\)](#) Earth Systems and Climate Change Hub, who worked with the Northern Territory Office of Climate Change to prepare the report.

A first pass [national assessment of climate change risks to Australia's coasts](#) was completed in 2009 and [supplemented](#) in 2011 with additional information on coastal buildings and infrastructure.

Informing our National Adaptation Actions

Australia has made substantial progress in climate research since the last National Communication on Climate Change in 2017. Examples and highlights are included below, with further information on our science research and systematic observations to be provided in the 2022 National Communication on Climate Change.

Examples of Climate Research and Evidence

The Australian Government has established the [Australian Climate Service](#) (\$210 million), bringing together world-leading climate science and statistical expertise from the Bureau of Meteorology, Geoscience Australia, CSIRO and the Australian Bureau of Statistics. This new service, established on 1 July 2021, supports the National Recovery and Resilience Agency and Emergency Management Australia by providing key information on natural hazard and climate risks, exposure, vulnerabilities and disaster impacts.

Climate projections as well as other climate science information are delivered through the [Climate Change in Australia](#) web portal, developed by the CSIRO and the Bureau of Meteorology.

State and Territories have also made significant contributions to the development of climate information including through the production of [regional downscaled climate projections](#).

Australia continues to lead research in the Southern Ocean and Antarctica to improve understanding of the Southern Ocean's role in moderating the Earth's climate as well as heat and carbon dioxide movement into the ocean interior.

Regionally, Australia plays an important role in systematic observation, contributing to global advancement and understanding of climate science.

Australians have acted as authors or editors on International Panel on Climate Change (IPCC) Reports, including contributing to all 3 Working Groups of the 6th Assessment Report, and IPCC special reports on 1.5°C global warming, oceans and cryosphere, and land.

Examples of Climate Science in Action

Australia is investing in the next phase of the [National Environmental Science Program](#) (NESP, \$149 million), which comprises 4 hubs, with 4 cross-cutting research missions spanning the hubs. The Climate Systems Hub will advance understanding of Australia's climate and its extremes, including the fundamental drivers of rainfall, drought and bushfires, and will inform climate adaptation solutions for Australia. The Climate Adaptation Research Mission spans the NESP hubs, integrating climate research to improve Australia's adaptive capacity and resilience to climate change.

The [CSIRO Climate Science Centre](#) brings together CSIRO's capabilities in atmospheric and oceanic observation, and climate modelling. A decadal forecasting capability is being developed within the Climate Science Centre, which will support decision-making that incorporates expectations for long-term climate variability. CSIRO is also preparing and assisting Australian industry and regional partners in the Asia-Pacific to manage impacts and risks from a changing climate through their [Climate Resilient Enterprises](#) mission.

The [Australian Community Climate and Earth System Simulator](#) (ACCESS) is Australia's national weather and climate forecasting system, contributing model runs to the Climate Model Intercomparison Project (CMIP).

On 1 July 2021, the Government established [Natural Hazards Research Australia](#), which will deliver critical research into natural hazards, inform how Australia can move towards 0 preventable deaths, better prepare communities to deal with natural hazard-induced disasters, and develop technological solutions to mitigate risks. NHRA will work closely with state and territory governments, emergency service agencies, universities and industry to develop a long-term research program that will deliver solutions to contemporary challenges and tangible benefits to all end-users.

The Australian National University's [Institute for Climate, Energy and Disaster Solutions](#) advances innovative solutions to address climate change, energy system transitions and disasters, and facilitates integrated approaches to research, teaching and policy, industry and community engagement across disciplines.

The [Australian Research Council Centre of Excellence for Climate Extremes](#) undertakes research to improve understanding of the processes that trigger or enhance extremes and build this understanding into climate modelling systems. The improved predictions of climate extremes will help Australia cope with climate extremes now and in the future.

The [Australian Antarctic Program Partnership](#) will build understanding of the role of the Antarctic region in the global climate system and the implications for marine ecosystems. This includes building understanding of the role of ice sheets in changing global sea level and understanding drivers and feedbacks in the climate system by recovering an ice core extending over a million-year timeframe from Little Dome C, high on the Antarctic plateau.

[Cape Grim Air Pollution Monitoring Station](#) is 1 of the 3 premier Baseline Air Pollution Stations in the World Meteorological Organisation Global Atmosphere Watch network. It provides baseline data on greenhouse gases, including carbon dioxide, methane, nitrous oxide and synthetic greenhouse gases. The data are made available to interested parties, including the Australian Government, industry, international agencies and the public.

Tasmania's [Climate Futures](#) research program bridges the gap between fundamental climate science and the local adaptation needs of Australian industries, government agencies and communities. Climate Futures provides localised climate information, producing fine-scale climate change projections that allow local analysis of climate impacts, changes to seasonality and extreme events.



Australia's Domestic Adaptation Actions

Implementation and Provision of Support for Domestic Action

Australia acknowledges that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, considering vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions.

Aligning with Australia's new National Climate Resilience and Adaptation Strategy, submitted to the UNFCCC alongside our Adaptation Communication, the following is a showcase of some of Australia's practical adaptation actions at home.

Australia's practical approach to adaptation and resilience building involves connecting and leveraging action at national and subnational levels to manage climate risk, protect communities, and strengthen resilience. Our practical actions and expertise come from a range of government and non-government partners and include nature-based climate solutions, minimising loss and damage, climate information and services, and disaster risk reduction, preparedness and response.

Examples of recent achievements are included below. Additionally, a non-exhaustive set of sectoral domestic actions and programs in Australia to strengthen adaption and resilience are available in [Annex A](#).

Examples of Action Through National Programs

Australia's Strategy for Nature

[Australia's Strategy for Nature](#) and supporting website, [Australia's Nature Hub](#), bring together existing work across the country with the aim to guide the development of new and innovative approaches to biodiversity conservation. It focuses on overarching goals that support healthy and functioning biological systems by promoting a stronger connection between people and nature, improving the way we care for nature, and building and sharing knowledge. It is a shared roadmap to better understand, care for and sustainably manage nature to 2030.

The Strategy provides an adaptive approach allowing each jurisdiction the flexibility to establish targets appropriate to the variety of environments across Australia and to change these as we continue to build knowledge during the life of the Strategy. It includes explicit consideration of climate change adaptation and resilience, including in the management of species and ecosystems that are vulnerable to climate change.

National Landcare Program

The [National Landcare Program](#) is a key part of the Australian Government's commitment to natural resource management.

Through the National Landcare Program, the Australian Government aims to work in partnership with governments, industry, communities and individuals to protect and conserve Australia's water, soil, plants, animals and ecosystems, as well as support the productive and sustainable use of these valuable resources.

Threatened Species Strategy

The Australian Government has released the second [Threatened Species Strategy 2021–31](#), which sets the Australian Government's forward plan for action to protect and recover Australia's threatened plants, animals and ecological communities.

1 of the 8 action areas in the new Strategy focuses on climate change adaptation and resilience. This action area recognises that the changing climate is driving changes in species distribution and the composition and functioning of ecological communities. The Strategy identifies actions that are needed to assist threatened species to adapt to climate change, including taking account of interactions with other threats, risk-based conservation planning, and identifying and conserving places that will be refugia for threatened species.

National Soil Strategy

The [National Soil Strategy](#) sets out how Australia will value, manage and improve its soil for the next 20 years. The Strategy has 3 main goals: prioritise soil health, empower soil innovation and stewards, and strengthen soil knowledge and capability. To support the Strategy, the Australian Government is funding a 2-year National Soil Monitoring and Incentives Pilot Program. This program will improve our understanding of Australia's soil condition and how to better manage it, assess the impact of land management practices on soil, assist farmers to improve their productivity, and better support farmers to participate in other programs such as the [Emissions Reduction Fund](#).

Examples of Action Through Subnational Programs and Locally Led Adaptation

Adapting to the Increasing Risk of Mosquito-Borne Disease

[Tackling Mosquitos Together](#) is an important public health and adaptive capacity building initiative that has improved regional resilience to the climate change driven threat of increased mosquito-borne disease in the Northern Rivers region of NSW. Seven Northern Rivers local government councils and the North Coast Public Health Unit successfully collaborated to implement a range of learning and adaptation actions, including the establishment of an effective rapid response network, 2-day mock exercise and citizen science survey.

Cool Road Adelaide Project

The [Cool Road Adelaide Project](#) tested the performance of 3 cool road surface treatment products on a road in the Adelaide CBD in summer 2019–20. The road was monitored to see how the different products reduced surface and ambient air temperature, as well as the experiences of local road users, pedestrians and businesses. The project was delivered by Climate-KIC Australia, in partnership with the Department for Environment and Water and the City of Adelaide council.

Darwin Living Lab

The Darwin City Deal includes several commitments to support a cooler, greener city that supports improved liveability, sustainability and resilience. This includes: support for the CSIRO-led [Darwin Living Lab](#) to develop evidence-based approaches to tropical design and help transform Darwin into a best-practice example of tropical urban living; trialling heat mitigation initiatives to reduce surface and localised temperature; the delivery of a Tropical Design Guide to support best practice tropical urban design principles for business, government and residents; and delivery of a Heat Mitigation and Adaptation Strategy to help people experience the best of Darwin's lifestyle by reducing the seasonal impact of Darwin's hot and humid climate, and adapt to accommodate future heat-related climate challenges.

Canberra's Living Infrastructure Plan: Cooling the City

[Canberra's Living Infrastructure Plan: Cooling the City](#) sets out the ACT Government's commitment to maintain and improve living infrastructure within urban Canberra to achieve a climate-wise city. The plan addresses a variety of adaptation and resilience issues including the urban heat island affect, retaining water in the landscape and maintaining ecosystem services and biodiversity in the city's landscape. The plan includes targets to achieve 30% tree canopy cover (or equivalent) and 30% permeable surfaces in Canberra's urban footprint by 2045.

Examples of Nature-based Solutions for Climate

The Australian Guide to Nature-Based Methods for Reducing Risk from Coastal Hazards

The [Australian guide to nature-based methods for reducing risk from coastal hazards](#) aims to translate global and Australian research into a practical tool that can be used to support decisions by coastal practitioners to use nature-based methods.

Restoration of Seagrasses at Shark Bay

Together with the Shark Bay Malgana Indigenous community, NESP Marine Biodiversity Hub researchers are developing seeding and shoot planting methods to assist [natural recovery of seagrasses](#) in preparation for future impacts of climate change.

Examples of Averting, Minimising and Addressing Loss and Damage Associated with Adverse Effects of Climate Change

The Future Drought Fund

The [Future Drought Fund](#) (\$5 billion) helps Australian farms and communities prepare for the impacts of drought and the changing climate. Programs under the fund improve farm business and risk management capabilities, develop regional drought resilience plans, make information, assessment of climate risk, and potential adaptation pathways more accessible to farmers, communities and agribusiness.

North Queensland Strata Title Inspection Program

The [North Queensland Strata Title Inspection Program](#) is a 3-year project commencing in early 2022 that involves the development and operation of an inspection and assessment program of strata properties in North Queensland. The program aims to increase the total resilience of strata properties in Queensland to the effects of future tropical cyclones by providing Bodies Corporate with information about the resilience of their properties and strategies to improve that resilience if needed.

The program is funded by the Australian Government, administered by the Queensland Government, and independently developed and implemented by James Cook University (JCU).

Examples of Public Access to Information

Australian Flood Risk Information Portal

The [Australian Flood Risk Information Portal](#) enables flood information, currently held by different sources, to be accessible from a single online location. The portal includes a database of flood study information and metadata (the Australian Flood Studies Database). The portal provides access to authoritative flood maps and flood studies, as well as information about surface water observations derived from the analysis of satellite imagery. Geoscience Australia maintains all key products from this project.

Drought Resilience Self-Assessment Tool

The [Drought Resilience Self-Assessment Tool](#) (DR SAT) will provide accessible information and an online drought resilience assessment capability for primary producers. DR SAT will make it easier for primary producers to navigate their future path. It will enable farmers to work through an assessment of their exposure to future drought and other climate risks based on economic, social and environmental indicators. Based on their personal circumstances, the tool will suggest ways in which farmers can build their resilience and adaptive capacity.

Heatwave Hypothetical Resources

Adelaide's [Heatwave Hypothetical Resources — Resilient South](#) is a tool which guided community members through a hypothetical heatwave scenario to improve preparedness and response to heatwaves. The community and service providers were engaged in a lively, interactive event that built knowledge and capacity, and showcased best practice responses. The event resources are publicly available.

