Annual Climate Change Statement 2022

The first Annual Climate Change Statement to Parliament as required by the Climate Change Act 2022
Acknowledgement of Country

In delivering this first Annual Climate Change Statement to Parliament, we pay our respects to our First Nations people, their elders and their ancestors who cared for the lands before our time, their communities who continue to care for Country today, and the young ones who are following in their footsteps.

First Nations people have loved, cared for and listened to Country for thousands of generations, so it is important to reflect on this ancient connection and guardianship. These enduring cultures are the oldest on Earth. They have used their traditional knowledge to adapt as Australia’s climate has changed over the millennia, and the resilience of these cultures is a source of inspiration for this Government.

Aboriginal and Torres Strait Islander voices and knowledge are critical to addressing the impacts of climate change and responding to the challenges we all now face. In the spirit of reconciliation, we look forward to improving how these voices are heard and represented in Australian Government decision-making, especially in our current climate and environmental crisis.

Australia recognises and pays its respects to Aboriginal and Torres Strait Islanders as the Traditional Owners of Australia. I would like to thank the Traditional Owners for their continuing custodianship of the lands, waters, skies and communities that we live and work within today.
Foreword

I am honoured to present the Albanese Government’s first Annual Statement on Climate Change.

Six months ago, we received a mandate from the Australian people to implement our ambitious and sensible policies across climate change and energy. And for six months we have been in the early stages of doing just that.

Important in our agenda was the passage of the Climate Change Act, showing the world Australia is open for business, with a stable investment environment to unleash billions of dollars of renewable energy and zero emissions technology investment.

Notably this included increasing Australia’s emissions reduction ambitions to a 43 per cent target by 2030, and net zero by 2050. But it also included increasing Government accountability and transparency with this Annual Statement, and responding to advice from the Climate Change Authority.

We want to be open about the opportunities, progress, stumbling blocks and challenges in meeting this signature policy of our Government and this most important national challenge. Because there is much on the line. There is no Australian spared the impact of climate change.

Our beautiful land has always been subject to devastating natural disasters, but those disasters are increasingly devastating, increasingly frequent and increasingly unnatural.

Australia is highly vulnerable to the impacts of climate change, including bushfires and floods, so the stakes are extremely high. Not acting would be an unforgivable act of intergenerational negligence. But we also have the most to gain from action.

There are and will be challenges along the way. But our determination as a Government, and I am very confident as a country, is greater than any challenge.

I am proud to present this first Statement and look forward to building progress in future statements under an Albanese Government.

Chris Bowen
Minister for Climate Change and Energy
EXECUTIVE SUMMARY

Australia is already feeling the effects of climate change. Our weather is becoming increasingly variable. More frequent extreme and cascading weather events are impacting our communities and economy, disrupting lives, and threatening our environment. At the same time, summers are becoming steadily hotter and drier, leading to adverse health impacts, increased bushfire risks and ecological damage, and threatening agricultural production.

The response to these impacts needs to be twofold. First, we must anticipate, prepare for and adapt to the impacts from our warming climate. Second, we must mitigate further catastrophic climate change by reducing our own emissions and playing a leadership role in supporting other nations to reduce theirs. Both will require an economic transformation on a scale beyond anything we have experienced in our lifetimes. But this transformation will not just be of benefit to the climate. It will make energy more secure and affordable by deploying the cheapest and cleanest form of new energy – renewables. It will set Australians up for the immense job and investment opportunities that will arise from the transformation to a net zero economy. Australia has abundant clean energy resources and, as the world decarbonises, there is great potential to grow new industries, especially in regional Australia. The world’s climate emergency is Australia’s jobs opportunity.

The Climate Change Act 2022 requires the Government to prepare an Annual Climate Change Statement (Annual Statement) to Parliament. This Annual Statement is about accountability and transparency. It is how Government will engage with Australians on climate policy and demonstrate Australia’s progress towards our targets of 43% emissions reduction by 2030 compared with 2005 and net zero emissions by 2050. This Annual Statement is informed by independent advice from the Climate Change Authority, as required by the Act.

The need for action is urgent

This year alone, Australia has experienced – and continues to experience – devastating floods that have impacted large areas of South-East Queensland, New South Wales and Victoria. They are the latest in a long list of extreme events – including droughts, bushfires, record-breaking heatwaves, cold snaps and major extinctions – that our nation has had to deal with. Climate change makes these events more frequent and more severe, impacting every aspect of our lives.

Climate change also brings gradual changes such as increases in average temperatures, changes in rainfall patterns, changing ocean currents and temperatures, and rising sea levels. These too are causing economic, agricultural and ecological damage, shrinking areas where we can live and grow crops, increasing erosion, destroying our natural environment, and flooding homes and land. Impacts differ around the country, but nowhere is unaffected by climate change.

Acting now allows us to better capture the economic and social benefits of our transformation

The transformation of our economy brings with it many opportunities. Australia has a vast and rich supply of clean energy resources. This includes solar and wind energy sources, as well as critical mineral supplies used to make batteries and other technologies that support decarbonisation. It is important to take action now to position Australia to capitalise on these opportunities. This will provide us with the clean energy technology needed by Australia and our trading partners, as well as creating jobs and empowering Australia to continue to prosper by exporting clean energy, products and resources to the world.

Regional Australia, in particular, will benefit from the growth and transformation of our industrial sector. The regions that have powered Australia and the world for generations will power us into the future. As industries emerge, adapt and grow, they will create demand for workers in electricity generation, mining, manufacturing and many other sectors. Decarbonised and emerging industries will become the new foundation of many regional economies and communities.
The current energy crisis provides further evidence that transitioning to renewable energy will deliver cheaper and more secure energy. Unlike fossil fuels, no geopolitical crisis can affect our expansive supply of wind and solar energy. By taking advantage of the abundant opportunities presented by the transformation, Australia can prosper and thrive in the net zero world.

**The world has committed to a net zero future and global momentum for action is growing**

Since 2015 when countries including Australia first signed the Paris Agreement, there has been global momentum to limit global warming to as close as possible to 1.5°C above pre-industrial levels. The Paris Agreement has now been ratified by all members of the United Nations (except Libya, Yemen, Eritrea and Iran, which have signed but not yet ratified it). Overall, 151 countries have committed to a net zero target, accounting for 88% of global emissions, 93% of global GDP and 89% of the global population.

While much more must be done to realise these pledges, there have been significant moves in the right direction. The United States passed the Inflation Reduction Act in August this year – a historic piece of climate and energy legislation that signals the world’s largest economy is pivoting to net zero.

China and the United States have agreed to resume cooperating on climate change at the recent COP27 in Egypt. And in Europe, there has been an acceleration of decarbonisation efforts – partly in response to the current energy crisis – with action that puts Europe on the path to net zero.

Ensuring access to secure, reliable and affordable renewable energy is critical to meeting net zero targets. This will require all countries to rely on global supply chains for some clean energy technologies and materials, presenting an opportunity for Australia. Our nation is already an important contributor to these supply chains, including as an exporter of key materials and we have the opportunity to benefit from international interest in diversifying clean energy supply chains.

Many nations look to Australia to continue to be a reliable trading partner, as the world transitions to net zero emissions, through our exports of clean energy, products, resources and expertise to the world. Australia is stepping up to play a global leadership role and is positioning itself to capitalise on the opportunities this global transition presents.
Australia’s policies are putting us on track to net zero by 2050

The Australian Government’s 2022 Emissions Projections – published alongside this Annual Statement – show Australia’s 43% by 2030 target is ambitious but achievable.

This year’s emissions projections include two scenarios. Commitments under the Government’s Powering Australia plan are in the early stages of implementation, so not all are included in the ‘baseline’ emissions projections. As a result, the ‘baseline’ scenario largely reflects already-implemented policies and shows a 32% reduction in emissions on 2005 levels by 2030.

The ‘additional measures’ scenario modelled in the 2022 Emissions Projections incorporates two major elements of the Powering Australia plan, achieving the 82% national renewable electricity target by 2030 and the Safeguard Mechanism reforms. Under this scenario, Australia is on track to reduce emissions by 40% on 2005 levels by 2030. These projections do not yet include Powering Australia measures such as some elements of the Powering the Regions Fund and the National Electric Vehicle Strategy, nor additional commitments such as the National Energy Performance Strategy under development by the Assistant Minister for Climate Change and Energy.

With full implementation of Powering Australia, we are confident we will achieve 43% emissions reduction by 2030, putting us on track to reach net zero by 2050.

The immediate focus of this Government is to address rising energy prices, driven by the impacts of Russia’s invasion of Ukraine and by investment uncertainty over the last decade.

High exposure to global fossil fuel markets has caused these price rises in Australia. To put downward pressure on prices and meet our emission reduction targets, we must increase investment in domestic renewables, the cheapest form of energy.

Our policies seek to decarbonise our electricity sector and make sure we have the infrastructure in place to manage the significant increase in electricity demand as the transport and industrial sectors electrify. Through the Rewiring the Nation program, the Government has committed $20 billion of low-cost finance for much-needed upgrades to Australia’s electricity grid by building interconnectors and linking renewable energy zones to the existing grid at the lowest cost.

Faster clean energy transitions would have helped to moderate the impact of this crisis, and they represent the best way out of it. When people misleadingly blame climate and clean energy for today’s crisis, what they are doing – whether they mean to or not – is shifting attention away from the real cause: Russia’s invasion of Ukraine.

International Energy Agency
Executive Director

2022 World Energy Outlook
The Government is also supporting transport and industry to accelerate decarbonisation. For Australia’s passenger vehicle fleet, significant emissions reduction can be achieved by accelerating electrification. The National Electric Vehicle Strategy and Driving the Nation Fund are working to make electric vehicles more affordable and building the charging infrastructure needed in our cities and on our highways.

Additionally, we are directing significant resources towards the energy transformation in the regions. We are ensuring our regions have resilient infrastructure and future-oriented industries, and most importantly, continue to have a skilled workforce to capitalise on the opportunities presented by the global transition.

The $1.9 billion Powering the Regions Fund and $15 billion National Reconstruction Fund will diversify and transform Australian industries to secure future prosperity and drive sustainable economic growth. Many of Australia’s largest emitters are in regional areas, as are the renewable energy and industrial opportunities. The Government is reforming the Safeguard Mechanism to provide long-term clarity on emissions reduction, providing the policy certainty that will support industry to make the investment it needs to decarbonise with confidence. These reforms are supported by the Business Council of Australia, the Australian Industry Group and the Australian Chamber of Commerce and Industry, among others.

We have also established the cross-agency Net Zero Economy Taskforce in the Department of the Prime Minister and Cabinet to provide advice on how to support regional communities as Australia transforms to a net zero economy.

The advice from the Climate Change Authority, published alongside this Annual Statement, notes that Powering Australia is focused on measures towards our 2030 target, as is appropriate.

The Government agrees with the Climate Change Authority’s advice that it should develop a plan showing Australia’s pathway to net zero emissions by 2050. This will include Australia’s 2035 emissions reduction target, and the priority policies to achieve it and ensure we remain on track to net zero.

**Building Australia’s resilience to adapt to a changing climate**

Urgent action on emissions reduction is critical for mitigating the catastrophic effects of climate change, but there are already changes to our climate that are locked in. We need to support Australian communities, businesses and industries to adapt to a warmer climate with more extreme weather events. This includes ensuring the right tools are available to anticipate and prepare for crises.

Australia’s national adaptation efforts are underpinned by nationally agreed roles and
responsibilities, built on the foundation that risks are dealt with most effectively by empowering those who are best placed to manage them. The Government accepts the Climate Change Authority’s advice that Australia could strengthen its adaptation and resilience efforts. This includes improving climate risk management and the quality and accessibility of climate and disaster risk information across all levels of government.

Australia’s National Disaster Risk Reduction Framework (NDRRF) guides domestic efforts to reduce disaster risks. The NDRRF aims to limit the impacts and costs of disasters to Australian communities and the economy by incorporating disaster risk considerations into planning, policies and programs. The Disaster Ready Fund, available from 1 July 2023, will provide up to $200 million per year to curb the devastating impacts of disasters by funding disaster resilience initiatives.

The increasing impacts of climate change will disproportionately affect Australia’s most vulnerable communities. We will work with all levels of government and local communities to ensure our approach is proportionate to the risks faced by these communities.

The purpose of the Annual Statement

This Annual Statement enables the Government to report on Australia’s progress, what action we are taking and what more action is needed to do our part in reducing global emissions to avert the worst impacts of catastrophic climate change.

This first Annual Statement is a starting point. Our ability to measure and report on climate action in future statements will evolve as our capability expands and new measurement frameworks and reporting mechanisms are developed. The restoration of the Climate Change Authority, achieved in the Government’s first Budget with an investment of $47.1 million, will enable them to give more comprehensive advice in the future, which will inform future Annual Statements.

The Government has accepted all the advice provided by the Climate Change Authority in its first report. This advice is published in full on the Climate Change Authority’s website.
Australia’s 2022 achievements

- **Legislated net zero by 2050,** providing the policy stability Australia needs.

- **Increased and legislated Australia’s 2030 emissions reduction target** to 43% below 2005 levels, up from 26-28%.

- **Amended 16 Acts** to align the work of public institutions with our net zero trajectory and improve climate action.

- **Joined the Global Methane Pledge** which aims to reduce global methane emissions by 30% by 2030.

- **Announced bid to co-host COP31** in partnership with our Pacific neighbours.

- **Accelerated Australia’s renewable energy transformation,** committing to an 82% national renewable electricity target by 2030.

- **Provided financing for the Marinus Link interconnector** between Victoria and Tasmania after six years locked up in planning.

- **Fast-tracking offshore wind industry** and renewable energy zones.

- **Restored the Climate Change Authority** and appointed 3 new members, empowering them to fulfil their existing and new responsibilities.

- **Created the first National Energy Transformation Partnership** with all state and territory governments to ensure energy security as we move together towards net zero.
Timeline – The Government’s first few months

2022

MAY
New Ministry Established

JUNE
New Department of Climate Change, Energy, the Environment and Water established

JULY
Increased Australia’s 2030 target to 43%

AUGUST
Hosted Sydney Energy Forum

Committed to EPBC Act review

Introduced Climate Change Bills

Introduced Electric Car Discount Bill

SEPTEMBER
Legislated Australia’s emissions reduction targets, incl net zero

Safeguard Mechanism reforms discussion paper released

National Energy Transformation Partnership agreed by all states and territories

OCTOBER
Three new appointments to Climate Change Authority

Jobs and Skills Summit hosted in Parliament House

National Energy Performance Strategy announced

Marinus Link funding agreed

Joined Global Methane Pledge

November
Delivered first Budget, with $29b of climate and energy spending

Announced COP31 bid

Published State of the Climate report

Annual Climate Change Statement tabled in both houses

December
Appointed new Ambassador for Climate Change

Promoted Australia as climate and renewables leader at COP27

Safeguard crediting reforms introduced to Parliament

2023
INTRODUCTION

Climate change threatens global economic prosperity, security and livelihoods. The window is closing on limiting global warming to 1.5°C – the goal of the Paris Agreement. The good news is that the international community – now including Australia – is committed to a net zero trajectory. This first Annual Climate Change Statement is an honest stocktake of where Australia is at; the risks, challenges and opportunities of climate change; and what action the Government is taking and committed to in the future.