Enterprise Suitability Maps

[Enterprise Suitability Maps](#) is a Tasmanian Government initiative to project new agricultural opportunities in the state by bringing together climate change projections and physical characteristics of the land. The map can assist farmers and prospective investors to analyse potential crop or enterprise options for a property or district. The information is intended to guide the on-farm investigations and business analysis required before making investment decisions. For each enterprise, land and climate criteria, "crop rules" are used to distinguish suitable from less suitable areas. These rules define the boundaries between the different classes of the enterprise suitability maps.

Examples of Action Through Disaster Risk Reduction and Resilience

The Australian Government is committed to ensuring people impacted by natural hazard-induced disasters receive the support and advice they need to recover, while also delivering resilience initiatives that reduce the risk and lessen the impact of future events.

The [Royal Commission into National Natural Disaster Arrangements](#) (the Royal Commission) was established on 20 February 2020 in response to the extreme bushfire season of 2019–20 that resulted in loss of life, property and wildlife, and environmental destruction.

The Royal Commission examined coordination, preparedness for, response to and recovery from disasters as well as improving resilience and adapting to the changing climate and mitigating the impact of natural hazard-induced disasters. The inquiry also considered the legal framework for Commonwealth involvement in responding to national emergencies.

In response to the Royal Commission, the Australian Government is improving Australia's capability to better prepare for, respond to, and recover from natural hazard-induced disasters. This includes several interlinked reforms and provides strong leadership on all hazards emergency management and natural hazard-induced disaster risk reduction.

The Australian Government has significantly enhanced Emergency Management Australia by transforming the Australian Government Crisis Coordination Centre (AGCCC) into an all hazards National Situation Room (NSR). It has embedded the National Coordination Mechanism (NCM), which facilitates partnerships across government and industry, including with the new Australian Climate Services (ACS) and [National Recovery and Resilience Agency](#) (NRRRA), and the declaration of national emergencies, into the Department of Home Affairs.

NRRRA will help support local communities responding to large-scale, natural hazard-induced disasters and undertake new initiatives to manage the impact of future events and the changing climate.

In addition to providing support to communities during the relief and recovery phases following major disasters, NRRRA will provide advice to government on policies and programs to mitigate the impact of future major disaster events.

Additional examples of actions in disaster risk reduction and resilience include:

[Preparing Australia Program](#)

The [Preparing Australia Program](#) (\$600 million) is a targeted program that will encourage action to deliver long-term risk reduction and resilience outcomes for Australian communities to ensure they are better prepared for future disasters. The program is funded by the Australian Government and supports the National Disaster Risk Reduction Framework. The program will focus on initiatives which will lessen the impact of future large-scale events. The program aims to make Australia stronger in the face of natural disasters like bushfires, floods and tropical cyclones, and reduce the cost of recovery as we adapt to climate change. The Australian Climate Service is supporting the design of the program.

Risk reduction is key to limiting the impacts of disasters and enhancing our focus on risk reduction is a key focus of the Preparing Australia Program.

Bushfire Recovery for Wildlife and their Habitat

The Australian Government is supporting [recovery and building the resilience of native wildlife and their habitats impacted by the 2019–20 extreme fire events](#). In January 2020, a [Wildlife and Threatened Species Bushfire Recovery Expert Panel](#) was convened to assist in prioritising recovery actions for affected native species, ecological communities, natural assets and their cultural values for Indigenous Australians. Whether on the ground, or in vital research and planning, important work is happening across bushfire-affected regions and heritage places to give our precious plants and animals the best chance at survival and long-term recovery in a changing climate.

National Disaster Mental Health and Wellbeing Framework

In 2020, following the 2019–20 bushfires, the National Mental Health Commission led the development of the first National Disaster Mental Health and Wellbeing Framework. The Framework offers an integrated cross-jurisdictional approach to supporting the mental health and wellbeing of people impacted by disasters and emergencies. It is based on contemporary research, expert input and stakeholder advice.

Queensland Household Resilience Program

Detached homes built before 1984 can be more susceptible to damage from cyclones, and homeowners often pay higher insurance premiums to account for that risk. The [Household Resilience Program](#) provides funding to help eligible homeowners in coastal parts of Queensland improve the resilience of their homes against cyclones.

South Australia Flood Awareness

Water Connect's [Flood Awareness site](#) has been designed to assist stakeholders and the wider public to learn about flood risk at their property or other places of interest.

RiskReady Tasmania

The Tasmanian Government has developed an [online tool](#) to improve community resilience to natural hazards by providing access to property-specific natural hazard information in a simple, understandable format.

The website provides high level advice on how to reduce the risk of property damage and directs users to the relevant government agency for more information, including detailed risk mitigation and preparedness advice.

The information in RiskReady is designed to help property owners to understand, adapt and respond to the presence and risk of natural hazards on their land.

The following 5 hazards currently display on the RiskReady tool:

- Bushfire Prone Area: Tasmania Fire Service
- Bushfire Impact Area: Tasmania Fire Service
- Coastal Erosion: Department of Premier and Cabinet
- Coastal Inundation: Department of Premier and Cabinet
- Landslide: Mineral Resources Tasmania.

Domestic Cooperation, including Public-Private Partnerships and Adaptation Synergies with other Domestic Frameworks and Strategies

Reef 2050 Long-term Sustainability Plan

The Australian and Queensland governments' [Reef 2050 Long-term Sustainability Plan](#) (Reef 2050 Plan, \$1.9 billion) is Australia's overarching long-term strategy for protecting and managing the Great Barrier Reef. The focus of the Reef 2050 Plan is on reducing local and regional pressures to support the Reef's health and build its resilience to climate change. It outlines the objectives and goals for the Reef that Australia is working to achieve and the strategic actions that will:

- reduce our greenhouse gas emissions as part of global efforts to rapidly address climate change
- support species and habitats to adapt to a changing climate
- reduce land-based run-off to improve the quality of water entering the Reef
- ensure uses of the Reef and its catchment are sustainable and culturally sensitive
- lead to greater involvement of Reef Traditional Owners
- rehabilitate and restore impacted areas where possible.

The Australian and Queensland governments are implementing the Reef 2050 Plan in partnership with industry, land managers, scientists, Traditional Owners and the wider community.

Resilience Investment Vehicle

The Australian Government is supporting resilience investment initiatives through the Resilience Investment Vehicle and CSIRO-led [Climate Resilience Enterprise](#), and Enabling Resilience Investment initiatives. These are examples of how we can unlock private investment for resilience initiatives, taking into consideration climate change, vulnerability, exposure and the impacts of hazards.

Building Resilient Telecommunications Infrastructure

[Optus and CSIRO](#) have been collaborating since mid-2020 on a study of potential impacts of embers, radiation and flames on and around Optus sites with telecommunications equipment. Optus, with the assistance of CSIRO, have developed maps based on information around topography, fuel load, vegetation type and local bushfire weather severity to inform resiliency decisions for site updates, including which sites are most at risk. These bushfire hazard and planning maps are early examples of the types of products being developed by CSIRO's National Bushfire Intelligence Capabilities (NBIC) project which seeks to develop relevant bushfire hazard mapping products for a wide range of infrastructure types, ranging from residential housing to critical infrastructure.

Gender-responsive and Socially Inclusive Adaptation Action, that Supports Vulnerable Groups and Utilises Traditional Knowledge and Local Knowledge Systems

While climate change and natural hazard-induced disasters affect all Australians, regardless of background or status, they do not affect us all equally.

People facing disadvantage, such as those in poverty, migrants, refugees, children, older people, people with disabilities, people who are homeless or transient, and people living in poor quality housing, are more vulnerable at all stages of a disaster.

The Australian Government maintains a strong, flexible economy and well-targeted safety net to ensure that climate change does not disproportionately affect vulnerable groups.

Gender-responsive Adaptation Actions

Australia is committed to improving women's safety and economic security, priorities which will in turn improve the resilience of women and their children, and their ability to adapt to changing climate scenarios.

Australia has a range of policies that improve women's safety and economic security, and some examples are listed below.

The second [Women's Economic Security Statement](#) responds to the diverse needs of women and supports women as leaders and positive role models. Extending and expanding measures to support women in STEM will continue to address the imbalances of women's representation in STEM, including climate science.

The [National Plan to Reduce Violence against Women and their Children 2010–2022](#) sets out what Australia is doing to reduce violence against women and their children. Natural hazard-induced disasters are often linked with increased rates of family violence, either increasing the intensity of existing violence or triggering new violent behaviours. [Frontline workers will be offered training](#) to help identify and respond to perpetrators of domestic violence, while emergency response personnel and volunteers will receive education to help victims of natural hazard-induced disasters who may be experiencing abuse.

The new training package for frontline responders in the emergency management and recovery sector will help personnel and volunteers support vulnerable Australians who may not be able to react when they are experiencing family violence.

Aboriginal and Torres Strait Islander Communities

For Aboriginal and Torres Strait Islander communities the impacts of climate change on their country are already evident, including extreme weather events and climate variability. Remote communities in tropical and northern Australia are particularly vulnerable to extreme weather events, such as flooding, drought and bushfires, in part due to higher rates of disadvantage in these communities. Additionally, Aboriginal and Torres Strait Islander communities have a deep and unique connection to country and climate change poses the real risk of affecting this connection to country.

The Australian Government is committed to empowering Aboriginal and Torres Strait Islander peoples through access to opportunities, greater inclusion in decision-making and co-design to achieve better outcomes for their communities. Like many other groups in Australia, Indigenous communities are often best placed to decide how they mitigate and adapt to the impacts of climate change in their region.

In 2018 and 2021, the [National Indigenous Dialogue on Climate Change](#) enabled Aboriginal and Torres Strait Islander peoples from across Australia to come together to provide recommendations about what climate-change information, capacity-building and engagement would be of greatest value to Indigenous communities.

The Australian Government recognises that Indigenous Australians are the custodians of their knowledge, traditions and cultural practices. While the Australian community can benefit greatly from these practices, they must be utilised through respectful engagement and recognition of the unique status they hold.

Indigenous Fire and Land Management

A [National Bushfire Management Policy Statement for Forests and Rangelands](#) endorsed in 2014 provides explicit recognition of the need to promote and empower Indigenous fire practitioners, and the [Australian and New Zealand National Council for Fire and Emergency Services](#) acknowledges Traditional Owner use of fire in the landscape in its national position on prescribed burning. Fire authorities have established Aboriginal and Torres Strait Islander inclusion plans, and government agencies across the country have developed a range of partnerships with Traditional Owners.

Cultural burning activities are now conducted by Indigenous ranger groups, including in National Parks, Indigenous land and sea management organisations and Indigenous enterprises in many locations across Australia. Work is carried out on a mixture of land tenures and is developed via a suite of partnerships, including between Aboriginal and Torres Strait Islander groups and with government agencies, scientists, non-governmental organisations and private landholders. Aboriginal and Torres Strait Islander communities and organisations across northern Australia have also seized opportunities to earn carbon credits through voluntary and payment for ecosystem services arrangements which recognise the emission mitigation effect of cultural burning practice.

In Northern Australia, Indigenous rangers undertake fire management activities such as prescribed burns and wildfire suppression that mitigate risk of severe bushfires and contribute to carbon abatement measures by offsetting greenhouse gases. Under the [Emissions Reduction Fund](#), these offsets generate revenue that is reinvested in the management of country. These groups work with government agencies, researchers and industry to combine traditional and modern fire management techniques on their land. 1 project alone, the West Arnhem Land Fire Abatement Project, produces an annual offset of 100,000 tonnes of greenhouse gas emissions.

Torres Strait Regional Authority

Climate change is a very significant issue for Torres Strait communities, many of which are situated on low-lying islands exposed to sea level rise impacts. Increasing air and sea temperatures and changes to ocean acidity bring a number of risks to the region's environment, community health, local economies, infrastructure and services. The [Torres Strait Regional Authority](#) (TSRA) has been proactive in building a better understanding of these risks and working with Traditional Owners, councils and partner organisations to develop adaptation options.

Through the [Torres Strait Regional Adaptation and Resilience Plan 2016–2021](#), climate change risks have been assessed in detail for a number of key areas. Under the Plan local adaptation and resilience plans have been developed for the 14 outer island communities. These plans are designed to help communities identify local actions that can be undertaken to prepare for climate change impacts and to assist in building greater community strength and resilience. A review and update of the Plan is in development.