The Intergovernmental Panel on Climate Change (IPCC) reports the global average temperature has warmed by 1.1°C. Our leading scientific and climate institutions have concluded that Australia’s land temperature has warmed on average by about 1.47°C since national records began in 1910, and Australia is highly vulnerable to climate impacts (Australian Academy of Science 2021; CSIRO & BOM 2022). We have already experienced unprecedented fires, floods, droughts, storms and heatwaves, and significant ecosystem dieback (the gradual deterioration in ecosystem health) as permanent temperature and rainfall changes push them towards extinction.

In response, major economies are stepping up efforts to transition to net zero, including taking action to meet their pledges under the Paris Agreement. For example, the United States has passed its flagship Inflation Reduction Act, linking the need to decarbonise the economy with prosperity and economic opportunity. Likewise, European Union nations are accelerating their transition to renewables, in line with their emissions reduction commitments and in response to the pressing need to end reliance on Russian oil and gas imports. In our region, India and Indonesia will shape future energy markets, as they too look to decarbonise and grow their economies.

Australia too needs to transform on a scale beyond anything we have experienced in our lifetimes. As this year’s emissions projections show, the Government’s Powering Australia plan presents a substantial suite of measures to accelerate Australia’s emissions reduction and deliver reliable and affordable energy, but this is only the beginning. Australia has abundant renewable energy and mineral resources, and as the world decarbonises, there is great potential for growth in Australian industries and jobs. The transformation of our economy brings immense opportunities that will go elsewhere if we do not grasp them. The current energy crisis, fuelled by high prices on global oil and gas markets, provides further evidence that renewables will provide cheaper and more secure power for Australians in the long term.

Through a change as substantial as this, Australia needs governments to be effective, open and accountable for their actions to reduce emissions and respond to climate change.

This Annual Statement reports on Australia’s domestic policies for reducing emissions and building the resilience and adaptive capacity of our communities and industry to better manage the impacts of climate change. Now is the time for bold, ambitious action. But Government alone cannot deliver this change. This Annual Statement aims to build trust between the Government, communities and industry so we can all take action on climate change.

Australia’s 2022 Emissions Projections are published alongside this Annual Statement. They provide insight into the effectiveness of Australia’s climate policies and our progress towards our legislated targets. They also guide Government decision-making and support industry and other groups taking action to reduce emissions.

The Climate Change Authority’s advice is tabled and published alongside this Annual Statement. This advice is in line with the best available science and the direction taken by the international community. The advice provides sound guidance on how Government can accelerate progress and improve outcomes.
The Government recognises that the climate crisis is a major threat to Australia. But it is also Australia’s opportunity to improve our economy, jobs and communities, and create a fairer society in the process – one that will not only withstand the impacts of climate and economic change but prosper and thrive in the new, net zero world.

The Climate Change Act

On 8 September 2022, the Australian Parliament passed the Climate Change Act 2022. This Act legislates Australia’s targets to reduce emissions by 43% on 2005 levels by 2030 and net zero emissions by 2050. It sends a message to the private sector that Australia is open for business in renewable energy.

The accompanying Climate Change (Consequential Amendments) Act 2022 changed 14 other Acts to focus Government institutions on achieving those targets. These institutions include:

- the Northern Australia Infrastructure Facility
- Export Finance Australia
- the Australian Renewable Energy Agency
- the Clean Energy Finance Corporation
- the Clean Energy Regulator
- the Commonwealth Scientific and Industrial Research Organisation
- Infrastructure Australia.

Amendments to a further two Acts were introduced throughout the year to align the work of public institutions with our net zero trajectory.

Public Support for the Climate Change Act 2022

The NFF recognises this is framework legislation that embeds a national 2030 and 2050 target in legislation and makes consequential amendments to related Acts. This provides a level of business certainty that is otherwise absent.

National Farmers’ Federation
Senate Inquiry submission

The bills set up clear national goals, a predictable process for evolving those goals over time, a useful transparency framework to assess progress and a valuable avenue for independent advice and community consultation.

The Australian Climate Roundtable
Senate Inquiry Submission

The business community has been very clear that we must achieve consensus on energy and emissions reduction policy. The best way to promote the planning and innovation that will underlie an efficient energy transition is through legislated bipartisan support. For the sake of certainty, business urges bipartisan support for the Government’s plan.

Australian Chamber of Commerce and Industry
Media release 2022
The Annual Statement

The Climate Change Act 2022 requires the Minister to prepare and table an Annual Climate Change Statement to Parliament, holding the Government accountable for meeting Australia’s emissions reduction targets and creating effective climate change policy. The Annual Statement provides a mechanism for transparency, accountability and certainty about Australian Government action and policy, as well as making clear the risks posed to the Australian community by climate change.

Under the Act, Annual Statements must report on:

• progress made during the year towards achieving Australia’s greenhouse gas emissions reduction targets
• international developments during the year that are relevant to addressing climate change
• climate change policy
• the effectiveness of the Commonwealth’s policies in contributing to the achievement of Australia’s greenhouse gas emissions reduction targets and reducing emissions in sectors covered by those policies
• the impact of the Commonwealth’s climate change policies to achieve Australia’s greenhouse gas emissions reduction targets on rural and regional Australia, including the social, employment and economic benefits being delivered there
• risks to Australia from climate change impacts, including to Australia’s environment, biodiversity, health, infrastructure, agriculture, investment, economy or national security

Annual Statements must also be prepared having regard to the Climate Change Authority’s advice. If a material aspect of that advice is not accepted, the Minister must table a statement explaining why in Parliament.

This first Annual Statement is a starting point for future reporting. The Government’s capability to report on climate action will evolve over time as we implement key policies. This includes improving climate modelling, fully restoring the Climate Change Authority, transitioning towards a net zero Australian Public Service, and better managing our response to climate-related risks. Future reports will be more detailed as these measures take effect, new policies commence and successive reports respond to more comprehensive advice prepared by a properly resourced Climate Change Authority.
1. CLIMATE CHANGE IN AUSTRALIA

Climate change brings with it both long-term, gradual shifts in climate and increases in episodic extreme events. Australians are already feeling the effects of climate change. More frequent extreme and cascading weather events are disrupting our communities, livelihoods, economy, environment and national security.

At the same time, summers are gradually becoming hotter and rainfall patterns continue to change. This leads to more frequent and severe droughts, health risks, increased bushfire and flooding risks, reduced agricultural production, and ecological damage.

State of the Climate Report 2022

The seventh biennial State of the Climate report was released on November 23, 2022. It is a collaboration between the CSIRO and Bureau of Meteorology, who play crucial roles in monitoring, analysis and communicating current and future changes in Australia’s climate. This report reaffirms that anthropogenic (human-caused) climate change is causing increases in average temperatures, extreme heat, fire weather, drought, heavy rainfall events, and coastal inundation. These changes are happening at an increased pace, with the past decade seeing record-breaking extremes leading to disasters.

Several important key findings were published in this report:

- Atmospheric concentrations of greenhouse gases continue to rise and accelerate. They are the highest they have been in 2 million years.
- Global average temperature rise is now over 1°C.
- The temporary decline of CO₂-e in 2020 associated with the COVID-19 pandemic will have negligible impact on slowing climate change, and emissions are now back to pre-pandemic levels.
- Australia’s climate has warmed by an average of 1.47°C ± 0.24°C. Warming has occurred across Australia in all months with both day and night-time average temperatures increasing. This shift is accompanied by an increased frequency of extreme heat, including an increase in record-breaking hot days, and an increase in days where extreme heat covers large parts of Australia.
- There has been an increase in extreme fire weather, and the length of the fire season, across large parts of Australia. This has led to larger, more frequent fires.
- Rainfall has decreased by 10% in south-eastern Australia and 15% in south-western Australia since the 1970s in the winter months. Rainfall has modestly increased across most of northern Australia.
- Heavy rainfall events have become more intense.
- More than 60% of Australia’s hydrologic reference stations show a declining trend in streamflow, meaning our water resources are diminishing.
- Sea surface temperatures have risen by an average of 1.05°C and have become more acidic.
- Mass coral bleaching events are occurring with increased intensity and extent.
- Sea levels are rising around Australia with more frequent extremes, increasing the risk of inundation.
- The world’s oceans have absorbed 91% of the extra heat energy associated with global warming.
- All these climate change effects are expected to worsen in the coming decades.
1.1 The physical effects of climate change

Australia’s climate has warmed by an average of about 1.47°C over land, most of which has happened since 1950 (CSIRO & BOM 2022). The IPCC reports that the world is likely to reach 1.5°C of global warming in the 2030s (IPCC 2021). As our climate continues to change in the coming decades, Australia is expected to experience more extremely hot days, more heatwaves and more extreme fire weather. At 1.5°C global warming, we can expect Australia’s hottest year on record, 2019, to be an average year (CSIRO & BOM 2022).

In the last 18 months, Australia has experienced unprecedented flooding, not only in volume of water but in frequency of flooding. In addition, we are seeing impacts through temperature warming, changed rainfall and multiple climate events at the same time. The science indicates this is likely to continue (IPCC 2021).

While Australia has experienced increased frequency and severity of rain events in recent months, rainfall in the southwest has declined since the 1970s and declined in the southeast since the late 1990s. The decreases have been most significant in winter months, placing substantial stress on water availability in these regions. Over the same period, rainfall has increased across most of northern Australia (CSIRO & BOM 2022). The decline in rainfall across southern regions is likely to continue, meaning Australia will spend more time in severe drought. Rain is also more likely to fall in intense, heavy rainfall events, resulting in much higher flood risks.

Australia is already experiencing sea level rises, which are expected to continue accelerating, leading to more frequent and severe coastal inundation from storm surges (CSIRO & BOM 2022), risking homes and livelihoods in low-lying coastal areas.

Australians may also face situations where more than one climate hazard occurs at the same time or one after the other. For example, many of the communities that experienced the 2019–20 Black Summer bushfires after two years of drought subsequently experienced floods.

Climate hazards may interact with each other and spread across interconnected systems and regions (IPCC 2021). This makes our society and environmental systems much more vulnerable to the effects of climate change, and challenges our capacity to respond to disaster when it hits.

Our emergency services are world leading, but can become stretched when responding to multiple cascading and compounding risks. At times, such as during the bushfires of 2019–20, events may exceed our capacity to respond (Royal Commission into National Natural Disaster Arrangements 2020).

Even with immediate reductions in emissions, these trends will continue. Hot days will become more frequent and hotter, extreme rainfall events will become more intense, sea levels will continue to rise, oceans will become more acidic and snow depths will continue to decline. These physical impacts further emphasise the importance of taking action on climate change through emissions reductions, climate adaptation and disaster resilience (see section three for the Government’s plans for this).

1.2 Environment and biodiversity

Australia’s biodiversity and ecosystems are among the most diverse on Earth. Australia’s unique biodiversity is part of our national identity and fundamental to the health of our environment, economy and communities. However, the 2021 State of the Environment report concludes that the condition of Australia’s natural environment is poor and deteriorating.

Australia has one of the highest rates of extinction in the world, and climate change is having a widespread impact on natural ecosystems. It is driving changes in the distribution and behaviour of species, reducing food and shelter availability, altering the composition and functioning of ecological communities, and worsening the impact of other threats to biodiversity, such as invasive pests and habitat destruction. At least 19 Australian ecosystems are showing signs of collapse or near collapse (CSIRO & BOM 2022).
There are limits to the capacity of natural systems, including many of our unique and iconic natural heritage sites, to adapt to the impacts of climate change. Sea temperature rises and destructive marine heatwaves have caused mass coral-bleaching events on our internationally renowned Great Barrier Reef and major losses in significant seagrass beds in Western Australia. Increasing marine temperatures are expected to continue in the future, leading to further damage to these ecosystems (CSIRO & BOM 2022).

Kakadu National Park, with its extensive low-lying freshwater wetlands and coastal floodplain systems, is also vulnerable to climate change-induced sea level rises, storm surges and flooding. These impacts are likely to exacerbate the intrusion of salt water into freshwater systems, and existing threats such as invasive species, resulting in loss of habitat and key species. These physical impacts have economic consequences too, with the impact of climate change on the tourism sector expected to be immense (Australian Academy of Science 2021).

The Great Barrier Reef and the Reef 2050 Plan

The Great Barrier Reef is under significant pressure. Oceanic warming and destructive marine heatwaves have caused mass coral bleaching events. Its complex and delicately balanced ecosystem is being challenged by human activities both locally on the reef and regionally, in addition to the impacts climate change.

The Australian and Queensland governments co-developed the Reef 2050 Plan in 2015 – a long-term strategy focusing on reducing local and regional pressures to support the Reef’s health and help the reef adapt to climate change. The Australian and Queensland governments implement the Reef 2050 Plan in partnership with industry, land managers, scientists, Traditional Owners and the wider community.

The Reef 2050 Plan has five priority areas for action:

- limit the impacts of climate change by contributing to global efforts to reduce emissions and supporting the reef and communities to adapt
- improve water quality by working with landholders, industries and communities to accelerate action to reduce the impacts from land-based activities
- reduce impacts from water-based activities by strengthening partnerships with reef industries and delivering strong marine park management
- reduce marine debris entering the reef from outside Australia and protect migratory species
- protect, rehabilitate and restore reef habitat, species and heritage sites by minimising impacts from disturbances and assisting with their recovery.

These are supported by community collaboration, rigorous science, regular monitoring and reporting, and more than $4.4 billion from 2014-15 to 2029-30 from the Australian and Queensland governments to deliver the Plan.
1.3 Public health and community safety

Climate change impacts the physical and mental health of people and communities. Health and wellbeing is adversely affected both through physical injuries and illnesses, as well as the mental toll of responding and recovering from severe and often compounding disasters (National Mental Health Commission 2021). Heat-related illnesses and fatalities, air quality impacts such as thunderstorm asthma and smoke, injuries and fatalities directly from extreme weather events, and poverty and community displacement are just a few of the health impacts we are already seeing.

These impacts can have far-reaching and complex impacts on social cohesion and economic productivity (IPCC 2022), and are often disproportionately borne by the most vulnerable and disadvantaged people in our society without ready access to adequate infrastructure and utilities. Where you live determines what kinds of climate impacts you may be exposed to. In rural and regional Australia, climate-related disasters such as flooding and bushfire often create physical barriers, unsafe conditions for transport, and loss of essential services. This can lead to significant delays in accessing support services, prolonging trauma, and intensifying emotional distress. Long-term mental health issues can exacerbate the practical challenges of rebuilding after a natural disaster, including securing housing, making insurance claims and obtaining financial assistance.

Our cities are also vulnerable to climate change impacts, particularly the effects of extreme heat on residents due to the urban heat island effect. High levels of heat-absorbing materials such as dark-coloured pavements, amplified by a lack of canopy cover and green space, make urban areas much hotter. Extreme heat in the form of heatwaves kills more Australians than any natural disaster (Coates et al. 2022). Older and younger Australians are more likely to suffer from heat-related health impacts, as are other vulnerable Australians whose homes may not be adequately insulated or cooled.

First Nations people are disproportionately affected by climate change because of their relationship to the environment and to Country. Climate impacts can threaten cultural knowledge, heritage and traditional practices, and potentially further displace First Nations people from their homes and affect their ability to access Country.