Aboriginal and Torres Strait Islander Heritage Strategy for the Great Barrier Reef Marine Park

The [Aboriginal and Torres Strait Islander Heritage Strategy for the Great Barrier Reef Marine Park](#) sets out how the Great Barrier Reef Marine Park Authority can work in partnership with Traditional Owners to combine their tens of thousands of years of expertise in Reef management with modern Marine Park management tools to help keep Sea Country heritage strong, safe and healthy.



Australia's International Adaptation Actions

Australia is resolutely committed to all 3 goals of the Paris Agreement — mitigation, adaptation and finance. Our practical approach to adaptation and resilience building involves connecting and leveraging action at local, national, regional and international scales to support partner countries in managing climate risk, protecting communities and strengthening the resilience of their economies.

Our international action includes cooperation and advocacy through international frameworks and conventions, support to multilateral organisations and via global programs, and support through regional programs and to individual countries. We recognise that climate change impacts human rights, nature and human wellbeing and that we need to consider human rights, social inclusion (including gender and Indigenous engagement) and nature in adaptation and resilience action.

Australia's contributions and expertise come from a range of government agencies and non-government partners and include climate science and meteorology, governance and planning, economic reform, water, agriculture, nature-based solutions, infrastructure, and disaster risk reduction, preparedness and response. We share this expertise with our region to support their efforts to tackle climate change, and avert, minimise and address loss and damage from climate impacts, especially for the most vulnerable.

There are strong synergies between the investment priorities for lowering emissions and those designed to support adaptation and build resilience. Going forward, we will continue to seek out investments that deliver both mitigation and adaptation co-benefits, such as those within the energy and land sectors, forests, oceans, and cities, as well as nature-based solutions. Building community-level resilience is important in all of these areas in order to reduce climate risk.

Implementation and Provision of Support to Developing Countries

The range and scale of adaptation challenges in the Indo-Pacific require targeted and tailored support informed by country specific circumstances and priorities. In supporting the implementation of Article 7 and 8 of the Paris Agreement, Australia's adaptation investments focus on 3 key areas:

1. governance and adaptive planning, and helping to prepare for and respond to the adverse impacts of climate change, including through partner National Adaptation Plans
2. effective adaptation programs that strengthen community resilience in partner countries, especially for the most vulnerable
3. investments that strengthen adaptation efforts in areas of mutual priority. These include infrastructure, science, research and meteorological support, agriculture, fisheries and water and nature-based solutions.

Australia recognises the importance of finance to assist developing countries to address climate change. Australia has met and exceeded the 2015–20 commitment to provide at least \$1 billion in climate finance over 5 years. Australia provided \$1.4 billion across the 5-year period, making a significant contribution to strengthening adaptation, building disaster resilience, supporting climate-sensitive water and agriculture initiatives, as well as investments to reduce emissions through low-emissions technology solutions in our region.

Australia has increased its climate financing with an announced \$1.5 billion commitment over 2020–25 to be implemented through our development program. This represents a 50% increase on our previous climate finance pledge and includes Australia’s pledge of \$500 million from 2020–25 to support adaptation and mitigation efforts in the Pacific. Some practical examples of climate adaptation investments in selected countries are provided in the subsections below. For more detailed information on the support Australia provides to individual countries, please see our [7th National Communication](#) to the UNFCCC.

Australia’s 2020–25 climate finance will be primarily delivered as grant financing through bilateral, regional and global programs funded by Official Development Assistance (ODA) and guided by the [Climate Change Action Strategy](#) (2020–25). The Strategy has 3 objectives, 1 of which is to support partner countries to adapt to climate change, and to plan, prepare for and respond to climate-related impacts. The Strategy supports the goals of the Paris Agreement while strengthening socially inclusive, gender-responsive sustainable development in our region. Australia also provides grant financing as core contributions to multilateral institutions, loan financing through the Australian Infrastructure Financing Facility in the Pacific, and loans, equity and guarantees through the Emerging Markets Impact Investment Fund (EMIIF) and the Australian Climate Finance Partnership (ACFP).

Australia has a strong record in providing capacity building and technical collaboration and we will continue to work closely with partner countries to share expertise and promote development of in-country resources. In particular, Australia is committed to supporting partner countries to build capacity to refine and implement their Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs), translating them into policies and strategies that are aligned with national development objectives.

Australia recognises developing countries’ calls for a stronger focus on financing for adaptation and resilience, including averting, minimising and addressing loss and damage, and for an increased share of finance flowing to Small Island Developing States (SIDS) and Least Developed Countries (LDCs). Australia has performed strongly on both these measures in recent years with over 70% of our bilateral, regional and global climate financing invested in adaptation efforts and two thirds of our bilateral, regional and global climate finance benefiting SIDS and LDCs. We continue to support adaptation and build resilience in the Pacific as a top priority. Australia sees grant financing and capacity building as playing a critical role in achieving impact in sectors where private finance is not readily available. Our engagement and lessons learned from support provided informs our ongoing contributions to important adaptation-related UNFCCC processes including the Adaptation Committee, the Standing Committee on Finance, and the Executive Committee of the Warsaw International Mechanism for Loss and Damage.

Australia views robust monitoring and evaluation as essential for assessing the performance and progress of investments, as well as for managing risk, supporting learning, and informing continual improvement in implementation — ensuring that development program managers can actively manage and adapt investments as the context changes. Australian development investments are subject to a safeguard risk assessment process covering environmental issues and must meet our high standards for monitoring and evaluation in order to ensure that investment outputs and outcomes can be measured.

Examples of Support to the Pacific

Regional-level Support

Pacific leaders have identified climate change as the single greatest threat to the livelihoods, security and well-being of the peoples of the Pacific. This was reaffirmed in the 2018 Boe Declaration on Regional Security and the 2019 Kainaki II Declaration for Urgent Climate Change Action Now.

At the regional level, Australia directly finances the Pacific Resilience Partnership (\$600,000, 2018–22), which was established by Pacific Leaders to oversee implementation of the 2016 Framework for Resilient Development in the Pacific (FRDP). Serving multiple stakeholders, this framework considers climate change through a regional lens and provides high-level strategic guidance to different stakeholder groups on how to enhance resilience to climate change and natural hazards, in ways that contribute to and are embedded in sustainable development.

Australia cooperates on climate change and disaster risk reduction with the key Pacific regional organisations – the Pacific Islands Forum Secretariat (PIFS), the Pacific Community (SPC), and the Secretariat of the Pacific Regional Environmental Programme (SPREP). Australia provides \$4.3 million per year in core funding to SPREP. This organisation leads Pacific engagement in the UNFCCC and supports Pacific Island countries on sustainable development. Our partnership approach enables Australian and Pacific governments, academic and civil society institutions to share information and build knowledge pathways at the regional and bilateral level, including through research and public scientific institutions.

For example:

1. Australia's Bureau of Meteorology, together with Geoscience Australia, works with the 15 Pacific Island Meteorological Services through the Climate and Oceans Support Program in the Pacific (COSPPac, \$23.3 million, 2018–23) to monitor, analyse and communicate information about climate, oceans, and sea levels. This program provides critical information to support planning and decision-making in key sectors such as agriculture, energy, water, health and disaster management.
2. Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) is updating climate change projections for the western Pacific to better communicate the impacts associated with 1.5°C and 2°C temperature rise scenarios in 14 Pacific countries and illustrating how these changes could impact production in specific sectors (\$1 million, 2019–22).
3. The Australian Institute of Marine Science is piloting the ReefCloud platform in Fiji and Palau (\$3.2 million, 2019–24), which uses innovative technology and artificial intelligence to monitor the conditions of coral reefs, gathering data about how they are impacted by increasing pressures including climate change. Indigenous exchanges will facilitate sharing of knowledge and expertise in coral reef science and management.

Australia's climate change investments to the Pacific are supported by the [Australian Pacific Climate Partnership Support Unit](#) which provides specialist advice to address disaster risks and deliver climate informed outcomes.

Australia is strongly focused on supporting Pacific-led disaster management processes. Disaster READY (\$50 million, 2018–22) works across the Pacific with Australian NGOs and local partners to support over 390 communities, schools and churches to develop or update inclusive disaster response plans. The Australian Red Cross Partnership (\$50 million, 2020–25) will work with Red Cross National Societies in countries across the Indo-Pacific to improve their ability to respond to, and recover from, climate-induced crises and disasters.

Australia's climate change and disaster risk reduction support to the region is strongly gender-responsive and socially inclusive. For example, Australia supports the Pacific Women Climate Change Negotiators Training Program (\$1.4 million, 2016–21), to amplify the voices of women in the UNFCCC through communications, leadership and negotiations capacity building. In the Solomon Islands, the Addressing the Gender Inequality of Risk (managed by UN Women, \$1.73 million over 2018–21) integrates gender into risk assessments in disaster prevention, planning and response.

Australia recognises the importance of nature in addressing climate change and reducing its impacts. We are using catalytic investments in key nature programs to stimulate and scale new types of environmental investments across the aid program, that seek to both strengthen nature while also achieving mitigation and adaptation co-benefits. Pacific communities rely heavily on natural resources such as reefs, mangroves and forests for social, economic and cultural wellbeing, making nature-based solutions and their focus on protecting ecosystems particularly well-suited to the region. Through the Pacific Blue Carbon program (\$6 million, 2018–24), Australia is supporting national climate action and improving livelihoods in Papua New Guinea (PNG) and Fiji, through enhanced measurement of, and innovative investment in, blue carbon ecosystems, as well as sharing knowledge and expertise between Australian Indigenous communities and Fiji local communities. Australia also contributes to the multi-donor Kiwa Initiative: Nature-Based Solutions for Climate Resilience (\$1 million, 2020–25), an initiative led by the French Development Agency (AFD) that aims to strengthen resilience to climate change by providing biodiversity conservation for Pacific islands ecosystems, communities and economies, through grants to community organisations, Pacific island countries and territories and regional organisations. Australia's more recent Nature-Based Solutions for Climate Change initiative (\$9.5 million, 2021–23), is a flexible program that supports a portfolio of community-led activities to pilot different nature-based solutions approaches in the Pacific.

Australia has supported 14 Pacific Island countries to establish maritime zones and negotiate shared boundaries to help secure maritime entitlements, such as fisheries resources, in the face of sea level rise and other climate change impacts. The Resilient Boundaries for the Blue Pacific Project with SPC (\$3.5 million, 2019–24) is working to better understand the impacts of sea level rise and other climate change impacts on the region's maritime zones and develop Pacific-led technical and legal response options.

Australia is also supporting improved food security in the Pacific through innovation in productive and sustainable resource use. Through the Pacific Horticultural and Agricultural Market Access Plus program (PHAMA Plus, \$39 million, 2018–22), Australia is supporting the application of updated climate projections and tailored advice, working with farmers and agribusiness in Fiji, PNG and Tonga with a focus on staple Pacific foods such as root crops.

More recently, Australia announced the Science and Technology Climate Partnerships (Sci-Tech4Climate) which will bring leading Australian science agencies (CSIRO) and climate specialists (and the Australian National University) to work together with development partners in the Indo Pacific to ensure our region's response to climate change is supported by the best available science and technological advances. The partnerships will harness new technologies, emerging science, innovative practice and business networks to provide partner governments with Australian-developed and locally appropriate climate adaptation and mitigation solutions. Sci-Tech4Climate will provide \$3.5 million to CSIRO and \$2 million to the Australian National University in the initial phase of the program (2021–24).

Country-level Support

Australia works in partnership with Pacific island countries to integrate climate change adaptation and disaster risk reduction measures across a broad range of development sectors, in line with the Framework for Resilient Development in the Pacific (FRDP) and [Australia's Climate Change Action Strategy](#).

In Fiji, Australia works in partnership with the Fijian Government and the International Finance Corporation (IFC) to support affordable, resilient social housing informed by detailed site assessments of climate risks, including flooding (\$14.3 million total, 2016–21). Australia is also working to build local capacity to respond to emergencies, including through upgrades to the National Emergency Operation Centre and training for first responders (Fiji Program Support Facility's Preparedness and Response Fund, \$3.5 million, 2016–22).

In Kiribati, Australia's support is ensuring schools have raised floors and protective seawalls to reduce coastal flooding, and that school curriculums incorporate climate change (Kiribati Education Improvement Program, \$96 million total value, 2010–22). The Pacific Women Shaping Pacific Development program in Kiribati (\$9.9 million total value for Kiribati, 2012–22) is supporting Kiribati's first crisis centre to ensure the building is climate and disaster informed.