Climate change impacts such as sea level rises experienced in island communities and increases in temperature experienced in desert communities could leave First Nations people with no choice but to migrate from some ancestral homelands to urban settings or other locations. The consequences for First Nations people facing this possibility, risking further dispossession and a loss of access to traditional lands, waters, and natural resources, can only be described as catastrophic. The loss of ancestral, spiritual, totemic and language connections to lands and associated areas has major implications for the human rights of affected peoples as well as their physical and mental wellbeing. Extreme events are also contributing to the damage of First Nations places and cultural sites.
Climate Change impacts in the Torres Strait

Torres Strait Islanders are dealing with the acute impacts of climate change right now. Communities are experiencing sea level rises at approximately three times the rate of the global average, resulting in more frequent and severe inundation flooding events and accelerated coastal erosion. Higher temperatures and storm events create other challenges for community health, infrastructure, and services. Hotter and more frequent marine heatwaves are threatening locally and nationally significant fisheries, as well as culturally important species and ecosystems such as dugongs, turtles, coral reefs and seagrasses.

At the Ministerial Torres Strait Round Table on Climate Change in June 2022, Minister Bowen and Assistant Minister McAllister heard from Traditional Owners that climate change was one of the greatest threats to their people, culture, economy, livelihoods, food, water, and energy security. This was also the resounding message from the National First Peoples Gathering on Climate Change in March 2021, with the First Nation Peoples Statement on Climate Change calling for a commitment from the Australian Government to financially support an annual First Nations-led dialogue on sharing lived experience of climate change and inform climate policy at all levels.

The Commonwealth has committed $15.9 million over four years to establish the Torres Strait Climate Centre of Excellence. This is part of a new model for working with Torres Strait Islanders and other First Nations peoples across Australia on climate change. The new centre will benefit communities in Far North Queensland, in particular Torres Strait Islanders and other First Nations peoples by empowering them as climate change leaders.

The centre will:

- empower Torres Strait communities to design and deliver local adaptation and mitigation initiatives, including through the Climate Warriors training program
- drive a coordinated regional response to and practice action on climate change on sea level rises and infrastructure, water and food security, sustaining and strengthening culture, economic stability, access to renewables and other opportunities.

It will demonstrate contemporary and culturally appropriate adaptive approaches and governance mechanisms to lead thinking and practice to support First Nations communities to respond to climate change.

The First Nations people of the Torres Strait will lead on establishing the centre with on-ground traditional knowledge embedded and driving integrated climate resilience development in First Nations communities.
1.4 Economic opportunity and regional transformation

Climate change impacts all sectors of our economy. It affects our infrastructure, homes and businesses; how we farm the land; and how we will do our jobs in the future. These impacts are felt in all parts of Australia, but are particularly acute in our regions.

In 2022, severe flooding affected many parts of South-East Queensland, New South Wales, Victoria and Tasmania. Many individuals and communities affected by the floods faced displacement and property and vehicle losses, leading to a long road to recovery (NSW Government 2022). A 2022 report by Deloitte Access Economics estimated that the South-East Queensland floods between February and April cost $7.7 billion, taking into account both direct financial and economic costs and the net present value of lifelong health and social costs (Deloitte Access Economics 2022). According to the Royal Commission into National Natural Disaster Arrangements report (2020), consecutive natural disasters also increase the pressure on affected and vulnerable communities and are expected to increase in cost over time.

Critical infrastructure, including our road, rail and telecommunications networks, needs to be built to resist extended periods of extreme heat. Our coastal infrastructure needs to be built to withstand sea level rises and increasing frequency of storm surges. All of these measures to build better, more climate-resilient structures come with higher costs. These costs and high risks may mean insuring infrastructure, housing and buildings becomes more expensive or impossible in higher risk regions across Australia. Effective planning is necessary to ensure we are not putting people and critical assets in the path of future disasters.

Agriculture is also severely impacted. Higher temperatures and changes in seasonal rainfall are eroding the productivity of Australian farms. Changes in seasonal conditions have reduced annual average farm profits by 23%, or around $29,200 per farm, over the past 20 years, with larger reductions projected to 2050 in the absence of adaptation (ABARES 2020). These impacts highlight the importance of supporting adaptation in our regions, and using new methods and technology to support productivity in a hotter, more unpredictable climate (ABARES 2021).

Australia’s regions are well placed to capitalise on new opportunities emerging from a changing global economy. Most of Australia’s heaviest emitting industrial facilities are located in regional areas. Four key industrial regions alone make up 16% of Australia’s total emissions: the Pilbara, the Hunter Valley, the Illawarra and Gladstone.

In a world where countries that make up 93% of global GDP, and 88% of global emissions have net zero targets, these regions are extremely vulnerable to changing global markets.

The Government is taking responsibility to work with industrial and resource regions to ensure economic prosperity over the long-term, carefully co-designing the reforms and investments to ensure these regions continue to power Australia and our trading partners for many decades to come.

Australia is also home to some of the world’s best renewable resources, including solar and wind energy generation, and critical minerals used to make batteries and other technologies that support decarbonisation. As new industries like hydrogen, offshore wind, and renewables manufacturing emerge and grow, they will create demand for workers with both new and existing skills in electricity generation, mining, manufacturing and many other sectors. These industries will in turn become the new foundation of many regional economies and communities.
1.5 Australia’s national security

Climate change will also increasingly exacerbate risks to national security interests as the physical impacts and economic consequences increase and geopolitical tensions mount about how to respond to the challenge. In response to this concern, the Prime Minister has asked the Director-General of the Office of National Intelligence to coordinate an assessment of the implications for national security of climate change. This assessment will inform how the Government considers climate risk when discussing matters of national security interest.

The intensity and frequency of extreme weather events in both the Pacific and South East Asia is forecast to increase (IPCC 2022a). The IPCC reports that climate change impacts will continue to be felt most in countries that are least able to adapt and respond. These physical impacts exacerbate existing issues and have the potential to exacerbate inequality and conflict. Disruptions caused by climate change can be expected to spill over into global systems, fundamentally changing the movement of people and goods. In the decades to come, climate-motivated migration will significantly increase, as sea levels rise and inundate communities. Australia is playing our part in mitigation and supporting adaptation, but recognises that these are also global problems that require global solutions.

Security considerations will also be important in securing our future energy needs. Australia’s supply chains for resources and technologies are heavily consolidated. Diversification of supply chains and increased domestic manufacturing of clean energy technologies will help to mitigate security risks.

As a leading supplier of critical minerals, Australia is engaging strongly with others on scaling up and diversifying renewable energy supply chains. There is great opportunity to expand our existing footprint in these critical global supply chains through value-adding in resources and domestic manufacturing.

In our multilateral engagement, and through our international partnerships, we are working to support our own energy security and grow the economic opportunities for Australia. It is in Australia’s national interest to consider the cascading and compounding impacts for human security in our region and across the globe, and to help affected countries become safer and more resilient. It is in Australia’s interests to help support our neighbours and others in need, particularly in an era of strategic competition. The increasing frequency and intensity of extreme weather events will require humanitarian, diplomatic, economic and military resources to assist the worst-affected, least-resilient countries. Australia is pushing for the widening of climate financing providers to include multilateral development banks like the World Bank, the private sector, countries that are now wealthy, and large emitters.

Lyup Flats during the millennium drought, Murray River National Park, South Australia
2. GLOBAL MOMENTUM

Over the past decade, the need for real action on climate change has been gaining prominence in international discussions. The global economy has resolutely committed to net zero.

The 2015 Paris Agreement was a milestone in global efforts to address climate change. Through this agreement 196 countries committed to keep warming to well below 2°C and pursue efforts to keep it to 1.5°C. To achieve these goals, countries agreed to peak global emissions as soon as possible and undertake rapid declines in emissions to reach net zero around mid-century.

The Paris Agreement is comprehensive and goes beyond mitigation. Countries have also agreed to work together to increase our ability as a global community to adapt to the impacts of climate change and build resilience. Importantly, the Paris Agreement outlines cooperation to align global finance flows with the transition to low emissions and resilient economies and development.

The global economy has resolutely committed to net zero. The Paris Agreement has now been ratified by all members of the United Nations (except Libya, Yemen, Eritrea and Iran, which have all signed but not yet ratified). Overall, 151 countries have committed to a net zero target, accounting for 88% of global emissions. But the reality is that, at a global level, emissions are still far too high and continuing to rise. The global community is yet to bend the curve down and establish the steeply declining trajectory that is necessary to keep warming to safe levels.

Nationally Determined Contributions (NDCs) are climate action plans put forward by each country under the Paris Agreement. Many countries made new commitments ahead of and after the UNFCCC global climate conference in Glasgow, in fulfilment of the Paris Agreement’s requirement to submit new or updated NDCs every five years. The Australian Government submitted its updated NDC in July 2022.

The United Nations Environment Program (UNEP) Emissions Gap Report points to the fact that even with strengthened NDCs, the world is still on a dangerous warming trajectory. The UNEP considers that implementation of all current NDCs and other net zero commitments, although on the rise, put us on track for a 1.8°C increase and more needs to be done to implement those commitments (2022). This shows that at this stage globally we are at a pivotal moment where actions must align with ambition.

Each annual Conference of the Parties (COP) is an important tool for global accountability, providing a forum to ratchet up commitments, further international cooperation and understand whether we are making progress globally. At COP27 in Sharm el-Sheikh, Australia officially launched our bid to co-host COP31 with the Pacific in 2026. In hosting, Australia and Pacific countries would highlight the impact of climate change in the region, accelerate global action and harness the economic opportunities of the global transformation.
2.1 Energy security and decarbonisation

Countries around the world are balancing the need for urgent action to meet their climate commitments with other challenges. Economies are still managing the lingering impacts of the global pandemic, supply chains remain stressed and there is an unprecedented energy crisis resulting from Russia’s illegal invasion of Ukraine. Climate change is impacting our global energy demand patterns: hotter summers and colder winters are making energy demand harder to predict, which results in supply falling short of demand and prices spiking.

The Russian war on Ukraine has emphasised how energy can be quickly weaponised, driving home the likelihood of ongoing global oil and gas market volatility. This further underlines the need for action to build resilient renewable energy systems. The most significant driver accelerating the transition to renewables is energy cost. Solar and wind are the cheapest forms of new electricity generation, and are replacing coal, oil and gas based energy supplies as these older technologies become uneconomic and require updating and replacement. Despite a rise in costs in recent months, renewable energy technologies such as wind and solar PV remain the cheapest option for new power capacity in many countries, even without taking into account the exceptionally high prices seen in 2022 for coal and gas (IEA 2022b).

Fortunately, countries have the tools at their disposal to address decarbonisation and energy security issues at the same time. The European Union and United Kingdom have used Russia’s actions as a reason to accelerate the transition to renewables, a central strategy to wean off the reliance on Russia for energy. This shows countries are simultaneously addressing energy security and accelerating the rollout of renewable energy.

In May 2022, the European Commission announced its plan to make Europe independent from Russian fossil fuels well before 2030. The REPowerEU plan sets out a series of measures to rapidly reduce dependence on Russian fossil fuels and fast-forward the green transition, while increasing the resilience of the EU-wide energy system. REPowerEU is supported by other EU initiatives such as the European Green Deal. Under the Green Deal, all 27 EU member states committed to turning the EU into the first climate-neutral continent by 2050, pledging to reduce emissions by at least 55% by 2030, compared with 1990 levels (European Commission 2022).

In August 2022, US President Biden signed into law the Inflation Reduction Act, the largest investment the US has ever committed to addressing climate change and the energy transition. With the investment totalling an estimated US$369 billion, the Act is intended to set the US economy on the path towards its target of 50–52% below 2005 levels by 2030 and net zero by no later than 2050. The commitment of an economy the size of the US sends a strong signal that net zero is the future.

The response to the energy crisis is not for governments alone. It requires action from the private sector and civil society. Realigning finance flows is critical to success, which means mobilising public and private finance for the transition. The International Energy Agency (IEA) estimates that for the energy sector alone, US$2 trillion worth of investment is needed to 2030 to deliver the stated policies by governments (2021). More will be needed to align the global trajectory with net zero by 2050. Governments have an important role to play in this, aligning public investment with the transition and setting the framework through targets, creating policy certainty for private investment.
In our region, key emerging economies and Australia’s important regional partners are taking steps to decarbonise. Indonesia chaired the 2022 G20 Energy Transitions Ministerial Meeting, which produced the Bali Compact. This compact includes principles to ensure an effective transition in accordance with national circumstances and priorities, such as energy security and market stability, energy efficiency measures and the importance of mobilising finance to support emerging and developing economies.

Australia very much looks forward to India’s leadership of the G20 in 2023, particularly given India’s commitment to green development and unlocking the potential of solar to provide access to electricity and decarbonise electricity generation. India is already a major proponent of renewables, particularly solar and hydro, which will support the long-term transition to net zero emissions of its economy.

The international business community also has an important role to play. The latest IEA World Energy Outlook (2022b) highlights the sheer scale of investment that is needed to reduce risks of future price spikes and volatility, and to get on track for net zero emissions by 2050. Governments have a role to play in providing strategic direction, but the investments required are far beyond the reaches of public finance. It is vital to harness the vast resources of markets and incentivise and cooperate with private actors.

**COP27 – Sharm el-Sheikh**

In November 2022, Australia re-joined the ranks of countries leading on climate action at the 27th UNFCCC Climate Change Conference in Sharm el-Sheikh, Egypt.

Australia stepped-up our global action on climate change by joining or endorsing the:
- Green Shipping Challenge
- Global Offshore Wind Alliance
- Net Zero Government Initiative
- Forest Climate Leaders Partnership
- Global Methane Pledge
- Mangrove Alliance for Climate
- Oceans Conservation Pledge
- Article 6 Implementation Partnership
- Just Transition Declaration
- Glasgow Breakthrough Agenda on Agriculture.

Australia influenced negotiation outcomes, working with Pacific countries and others to find common ground on climate finance, and loss and damage. COP27 concluded with a historic agreement to establish a fund to assist developing countries that are particularly vulnerable to adverse effects of climate change, in responding to loss and damage, which was widely welcomed by low-lying Pacific Island states.

The Australian Pavilion provided a welcoming and inclusive space for all Australians involved in the COP, showcasing Australia’s potential as a renewable energy powerhouse, our renewed commitment to climate action and desire to work with the global community towards net zero by 2050.

Australia’s bid to co-host COP31 with our Pacific neighbours was widely supported by COP Parties, sending a clear message to the region and to the world that Australia is back as a constructive, positive and willing climate collaborator, and is stepping up as regional leader.
3. POLICY PATHWAYS TO NET ZERO

The Government’s Powering Australia plan is a substantial suite of measures focusing on the medium to long term changes necessary to enable the transformation of our economy and electricity grid on the way to net zero.

The Climate Change Authority is clear in its advice to Government that we need to build on current measures and develop a plan to get to net zero by 2050. The Government accepts this advice and, as part of this Annual Statement, commits to develop this plan. It will include Australia’s 2035 target (required by 2025 under the Paris Agreement), help integrate climate change as a core consideration in all policy and Government decision making, and outline the next steps to put us on the path to net zero.

The net zero plan will consider all elements of the Climate Change Authority’s advice, including a national carbon market strategy, a technology and innovation strategy, and how to accelerate emissions reductions in heavy transport and industries not covered by the Safeguard Mechanism. It will also consider the adaptation measures that a resilient and prosperous Australia will need to thrive in a changing climate. A net zero plan will not only provide a framework for Australian governments, but build further policy certainty for industry, business, investors and community groups as they make decisions on how to act on climate and reduce their emissions. This plan will draw together the significant amount of work already underway and outline where we will take further action.

The Budget delivered by the Treasurer in October is the first Federal Budget to deliver greater transparency around how the Government is committing funds to climate action and articulate climate change specifically as a fiscal risk to Government (Australian Government 2022). It aggregates spending around the following four areas:

- Supporting the net zero transformation by reducing emissions and investing in the opportunities presented by a low-carbon economy
- Adapting to climate impacts and building climate resilience, spending to support Australia in managing the physical impacts of climate change
- International climate engagement, spending to support how we engage through international forums and with other jurisdictions to advance Australia’s interests
- Governance and institutions, investing in the capabilities of Government to ensure it effectively delivers on its objectives and enable a national approach on climate change.

The Government is taking significant action across these policy areas. This section also reflects the policy that the Australian Government is working on in cooperation with state and territory governments, particularly through the National Energy Transformation Partnership.
**Climate Commitments in the October 2022–23 Budget**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rewiring the Nation</strong></td>
<td>$20 billion</td>
<td>Support the integration of renewable energy into the National Electricity Market (NEM)</td>
</tr>
<tr>
<td><strong>Powering the Regions Fund</strong></td>
<td>$1.9 billion</td>
<td>Dedicated support for regional industries to harness the economic opportunities of decarbonisation</td>
</tr>
<tr>
<td><strong>Expanding the Driving the Nation Fund to $500 million</strong></td>
<td>$700 million</td>
<td>Build a national electric vehicle charging network for zero-emission vehicles</td>
</tr>
<tr>
<td><strong>$105.2 million to support First Nations communities to respond to climate change</strong></td>
<td>$105.2 million</td>
<td>Support First Nations communities with $89.3 million for clean energy, $15.9 million for Torres Strait Climate Centre of Excellence</td>
</tr>
<tr>
<td><strong>$71.9 million to build a Hydrogen Hub in Townsville,</strong></td>
<td>$71.9 million</td>
<td>Fast-track Australia's green hydrogen industry and planned investments in regional hydrogen</td>
</tr>
<tr>
<td><strong>$224.3 million for the Community Batteries</strong></td>
<td>$224.3 million</td>
<td>Deploy community-scale batteries for households across Australia</td>
</tr>
<tr>
<td><strong>$62 million towards Skilling the Clean Energy Workforce</strong></td>
<td>$62 million</td>
<td>Financial support, assistance, and mentoring for New Energy Apprenticeships</td>
</tr>
<tr>
<td><strong>$345 million for the Electric Car Discount</strong></td>
<td>$345 million</td>
<td>Exempt eligible electric cars from fringe benefits tax and import tariff</td>
</tr>
<tr>
<td><strong>$102.2 million for Community Solar Banks</strong></td>
<td>$102.2 million</td>
<td>Support 25,000 Australians in apartments, rentals, and low-income households</td>
</tr>
<tr>
<td><strong>$22.8 million to support the Australian Energy Regulator</strong></td>
<td>$22.8 million</td>
<td>Support the Australian Energy Regulator to integrate more renewable energy into NEM</td>
</tr>
<tr>
<td><strong>ARENA and the CEFC,</strong></td>
<td>$60.0 million</td>
<td>Expand ARENA's Large Scale Battery Storage Funding Round</td>
</tr>
</tbody>
</table>

**Funding Sources**
- ARENA and the Clean Energy Finance Corporation (CEFC)
- Community Batteries for Household Solar grants program
- Large Scale Battery Storage Funding Round
- Electric Car Discount
- Community Solar Banks
- Hydrogen Hub in Townsville
- Skilling the Clean Energy Workforce
- Expanding the Driving the Nation Fund
- Powering the Regions Fund
- Rewiring the Nation
3.1 Supporting the net zero transformation by reducing emissions

The Powering Australia plan focuses on reducing emissions through the following measures:

- **Decarbonisation** – replacing fossil fuel energy and electricity generation with renewable energy sources such as solar and wind
- **Electrification** – using vehicles, appliances, and industrial machinery that only require renewable electricity rather than a fossil fuel source
- **Energy efficiency** – reducing energy waste right across our built environment, including in homes, commercial buildings and industry
- **Technology innovation and development** – investing in technologies, such as hydrogen, that are not yet commercially available but will be critical to decarbonising our economy, particularly for hard-to-abate sectors such as agriculture.

Decarbonising the electricity system

The electricity system accounts for about 33% of national emissions. This is due to the significant share of coal (62.4%) and gas (7.4%) generation, much of which is supplied from ageing facilities and has been impaired by investment uncertainty over the last decade. The surge in coal and gas prices, driven by the war in Ukraine, has increased generation costs and driven up wholesale prices, particularly in the National Electricity Market. These high fuel and generation costs are now being felt by consumers.

The Australian Government is working with the states and territories on both supply and demand measures to transform the electricity sector. The majority of this work must happen this decade and is critical to meet Australia’s 2030 emissions reduction target.
Significant investment is underway to make sure there is stable renewable energy supply that can support affordable energy prices for Australian businesses and communities. The Government has committed $20 billion to the Rewiring the Nation Fund to spur investment in cheaper, cleaner and more secure energy through the modernisation of Australia’s energy grid. Australia has also set an 82% national renewable electricity target by 2030, and Commonwealth initiatives such as community batteries and solar banks, as well as the many initiatives by states and territories, will help make this a reality.

**National Energy Transformation Partnership**

Energy Ministers across all jurisdictions recently established the National Energy Transformation Partnership. This is the first fully integrated energy and emissions agreement in Australia that commits the Australian and state and territory governments to work together and drive down emissions. It is the overarching framework that cements cooperation across jurisdictions and provides policy certainty at both state and national levels, further opening the door for much-needed private investment to accompany action by governments.

Through this partnership, Energy Ministers agreed to fast-track an amendment to the National Electricity Objective, National Gas Objective and National Energy Retail Objective to integrate an emissions reduction objective. This change is significant and will give Australia’s three energy market bodies – the Australian Energy Market Commission, Australian Energy Regulator and Australian Energy Market Operator – the explicit capacity to consider emissions reduction in their work. This makes emissions reduction targets a key consideration for energy market decision-making in Australia.

The partnership will also address critical energy security risks inherent in the transformation of the electricity sector. This includes enhancing our cybersecurity protections to address the increasing digitalisation of the grid and understanding the supply chain risks to Australia’s energy sector, including potential impacts of consolidated or limited supply chains.

Many of these initiatives are led by the states and territories but require cooperation across jurisdictions. The National Energy Transformation Partnership creates the framework that will coordinate and amplify the net zero ambitions of each state and territory, such as the such as the NSW Government’s Net Zero Plan Stage 1.

**Renewable electricity generation**

The Australian Government has committed to a national renewable electricity target of 82% by 2030. This target will help the Government to achieve the legislated emissions reduction target of 43% by 2030 and set Australia on the path to net zero by 2050. It also sends an important signal to the market that renewable energy is Australia’s future.

One in three Australian houses now have rooftop solar, and wind energy generation is rapidly coming online. In the National Electricity Market, Australia benefits from the substantial investments by governments in hydro generation, which are being added to by projects such as the Snowy 2.0 project and Tasmania’s Battery of the Nation.

Australian Energy Ministers have recognised the need to ensure sufficient investment in clean energy capacity and are developing a framework that delivers this capacity, ensures an orderly transition, and incentivises new investment in firmed renewable energy to ensure the system can meet peak demand.

Australia generated 29.1% of electricity from renewable sources in 2021, including solar (12%), wind (10%) and hydro (6%). Substantial additional renewable generation capacity needs to be built to reach the national 82% renewable electricity target by 2030. However, renewable energy generation capacity has been rapidly increasing in recent years, and has more than doubled over the last decade, largely driven by solar.

Australia is expected to continue to develop more large-scale wind and solar electricity generation capacity, as well as continuing to increase small-scale solar through the Small-scale Renewable Energy Scheme. Significant investments in electricity storage capacity, including pumped hydroelectricity and large- and small-scale batteries, are expected to provide firming capacity for higher levels of renewable electricity generation.
CASE STUDY
NSW: Net Zero Plan Stage 1: 2020–2030

In March 2020, the New South Wales Government released Net Zero Plan Stage 1: 2020–2030. The plan is the foundation to deliver the long-term objective set out in the 2016 NSW Climate Change Policy Framework, which is to achieve net zero emissions by 2050. In a Plan update released in September 2021, the NSW Government adopted an interim target of achieving a 50% reduction in the state’s emissions compared with 2005 levels by 2030.

As reported in the NSW State of the Environment 2021, the Net Zero Plan Stage 1 and its related policies – including the NSW Electricity Infrastructure Roadmap – are projected to reduce state emissions in 2030 by 28.6 to 37.3 million tonnes of carbon dioxide equivalent (Mt CO₂-e). In addition, NSW base case trends are projected to result in a further 20.4 Mt CO₂-e reduction in annual emissions by 2030. Hence total NSW emissions are expected to reduce to 78.9 to 87.6 Mt CO₂-e in 2030, which is 47–52% below 2005 levels.

Progress made towards achieving NSW’s net zero emission targets will be reported annually via the NSW Net Zero Emissions Dashboard, and every three years within NSW State of Environment reports. The dashboard provides state and local government, businesses and communities with overall, sector and location-specific insights into emission trends and progress being made towards the state’s emissions reductions targets.

In the five years to 2022, more than $1.2 billion was invested from the Climate Change Fund (CCF) on mitigation and adaptation programs. The CCF will invest a further $2.8 billion in programs in the eight years to 2029–30, including to implement the Net Zero Plan and Electricity Infrastructure Roadmap.

Key policies relating to the Net Zero Plan Stage 1: 2020–2030 and measures to reduce emissions reduction in NSW since 2017 are the:

- NSW Hydrogen Strategy
- NSW Electricity Infrastructure Roadmap and Renewable Energy Zones
- NSW Future Transport Strategy
- NSW Electric Vehicle Strategy
- NSW Future Energy Strategy (Transport)
- NSW Zero Emission Bus Transition Strategy
- NSW Net Zero Industry and Innovation Program
- NSW Waste and Sustainable Materials Strategy
- Primary Industries Productivity and Abatement Program
- Business Decarbonisation Support
- Energy Security Safeguard
Rooftop solar installations have grown rapidly

Over 20,000 GWh of electricity was generated on rooftops in Australia in 2021

National totals

1 in 3 houses have solar panels

8% of Australia’s electricity is generated on rooftops

1st Australia leads the world in number of rooftop solar systems per house

Renewable electricity generation in Australia
**Transmission and storage**

With the electrification of our economy, Australia will need more electricity and to be able to move it more efficiently around the country. This means a significant transformation with enhanced transmission and more interconnectors between the eastern states of Australia, moving renewable energy around the grid where it is needed. When there is excess solar energy in one state and cloudy days in another, it can easily be moved.

This modernisation of the grid is essential for an orderly transition and to ensure Australians are able to access the energy they need. Rewiring the Nation will invest $20 billion in transmission to help deliver the modern grid Australia needs and make it ready for the fast pace of decarbonisation and electrification necessary to meet our emissions reduction targets.

Batteries are also key to the energy transformation, through storing energy for night-time use peaks and times when renewable generation is low. Their deployment can add stability to the grid, such as through frequency control ancillary services that, put simply, provide a fast injection of energy or fast reduction of energy to balance supply and demand.

The Government is investing $200 million in community batteries to improve our energy storage at a local level, allowing communities to harness the energy from the sun during the day and continue to draw on this energy through the night. Our Australian-Made Battery plan to ensure Australia is positioned to take advantage of our abundant raw inputs for batteries, securing availability and enabling technologies for Australia’s storage needs through local manufacturing. This includes a National Battery Strategy, up to $100 million equity in an Australian Made Battery Precinct, and a Powering Australia Growth Centre.

In the 2022–23 October Budget, the Government announced $60 million in funding to the Australian Renewable Energy Agency (ARENA) to expand the existing $100 million competitive Large Scale Battery Storage funding round to support large-scale batteries of at least 70 MW in size. The funding will build upon ARENA’s support for grid-scale batteries. The additional funding for large-scale batteries will also allow ARENA to provide more funding to large-scale battery projects with advanced inverter functionality – helping to get more energy storage into the grid to improve security and reliability.
In the mid- to long-term, as coal-fired generation retires and more solar and wind are added to the grid, longer-duration storage, known as ‘deep storage’, will be needed. Deep storage will enable effective dispatch of electricity on demand, providing the reliable energy needed for Australian households and industry.

As the need for deep storage grows, other technologies may play an increasingly important role, such as using parked electric cars as a giant distributed battery through vehicle-to-grid (V2G) technology and expanding the nation’s pumped hydro capacity and hydrogen storage. While our current investment focuses on batteries, we need to keep these other complementary technologies within view.

**CASE STUDY**

**Victorian Energy Sector Pledge**

The Victorian Energy Sector Pledge was implemented in 2021 with the objective to reduce emissions, increase large- and small-scale renewable energy, build a reliable and secure electricity grid and improve energy efficiency.

The pledge will deliver significant emissions reductions via more than 20 programs, including:

- **Targets to help guide emissions reductions:**
  - Commitments to increase the 2030 Victorian Renewable Energy Target for renewable electricity from 50% to 65% and set a target of 95% by 2035
  - Energy Storage targets of at least 2.6 GW by 2030 and 6.3 GW by 2035
  - Set targets of at least 2 GW of offshore wind capacity by 2032, 4 GW by 2035 and 9 GW by 2040, with the release of the Offshore Wind Implementation Statement 1 outlining plans for the establishment of an offshore wind industry

- **Investment in a next-generation electricity grid – including six renewable energy zones and the Victorian Big Battery – Australia’s largest lithium-ion battery**
  - Deliver six projects announced under the VRET2 Auction, bringing forward 623 MW of new renewable generation capacity and delivering up to 365 MW and 600 megawatt-hours (MWh) of new battery energy storage

- **Support for households and businesses to invest in solar panels and residential batteries through the Solar Homes and Solar Business programs**

- **Increased energy efficiency, including encouraging uptake of efficient appliances and smart technologies, for households and businesses through the Victorian Energy Upgrades program**

- **Encouraging electrification through removing barriers to ‘all-electric’ homes and appliances and substituting natural gas with clean alternatives through the Gas Substitution Roadmap.**
**Electrification**

Electrification is the key to our transformation to net zero by 2050. Much of the technology is already commercially available to support fuel switching to electricity, particularly from gas and liquid fuels. To meet our targets, we must build the infrastructure and drive electrification as much as possible, especially in industry and transport. This fuel switching will, over time, increase our electricity demand, which will incentivise investment, enabling greater renewable energy generation and storage to come online to replace existing fossil fuel-based electricity generation progressively.

Australia needs a fast and orderly transition, guided by stable policy. Australians need to continue to have confidence that our markets can deliver reliable renewable electricity at affordable prices. The priority placed by the Government on the electricity sector is central to making sure there is a reliable supply of renewable electricity to support electrification of industry and transport over the next decade.

The Powering Australia plan provides the foundations for wide-scale electrification of the economy. The Government is implementing a number of initiatives that support electrification in the transport sector. These include the National Electric Vehicle Strategy, $500 million Driving the Nation Fund, Commonwealth Fleet target and Electric Car Discount. This is in addition to proposed broader policies such as reforms to the Safeguard Mechanism, which sets emissions reduction targets for industry.