In Nauru, Australia works with the Government of Nauru, the Asian Development Bank and the Green Climate Fund to build a climate-resilient deep-water port to facilitate the efficient delivery of essential supplies (\$21.7 million, 2017–21). Australia is also supporting Nauru's Ministry of Education to integrate climate change across the school curriculum, ensuring the next generation of school leavers understand climate risk and locally relevant adaptation.

In the North Pacific, the Ebeye Water and Sanitation Project in the Republic of the Marshall Islands (\$5.3 million, 2015–22) is helping ensure people have access to fresh water in times of disaster. Australia works with the International Organization for Migration to build the resilience of community health centres' water capture and supply systems against changing weather patterns and saltwater intrusion in the Federated States of Micronesia (Strengthening of Dispensaries and Health Centres in FSM, \$0.4 million, 2020–21).

In Papua New Guinea (PNG), the Climate Resilient Green Growth Project (\$6 million, 2018–22) is helping government, businesses and communities to pursue climate resilient and low-carbon development pathways. Australia also works with the Government of PNG to ensure roads and bridges are more resilient to extreme weather (Transport Sector Support Program, \$520 million, 2013–22) improving the response of health services to disasters, by integrating climate change and disaster risk reduction into best practice health interventions (Health Service Sector Development Program, \$50.4 million, 2018–25).

In Samoa, the new Education Sector Support Program (\$13 million, 2020–23) is supporting the integration of climate and disaster resilience in infrastructure, curriculum and teacher training as well as support the development of a Climate Change and Disaster Risk Resilience Strategy for the Education Sector. Australia is also supporting the surveillance of vector-borne diseases impacted by climate change, through placement of an Epidemiologist Technical Advisor within the Ministry of Health; support which has continued remotely during the COVID-19 pandemic.

In the Solomon Islands, the Solomon Islands Infrastructure Program (\$250 million, over 10 years) will ensure that climate and disaster risks are assessed and factored into infrastructure design criteria, construction standards and maintenance programs. The Education Sector Support Program (\$97 million, 2015–23) is delivering certified school buildings rated to Category 4 cyclone standard and is working to better integrate climate change into curriculum, education resources and teacher training. The Gender Inequality of Risk program (\$2 million, 2018–21) is integrating climate risks in the Solomon Islands' community-based disaster risk management manual and helping ensure that women's rights are adequately considered.

In Tonga, Australia is co-funding the Tonga Renewable Energy Program (\$3.5 million, 2019–22), which will help the country meet its target of 50% renewable energy by 2020. Using renewable energy, such as solar, also has an adaptation and development benefit, by helping communities recover faster from disasters and providing more affordable sources of power.

In Tuvalu, Australia is supporting the Government of Tuvalu's economic reforms in fiscal sustainability and public financial management, improving economic resilience against climate change. Through the Tuvalu Food Futures Project Phase 2 (\$1.7 million, 2020–21), Australia is helping to establish food gardens using modular raised wicking vegetable beds, known as Foodcube technology in 2 outer islands, to support improved long-term food security.

In Vanuatu, the Vanuatu Skills Partnership (\$23.5 million, 2017–22) integrates climate resilience and climate risk assessment training into vocational courses for the tourism, agribusiness and handicraft sectors. The Roads for Development Program (\$54 million, 2012–23) is working to ensure vital rural road links are designed and maintained to withstand increasingly extreme weather conditions. With Australian support (\$16.8 million, 2010–21), the local Wan Smolbag Theatre is producing documentaries and performing shows to inform Ni-Vanuatu about managing climate change and disaster impacts.

Examples of Support to Southeast Asia

Australia has a strong history of engagement and support to Southeast Asia. Regionally, Australia's new Southeast Asia Economic Governance and Infrastructure Facility (SEAEGIF, \$141 million, 2020–24) contributes to quality infrastructure development in the region, helping build resilience to climate change impacts and supporting lower-emissions economic growth. SEAEGIF will partner with ASEAN and Southeast Asian governments to help the region build back better from COVID-19, delivering technical advice and government partnerships to support the use of infrastructure stimulus to drive economic recovery and job creation.

Within the region, the Mekong Australia Program for Water and Renewable Energy (\$50 million, 2020–27) will continue supporting the Mekong River Commission on sustaining rules-based water and energy cooperation and supporting climate-risk informed decision-making, involving civil society, with a focus on women's leadership.

In Cambodia, the Agricultural Value Chain Program Phase 2 (CAVAC II, \$84.2 million, 2016–21) supports improved productivity and incomes for smallholder farmers through climate resilient irrigation infrastructure, seed varieties and mechanisation. The 3i Investing in Infrastructure program (\$49.4 million, 2015–21) supports climate change adaptation in the water infrastructure sector.

In Indonesia, the Australia-Indonesia Partnership for Disaster Risk Management (\$25 million, 2019–24) supports Indonesia’s disaster risk management system to build preparedness and resilience. The Indonesia Australia Infrastructure Partnership (\$146.2 million, 2017–21) provides technical assistance on climate-resilient infrastructure. Australia also supports the Pulse Lab Jakarta (\$12.7 million, 2015–23), a joint data innovation facility of the UN and the Government of Indonesia that provides evidence to inform policymakers to address information gaps in development and humanitarian sectors, including on disaster response and climate change. The Australia-Indonesia Blue Carbon program (\$2 million, 2018–22) is enhancing blue carbon policy and science collaboration with the Government of Indonesia.

In Myanmar, Australia’s humanitarian assistance program is working to increase the resilience and self-reliance of disaster and crisis affected populations, including those dealing with climate change. Australia’s support to the multi-donor Livelihoods and Food Security Trust Fund (LIFT, \$47 million, 2009–24) strengthens climate resilience and maintains rural livelihoods, helping communities adapt to shifting climatic conditions.

In the Philippines, the Strengthening Institutions and Empowering Localities Against Disasters and Climate Change (SHIELD, \$18 million, 2018–25) program will support institutional and community resilience to climate change and disasters targeting the subnational level. The Advancing Multilateral Partnerships for Economic Development program (\$25 million, 2018–24) will co-fund multilateral institutions to deliver economic development projects that incorporate climate change considerations, such as working with the IFC on typhoon insurance, and with the World Bank on the Agus-Pulangi Hydropower Complex Rehabilitation.

In Timor-Leste, TOMAK (Farming for Prosperity, \$25 million, 2016–21) is helping to build the resilience of rural communities by improving their food security, nutrition and livelihoods through promoting climate-resilient farming techniques and practices. Under Australian Humanitarian Partnership COVID-19 response activities (\$5 million, 2020–21), partner NGOs will integrate climate change resilience into food security and water, sanitation and hygiene activities, including through the identification of climate resilient seeds and developing water activities in consultation with Timor Leste’s national meteorology department.

In Vietnam, Australia is partnering with the World Bank (\$30 million, 2017–22) to strengthen climate resilience in the Mekong Delta through improved regional planning and coordination on climate resilient investments and livelihoods. Australia is also working to mainstream climate change across programs, especially by increasing efficiency and sustainability of transport infrastructure and services in Vietnam. As part of Aus4Transport (\$30 million, 2018–22), Australia is working with the Ministry of Transport in Vietnam to arrange hydrological surveys to account for climate change impacts in bridge and drainage structures as well as slope protection of approved road improvement projects.

Examples of Support to South Asia

Australia has a strong history of engagement and support to South Asia. Regionally, the new Strengthening Water Security in South Asia Initiative (SAWASI, \$20 million, 2021–25) will focus on improving access to safe water and sanitation services for disadvantaged communities in cities in South Asia and enhancing climate resilience by sharing our expertise and experience in implementing low-cost nature-based solutions to urban water-related shocks.

In Bangladesh, Australia supports efforts to enhance the quality of transport and energy infrastructure, including in the context of the economic recovery from COVID-19. This work will help Bangladesh to plan and leverage private and multilateral development bank finance, and to access technical expertise, improve climate and disaster resilience, shift to low-carbon and inclusive development and improve regional connectivity.

In Sri Lanka, Australia has established a flexible mechanism with UN partners, to build resilience and improve Sri Lanka's ability to respond to shocks and stresses (Building Resilience, \$1.6 million, 2020–23). Over the long term this will focus on climate change, while, in the short term, it supports stability and the resilience of the most vulnerable and those most highly impacted by COVID-19. Australia is supporting national climate action through the Blue Carbon for Climate change and Sustainable Livelihoods project (\$430,000, 2019–22) to enhance policy and science collaboration by providing training to early career scientists and policy officers and helping develop the blue carbon evidence base.

Examples of Support via Global Programs

In the agriculture and water sectors, the Global Water Scarcity Initiative (\$20 million, 2019–23) aims to share Australia's expertise on managing water scarcity by building partnerships and delivering a small number of activities in targeted countries, promoting climate change adaptation. Phase 2 of the Australian Water Partnership is also focused on climate change and pandemics in new activities (\$26 million, 2019–23).

The Australian Centre for International Agricultural Research (ACIAR) has established a new Water and Climate Program, to build knowledge on how to achieve more ambitious, transformational adaptation and mitigation outcomes. This enables partners to tap into Australia's world-leading expertise in systems change and transformational adaptation developed through, for example, the Coral Triangle Initiative, the Natural Resource Management Impacts and Adaptation Program, and work with the Global Environment Facility in developing the Resilience, Adaptation Pathways and Transformation Approach (RAPTA).

The Australian NGO Cooperation Program (ANCP, DFAT budget \$133.5 million in 2020–21) partners with accredited Australian NGOs to support community-based projects that have a direct and tangible impact on reducing poverty in developing countries. As a partnership, it provides funding in the form of annual grants, which are supplemented by NGO co-contributions and encourages its partners to incorporate climate change and disaster considerations, with a view to building long-term disaster and climate resilience. ANCP will continue to support a range of climate change related activities across a range of areas – including governance, adaptation, capacity building, education, health, training, awareness raising, renewable energy technology and climate resilient construction and land management practices.

Australia's work through the [Global Forest Observations Initiative](#) (2013–20) supports developing countries in the Asia-Pacific, Africa, and South America to build capabilities and systems for forest carbon accounting. We are also building capacity in measurement, reporting and verification of greenhouse gas mitigation, and support for the development of blue carbon inventories in the Pacific and Indonesia.

Australia's contribution to the World Bank's principal ocean trust fund — [PROBLUE](#) (2021–22) — will support countries in the Indo-Pacific region to address climate change and other pressures by improving sustainable ocean management across the fund's 4 target pillars — improved fisheries governance, marine litter and pollution management, innovation and efforts to help traditional sectors become more sustainable, and integrated seascape approaches.

Examples of Support to Multilateral Organisations

The UN agencies we work with have adapted programming to build climate resilience. Australia's core funding enables UN agencies to flexibly and quickly respond to emerging priorities, including pandemics, while still accounting for the impacts of climate change.

Some of the key UN agencies we work with include:

- UNDRR's work in the Asia-Pacific region to assist governments and communities to implement the Sendai Framework and to engage with the private sector to develop more disaster resilient investment and prevent new risks. Australia also supports The World Bank's Global Facility for Disaster Risk Reduction (GFDRR) — a global partnership committed to helping developing countries to design and implement comprehensive approaches to disaster risk management, helping embed resilience into development policies and plans.
- UNDP works in 170 countries and territories to eradicate poverty, reduce inequalities and exclusion, and build resilience so countries can sustain progress. UNDP's approach includes a strong focus on climate and disaster resilience, including in the Pacific region. Australia contributes to UNDP's Governance for Resilient Development in the Pacific (Gov4Res), which aims to help Pacific Island countries integrate climate financing, and climate and disaster risks, into public policies and planning.
- Australia supported UNDP to implement small-scale [community-based adaptation](#) through the GEF's Small Grants Programme (SGP) with \$12 million from 2009–2020. The program worked in 41 countries in the Mekong, Asia Pacific and Small Island Developing States. Innovative climate change adaptation techniques were piloted, and several contributed to revisions to national/subnational policy revisions and development.

Australia is a longstanding supporter of the Global Environment Facility (GEF). We committed \$76.7 million for the GEF-7 period (2018–22) and are an active participant in the current GEF-8 replenishment negotiations. The GEF is the largest funder of projects to assist developing countries address environmental challenges and make efficient use of natural resources. Australia is a strong advocate for the Indo-Pacific region in the GEF and will support an increase in resource allocation for Small Island Developing States in the GEF-8 period.