**Energy efficiency**

Improving energy efficiency is critical for emissions reduction, particularly in sectors of the economy where energy use is directly correlated to emissions or is expensive. Supporting industry, businesses and households to make improvements to their energy use can create direct energy bill savings, improve the health of building occupants and stabilise demand on the network. The Australian Government has a role in helping set the standards and regulations to harmonise state and territory policy and ensuring buildings are constructed and used in a way that aligns with our net zero target.

The Government is collaborating closely with state and territory governments and, in some cases, with the New Zealand Government on a number of measures including:

- a National Energy Performance Strategy to support households and businesses nationwide to reduce their energy costs while at the same time reducing energy demand and helping to meet Australia’s emissions reduction goals
- the Equipment Energy Efficiency Program to deliver integrated energy efficiency standards and labelling for equipment and appliances
- the Trajectory for Low Energy Buildings – a suite of measures to achieve net zero in Australia’s building sector. Priority measures include:
  - a residential energy efficiency disclosure framework, providing information to homebuyers, renters, investors and lenders so they can make more informed choices.
  - a minimum rental requirements framework, guiding states and territories to set minimum rental standards. Retrofitting older, less energy efficient homes to a 5-star equivalent rating could reduce energy use by 45% or more, significantly improving household energy bills.
  - an updated Nationwide House Energy Rating Scheme (NatHERS) to help households understand and manage their energy use through new user-friendly, whole-of-home assessments. NatHERS ratings underpin compliance with the energy efficiency standards in the National Construction Code and are used by the finance sector to inform green loan products.
In addition, from 1 October 2023, the energy efficiency changes in the National Construction Code will come into effect. These changes raise the minimum energy efficiency requirements for new homes from six to seven stars and introduce a new whole-of-home annual energy use budget to account for homes’ major fixed appliances and energy generated onsite. The enhancements will make homes more comfortable and support households with cost of living pressures by lowering energy bills on average by $180 per year. The changes support decarbonisation by reducing the need for new renewable generation and transmission infrastructure and are estimated to reduce greenhouse gas emissions by around 4.3 Mt CO₂-e from 2022 to 2030.

**Supporting the transition in the transport sector**

Globally, transport makes up nearly a quarter of total emissions. Road transport contributes around 75% of that share (IEA 2022b). In Australia, transport accounts for 19% of national emissions, with nearly 85% of those emissions coming from road transport. Addressing road transport emissions, particularly through electrification, is critical to Australia reaching net zero by 2050.

Transport emissions tend to grow in line with population and economic growth, although there are some improvements through fuel efficiency. Australia’s transport emissions have grown 22% since 2005. Transport activity and emissions in 2020–21 were significantly disrupted by the impacts of the COVID-19 pandemic, as the movement of people and goods was limited. As the global economy reopens and lockdowns are lifted, transport emissions are again on the rise.

The pandemic had a significant impact on energy use in transport. Air travel dropped significantly; and consumption of petrol, largely used by household vehicles, also declined. Diesel (which drives our freight network, is relied on by industry and used to generate power in some cases) did not see the same levels of decline.
Electric vehicles

Transitioning the passenger vehicle fleet is the logical place to start in reducing transport emissions. About two-thirds of transport emissions come from cars and other light vehicles. While petrol demand for our transport fleet is declining as passenger vehicles become more fuel efficient and more people choose electric or hybrid vehicles, our electric vehicle (EV) uptake sits at a low 2%, nearly five times below the global average (IEA 2022c).

EVs offer enormous opportunities for Australia, including major savings on fuel and operating costs, the health benefits of better air quality, less noise and better safety features. Australia can also realise economic value in the EV value chain, such as through battery minerals, and recycling.

The Government has a plan to make EVs the easy choice for people, building on state and territory initiatives already underway. The National Electric Vehicle Strategy will deliver a nationally consistent framework to ensure Australians can access the best transport technologies and help meet our emissions reduction targets. The Government will release the strategy after feedback from extensive stakeholder consultation is taken into consideration.

The Government is investing $39.3 million, to be matched by the NRMA, to deploy EV fast charging stations on highways across Australia. This will see charging stations built at an average interval of 150 km on major roads. To make EVs cheaper and encourage their uptake, the $345 million Electric Car Discount will cut taxes by exempting eligible electric cars from fringe benefits tax and the 5% import tariff. The Government has set a low-emission vehicle target for the Commonwealth fleet of 75% of new leases and purchases by 2025 to contribute to a market for second-hand EVs. These policies will make EVs more affordable and help Australia become a globally competitive market for EVs.

The National Reconstruction Fund will set aside $1 billion for value-adding to resources and support targeted investments in transport. New innovations will enable more EV models to provide battery storage for homes, neighbourhoods and the broader electricity grid.

Fuel standards

The Government is examining options for implementing vehicle fuel efficiency standards in Australia. Australia is one of the only major economies without vehicle fuel efficiency standards in place or under development. These policies are helping other countries reduce transport emissions, save motorists money at the bowser and enhance consumer choices. They also preserve access to the range of vehicles people need for work and leisure. Improving fuel quality standards will be an important step to reduce transport emissions in Australia as it will enable the introduction of more stringent noxious emissions standards and complement fuel efficiency standards if they are introduced.

Heavy vehicles

The task of decarbonising freight transport in Australia is large and complex. The technology and global market for clean heavy vehicles are in their infancy. Price parity between renewables-based heavy vehicles and diesel heavy vehicles is unlikely to be reached before 2030. Battery electric vehicle technology is less advanced for heavy than for light vehicles, and fuel cell electric vehicles (FCEVs) are only beginning to enter production at scale. The national rollout of fast charging stations is one part of the broader $500 million Driving the Nation plan, which will also support a national Hydrogen Highways refuelling network. This too will be critical to decarbonising our heavy vehicle fleet.

Heavy vehicles and freight will take longer to transition. Driving the Nation is the first step towards net zero heavy vehicles and freight. We need to start now by installing foundational infrastructure and creating a domestic market for hydrogen and other alternatives, and be ready for large-scale deployment as soon as the technology and market are ready.

Australia’s local heavy vehicle manufacturing industries could transition to producing zero-emissions vehicles with the assistance of the National Reconstruction Fund and National Battery Strategy to secure an end-to-end value chain.
Facilitating the transformation of our industries and regions

Australia’s regions house many industries that will be critical to our efforts to decarbonise and are a key source of economic growth and employment in regional areas. The transition to a net zero economy presents enormous economic potential for Australia. This is particularly the case with clean energy generation and export opportunities like renewable electricity, hydrogen, ammonia for fertiliser, low-emissions mining, critical minerals mining and low-emissions processing of steel and aluminium.

We need to invest in our regions to ensure they have resilient infrastructure, future-oriented industries and, most importantly, a skilled workforce to capitalise on the opportunities presented by the global transition. The Government has established a cross-agency Net Zero Economy Taskforce in the Department of the Prime Minister and Cabinet to provide advice on how to support regional communities as Australia transforms to a net zero economy. The taskforce will help coordinate work between the Australian Government and state, territory and local governments, as well as with industry and local communities. The goal of this collaboration is to identify how the Australian Government can support communities dependent on emissions-intensive industries to be active players in achieving and sharing the benefits of the net zero economy.

Many of Australia’s largest emitters are in regional areas, as are the renewable energy opportunities. The Government has established the $1.9 billion Powering the Regions Fund to support the decarbonisation of existing industries, grow new clean energy industries and support workforce development, as well as continue Government purchase of Australian Carbon Credit Units (ACCUs). Clear investment signals, such as reforms to the Safeguard Mechanism, will support industry’s international competitiveness and economic growth while significantly reducing Australia’s emissions in line with our 2030 and net zero targets.

The National Reconstruction Fund (NRF) is a $15 billion financing vehicle that will diversify and transform Australia’s industry to secure future prosperity and drive sustainable economic growth. The NRF will drive investment in seven priority areas, focusing on value adding and capability development to leverage Australia’s natural and competitive strengths. One of the priority areas is renewables and low-emissions technologies. This will include investments in clean energy component manufacturing, hydrogen electrolyser and fuel switching, agricultural methane reduction and waste reduction, and green metals.

Safeguard Mechanism

Reforms to the Safeguard Mechanism will provide the long-term policy certainty required for industry to make the investment it needs to decarbonise.

The Safeguard Mechanism requires Australia’s largest industrial greenhouse gas emitters to keep their net emissions below an emissions limit called a ‘baseline’. Through these reforms, baselines will be reduced in a predictable and gradual way to contribute to Australia’s 2030 target and align with a trajectory to net zero. This will help strengthen Australian business competitiveness as the world decarbonises.

To ensure emissions reductions occur where they are least cost and do not ‘leak’ overseas as a result of the reforms, the Safeguard Mechanism will include credits for facilities that emit less than their baseline and tailored treatment for emissions-intensive, trade-exposed (EITE) facilities.
Corporate Voluntary Action on Climate

Many Australian businesses, corporations, facilities and industry bodies have voluntarily set themselves net zero targets. Many have also set interim emissions reduction and renewable energy targets, and adopted climate risk management standards. An increasing number are already certified carbon neutral.

According to the Australian Council of Superannuation Investors (ASCI), the number of companies with net zero commitments in the ASX200 more than doubled between March 2021 and March 2022 to a total of 95. These companies account for 70% of the ASX200’s collective market capitalisation – or $1.59 trillion. Since March 2022, this number has continued to rise to 104 in November 2022.

Most Safeguard facilities – around 70% – are owned by companies that have made net zero commitments. These voluntary commitments cover over 75% of emissions reported under the Safeguard Mechanism. This is also over 20% of Australia’s national emissions. The Safeguard reforms align emissions baselines with a trajectory to net zero by 2050. This will ensure a level-playing field between the majority who are on a path towards net zero, and the minority who have not yet begun this journey.

This trend is further accelerated by Australian companies participating in the global economy where global practices and the changing expectations of our trading partners influence the actions of Australian businesses. Aligning corporate operations and strategic planning with a net zero trajectory ensures Australian businesses remain competitive, and helps solidify Australia’s reputation for high quality, ethical and sustainable products and services.

The data below has been gathered and analysed by the Department of Climate Change, Energy, the Environment and Water. Note that rows are not exclusive categories – many of Australia’s highest emitting companies are ASX-listed and own or operate facilities covered by the Safeguard Mechanism. Emissions data is based on 2021-22 NGER and Safeguard facilities reporting data.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number with net zero commitments</th>
<th>Emissions covered by net zero commitments</th>
<th>No. carbon neutral (inclusive)</th>
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<td>104 (52%)</td>
<td>Scope 1: 105 Mt CO₂-e 21% of national emissions</td>
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<td>Scope 2: 24 Mt CO₂-e</td>
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<td>Top 50 emitters</td>
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<td>Scope 1: 199 Mt CO₂-e 41% of national emissions</td>
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<tr>
<td></td>
<td></td>
<td>Scope 2: 27 Mt CO₂-e</td>
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<tr>
<td>Safeguard facilities</td>
<td>148 (70%)</td>
<td>104 Mt CO₂-e 21% of national emissions</td>
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</tbody>
</table>

Annual Climate Change Statement 2022
Australia’s workforce

The IEA’s World Energy Outlook (2022b) highlights that clean energy supply chains are a huge source of employment growth, with clean energy jobs already exceeding those in fossil fuels worldwide. The IEA forecasts that new jobs directly in clean energy industries will reach 40 million by 2030, outweighing job losses in the fossil fuel related industries. Australia’s abundant clean energy resources position us well to seize a significant share of this global opportunity.

The Jobs and Skills Summit hosted in September 2022 identified the energy sector as one of the areas in which Government and industry should work together to maximise employment opportunities. Summit participants highlighted the importance of cross-jurisdictional energy transition workforce planning, to make sure Australia has the workforce it needs to meet new demands.

As an outcome of the summit, Jobs and Skills Australia is undertaking a Clean Energy Capacity Study, to be completed as a priority in 2023. This study will look at the clean energy workforce and provide a clear picture of Australia’s workforce needs for our transition to clean energy. It will bring together a range of related work undertaken across Government and provide a report of job opportunities in the emerging low-emissions economy. This study will cover the geographic distribution of jobs, a transition analysis and a study of existing workforce capabilities.

As part of the 2022–23 October Budget, the Government announced a number of complementary measures that will support the priorities identified through the Jobs and Skills Summit. The first phase of the New Energy Apprenticeships and New Energy Skills program will deliver financial support of up to $10,000 to 10,000 eligible apprentices in the clean energy industry, as well as additional mentoring and assistance. This support is part of a broader program to invest in tertiary and skills training to make sure Australians are ready for the jobs of the future.

Industry is already bringing forward timelines for the closure of coal-fired generators. This is a sign that global markets are moving away from fossil fuels, recognising that renewables are where growth is, and that maintenance of older, ageing facilities is no longer economically viable. It is important that employees and communities are supported to build economic resilience through diversifying their economic opportunities. Many employers are already thinking about how workforces can be retrained, using valuable skills learned through decades of power generation and applying them to renewables and growth industries of the future.
Critical Minerals in Northern Australia

Australia has some of the world’s largest reserves of critical minerals and renewable energy potential. Building on the sector by generating new downstream industries and diversifying global green supply chains will help Australia and its partners to meet net zero commitments.

Taking advantage of our supplies of critical minerals such as lithium, cobalt, manganese, titanium and rare earths will see Australia build on its world-class resources sector, diversify global supply chains and meet growing demand for batteries, electric vehicles (EVs) and clean energy technology. Critical minerals, including rare earths, are crucial components of low-emissions technologies, such as batteries, EVs and solar panels.

Australia is the world’s largest lithium producer and the latest figures forecast the value of lithium exports is due to increase more than tenfold over two years, from $1.1 billion in 2020–21 to almost $14 billion in 2022–23, with export volumes expected to grow steadily in future years.

As well as lithium, Australia is the world’s top producer of rutile (titanium) and the second largest producer of zircon and rare earth elements. Australia also has the world’s largest reserves of rutile (titanium), zircon (zirconium) and tantalum. Our reserves of critical minerals, including antimony, cobalt, lithium, manganese ore, niobium, tungsten and vanadium rank in the top five globally.

The $99.8 million Critical Minerals Development Program will help early and mid-stage critical mineral projects overcome technical and market barriers. The Government is establishing a $50.5 million Australian Critical Minerals Research and Development Hub, which will bring together globally recognised experts within Geoscience Australia, CSIRO and the Australian Nuclear Science and Technology Organisation (ANSTO) to prioritise and advance strategically significant projects, work with the research community and industry to build and commercialise Australian IP, and collaborate with Australia’s international partners. There is also a $2 million commitment to invest in a Resources Centre of Excellence Hub to provide mine workers and the resources community with access to training and emerging technologies to support future employment and growth opportunities.
Creating jobs for a net zero future

Preparing for a net zero workforce begins now

Skills and Workforce Program
as part of the National Energy Transformation Partnership

Workforce development
is a key priority of the $1.9 billion Powering the Regions fund

$95.6 million to support 10,000 New Energy Apprentices in the jobs of the future

The Government aims for equal pay, equal leadership and equal opportunities for women in the clean energy sector by 2030, and has joined the Equal by 30 campaign

$9.6 million New Energy Skills Program
will work with the states, industry and unions to ensure workers have access to training pathways

$14.2 million National Rail Manufacturing Plan
to support jobs in sustainable transport

$20 billion to modernise our energy grid, creating thousands of new jobs

$15 billion National Reconstruction Fund
to support, diversify and transform Australian industry
Carbon markets

Carbon markets provide another opportunity for regional communities to contribute to Australia’s emissions reduction goals, while diversifying income and increasing farm productivity. Carbon crediting offers landholders, communities and businesses, including First Nations people and farmers, the opportunity to run projects that avoid the release of greenhouse gas emissions or remove and sequester carbon from the atmosphere.

Over 1000 projects are underway in Australia, spanning all states and territories, and concentrated in regional and rural areas. Activities include planting trees, changing farming practices to store more carbon in soil or to reduce the emissions of herds, and managing fires in Australia’s savannas. Projects are awarded one Australian Carbon Credit Unit (ACCU) for each tonne of CO₂-e they sequester or avoid. The Government will continue to support projects and the purchase of ACCUs through the Powering the Regions Fund, and project developers can also sell into private markets to meet growing private demand. The reforms to the Safeguard Mechanism will provide an ongoing source of private sector demand for ACCUs, encouraging further investment in these projects.

The Clean Energy Regulator is in the process of developing an Australian Carbon Exchange that will make the trading of ACCUs simpler and support rapidly increasing demand from the corporate sector. It will help foster growth in Australia’s vibrant carbon markets, where ACCUs credited from approved Emissions Reduction Fund projects can be traded among individuals and businesses.

The Government has commissioned an Independent Review of ACCUs, led by former Chief Scientist Professor Ian Chubb, to ensure carbon credits are of the highest integrity and provide social, economic and environmental benefits. We are committed to the ongoing integrity of this market and will ensure any issues identified by the review are addressed to promote investment certainty and environmental effectiveness.

In August 2022, the Climate Change Authority released its Review of International Offsets. The review included 18 recommendations about the use of international carbon offsets, particularly for the Australian Government’s Climate Active program and Indo-Pacific Carbon Offsets Scheme. The Government’s response to the review is due in February 2023. The Climate Change Authority’s advice further highlights the role that a national carbon market strategy could play in the net zero by 2050 plan. We will consider this advice as part of the plan’s development.

The $20.3 million Carbon Farming Outreach Program will deliver targeted advice to farmers and land managers, including First Nations people. It will help them make informed decisions on how to integrate low-emissions technologies and practices, and whether to participate in carbon markets by developing offsets or their own low-emissions products. This will help grow rural and regional economies and employment opportunities.

In addition to opportunities from carbon offsetting, global markets are increasingly prioritising low-emissions agricultural commodities. Australia is well placed to respond to this trend because of our reputation for clean and safe produce. Meat and Livestock Australia has set a goal to be carbon neutral by 2030; Dairy Australia aims for a 30% reduction in emissions intensity in the same time frame; and wool production is also moving towards carbon neutrality (Meat and Livestock Australia 2020; Dairy Australia 2020; Australian Wool Innovation 2020). All are committed to achieving these goals by avoiding emissions, undertaking sequestration activities and using carbon offsets.
Australia’s home-grown carbon market

Contracted abatement: 215m tonnes total across all methods

$2.7 billion Committed in total

Total abatement: 120m tonnes issued as ACCUs

Tonnes of CO\textsubscript{2}-e abated and issued as ACCUs per state and territory

- **ACT**: 959,874
- **TAS**: 2,058,018
- **SA**: 1,908,336
- **WA**: 8,740,653
- **VIC**: 8,964,963
- **QLD**: 30,683,398
- **NSW**: 56,657,253
- **NT**: 7,233,297
- **Multi-State**: 2,093,277
- **National**: 549,073

as of 13 November 2022

Australian Carbon Credit Units (ACCUs) contracted by method of abatement:

- Vegetation: 148.9m
- Landfill & waste: 26.4m
- Agriculture: 15.2m
- Savanna burning: 13.6m
- Facilities: 4.7m
- Energy efficiency: 3.3m
- Industrial fugitives: 1.7m
- Transport: 1.2m

Contracted abatement: 215m tonnes total across all methods

$2.7 billion Committed in total

Total abatement: 120m tonnes issued as ACCUs
Climate Active certification

Climate Active is the Australian Government’s carbon neutral accreditation scheme. To become Climate Active carbon neutral, businesses and organisations calculate the greenhouse gas emissions generated by their activity, such as fuel or electricity use and travel. They reduce these emissions as much as possible by investing in new technology (including renewable energy), changing the way they operate and seeking out lower carbon supply chains. Any remaining emissions can be abated by purchasing eligible carbon offsets.

The Climate Change Authority Review of International Offsets provides advice on the use of international carbon offsets under Climate Active and the Indo-Pacific Carbon Offsets Scheme, in the context of the Paris Agreement. The review found Climate Active has appropriate processes for maintaining offset integrity, but needs to keep up with evolving practices to encourage continuous improvement. The Government will consider the review’s recommendations as part of its response.

On 10 December 2021, the previous Government announced a requirement for all carbon neutral Climate Active certifications to use 20% ACCUs, to be implemented in two phases:

- from 1 July 2023, for certifications with annual emissions equal to or greater than 1,000 t of CO₂-e
- from 1 July 2024, for certifications with annual emissions less than 1,000 t of CO₂-e.

The Independent Review of ACCUs is considering the integrity of ACCUs and the requirements for use of ACCUs under Climate Active. This review will complete its report by 31 December 2022.

Figure 1: Climate Active certification growth since 2010

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<th>Events</th>
<th>Buildings</th>
<th>Precincts</th>
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<th>Total (projected)</th>
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Total of 605 certifications

Climate Active Certifications (as of November 2022)

344 organisations 88 products 35 services 20 events 115 buildings 3 precincts

Across 437 businesses
Technology investment and innovation

Both the IEA (2021) and IPCC (2022b) report that achieving the deep and effective emissions reductions required to meet net zero will require innovation and deployment of clean technologies at a substantially faster pace and larger scale than seen to date. The IEA work emphasises the importance of commercialising a greater range of technologies to achieve net zero at reduced economic cost (IEA 2021). The Government’s current measures and Powering Australia policies support technology investment to meet our medium-term supply needs and increase demand for renewable energy (solar, energy storage, hydrogen), EVs, and low emissions metals.

Alongside our drive to deploy existing technology, the Government is supporting innovation for the technologies we will need beyond 2030. The Climate Change Authority highlighted the value of developing a plan for technology research development and deployment for all sectors over the coming decade.

We agree with this advice and consider it could complement the measures in Powering Australia by highlighting areas where further investment from Government and the private sector could accelerate large-scale technology development and deployment. We will consider how this advice can be addressed as part of the broader net zero by 2050 plan.

Investing in Australian innovation

Innovation supports further development of existing technologies and development of new technologies. This is especially important for hard-to-abate sectors. Our universities and companies play an essential role in developing cutting-edge technologies. Commonwealth agencies such as ARENA, the Clean Energy Finance Corporation (CEFC) and the Northern Australia Infrastructure Facility (NAIF) play a key role in driving development and deployment of clean technologies.

Australian Made Hydrogen in Western Australia

As part of the Western Australian Government’s Renewable Hydrogen Strategy, the state government is partnering with ITM Power and Linde Engineering in a $450,000 study to develop a business case for the manufacture of hydrogen electrolyser within the state. The business case aims to identify the site, costs and local demand needed to get upstream manufacturing underway. This strategy sets several goals to achieve by 2030, including using renewable hydrogen in mining haulage vehicles, using hydrogen as a major fuel source for regional transport and freight, and increasing WA’s market share in global hydrogen exports so it is similar to its share in LNG today.

Hydrogen electrolyser are a core component of producing renewable hydrogen through electrolysis, a chemical process that separates water into hydrogen and oxygen molecules using electricity. IEA’s 2022 Global Hydrogen Review projects that demand for electrolyser’s capacity will increase from 0.3 gigawatts today, to close to 850 gigawatts by 2030, and almost 3,600 gigawatts by 2050. Western Australia alone could have up to 100 gigawatts of renewable hydrogen generation capacity by 2030. As the expansion of hydrogen production continues, the demand for critical equipment such as electrolyser’s will increase, which presents a new opportunity for local advanced manufacturing industries.

Under the Climate Action Fund, $500,000 has been allocated to support feasibility studies of the potential size, scale and market for hydrogen electrolyser manufacturing, assembly and maintenance opportunities. These studies will allow the state to better position itself in the supply chain for renewable hydrogen, by providing clearly defined opportunities around potential manufacturing capabilities.
ARENA is focused on innovation investment, supporting pilot, demonstration and precommercial renewable energy technologies and projects across sectors. The Government has expanded ARENA’s mandate to support energy efficiency and electrification technologies that can reduce emissions.

As a specialist investor and a world-leading example of a green bank, the CEFC supports investment across solar, energy storage, bioenergy and wind. The CEFC operates with a national focus to deliver finance essential to fill market gaps for pre-commercial and commercial-ready projects.

Innovation the key to reaching our 2050 target and unlocking opportunities

Affordable, new and innovative ways to manufacture and deploy clean energy and low emissions technologies are essential to reaching our 2050 target. Innovation is needed to support the operation and integration of flexible clean sources of generation, such as hydropower, bioenergy and battery storage, and to develop solutions for sectors such as agriculture.

Increasing renewable generation will support decarbonisation of the steel and aluminium processing sectors and the supply of other renewable energy sources, such as hydrogen. Australia has abundant land and renewable energy resources, and an established track record as a major energy and mineral exporter. This means Australia is well positioned to be a global hydrogen, ammonia, low-emissions iron ore, iron and steel producer.

There is also great potential for the use of large-scale hybrid renewable energy facilities to support local renewable energy use in the Pilbara and other mining-intensive regions. This will enable large-scale mine electrification and fuel switching to hydrogen, and facilitate decarbonisation of mineral and metal processing and higher-value exports.

CASE STUDY
Livestock feed supplements to reduce emissions

Australian researchers are playing a key role in the global race to reduce livestock emissions through development of methane-reducing feed supplements.

The Government is investing in the development of methane-reducing feed supplements across the whole value-chain. In October, the Government announced $5 million in grants to support research and development for livestock feed supplements under the $29 million Methane Emissions Reduction in Livestock (MERiL) Program.

The Government has also committed $8 million for the seaweed industry to scale-up of production of Asparagopsis to ensure we can meet current and future demand.

There is growing global demand for hydrogen, driven by the decarbonisation efforts of Australia’s major trading partners, the international shipping industry and Europe’s energy crisis. Australia is playing a leading role internationally to develop methods to determine emissions coming from hydrogen production. Australia’s Guarantee of Origin scheme will measure and show key attributes of how and where a unit of hydrogen is produced, including its carbon emissions, to allow customers to choose the product best suited to their needs into the future. It will also provide an enduring mechanism to certify claims of renewable electricity. Over time, the scheme could be expanded to cover other low emission products.

Further innovations can fully unlock the emissions reduction potential in these sectors. The Government is focused on investing in those priorities that will move us towards our emissions reduction goals and capitalise on economic opportunities.
ARENA has committed $1.96 billion to 632 projects across Australia. For every $1 invested by ARENA, there has been $3.48 of co-investment resulting in total investment of $8.81 billion.

The breakdown of ARENA’s investment by state and territory is shown in Figure 2.

Over its lifetime, ARENA has funded mostly solar PV projects in the Australian Capital Territory, New South Wales and Queensland. Across South Australia, Victoria and the Northern Territory, grid integration has been a common theme for projects, while storage (batteries and pumped hydro energy storage) has been a focus in Tasmania and South Australia. Western Australia has a similar number of projects across grid integration, hydrogen and solar PV. In addition to these trends, ARENA has invested in a variety of technologies across each state and territory. The following are examples of these projects.

**Australian Capital Territory**
- **Evoenergy Project Converge:** With the help of a $2.85 million grant from ARENA, Project Converge is demonstrating coordination of distributed energy resources to improve network congestion management and minimise network expenditure.

**Victoria**
- **Brimbank Leisure Centre:** With the help of a $1.53 million grant from ARENA, the Brimbank Aquatic and Wellness Centre Integrated Energy System project, led by the Brimbank City Council, is Australia’s first 100% renewable energy powered aquatic centre, demonstrating a pathway for all councils to achieve their climate goals.

- **Viva Energy Australia New Energies Service Station:** With the help of a $22.8 million grant from ARENA, the project will build a fuel cell electric vehicle (FCEV) hydrogen refueling station located in Geelong, to support the uptake of hydrogen FCEVs in heavy fleets.
• **Spinifex Offshore Wind Farm:** With the help of a $1.5 million grant from ARENA, Alinta Energy is exploring how to potentially supply 100% renewable energy to the Portland Aluminium Smelter and assessing the potential of offshore wind and state-of-the-art technologies.

**New South Wales**

• **MGA Thermal Energy Storage Project:** With the help of a $1.26 million grant from ARENA, MGA Thermal has set out to design, manufacture and operate a 0.5 MW/5 MWh thermal energy storage system in the Hunter region to test its potential to provide cost-effective longer duration energy storage.

• **Yanderra Poultry Farm:** With the help of a $318,000 grant from ARENA, the Yanderra Shallow Geothermal Solar Systems Demonstration Project will demonstrate a full-scale operational hybrid-geothermal system at a poultry farm.

• **Underground renewable storage in Broken Hill:** With the help of a $45 million grant from ARENA, Australia’s first energy storage facility utilising compressed air technology will be built to back up power supplies in far western NSW. The $652 million Silver City Energy Storage Project, will compress air during the day, store it in a cavity at a disused local mine, and use it to power homes and businesses in the evening when demand is highest. This will help reduce electricity prices and providing reliable backup power for Broken Hill.

**Queensland**

• **Gibson Island Renewable Ammonia Project FEED Study:** With the help of a $13.66m grant, Fortescue Future Industries and Incitec Fertilisers Operations are undertaking a joint front-end engineering and design (FEED) study for the development of a large-scale renewable hydrogen production facility to decarbonise the existing Gibson Island ammonia plant.

**South Australia**

• **Neoen Hornsdale Power Reserve (HPR) Upgrade:** With the help of an $8 million grant from ARENA, the Neoen HPR is now the world’s first grid-scale inertia system, with 150 MW/193.5 MWh capacity approved by Australia’s Energy Market Operator since July 2022. Inertia keeps the electricity grid functioning. This project showcases the range of benefits that grid-scale batteries can provide to Australia’s energy system and consumers.

• **Tesla Virtual Power Plant:** With the help of an $8.2 million grant from ARENA, Tesla has installed 1,500 household solar and Powerwall battery storage systems on residential properties owned by Housing SA and is halfway towards its goal of 3,000 by mid 2023. These systems are centrally managed and controlled by Tesla and offer a chance for Housing SA tenants to lower their electricity bills and be part of making electricity cleaner and more affordable, reliable and secure for all South Australians.

**Western Australia**

• **Western Power Project Symphony:** With the help of an $8.55 million grant from ARENA, Project Symphony is piloting the orchestration of customer-owned distributed energy resources such as rooftop solar, batteries and major appliances to participate in a future energy market. Over 300 customers have already signed up to participate in the pilot and help manage their bills, and the health of the network.
3.2 Adaptation and resilience

Adaptation is the process of adjusting to the actual or expected effects of climate change. In 2021, Australia joined the UNFCCC Glasgow–Sharm el-Sheikh work programme, which focuses on the global goal of adaptation, collaborating with international colleagues to establish the tools we need to monitor and evaluate adaptation actions. The outcomes of this working group are expected in 2024 and will be important in measuring how Australia is tracking in supporting adaptation.

Even with strong global action to reduce emissions, the impacts of climate change will continue to increase over the coming decades due to past emissions. Practical action is needed to build resilience and protect communities, economies and the environment from the impacts of climate change. This means we must anticipate, manage and invest in adapting to climate risks.