Australia also engages with multilateral development banks to support climate change mitigation and adaptation efforts globally. Australia is an advocate for the Indo-Pacific region through the governing bodies of the Asian Development Bank, World Bank Group and the Asian Infrastructure Investment Bank. Australia supports MDB climate-related policies and action plans, and through our core contributions to the ADB's Asian Development Fund and the World Bank's International Development Association. Through the 19th IDA replenishment, donors, including Australia, agreed climate co-benefits as a share of total commitments be increased to at least 30% on average over FY2021–23, and at least half of these co-benefits are to support climate adaptation actions. For the ADB, the share of projects supporting climate change mitigation and adaptation is expected to be 63% during 2021–23, with a target of achieving 75% by 2030.

Examples of Support Through Humanitarian Assistance and Disaster Risk Reduction

A key pillar of our adaptation and resilience building work is the support we offer through disaster risk reduction and humanitarian assistance. This work contributes significantly to help avert, minimise and address loss and damage with partners in the region.

Australia's [Humanitarian Strategy](#) provides the framework for Australia's humanitarian action, which is designed to save lives, alleviate suffering and maintain human dignity during and in the aftermath of conflict, disasters and other humanitarian crises, as well as to prevent and strengthen preparedness for the occurrence of such situations.

The Sendai Framework guides Australia's approach to disaster risk reduction both here in Australia and in supporting other countries. Through the aid program, Australia supports partner countries to identify risks and hazards, and lay the foundations for resilience to disasters and climate change, focused on local communities, and local and national government. Australia's estimated total contribution to disaster risk reduction through the development assistance program was 5% of ODA in 2019–20 and has consistently exceeded the target of 1% of ODA since it was recommended at the Global Platform for DRR in 2009.

Australia contributes to the international humanitarian system, including by adhering to global standards and principles. Australia is committed to helping partner governments manage crisis responses themselves. We do this through building the capacity of the national government and civil society to respond to disasters, including preventing COVID-19 outbreaks. Australia also works with experienced international partners to prepare for and respond to disasters in support of partner governments, including other donors, UN agencies, the International Red Cross and Red Crescent Movement and non-government organisations.

Where a disaster is beyond national capacity to respond, Australia has the capacity to rapidly deploy humanitarian assistance to countries affected by crisis. Australia has a range of specialist capabilities to assist in responding to humanitarian crises, including:

- Australian personnel deployed to provide humanitarian response expertise
- lifesaving humanitarian relief supplies
- partnerships with local and international humanitarian organisations that have capacity to deliver support in line with Australia's humanitarian priorities.

The Australian Humanitarian Partnership (AHP) is a strategic 5-year (2017–22) partnership that delivers effective, innovative and collaborative humanitarian assistance by allowing Australia to use the networks and access of Australian NGOs to respond to disasters and protracted crises in our region and beyond.

The AHP has a specific focus on strengthening the ability of local communities and organisations in the Pacific to prepare for and respond to crises. Through the AHP's Disaster READY program, \$50 million will be invested from 2017–22 to build the capacity of local organisations across the region to prepare for and respond to disasters more effectively.

In response to the impacts of COVID-19, AHP partners aim to reach over 2 million people in the Pacific and Timor-Leste with support such as health and hygiene information, access to water and sanitation facilities, alternative livelihood opportunities and improved food security.

DFAT has partnered with 6 peak Australian NGOs and their consortium partners to deliver on these priorities:

- CARE Australia
- Caritas Australia
- Oxfam Australia
- Plan International Australia
- Save the Children Australia
- World Vision Australia.

International Cooperation, including Adaptation and Resilience Synergies with Other International Frameworks and Conventions

Australia works with partners to achieve the Sustainable Development Goals (SDGs) and remains strongly engaged on adaptation and resilience issues across the multilateral system, including in the UN General Assembly, Human Rights Council, UN Security Council, G20, OECD Development Assistance Committee, Intergovernmental Panel on Climate Change, World Health Organisation, and Convention on Biological Diversity. Climate adaptation and resilience also forms a core stream of our cooperation through informal plurilateral groupings, such as the Quad, which recently agreed to improve critical climate information-sharing and disaster-resilient infrastructure for the Indo-Pacific. We play an active and constructive role in UN climate negotiations and have worked to raise the profile of social inclusion, gender, indigenous, oceans and human rights issues in climate.

Climate change exacerbates the difficulties already faced by vulnerable communities, including political and economic marginalisation, conflict and security, loss of land and resources, and human rights violations. Australia is working to address these issues and acknowledge human rights through international processes, including the UNFCCC and the Human Rights Council. Australia aligns its UNFCCC and Human Rights Council efforts to ensure they are complimentary to both agendas. Australia will continue to progress work on the pillars of our Human Rights Council seat mandate. This includes efforts to ensure climate action is gender-responsive and socially inclusive and the right to participation for all stakeholders is upheld in the UNFCCC process and in international, national and local responses to climate change.

In cooperation with the UK as incoming COP President, Australia has joined the 'Call for Action on Adaptation and Resilience' and the 'Adaptation Action Coalition'. In January 2021 at the Climate Adaptation Summit, Australia announced official endorsement of the Coalition for Climate Resilient Investment (CCRI) that looks to shift private investments towards climate resilience infrastructure and support vulnerable communities to attract more resilience private sector investment.

Australia contributes to a number of Paris Conference initiatives, including in constituted bodies under the UNFCCC (e.g., Loss and Damage WIM, Standing Committee on Finance). Australia supports a range of adaptation-related efforts, including the Climate Risk and Early Warning System (CREWS) initiative (\$5 million over 2016–20) with the World Bank and WMO to protect lives, livelihoods and property in Least-Developed Countries and Small Island Developing States by developing ways to communicate early warnings. Other investments include \$1.5 million (2017–20) for the World Resources Institute's Nationally Determined Contributions Partnership (NDC Partnership) and the Pacific Women Climate Change Negotiators Training (\$1.4 million, 2017–21).

As noted above, Australia is committed to the Sendai Framework for Disaster Risk Reduction (2015–30) and is pleased to be hosting the ninth Asia-Pacific Ministerial Conference on Disaster Risk Reduction (APMCDRR) in 2022, convened by the UN Office for Disaster Risk Reduction. Focusing on 3 key themes, resilient investment and recovery, resilient systems, services and infrastructure, and resilient communities, the APMCDRR will promote a local and inclusive approach to disaster risk reduction and will highlight the challenges faced by Pacific Island, coastal, and remote communities.

Australia is also a founding member of the Coalition for Disaster Resilient Infrastructure (CDRI), a global partnership to progress disaster resilient infrastructure and view our engagement as a strategic complement to our \$2 billion AIFFP to support climate and disaster resilient infrastructure projects (as detailed above).

Australia contributes to the development of a global biodiversity framework and targets to conserve and use biodiversity in a sustainable manner and share benefits arising from genetic resources in a fair and equitable way. Australia is a member of the Global Ocean Alliance and the High Ambition Coalition for Nature and People, which are championing a global target (30% by 2030), through the global biodiversity framework, to protect the world's land and ocean to conserve biodiversity. [Australia's Strategy for Nature](#) coordinates national delivery of Australia's commitments to the Convention on Biological Diversity, its [Aichi Targets](#), and other international agreements including the [Ramsar Convention on Wetlands](#) and the [Convention on Migratory Species](#).

Australia is leading global partnerships to protect rainforests such as the Asia-Pacific Rainforest Partnership and marine ecosystems, including the [International Coral Reef Initiative](#) and the [International Partnership for Blue Carbon](#).

Addressing pressures like marine plastic pollution on the ocean is important to build resilience to the impacts of climate change. Australia is supportive of improved global action on marine litter, through a new global instrument to combat plastic pollution. Australia's world-leading climate research capabilities continue to make globally recognised contributions to climate science, helping the world to understand the way the climate is changing and the impacts we need to manage. Australia's Bureau of Meteorology, Geoscience Australia and the CSIRO contribute to better and more relevant climate information to support our country partners with their climate change action.

Gender-responsive and Socially Inclusive Adaptation Action, that Supports Vulnerable Groups and Utilises Traditional Knowledge and Local Knowledge Systems

Australia recognises that the impacts of climate change on people are influenced by social pressures including discrimination based on gender, class, ethnicity, age, and disability. As such, Australia's Climate Change Action Strategy promotes social inclusion and gender equality, with a clear focus on vulnerable communities, which may include women and girls, gender diverse people, people with disability and indigenous peoples. The Australian Centre for International Agricultural Research (ACIAR) Gender Policy and Strategy also commits ACIAR programs to addressing the differential impacts of climate change adaptation and mitigation on female and male farmers, to understand and leverage the benefits of gender-sensitive and gender-inclusive approaches to drive innovative and more transformative adaptation and mitigation options, and to increase gender equity in research, capacity building and development actions.

Australia supports both targeted and mainstreamed gender and social inclusion investments, with a strong focus on intersectionality. Aligned with the UNFCCC Gender Action Plan, we are strongly focused on seeking to ensure that gender-responsive investments integrate the knowledge, experience, concerns and priorities of people of all genders into all stages of design and delivery. We do this to ensure more equitable benefits and greater effectiveness. Australia recognises the powerful role of diverse leadership at all levels, particularly in their local communities, in building resilience and enabling an integrated response to climate change and disasters. We ensure our response to intersecting social pressures involves identifying biases, discrimination or other forms of social marginalisation, pro-actively engaging participants in an inclusive and meaningful way and aiming for investments to deliver benefits and opportunities equally.

Women's Resilience to Disasters in the Pacific

Australia launched the Women's Resilience to Disasters in the Pacific programme this year (\$13.5 million, 2021–26, implemented by UN Women) to support the lives and livelihoods of women and girls to be more resilient to disasters and climate change, contributing to sustainable, secure, and thriving communities. Gender-responsive decision-making and governance systems in target countries (currently Fiji, Kiribati and Vanuatu) will enable targeted action for building the resilience of women and girls to current and future disasters and threats, including climate change and COVID 19. Program outcomes are two-fold. First, prevention, preparedness, and recovery policy frameworks, systems, processes, and tools are gender-responsive and implemented as a result of local women's and girls' advocacy. Second, women and girls have agency and voice to withstand multiple hazards, recover from disasters, and increase their resilience to current and future risks.

Rainbow Resilience Action Research

Implemented by Edge Effect, this initiative is generating the evidence base needed to challenge narratives that blame LGBTI people for climate change and disasters. 2 of 4 rounds of participatory action research (PAR) have now been completed in Fiji and are helping to develop a nuanced understanding of the experiences of people with diverse sexual orientation, gender identity and expression, and sex characteristics (SOGIESC) in humanitarian and development contexts.

Climate Change, Disaster Risk Reduction and People with Disability Research

Implemented by the Pacific Disability Forum in partnership with the Australia Pacific Climate Partnership, this initiative is looking to establish the evidence base on climate change impacts on people with disability in the Pacific and develop a robust policy and action agenda. In doing so, this initiative is also helping to build the research capacity of national disabled people's organisations in the Pacific.

Young Women's Climate Action

Through Action Aid, Australia is supporting the Shifting the Power Coalition to undertake a 2-year initiative focused on Young Women's Climate Action. This initiative is working to engage Pacific women with Pacific national meteorological services to ensure diverse young women have the knowledge and skills to engage in climate action at the local level and in national and regional policy dialogue, and ensure that the unique experiences, needs and capacities of young Pacific women are well documented and used to inform the design of campaigns and calls for greater action on climate change.

Australian Youth for International Climate Engagement

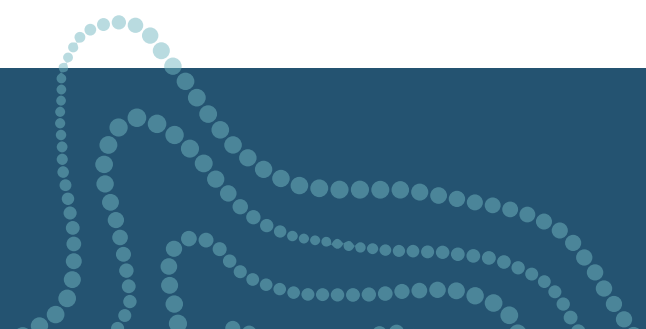
Promoting international climate engagement by Australian youth is a priority for the Australian Government. Australia signed the Kwon Gesh pledge at the 2019 UN Climate Action Summit, in which we commit to involving youth in our implementation of the Paris Agreement and the achievement of its goals. Following COP 25, in recognition of the constructive role Australian youth were already playing in the UNFCCC, Australia's Department of Foreign Affairs and Trade established a working group with the Australian Youth for International Climate Engagement (AYFICE) Network. The Working Group provides formalised connection between Australian youth delegates who attend UNFCCC events and the official Australian Delegation with the objective of mainstreaming youth engagement through the Delegation's work and facilitate sharing of views, knowledge and experiences.

Indigenous Engagement in International Climate Action

Supporting climate action to be inclusive of indigenous knowledge and priorities will make mitigation, adaptation and resilience efforts (nature-based solutions, in particular) more effective and sustainable, and lead to more equitable long-term outcomes. To support our work domestically, Australia is working to support knowledge sharing of traditional indigenous land management practices internationally. In line with Australia's [Indigenous Diplomacy Agenda](#) and the UNFCCC's Local Communities and Indigenous Peoples Platform, we are working to ensure that international norms and standards on climate change benefit indigenous peoples and opportunities for indigenous peoples are maximised in emerging industries related to climate change action.

Knowledge Sharing of Traditional Indigenous Fire and Land Management

The Australian Government is providing \$3.87 million (2018–21) to export traditional Australian fire management practices to Botswana. Australia is the driest inhabited continent in the world. It has the world's oldest living cultures and some of its richest biodiversity. For over 65,000 years the traditional knowledge and practices of our Aboriginal and Torres Strait Islander Peoples have preserved and protected Australia's natural environment. In Australian savannas, application of traditional fire management techniques has led to reductions in wildfire emissions by up to 50%, with significant further emissions mitigation through carbon sequestration over the long term. This innovative nature-based approach also offers co-benefits including job creation, promoting biodiversity, supporting tourism and reinvigorating culture and improving food security and health.





Annex A

Non-exhaustive Sectorial Examples of Australia's Adaptation and Resilience Actions

The below is a non-exhaustive list of Australia's action on adaptation which provides an illustration of policies, strategies, programs and practical actions across a range of sectors.

These are arranged as follows:

- Agriculture and Food Security
- Natural Environment
- Marine Ecosystems, including Coastal and Reef
- Water Resources
- Infrastructure
- Health
- Youth and Children
- Economic Sector

Agriculture and Food Security

Australia is one of the most food secure countries in the world ([Australian Bureau of Agricultural and Resource Economics and Sciences \(ABARES\) data](#)). We produce much more food than we consume, exporting on average around 70% of agricultural production.

Australia also imports food to meet consumer demand. Just over 10% of domestic spending on food and beverages was imported products. Generally processed products like coffee and seafood are imported, as well as small amounts of out-of-season fresh produce.

The impacts of climate change are already being felt by the agricultural sector with events such as drought becoming more frequent and extreme.

Agriculture industries are developing methods to better understand, manage and prepare for the physical impacts of climate change. For example, through changes to crop selection, land management and improving water efficiency. Drought is increasingly being viewed as another cyclical business risk, alongside changes to commodity prices or market demand.

Adaptation and preparedness efforts have reduced but not eliminated the impact of climate change over the past 20 years.

Recent modelling from [ABARES](#) has confirmed that changes in climate are having a negative effect on Australian farmers. ABARES estimates that since 2000, increases in temperature and reductions in winter rainfall have (relative to the 1950–1999 climate) reduced broadacre farm profits by an average of 23%, with larger effects among cropping farmers in south-eastern and south-western Australia. ABARES research also finds significant adaptation in the agricultural sector in response to these changes: including improvements in farm technology and practices enabling crops to be grown with less rainfall, and some migration of traditional cropping zones across Australia.

The global effort to mitigate and adapt to climate change is also presenting market opportunities to the agriculture sector. As economies transition towards lower emissions, opportunities may emerge for agriculture industries that can demonstrate more emissions-efficient production systems.

Adapting to climate change, including the drought cycle, will help make farming more productive and profitable, better protect Australia's land and water, and strengthen rural communities.

Australia's agriculture industry depends on a biodiverse and well-managed natural resource base.

The Australian Government is delivering an [Agriculture Stewardship Package](#), which aims to incentivise adoption of improved on-farm land management practices and develop a mechanism where farmers are rewarded for their efforts in delivering biodiversity and sustainability services that benefit their farms and the broader community.

The Global Research Alliance on Agricultural Greenhouse Gases (GRA) is an independent multilateral arrangement which aims to help countries improve agriculture productivity at the same time as enhancing resilience, adaptive capacity and greenhouse gas mitigation. As Chair of the GRA Council, Australia plays a leading role in strengthening links between the work of existing GRA members and greenhouse gas mitigation activities in our region. In this role Australia also supports the increasing international focus on adaptation co-benefits, including international partnerships that develop the capability to understand the relationship between mitigation and adaptation and the impacts on agriculture.

Some examples of actions in this sector include:

[Drought Communities Program Extension](#)

The [Drought Communities Program Extension](#) supports local infrastructure projects and other drought-relief activities in 180 Local Government Areas. Funding was targeted at projects that stimulated local community spending, used local resources, businesses and suppliers, and/or provided a long-lasting benefit to communities and the agricultural industries on which they depend.

[Drought and Climate Adaptation Program](#)

The Queensland [Drought and Climate Adaptation Program](#) (DCAP) aims to help producers better manage drought and climate impacts. The best climate scientists, government and non-government agencies, producers and industry leaders are working together on several cutting-edge research, development and extension projects and partnerships. This research will help farmers manage the financial risks associated with decision-making around droughts and climate variability through improved forecast products, tools and extension activities. DCAP is a 6-year program supported by investments from the Queensland Government and project partners.

Northern Australia Climate Program (NACP)

The [Northern Australia Climate Program](#) (NACP) is a new program designed to bring together the best climate scientists, advisors and regional producers to promote and develop the most useful climate forecasting tools possible for the northern beef industry.

Natural Environment

Australia is focused on protecting landscapes for biodiversity protection, taking into consideration the impact climate change could have on different landscapes.

Australia's protected area estate, the National Reserve System (NRS), covers more than 29% of Australia's land and sea, including around 20% of Australia's landmass (over 159 million hectares). Australia also has one of the world's largest representative systems of marine protected areas, covering 37% of Australia's marine habitat.

This exceeds the Convention on Biological Diversity's current strategic plan target which states that at least 17% of terrestrial and inland water, and 10% of coastal and marine areas be conserved through protected areas and other effective area-based conservation measures.

Indigenous Protected Areas (IPAs) represent an important part of the NRS. 78 IPAs cover more than 74 million hectares and more than 46% of the NRS estate.

The IPA Program is a highly successful program that supports Traditional Owners to manage their country for biodiversity conservation, while also providing other benefits including employment for Indigenous land and sea managers, knowledge transfer between generations and maintenance and reinvigoration of language and culture.

In 2017, the Australian Government committed under the National Landcare Program to establish new IPAs. As part of the Government's Oceans Leadership Package (\$100 million), the Government announced expanding IPAs to include additional Sea Country to strengthen protection of marine and coastal biodiversity. The IPA Sea Country Program will fund the expansion of IPAs with Sea Country, either through the establishment of new IPAs or the expansion of existing terrestrial IPAs.

Some examples of actions in this sector include:

Australian National Botanic Gardens

Botanic gardens around the world play a significant role in the conservation and exploration of global plant diversity. The [Australian National Botanic Gardens](#) (ANBG) holds the most comprehensive living collection of Australian native plant species in one location, including almost a quarter of EPBC listed threatened taxa. The ANBG contributes to threatened species conservation by advancing knowledge of seed science, horticulture, conservation and taxonomy, and through extensive research and conservation collaborations. The diversity of species in the ANBG collection provides a valuable resource of plant ecological information such as phenological indication of climate change. For plant functional characteristics, this diversity provides a large set of species to study functional trade-offs between species traits and plant performance. This will not only assist in propagation investigations but also contribute to studies on the resilience of native plants to changing climate.

The ANBG is also a member of the [Climate Change Alliance of Botanic Gardens](#), that brings together international botanical organisations to take action to protect and enable adaptation of botanical landscapes in a changing climate.

National Seed Bank

There are over 1,380 plants and 80 ecological communities listed as threatened under the EPBC Act, with many more at risk from impacts of a changing climate. To address this, the Australian Government continues to support ex situ seed conservation through the Australian National Botanic Gardens' [National Seed Bank](#), managed by Parks Australia. While the National Seed Bank team store seeds for long-term conservation, these collections are also used to undertake research on the adaptive capacity and regeneration ability of native plant species under projected environmental change.

Saving our Species

[Saving our Species program](#) (SoS) is one of the biggest conservation commitments ever undertaken in New South Wales. It is a movement involving volunteers, scientists, businesses, community groups and the NSW Government, all coming together to secure the future of Australia's unique plants and animals. The main objectives of SoS are simple, to increase the number of threatened species that are secure in the wild in New South Wales for 100 years and control the key threats facing our threatened plants and animals.

Cultural Heritage and Biodiversity in NSW

The New South Wales Government is supporting the resilience of [Traditional Owners' cultural connection to country and biodiversity](#). Cultural connection to land and biodiversity is likely to be impacted by climate change. Shifts in seasonal rainfall and temperature patterns can disrupt long standing cultural indicators, disturbing significant cultural connections with the land.

The New South Wales Government supported investigation of [the impacts of climate change on the Minyurnai Indigenous Protected Area](#), a 20,000 hectare wildlife corridor on the New South Wales North Coast. Local knowledge of Traditional Owners and rangers was used to identify changes to the seasonality of culturally significant plants and animals.

Resources were developed to enable Aboriginal and Torres Strait Islander communities, such as the Bandjalang traditional owners and rangers to enhance future land management and provide educational tools for schools.

Managing Jila on Ngurrara Country

The Yanunijarra Aboriginal Corporation and the [Ngurrara Rangers](#) have been working with the Threatened Species Recovery Hub on the [Managing Jila on Ngurrara Country project](#). The project includes a monitoring program which studies the impact of short- and long-term burning practices on reptile and mammal populations in the Warlu Jilajaa Jumu Indigenous Protected Area and the Ngurrara exclusive possession areas, located in the Great Sandy Desert, Western Australia.

Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project

From January to March 2016, bushfires affected approximately 126,800 hectares across Tasmania. This included an estimated 1.3% of the Tasmanian Wilderness World Heritage Area (TWWHA). The 2016 firefighting effort was unprecedented and highlighted the need to consider the impact of climate change on future bushfire risk in the TWWHA.

The Tasmanian Government commissioned the [TWWHA Bushfire and Climate Change Research Project](#) which aimed to investigate the impact of climate change on the TWWHA, and to identify ways to improve how Tasmania prepares for and responds to bushfires in the TWWHA. The Tasmanian Government has supported the implementation of several the Research Project's recommendations, such as improving bushfire management planning, bushfire risk assessment and modelling, bushfire recovery, developing a model of fire cover, and undertaking planned burning in the TWWHA.

Marine Ecosystems, including Coastal and Reef Management

The coast holds enormous economic, cultural, social and environmental significance for Australia. Most of Australia's urban population is located in the coastal zone, and coastal regions generate most of the country's economic activity. Beaches are part of the Australian identity, as are coastal and marine ecosystems.

Governments, industry, business, non-government organisations, communities and individuals are responsible for managing the climate risks in relation to their assets. This is the case with coastal hazards and erosion. The Australian Government provides scientific information to inform coastal adaptation actions.

There are many examples of governments working together to boost the resilience of Australia's coastal and marine ecosystems.

Coastal environments receive national protection under the EPBC Act if classified as [Ramsar wetlands](#) (Australia has 28 coastal wetlands), or if they contain nationally [threatened species](#), ecological communities or migratory species. Of the 23 Conservation Management Zones outlined by the Australian Government, 18 include a coastal component.

The Australian Government manages 60 marine parks (58 Australian Marine Parks, the Great Barrier Reef Marine Park and the Heard Island and McDonald Islands Marine Reserve) as part of Australia's national system of marine protected areas, which also includes state and territory marine parks. The 58 Australian Marine Parks cover a total area of 2,800,000 km² and are located around the country, generally in offshore waters. They protect tropical to subantarctic marine environments while also allowing sustainable use of marine resources.