The Climate Change Authority concluded in its advice that the Government could strengthen its adaptation and resilience efforts. With the impacts of the most recent unprecedented flooding still being felt, and recovery still underway following the Black Summer bushfires, the importance of building community resilience to adapt and avoid impacts over the long-term is paramount.

The Government accepts this advice, and will further consider it as we strengthen our national adaptation policies. This includes improving climate risk management and the quality and accessibility of climate and disaster risk information across all levels of government. To do this, we need to develop a national vision for adaptation, based on extensive consultation, including state and territory governments, local governments, industry and business groups, local communities and First Nations people that can guide the Government’s work.
Australian state, territory and local governments are already taking significant steps in adaptation and climate-related risk management, including information services, climate modelling, renewable energy projects, emissions projections and climate change scenario development. All of our eight states and territories, and many local governments, have an adaptation plan, either as part of a broader climate strategy or in a standalone adaptation strategy. These are listed below:

- ACT Climate Change Strategy 2019–2025
- NSW Climate Change Adaptation Strategy
- Queensland Climate Adaptation Strategy 2017–2030
- South Australian Government Climate Change Action Plan 2021–2025
- Climate Action 21: Tasmania’s Climate Change Action Plan 2017–2021 (Climate Action 21)
- Victoria’s Climate Change Strategy
- Western Australian Climate Policy
- Northern Territory Climate Change Response: Towards 2050.

**Australian Government adaptation action**

The Paris Agreement outlines that signatories should undertake national adaptation planning. This can include assessing climate change impacts and vulnerability, prioritising actions and monitoring and evaluating policy effectiveness. Australia’s national adaptation efforts are underpinned by agreed roles and responsibilities that are built on the foundation that risks are dealt with most effectively by empowering those who are best placed to manage them. This framework guides federal, state and territory Government cooperation and highlights the specific roles and responsibilities of the Australian Government.

These include:

- providing national leadership on adaptation reform
- providing nationally authoritative climate science and information
- managing climate risks to Australian Government assets and services, including investments in public infrastructure
- maintaining a strong, flexible economy and a well-targeted social safety net to ensure resources are available to respond to climate change and vulnerable groups are not disproportionately affected.

The Australian Government’s National Climate Resilience and Adaptation Strategy 2021–2025 (the Strategy) includes three main objectives to position Australia to better anticipate, manage, and adapt to the changing climate:

1. drive investment and action through collaboration
2. improve climate information and services
3. assess progress and improve adaptation over time.

Adaptation cannot be a standalone policy, and the Government is working actively to integrate climate risk considerations in a range of key strategies and decision-making processes. For example, the Government committed in the October 2022–23 Budget to making climate change a national health priority by allocating $3.4 million to establish a National Health Sustainability and Climate Unit and develop Australia’s first National Health and Climate Strategy.

**Understanding Australia’s climate risks**

In the 2022-23 October Budget, the Government committed $9.3 million over four years to address climate risks, including for co-design and scoping of a national climate risk assessment. This will improve our understanding of Australia’s greatest climate change risks. A national climate risk assessment will also include a monitoring and evaluation framework that will track adaptation progress.
The Government is also working to understand future climate risk through:

- coordinating the delivery of next-generation national climate scenarios with key research bodies and state and territory governments;
- enhancing the operation of the Australian Climate Service to provide extensive climate and natural hazard data, information and advice into a single national view; and
- restoring Treasury’s role in modelling climate risks and opportunities for the Australian economy.

Managing climate-related risks in the private sector

Business, industry and financial groups have reiterated the importance of policy certainty and consistency of regulation to aid our transition to net zero and consistent management of climate-related risks. The Government has committed through the Powering Australia plan to work with large businesses to ensure they provide Australians and investors with greater transparency and accountability when it comes to their climate-related plans, risks and opportunities. This would support the voluntary action already undertaken by some companies – such as setting themselves net zero targets and disclosing their climate risks.

Building on this, the Government has committed to working to improve corporate practices through regulation, including through requiring improved environmental social governance reporting, mandating climate-related financial disclosures and cracking down on corporate greenwashing. Public consultation on the design and implementation of standardised, internationally aligned requirements for disclosure of climate-related financial risks will commence in December 2022.

Treasury has commenced work with financial regulators and other agencies to develop a coordinated and ambitious Australian sustainable finance strategy. This will aim to help the financial system fund the transition to net zero and ensure that Australian firms remain competitive in global capital markets.

Disaster risk management

Australia’s approach to reducing disaster risks is set out in Australia’s National Disaster Risk Reduction Framework (2019), which implements the Sendai Framework – the primary international framework to drive disaster risk reduction. The Sendai Framework recognises that climate change is a key driver of disaster risk and the increasing frequency and intensity of disasters. It sets a foundation to incorporate disaster risk considerations into planning, policies and programs.

On 1 September 2022, the National Emergency Management Agency (NEMA) was established to provide end-to-end oversight on emergency management response, recovery and resilience, which is essential for Australian communities in the face of growing disasters due to climate change. This is a significant step forward to strengthen Australia’s ability to prepare for, manage and recover from an increasing number and severity of disasters.

From 1 July 2023, the $1 billion Disaster Ready Fund will provide up to $200 million per year to support investment in community and state-based projects like flood levees, sea walls, cyclone shelters, evacuation centres and firebreaks to enable better preparedness for and prevention of disaster, and reduce the impact disaster has on our communities. This funding will be matched, where possible, by state, territory and local governments.

The Government is also investing $22.6 million in a reform package to begin addressing insurance affordability and availability issues driven by disaster risk. The package will improve collaboration with industry to build a national knowledge base of where the most pressing insurance issues are and how to address them. It will also focus on improving consumer understanding of insurance.
Progress toward Sendai Framework for Disaster Risk Reduction Targets

The Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework) is the key international framework to drive disaster risk reduction, and seeks to achieve a substantial reduction of disaster risk by 2030. The Sendai Framework recognises that climate change is a key driver of disaster risk and the increasing frequency and intensity of disasters.

In 2022, Australia concluded a national midterm review of the domestic implementation of the Sendai Framework underpinned by extensive stakeholder consultation.

The Review found that Australia’s National Disaster Risk Reduction Framework (NDRRF) is effectively reducing our disaster risk. The Review also identified several actions to accelerate implementation and further reduce Australia’s disaster risk. These findings will be addressed through the Second National Action Plan. These included:

1. Aligning frameworks, strategies and plans across all levels of government and improving intergovernmental communication.
2. Mainstreaming climate and disaster risk reduction into other sectors for more harmonised systemic interventions.
3. Improving access to information, especially for decision making.
4. Developing standardised resources and processes to enable more rigorous and comparable risk assessments, more robust risk management, and more resilience benefits to boost private sector investment in infrastructure.

The outcomes of all national reviews will inform the United Nations’ efforts to monitor global implementation of the Sendai Framework.
Climate change is driving sharp increases in both the frequency and severity of many extreme weather events across the country. Multiple devastating floods affected more than half of Queensland in 2021–22. Record rainfall and flooding has tragically claimed lives and damaged homes, businesses, community organisations, schools and farms. The estimated cost of recovery and reconstruction will be more than $3 billion over five years, in addition to the broader economic and social impacts of the floods. The impacts of the flooding events will be felt for many years, but the best way we can collectively deal with more frequent and severe disasters is to be better prepared and adapt to the effects of climate change.

The Queensland Government, in collaboration with the Australian Government, is stepping up its support for affected regions and households and helping people adapt to flood risk and be resilient to future climate impacts. The $741 million Resilient Homes Fund, jointly funded by the Queensland and Australian governments, will support homeowners to bolster resilience across 39 local government areas. Funding is available to assist eligible flood-impacted homeowners to repair, retrofit or raise flood-affected homes.

Buy-backs will also be considered on a case-by-case basis and are voluntary. Investing in resilience measures in the home can significantly reduce the effort, cost and time to recover from disasters. It not only reduces the physical and financial costs, but the social and emotional impacts as well. This is the largest household resilience program of its kind to ever be delivered in Australia and has the potential to change Queenslanders’ lives and the region’s resilience to flooding.

Through the Disaster Ready Fund, the Australian Government will set aside up to $1 billion over the next five years to mitigate potential disaster loss and damage. With a focus on disaster resilience, it will help reduce the physical, economic and psychological impacts of disasters experienced by Australians.
3.3 International climate engagement

International cooperation is essential to addressing climate change and critical to securing the investment Australia needs to power our industrial transformation. There is an opportunity for Australia to be among the first movers, or gain early advantages, in renewable energy and clean technology sectors.

Through international engagement, Australia also has the opportunity to advocate for others. Climate change is the single greatest threat to the livelihoods, security and wellbeing of the peoples of the Pacific. Creating a space where the voices of the most vulnerable can be heard is central to highlighting the urgency for action. And genuine engagement with our Pacific family on climate is aligned with Australia's regional and foreign policy interests.

Australia’s new message to the world is clear: Australia is acting on climate change at home and will work to be part of the solution globally.

Through the 2022–23 October Budget, the Government is investing a further $45.8 million over six years to strengthen partnerships with our neighbours and others globally on climate change and energy transformation including more proactive engagement with the UNFCCC. This investment builds on Australia’s long-term investment in multilateral institutions.

On 5 November 2022, the Australian Government reinstated the role of Ambassador for Climate Change, appointing Ms Kristin Tilley to this role. The ambassador plays a leading role in Australia’s international advocacy and engagement on climate change, with a focus on engaging Pacific and South-East Asian neighbours. Ambassador Tilley will also provide advice to Government on international climate issues to advance our foreign policy, economic and development interests internationally.

Multilateral engagement

Australia participates in many multilateral forums to contribute to the global conversation on climate, and shape international cooperation. For some years, there has been a global perception that Australia had not made the commitments commensurate with our economy and place as a developed nation. Our work to repair international relationships and engage constructively in international cooperation to address climate change is already underway.

One of the Government’s first actions was to pledge our new NDC under the Paris Agreement, committing to lower our greenhouse gas emissions by 43% by 2030. This is a significant increase from our previous pledge of a reduction between 26% and 28% and ensures Australia is back at the international table, and able to pitch our potential with other nations as a clean energy superpower.
We are also redoubling our efforts in other critical forums that allow Australia to share our knowledge and enhance our reputation as a future clean energy exporter.

The IEA is an increasingly valuable forum for Australia, as cooperation on energy security shifts to the forefront of Government priorities around the world. Australia, as a major energy exporter, has an important role in this forum. In July 2022, Australia co-hosted the Sydney Energy Forum with the IEA, bringing together global industry and governments to discuss the challenges of accelerating clean energy deployment with a focus on supply chains. The first of its kind, the forum served as an opportunity for Government and industry to talk practically about what changes are needed to support the global transition.

In the margins of the forum, the Minister for Climate Change and Energy chaired a meeting of Energy Ministers from the Quad countries. The Quad is an important partnership between four key countries in the Indo-Pacific: Australia; India; Japan; and the United States. Cooperation on clean energy supply chains is a particular focus.

Forums that link Australia’s governments, businesses, industries and researchers with partners around the world are also critical to ensuring Australia stays at the forefront of technology development and innovation. Australia attended the Global Clean Energy Action Forum, a convening of Mission Innovation and the Clean Energy Ministerial in Pittsburgh, USA, in September this year. This was a rich opportunity to learn about cutting-edge technology, deployment solutions and the challenges the world needs to grapple with. Australian industry showcased how Australia was contributing to the energy transition by developing and harnessing clean technology.

Australia is playing an active role in forums such as the International Solar Alliance, the International Renewable Energy Agency and the Green Grids Initiative – One Sun One World One Grid. These forums are important to emerging and developing economies, particularly in our region, that are placing significant importance on solar for electricity generation.

The Global Methane Pledge is a voluntary commitment with 130 signatories – including the United States, the United Kingdom, Australia and the European Union – working collectively to reduce global methane emissions across all sectors by at least 30% below 2020 levels by 2030. Domestically, Australian investment will include up to $3 billion from the $15 billion National Reconstruction Fund to support investment in, for example, low-emissions technologies, component manufacturing and agricultural methane reduction.

A number of forums, including the OECD Task Force on Climate Change Adaptation, address global cooperation on adaptation. Established in 2019, this taskforce brings together policymakers and adaptation experts from over 70 countries and organisations to promote concrete solutions and accelerate policy action on climate adaptation.

As new initiatives and ideas for using international cooperation to address climate change emerge, Australia will engage constructively and listen carefully to the views of our partners. Australia’s decision to join the German-led Climate for Peace initiative in October is an example. The initiative provides a new forum for building collective understanding of climate and security risks with international partners.

International partnerships – building export markets and enhancing cooperation

Australia is well positioned to become a renewable energy superpower. With our exceptional renewable energy resources, record as a trusted global energy trade partner, proximity to Asian trade partners and stable regulatory environment, we have unique opportunities to export clean energy and the embodied products required in a net zero economy.
The Australian Government is working closely with international partners to advance practical action on climate change and build new clean energy industries. Australia has international clean energy partnerships with Germany, Singapore, Japan, India, the Republic of Korea, the United Kingdom and the United States. Through these partnerships, we are cooperating to support regional and global energy transformation, increase and diversify clean energy supply chains, collaborate on technology development and build new clean trade opportunities for Australia. Our focus areas include hydrogen, solar PV, energy storage, green metals (steel and aluminium) and advanced renewable energy integration technologies.

In October, we signed the Singapore–Australia Green Economy Agreement (GEA). A first of its kind, the GEA supports Australia’s economic, trade, investment and climate change objectives. Through the GEA, Australia and Singapore are laying the foundations for cross-border economic activities that drive growth and reduce emissions. This includes facilitating flows of environmental goods and services, green and transition finance, and clean energy.

Leader-level meetings have also strengthened cooperation with our key partners in the region and around the world. On 6 June 2022, Prime Minister Albanese and President Widodo reaffirmed cooperation, noting the urgency of action on climate change while maintaining and enhancing energy security. The Prime Minister also announced Australia’s commitment to a $200 million Climate and Infrastructure Partnership with Indonesia. On 1 July, the Prime Minister met with President Macron of France, reaffirming our shared interests, including cooperating on climate change and energy, particularly in the Pacific. At the Pacific Islands Forum on 15 July 2022, the Prime Minister reiterated Australia’s recognition of the existential threat posed by climate change to our Pacific neighbours and our commitment to take action.

Australia is one of the members of the Indo-Pacific Economic Framework (IPEF). The IPEF negotiations were launched on 9 September 2022 by 14 countries: Australia, Brunei Darussalam, Fiji, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, the Republic of Korea, Singapore, Thailand, the United States and Vietnam. Negotiations will cover a range of issues, including the environment, clean energy, decarbonisation and infrastructure. The IPEF seeks to complement and build on existing regional architecture and support the global rules-based trading system.

Australia is also engaging in a range of multilateral forums to enhance global cooperation on critical minerals. Australia is now the Chair of the Working Party on Critical Minerals under the IEA and actively involved in the Minerals Security Partnership and the Conference on Critical Minerals. These forums discuss complex global issues, including the best way to incentivise research and development, exploration, processing and production to meet the exponential growth in demand for critical materials. Australia has a strong interest in influencing the development and growth of these global markets.