In 2021, the Australian Government committed additional funding for Australian Marine Parks in the Ocean Leadership Package to reinforce Australia's position as a world leader in marine park management, following previous investments in 2020 and in 2016 to establish and implement park management. The Australian Government is currently planning new marine parks in Australia's Indian Ocean Territories that could increase marine park coverage over Australian waters to up to 45%.

The Great Barrier Reef Marine Park Authority (Authority) is responsible for ensuring the Great Barrier Reef Marine Park – one of the world's greatest natural treasures – is protected for the future. [The Great Barrier Reef Blueprint for Resilience](#) (Reef Blueprint) was developed to improve the capacity of corals to resist and recover from climate-related impacts following the back-to-back bleaching events in 2016–17. The Reef Blueprint is a collaborative effort between Traditional Owners, government agencies, research institutions, industry groups, Reef users and other stakeholders, both nationally and internationally.

The Reef Blueprint has already contributed to securing unprecedented levels of funding to develop and implement innovative strategies to build the health and resilience of the Reef, such as tackling coral-eating crown-of-thorns starfish, strengthening compliance measures, and supporting adaptation in the face of a changing climate through the world-leading [Reef Restoration and Adaptation Program](#). By focusing efforts, Australia will give the entire Great Barrier Reef ecosystem its best chance of coping with the challenges ahead.

Some examples of actions in this sector include:

The National Centre for Coasts and Climate

[The National Centre for Coasts and Climate: establishment and key research outcomes](#) provides a summary for recent research outcomes under the National Centre for Coasts and Climate under the [Earth Systems and Climate Change Hub](#) on how blue carbon ecosystems, coastal erosions and ecological engineering solutions to enhance the capacity of coastal ecosystems to adapt to climate change.

Great Barrier Reef World Heritage Area Integrated Monitoring Program

The [Great Barrier Reef World Heritage Area Integrated Monitoring Program](#) established a framework for standardised and integrated ecological, social, and economic monitoring in coastal and marine areas. It focussed on establishing an integrated monitoring program for the Great Barrier Reef World Heritage Area.

Eco-engineering and Restoration of Coastal Habitats in Australia

[Eco-engineering and restoration of coastal habitats in Australia](#) synthesises the latest understanding of nature-based coastal defence, including how nature-based solutions can deliver more sustainable and adaptive methods to protect the coast.

The South Coast Regional Sea Level Rise: Planning and Policy Framework

The [South Coast Regional Sea Level Rise: Planning and Policy Framework](#) was developed as a climate change response partnership between Shoalhaven City and Eurobodalla Shire Councils with funding assistance from the New South Wales Government. The aim of the project was to develop regionally relevant sea level rise projections for the Shoalhaven and Eurobodalla coasts and a risk assessment and policy response framework to address sea level rise for use by councils in strategic planning, development control and consent activities.

Hunter and Central Coast Regional Environmental Management Strategy

The [Hunter and Central Coast Regional Environmental Management Strategy](#) improves the capacity of coastal councils in the Hunter, Central and Lower North Coast region in New South Wales to proactively identify and implement adaptation solutions to the risks posed by both existing coastal processes and those projected to worsen due to climate change. Significantly, it promotes a consistent and transparent approach to adaptation decision making through the development and application of a comprehensive and integrated Decision Support Framework and Guide. Specific components of this resource include a clear and structured decision-making process, a process for evaluating the direct and indirect costs and benefits of adaptation options, a process for identifying and applying decision-making triggers to monitor progress toward identified threshold points, and to inform the timing of implementation of adaptation responses.

Swansea CBD Tidal Gates Pilot

The New South Wales Government provided funding to Lake Macquarie City Council through the Increasing Resilience to Climate Change program for [the trial of tidal gates at Swansea](#). The tidal gate pilot protects Swansea Central Business District from increasingly frequent tidal inundation from rising sea levels, as well as increasing storm surges resulting from climate change.

Tasmanian Coastal Adaptation Pathways

The Tasmanian Coastal Adaptation Pathways (TCAP) project aimed to help Tasmanian communities and decision makers to adapt to climate change impacts by:

- raising the communities' awareness of their vulnerability to the impacts of coastal inundation and erosion
- improving the ability of coastal councils and communities to plan and respond to likely climate scenarios
- examining risk management and adaptation options that will improve communities' ability to manage risk and reduce the impacts of inundation and erosion.

The TCAP approach worked step-by-step with local councils and communities to consider adaptation options for vulnerable coastal areas.

Tasmanian Sea Level Rise Planning Allowances

Sea level rise planning allowances help to ensure consistency and certainty in how planners, developers, property owners and managers consider sea level rise in any new coastal developments.

In 2016, the Tasmanian Government engaged CSIRO to provide updated sea level rise planning allowances for the State. The updated allowances are based on the sea level rise projections provided in the Intergovernmental Panel on Climate Change Fifth Assessment Report and are based on the high emissions scenario RCP8.5.

From the CSIRO work, Tasmania has developed sea level rise projections and planning allowances for each coastal municipality in the State, as well as state-wide averages for 2050 and 2100 (both relative to 2010 sea levels).

Water Resources

Australia faces major challenges in ensuring sustainable water supply in the face of a drying climate and growing demand for water. Despite high natural variability in Australia's rainfall, there has been a shift towards drier conditions across the southwest and southeast, with more frequent years of below average rainfall, especially for the cool season months of April to October. In 17 of the last 20 years, rainfall in southern Australia in these months has been below average. This has resulted in reduced water availability for consumptive use and the environment. Australia is projected to experience a continued decline in cool season rainfall across many regions of the south and east, likely leading to more time spent in drought.

A number of Australian cities have developed integrated strategies to manage the effects of a drying climate on their water resources. These strategies typically involve a range of actions to make water use more efficient and to diversify water supplies. Examples include [Waterwise Perth](#), the draft [Greater Sydney Water Strategy](#) and the [Melbourne Water System Strategy](#).

Some examples of actions in this sector include:

National Water Initiative

Australia is at the leading edge in its approach to water resource management. Through the [National Water Initiative](#), the Australian Government aims to continue the water reform journey, ensuring best practice water resource management.

Murray–Darling Basin

Changes in global and regional climate patterns are having significant impacts on the availability of water for both communities and the environment throughout Australia's Murray–Darling Basin. The [Murray–Darling Basin Authority](#) (MDBA) works with other Australian Government agencies, including the Australian Bureau of Meteorology, CSIRO and Basin state governments to understand climate risk and manage the Basin's water resources under these changing conditions.

The [Murray–Darling Basin Authority climate workplan](#) will guide the management of water in a changing climate while helping create a sustainable, productive and resilient Murray–Darling Basin. The [2020 Basin Plan Evaluation identified adapting to climate challenges and increasing resilience](#) as one of the priority areas for the future.

Rehabilitating PAC Park Waterway

[Rehabilitating PAC Park Waterway](#) used water sensitive urban design principles to create a functional wetland with a sediment basin to collect large sediments, water plant zones to filter out harmful nutrients and open water zones, providing a natural way to treat and remove pollutants before it enters Goobang Creek.

Water Security for Agriculture — Victoria

[Water Security for Agriculture — Victoria](#) is investing in infrastructure projects across Victoria – in areas such as Gippsland, Werribee and South West Loddon – to secure a sustainable and productive water future for our farmers.

Methodology for Analysing the Vulnerability to Climate Change of Ramsar Wetlands Sites

[Methodology for analysing the vulnerability to climate change of Ramsar wetlands sites](#) is being trialled at Ramsar wetlands including Muir Byenup System in southwest Western Australia where rainfall has decreased by around 20% in the last 100 years due to climate change. Reduced surface and groundwater availability has resulted in drying of the peat-based wetlands and exposure of acid sulphate soils. Acidification and increased wildfire have impacted species including the threatened Australasian bittern (*Botaurus poiciloptilus*). National guidance to be published will include the methodology and other resources to support adaptation planning.

Climate Change Impacts on The Reliability of Farm Dams and Environmental Flow in South West Western Australia

The NESP Earth Systems and Climate Change Hub collaborated with the Western Australian Department of Water and Environmental Regulation to [enhance understanding of the reliability of farm dams and environmental flows](#) in the Wilyabrup Brook catchment for a range of climate change scenarios.

Infrastructure

Climate change brings significant risks for Australia's infrastructure assets and networks.

Much of our existing infrastructure faces new and challenging conditions, such as higher temperatures, changed stream flows, rainfall, water availability and soil conditions, more intense bushfires, more extreme winds and rising sea levels.

Buildings and infrastructure assets across the country are needing to withstand more severe weather and changing temperatures. However, a shift in focus is needed from the resilience of assets themselves, to the contribution of assets to the resilience of the system.

With a large and diverse continent, the impacts of climate change on Australia's different communities will be varied. Asset and network owners and operators will need to work more closely with communities, emergency responders, and Australian governments at all levels to meet local needs.

For example, coastal communities are already experiencing the effects of sea level rise. Our cities are experiencing the impacts of the urban heat island effect. Communities in inland areas are experiencing increasing incidence and intensity of drought. Meanwhile, bushfires are increasing in intensity and the season is increasing in length.

In Northern Australia, increased intensity of cyclones threatens not only road infrastructure, but also water and wastewater, energy and telecommunications networks. In Australia's external territories, changing weather patterns have impacted water security, and additional infrastructure may be needed to ensure sufficient potable water continues to be available.

Some examples of actions in this sector include:

A Pathway to Infrastructure Resilience

Recognising the increasingly complex role infrastructure plays in supporting resilience, Infrastructure Australia and Infrastructure NSW partnered on the research project A Pathway to Infrastructure Resilience. [A Pathway to Infrastructure Resilience](#) recommends a whole-of-system, all-hazards approach to resilience planning that focuses on strengthening an infrastructure asset, network, and sector, as well as the place, precinct, city and region where the infrastructure operates.

Critical Infrastructure Resilience Strategy

The [Critical Infrastructure Resilience Strategy](#) sets out how the Australian Government will work with critical infrastructure entities of all levels of maturity to enhance the security and resilience of critical infrastructure to ensure that our critical infrastructure:

- continues to operate in the face of all hazards in an ever-evolving operating environment
- when disrupted, can be returned to delivering its service or function as quickly as possible
- continues to adapt and improve following periods of disruptions.

The Critical Infrastructure Resilience Strategy encourages stakeholders to take actions to prevent, prepare for, respond to and recover from all hazards, including natural hazard-induced disasters.

National Water Grid Fund

The Australian Government has established the [National Water Grid Fund](#) (the Fund, \$3.5 billion) as a rolling 10-year water infrastructure program to develop a pipeline of nationally significant water infrastructure investments. These will help build long term resilience to drought.

The [National Water Grid Authority](#) has worked with state and territory governments to develop the National Water Grid Investment Framework (the Framework), to underpin the Australian Government's investment in water infrastructure through the Fund. One of the key investment principles in the Framework is that projects should be of demonstrable public benefit and have a national interest element, including through securing the nations' water supply, building resilience to future drought, supporting primary industries and promoting regional prosperity.

Adapting the Nowra CBD for Cooling and Amenity

With support from the New South Wales Government through the Building Resilience to Climate Change program, Shoalhaven City Council was able to ensure that a [planned urban revitalisation project](#) captured adaptive responses, through the inclusion of a large scale public evaporative cooling structure.

Cross-Dependency Initiative (XDI)

The New South Wales Government has launched the [Cross-Dependency Initiative \(XDI\)](#) which provides state and local governments with access to an online platform that analyses the impacts of climate change on critical assets and infrastructure. Critical infrastructure is highly interdependent, which means the ability to contain climate related disruption to services and assure resilience is quite limited without a system-wide view. XDI helps identify climate change risks that are shared between asset owners. Over 30 asset owners in New South Wales are currently involved, to be further scaled up in 2021.

Reinsurance Pool for Cyclones and Related Flood Damage

The Government has announced its intention to establish [a reinsurance pool](#) covering the risk of property damage caused by cyclones and cyclone-related flood damage. The pool will seek to improve the accessibility and affordability of insurance for households and small businesses in cyclone-prone areas, which are mainly located in northern Australia.

Health

The physical, chemical and biological environment we live in affects our wellbeing. Ensuring we have clean drinking water, good hygiene, effective pest and disease control, and good housing, is important to our overall health. Environmental health in Australia is generally good compared to the rest of the world.

The impact of climate change on environmental factors such as temperature, humidity, and air and water quality will affect human health. These changes can also result in an increased amenity for the proliferation of certain diseases; for example, flash flooding can result in an exponential increase in water and vector-borne diseases, while an increase in temperature and changes in rainfall patterns have the potential to increase the distribution of insect vectors in Australia.

The [Department of Health](#) is responsible for a range of policies and programs to improve Australia's health and is focused on developing a sustainable and responsive health system that is well positioned to meet future challenges, including those associated with climate change.

The department is also working with states and territories on the health impacts of climate change and contributes to the development of nationally agreed information and practical resources on environmental health matters, including through the Australian Health Protection Principal Committee (AHPPC) and its standing committees. AHPPC has identified climate change as a health protection priority and work is underway to identify priority areas for action.

Some examples of actions in this sector include:

Disaster and Emergency Management for Environmental Health Practitioners

In 2020 the Environmental Health Standing committee (enHealth), a standing committee of AHPPC, reviewed and published the [Disaster and Emergency Management for Environmental Health Practitioners](#). Environmental Health Practitioners play an important role in protecting and supporting public health during emergencies and disasters in Australian settings. Quite often, the work of Environmental Health Practitioners continues from response into the recovery efforts long after other response groups have completed their work and the spotlight is taken off dealing with the devastating effects of cyclones, floods, bushfires and other emergencies and disaster events on communities.

Human Health and Wellbeing Climate Change Adaptation Plan for Queensland

The [Human Health and Wellbeing Climate Change Adaptation Plan for Queensland](#) supports human health and wellbeing services to be innovative and resilient in managing the risks associated with a changing climate. It provides a preliminary climate change adaptation framework and guidance for stakeholders across health care, aged care and childcare services.

The adaptation plan includes 10 Priority Adaptation Measures, together with a vision and a set of guiding principles. The Priority Adaptation Measures offer high level guidance for services, policymakers and the community to prioritise and plan for climate adaptation. They include examples of possible responses at service, system and government levels, informed by stakeholders and existing best practice.

The adaptation plan was developed by the National Climate Change Adaptation Research Facility and the Climate and Health Alliance with support from the Queensland Government.

Climate Health WA Inquiry: Final Report

The Western Australian State Government has committed to addressing risks and seizing opportunities that climate change poses and transitioning to a low-carbon economy by 2050. In announcing the [Climate Health WA Inquiry: Final Report](#), the Minister for Health acknowledged the need to adapt to climate change to protect the health of the community, but also asked how WA health services can do more to implement change, including reducing emissions and waste and increasing energy efficiency.

Tasmanian Climate Change and Health Roundtable

The [Tasmanian Climate Change and Health Roundtable](#) was held in 2019 with the aim to help identify and prioritise policies, programs and research in climate change and health, specific to the Tasmanian context. A report was produced on the outcomes of the Roundtable, which included 42 actions across 7 priority areas.

Youth and Children

The [Australian Curriculum](#) (the curriculum) sets the expectations for what all Australian students should be taught and has 3 dimensions: 8 learning areas, 7 general capabilities and 3 cross curriculum priorities.

The curriculum provides a range of opportunities for learning about climate adaptation and resilience across learning areas such as Geography and Science and the Sustainability cross-curriculum priority. For example, in Geography, in years 9 and 10 students learn about biomes and food security and environmental change and management, and in Science in year 6 they learn about how natural events cause rapid change to the Earth's surface and the effect of environmental changes on individual living things.

The Sustainability cross-curriculum priority is taught through the learning areas and provides the opportunity for students to develop an appreciation of the need to act for a more sustainable future and to develop the knowledge, skills, values and world views necessary to act in ways that contribute to more sustainable patterns of living. The Sustainability priority is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through informed action. It emphasises the interdependence of environmental, social, cultural and economic systems.

Australian universities are equipping the youth of Australia with the knowledge and understanding to build resilience across society and the environment. In addition to many university courses that touch on elements relating to climate adaptation and resilience, Australian university offerings specifically on this topic include: University of Newcastle [Bachelor of Climate Science and Adaptation](#), Griffith University [Master of Climate Change Adaptation](#), Australian National University [Master of Climate Change](#), and University of the Sunshine Coast [Master of Climate Change Adaptation by Research](#).

Economic Sector

Climate change has the potential to impact our economy in many different ways. Some of our most important industries and biggest employers are dependent on the climate, such as the agriculture and tourism industries. Climate change could impact the productivity and competitiveness of different industries, the structure of our economy and the nature of working in different industries and occupations.

Better understanding and proactively managing our climate change risks will enable Australians and Australian businesses to change the way we work, do business and manage our finances to allow our industries to continue to prosper, and ensure people continue to have secure and meaningful jobs and opportunities in our future climate.

Australia's financial sector will continue to play an important role in shaping how we plan for and adapt to climate change. Banks and lenders are considering the impacts that climate change risks could have on borrowers and capital markets. More and more businesses are seeking to understand, manage and disclose climate risks to provide effective governance and maintain investor confidence. Financial system regulators are providing guidance to businesses to ensure that company executives are accountable for managing climate risks and consumers are protected.

Insurance can also be an important risk management tool for individuals and businesses that are exposed to risks. As the climate changes and natural hazard-induced disaster and extreme weather risks increase, it is likely that the cost and availability of insurance will be affected. Some individuals and businesses may find that purchasing or amending insurance policies helps to transfer some risks at a fair cost. Others may find that actions to reduce their exposure to risks, and therefore their reliance on insurance, are more effective. Consumers will need to carefully consider their own circumstances when making decisions on the costs, benefits and risks of different insurance options.

Australia is also investing in better recognising and valuing the benefits of natural capital. Natural capital is difficult to observe and measure and is often not fully accounted for in economic decision making, leading to environmental degradation. Without more action to maintain and improve natural capital, future generations will not benefit from it to the same extent.

The Government is also improving the measurement and valuation of Australia's natural assets. This will better enable the environment to be considered in commercial decisions, reducing environmental degradation and supporting greater private investment.

Australia has facilitated the development of approaches and tools to measure and integrate natural capital in financial products and solutions.

We will provide an evidence base of the resilience benefits of restoring natural capital and use this and learnings from our engagement with the finance, agricultural and land sectors to develop tools and metrics that the private finance sector can use to provide financial products and solutions that incentivise and reward nature positive business and management practices that have enhanced productivity and resilience benefits.

Some examples of actions in this sector include:

Prudential Practice Guide and Climate Vulnerability Assessments to Understand Risks to Financial Systems

The Australian Prudential Regulation Authority (APRA) is implementing regulatory initiatives to help the Australian financial sector better understand climate-related financial risks, address some of the data and standardisation challenges in climate risk assessment and reporting, and support market participants as they respond to the policy, investment and insurance challenges of climate change.

The APRA has developed a [cross-industry prudential practice guide \(PPG\)](#) on the management of climate-related financial risks; and commenced a series of Climate Vulnerability Assessments (CVAs) of major Australian banks, which aims to assess vulnerability to risks arising from climate change and understand how financial institutions may adjust their business models in response to the challenges proposed by different climate scenarios.

Climate Vulnerability Assessments

First announced in February 2020, the CVAs will directly leverage work by the Network for Greening the Financial System and other initiatives for this first-of-its-kind assessment of banking industry climate-related risks in Australia. In developing the CVAs, APRA is engaging with ASIC and the Reserve Bank to ensure a consistent approach is taken to recommendations based on the CVAs, and to disclosure of climate-related risk information.

Initially commencing with the 5 largest banks, the CVAs will eventually be rolled out across the rest of the banking sector, as well as the insurance and superannuation sectors, with the final timetable yet to be confirmed.

The CVAs are aimed at:

- Assessing the vulnerability of institutions, the financial system and the economy to both physical and transition risks arising from climate change
- Understanding how financial institutions may adjust their business models in response to the unique challenges posed by different scenarios.

In addition, the CVAs will build enhanced capability for assessing the emerging macroeconomic and prudential risks of climate change for Australia more broadly. APRA plans to publish the CVA results relating to the major banks in 2022.

These regulatory initiatives will help the Australian financial sector to better understand climate-related financial risks, address some of the data and standardisation challenges in climate risk assessment and reporting, and support market participants as they respond to the policy, investment and insurance challenges of climate change.

Management of Climate Risk by the Australian Securities and Investments Commission

Since 2018, Australia's integrated corporate, markets, financial services and consumer credit regulator, the Australian Securities and Investments Commission (ASIC) has been promoting improved management and disclosure of climate risks by Australian listed companies.

ASIC has highlighted climate-related risk as a systemic risk that has the potential to significantly impact companies, investors and consumers. ASIC's focus is on ensuring listed companies have appropriate governance structures in place to manage climate risks and provide the market with reliable and useful information on their exposure to material climate-related risks and opportunities.

This has included:

- Updating regulatory guidance to help companies understand and comply with their obligations to disclose climate-related risks and opportunities, including encouraging companies with material exposures to climate change to consider reporting under the Task Force on Climate-related Financial Disclosures Framework (TCFD). Surveillance on climate risk disclosure practices of several large, listed companies across a range of industries. Overall, ASIC observed that adoption of TCFD reporting materially improved climate-related governance and disclosure. However, the key challenges remain of how to conduct scenario analysis and how to assess the physical risks of climate change. The results are published in this [report](#).
- Writing to several companies identified as potential “laggards” in this area to remind them of their statutory obligations to manage and disclose material climate risks.

ASIC intends to adopt a consultative approach as it continues to monitor the adoption of TCFD reporting and the development of climate-risk disclosure practices in the near future.

2021–22 NSW Intergenerational Report

The [2021–22 NSW Intergenerational Report](#) (IGR) presents a snapshot of the future state of New South Wales to inform policies and future planning. The report modelled select climate change risks to understand how they may affect New South Wales in future. The New South Wales Government is using this modelling to inform decision making and adaptation planning.

Insurance Council of Australia

The [Insurance Council of Australia](#) is working alongside the community, governments and other stakeholders to help ensure insurance remains affordable and accessible through physical adaptation measures and increased community resilience. Examples of projects that are being delivered in collaboration with stakeholders and partners include, the [Future Homes Initiative](#), [Minderoo Foundation – The Resilience Blueprint](#) and the [National Insurance Project](#).





Annex B

Additional Resources

This section provides links to additional relevant resources.

International

[Australia's 7th National Communication to the UNFCCC](#)

[Australia's submission on strategies and approaches for climate finance from 2015–2020](#)

[Australia Pacific Climate Partnership Support Unit](#)

[Climate Change Action Strategy](#)

[Department of Foreign Affairs and Trade climate change website](#)

[Humanitarian Strategy](#)

Domestic

National

[2021 Australian Infrastructure Plan](#)

[2021 Intergenerational Report](#)

[Bureau of Meteorology](#)

[Commonwealth Scientific and Industrial Research Organisation](#)

[Geoscience Australia](#)

[National Climate Resilience and Adaptation Strategy](#)

[National Disaster Risk Reduction Framework](#)

Subnational

NSW

[Adapt NSW](#)

[Guide to Climate Change Risk Assessment for NSW Local Government - \(PDF\)](#)

[NSW Integrated Regional Vulnerability Assessments](#)

Victoria

[Victoria's Climate Science Report 2019](#)

[Victorian Climate Projections 2019](#)

Queensland

[Climate Change Risk and Adaptation Assessment Framework for Infrastructure Projects \(Queensland Government\) - \(PDF\)](#)

[Queensland Coastal Hazard Mapping](#)

[Queensland Future Climate](#)

[Queensland - QCoast2100 Program](#)

South Australia

[Climate Smart South Australia](#)

[Guide to Climate Projections for Risk Assessment and Planning in South Australia](#)

[SA Climate Ready](#)

[Stronger Together - South Australia's Disaster Resilience Strategy 2019–2024](#)

Western Australia

[WA 2019 — Climate Change Risk Assessment Guidelines - \(Word Doc\)](#)

[WA 2019 — Coastal Hazard Risk Management and Adaptation Planning Guidelines](#)

[WA — Indian Ocean Climate Initiative \(IOCI\)](#)

Tasmania

[Climate Futures for Tasmania](#)

[RiskReady Tasmania](#)

[Tasmanian Coastal Adaptation Pathways Project](#)

[Tasmanian Coastal Hazards Mapping and Sea Level Rise Planning Allowances](#)

[Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project](#)

Northern Territory

[NT 2020 — State of the science and climate change impacts](#)

Australian Capital Territory

[ACT Climate Change](#)

[Actsmart](#)