The US Inflation Reduction Act offers opportunities for Australia to expand its footprint in global supply chains, particularly in supplying the critical minerals integral to the manufacture of clean energy products. The Technology Investment Advisory Council, chaired by Dr Alan Finkel, will be supporting the Government in considering these opportunities. The Government will also continue to engage closely with the US as the investments under the Inflation Reduction Act unfold, to understand and promote opportunities for Australia, and communicate any risks for industry and investment.
Contributing to the economic future and resilience of the Pacific region

Climate change is the single biggest threat to livelihoods, security and wellbeing for our country and our Pacific family. As we take action to transition Australia’s economy we have a responsibility to work with all in the Pacific to achieve our shared aspirations and address shared challenges.

Australia is strongly committed to contributing to the US$100 billion collective annual global goal for climate finance to support the climate adaptation and mitigation objectives of developing countries. We are on track to meet our doubled climate finance commitment of $2 billion over the period from 2020 to 2025, with at least $700 million of this to be directed to the Pacific.

The Australian Government’s increased ambition on climate extends throughout the Indo-Pacific region. We have increased our total overseas development assistance budget by $1.4 billion over the next four years, including an additional $900 million development assistance to the Pacific. This additional assistance will support further climate action in the region to build renewable energy capacity and strengthen climate and disaster resilience. Reflecting the needs of our region, we will maintain our historically strong focus on climate adaptation.

Through the new development policy and the development finance review – both due for completion in the first half of 2023 – the Government is actively considering ways to mobilise more finance, including from the private sector, to support climate action across our region, as well as to avert, minimise and address loss and damage.

Making the transition to low-emissions, climate-resilient economies will require a major and sustained increase in financing from all sources. This is why Australia, at COP27, began to make the case for mobilising finance from multilateral development banks like the World Bank, the private sector, and a wider country donor base. This is why, amid global economic headwinds and rising interest rates, Australia’s concessional lending and grant assistance will help our Pacific partners to continue to deliver sustainable and transparent infrastructure projects that meet international standards without imposing unsustainable debt burdens.

3.4 Governance and institutions – climate action in the public service

The Government is improving integrity in decision-making around climate change and ensuring the Australian Public Service (APS) meets international standards of best practice. We have committed $7.1 million to kick-start the transition of the APS to net zero by 2030 and maintain public accountability through regular emissions reporting. An additional $39.1 million will equip the APS with the resources to analyse and consider climate change comprehensively in policy decisions and Government reporting. This includes funding to restore the Treasury’s role in modelling climate risks and opportunities for the Australian economy.

APS net zero

The Government is committed to achieving APS net zero emissions by 2030, ensuring the APS plays its part to support national climate action. This will include:

- increasing renewable energy supply
- demand management and improved energy efficiency
- using more low-emissions and electric vehicles
- using Government spending power to take action on climate change and support energy projects through the Buy Australia Plan
- quality offsets for emissions that have not been eliminated by 2030.

Defence and security agencies, although exempt from the 2030 target, are making significant changes to their emissions and environmental impacts by implementing many of these same actions. It is important not to compromise capability; however, in many cases, defensive and security capabilities can be improved by adopting low-emissions technology, building resilience in supply chains and adapting to the physical and transitional impacts of climate change.
Climate risk management in Government operations

In addition to achieving net zero across APS operations, the Government is building greater public sector integrity and accountability by improving climate risk and opportunity management by Australian Government institutions.

The October 2022–23 Budget provides $9.3 million over four years to address climate risks, including to develop and implement a Commonwealth Climate Risk and Opportunity Management Program. This will support and improve how the Government manages climate risks to policies, programs, operations, assets and services delivered to the Australian community. This includes a number of key components:

- The development of a Climate Risk and Opportunity Strategy to help coordinate, report, evaluate and prioritise management of climate risks at a whole-of-government level.
- A new climate risk assessment and management framework and digital risk assessment toolkit. This will build on the existing Climate Compass, be aligned to international best practice and provide an easy-to-use method for public agencies to identify, assess and manage climate-related risks and opportunities using the best climate change science.
- Implementing a climate disclosure framework for the APS and Australian Government entities based on best practice international standards already being followed by much of corporate Australia.
- A learning and development package and a capability uplift program across the APS will improve understanding and consideration of climate risk in the specific context of people’s work.

This work program will help improve the quality of Government spending by including climate considerations from the outset, and manage the increasing fiscal costs associated with climate change.

The new climate risk assessment and management framework, digital risk assessment toolkit and learning and development package will be available to all levels of government across Australia, helping to standardise, coordinate and track climate risk management across the nation.

In addition, the Australian Government’s Diplomatic Academy has launched a Climate, Energy and Environment Toolkit to provide online on-demand training for APS staff and development assistance delivery partners. The toolkit covers climate science, climate adaptation and resilience, clean energy and emissions, environment and international climate engagement.
Restored Treasury climate modelling

The Government is improving decision-making processes for policy development to ensure climate considerations are incorporated from the outset. Investments in the APS will equip it with the skills and tools to better integrate climate thinking into policies and operational decisions. Rebuilding Treasury’s climate modelling capability, in particular, will help ensure Australia better navigates the economic risks and opportunities arising from climate change, and the global transition to net zero.

3.5 Equality and inclusion

Vulnerable and marginalised communities bear a disproportionate share of the burdens and impacts of climate change. People experiencing financial stress or social disadvantage have fewer resources to cope with, adapt to and recover from the effects of climate change. The impacts of climate change and disasters can further marginalise those who are already vulnerable; for example, by causing long-term displacement or financial stress. These effects can include economic changes, where communities and people must adjust to changing employment, supplies of products and infrastructure. Vulnerable people and groups are much more likely to lose employment, live in disaster-exposed areas and not be able to move, adapt or change jobs.

Vulnerability can impact people with a range of different backgrounds. Australia has a significant culturally and linguistically diverse community who need to be considered as part of climate policy – from how we communicate in the midst of a disaster, to how cultural practices may be impacted by climate change. We also need to be mindful of the way vulnerabilities can intersect. For example, a person with disability may also have a culturally diverse background or be part of the LGBTIQA+ community, which leads to overlapping forms of vulnerability.

The Government is committed to working with communities to strengthen social resilience and ensure that no-one is left behind. While we are already taking steps to support vulnerable communities to adapt and respond to climate change, we recognise more work is required.

Over the next year, the Climate Change Authority will develop indicators to better measure the impact of the Commonwealth’s climate change policies on rural and regional Australia, including the social, employment and economic benefits being delivered by those policies. This will be an important element in future Annual Statements.

First Nations people

As outlined in section 1.3, First Nations people face substantial threats from the impacts of climate change. The Government recognises the crucial role of First Nations people in tackling climate change and the benefits that can be realised by incorporating traditional knowledge and practices into climate actions. First Nations people have an intimate understanding of Country; its landscapes, habitats, and flora and fauna. By leveraging and integrating this knowledge into our policies and decision-making processes, we can improve the effectiveness of our climate response and deliver better social and environmental outcomes.

The Government is committed to implementing the Uluru Statement from the Heart in full, and will hold a referendum to enshrine an Aboriginal and Torres Strait Islander Voice in the Constitution in our first term. The Voice will be an independent advisory body for First Nations people and will enable First Nations voices to be heard in the development of the federal laws, policies and programs that impact their lives. This will take time, so we are including First Nations in policy processes ahead of a formalised Voice.

$105.2 million will be provided to support First Nations peoples to respond to climate change in their communities. In addition to the Torres Strait Climate Change Centre of Excellence, a First Nations Clean Energy Strategy and Community Microgrids Program will enable First Nations communities to influence and access the benefits of Australia’s renewable energy transformation. These measures will be developed in consultation with First Nations people, and the states and territories. The Government also funds a range of programs that support First Nations people to use traditional knowledge to care for Country and undertake activities that help mitigate and manage the impacts of climate change.
These activities include undertaking cultural burning and assisting the recovery of native species and habitats following natural disasters. The Government will double the number of Indigenous Rangers by 2030, increasing the program by more than 2000 additional ranger jobs.

The Government will also provide $66.5 million to expand the Indigenous Protected Areas (IPA) program through the establishment of 10 new IPAs. Likewise, the 2021 State of the Environment report included First Nations authors, a First Nations-led theme and First Nations case studies.

**Gender**

The Government is committed to ensuring an inclusive, equitable, gender-responsive transition of the economy and workforce to a clean energy and climate-resilient future. Decarbonising the economy will create new employment and educational opportunities for women. However, Australia needs to step up engagement on gender. Globally the energy sector remains male dominated, and Australia’s gender balance in this sector lags behind that of other OECD countries. We need to make sure there is a culture that welcomes women, and pathways for young women to train and develop the skills that will enable them to participate in the energy workforce.

The Government has further endorsed the four key principles of the Equality in Energy Transitions Initiative. A collaboration between the Clean Energy Ministerial and the IEA, this initiative aims to advance the transition to a low-carbon economy through advancing women’s participation in clean energy and closing the gender gap in the energy sector.

The Government has additionally committed to delivering a National Strategy to Achieve Gender Equality by mid-2023. The strategy will guide whole-of-community action to help make Australia one of the best countries for equality between women and men.

**CASE STUDY**

**First Nations Community Microgrids Program**

ARENA will deliver $75 million in grants over four years from 2022–23 to support development and deployment of microgrid projects in First Nations communities. The microgrid projects will be developed in consultation with First Nations groups and clean energy experts, as well as with the states and territories.

Women and other marginalised gender identities are particularly vulnerable to the impacts of climate change. Disasters and extreme weather events contribute to increases in intimate partner and family violence. Likewise, financial insecurity experienced by many Australian women reduces their ability to respond to climate-related shocks and disasters, leading to a worsening of existing inequities. The Australian Disaster Preparedness Framework, which supports the development of capability to effectively prepare for and manage disasters, recognises the importance of a gender-specific focus on disasters.

The Government is committed to addressing the underlying causes that increase the vulnerability of women, including lack of representation, inequality and domestic violence. Targeted programs and initiatives such as the Women’s Budget Statement and the Office for Women aim to advance gender equality within Australia and, by extension, increase the capacity of women to absorb climate-related shocks and disasters.
4. PROGRESS TOWARDS TARGETS

The Government has set an ambitious target to reduce emissions by 43% on 2005 levels by 2030. This target applies at a point in time – with emissions to be no more than 354 Mt CO$_2$-e in 2030. It also applies as a budget for the 2021–30 period – with cumulative emissions to be no more than 4,381 Mt CO$_2$-e.$^1$

Meeting this target will set Australia squarely on track to meet net zero by 2050. Alongside this Annual Statement, the Government is releasing the 2022 Emissions Projections and the latest estimate of emissions for 2021–22. These provide our best current estimate of progress towards our targets.

Australia’s emissions have been on a modest downward trend since 2005. The latest Quarterly Update of Australia’s National Greenhouse Gas Inventory shows that national emissions during 2021–22 were 486.9 Mt CO$_2$-e. This is 22% below 2005 levels. To reach the 2030 point target, emissions will need to decline by an average of 17 Mt CO$_2$-e per year.

Australia’s 2021–22 emissions were a slight increase on the previous year, reflecting a combination of factors. Some – such as the gradual easing of drought conditions – have seen emissions increase in the agricultural sector. Others – such as the accelerating deployment of renewable energy – have contributed to reductions in the electricity sector.

The 2021–22 reporting period result largely reflects policies and measures taken by previous governments, including the long-term impacts of government measures implemented from 2007 to 2013, such as the expanded Renewable Energy Target and ongoing ARENA and CEFC investments. New commitments entered into by this Government from May 2022 have not had a chance to materially impact on emissions to June 2022.

Preliminary estimates for 2021 and 2022 indicate that Australia has emitted 974 Mt CO$_2$-e since 2020, using 22% of the total emissions budget to 2030. This leaves 3,408 Mt CO$_2$-e remaining.

Figure 3: Australia’s emissions projections baseline and ‘with additional measures’ scenario, 2020 to 2035, Mt CO$_2$-e

$^1$ Point and budget figures are indicative estimates. These are updated over time based on emissions data.
4.1 Getting to 2030

The emissions projections estimate Australia’s future greenhouse gas emissions, providing an indicative assessment of how Australia is tracking towards its emissions reduction targets. They also provide an understanding of the expected drivers of future emissions. The 2022 projections look at two scenarios:

- a baseline emissions projection reflecting already-implemented policies or those where the detailed design is already complete, achieving a 32% reduction in emissions on 2005 levels by 2030.
- a ‘with additional measures’ scenario, which incorporates the Safeguard Mechanism reforms and a national 82% renewable electricity target, which are still subject to consultation and design activity, achieves a 40% reduction in emissions on 2005 levels by 2030.

Both scenarios in the 2022 projections only reflect the Powering Australia measures that have progressed far enough to provide the detail needed to estimate the emissions impacts. Some policies are at an early stage of design, so are not yet reflected – such as some elements of the Powering the Regions Fund, National Electric Vehicle Strategy and National Reconstruction Fund.

The 2022 Emissions Projections indicate that under the ‘baseline’ scenario, Australia is projected to reduce its greenhouse gas emissions to 32% below 2005 levels by 2030. Under this scenario, Australia would exceed its emissions budget for 2021–30 by 5%.

Under the ‘with additional measures’ scenario including the Safeguard reforms and the 82% renewable electricity target, Australia is projected to achieve 40% reductions on 2005 levels by 2030, and exceed its emissions budget for 2021–30 by 1%. It is expected that as more of the Government’s Powering Australia plan is included in the projections, Australia’s emissions outlook against the 2030 target will improve further.

From 2020 to 2030 most of the declines in emissions are projected to come from the electricity sector due to strong uptake of renewables supported by national, state and territory policies. Smaller declines are projected from the waste, industrial processes and product use and stationary energy sectors. Emissions are projected to increase in the transport, agriculture and Land Use, Land-Use Change and Forestry (LULUCF) sectors as transport activity recovers following the COVID-19 restrictions and the projected restocking of the cattle herd as drought conditions ease.

To be on track for net zero by 2050, Australia needs to reduce emissions over the next eight years by a similar amount to what was achieved over the previous 18 years. This means the pace of emissions reduction needs to more than double. It also means emission reduction efforts must broaden across sectors. To date, the land sector has made the greatest contribution to emissions reductions, particularly due to state and territory regulation of land clearing.

The projections indicate we are already implementing many of the measures we need to achieve this goal. The Government is confident that with full implementation of the Powering Australia plan, collaboration with states and territories, and consideration of further issues outlined in the Climate Change Authority’s advice, we can achieve and surpass 43% emissions reduction by 2030. This is consistent with Australia’s legislated climate targets and NDC commitments. Our aspiration is that the commitments of our industry, states and territories and the Australian people will yield even greater emission reductions in the coming decade.
Figure 4: Change in Australia’s baseline scenario emissions from 2020 to 2030, Mt CO₂-e

Figure 5: Change in Australia’s emissions from the baseline to the ‘with additional measures’ scenario in 2030, Mt CO₂-e
States and territories

State and territory targets are a critical part of Australia’s overall national emissions reduction, especially in the electricity sector where they hold many of the levers for change. States and territories have made ambitious emissions reduction and renewable electricity targets that can be supported through coordinated national approaches. Through the National Energy Transformation Partnership, jurisdictions are aligned in ambition to take significant steps towards net zero.

4.2 Beyond 2030

The 2022 projections extend to 2035, providing insights on emission trends after 2030 under current policies and measures. The projections show that Australia’s emissions are trending down and the Government’s policies reduce emissions up to and beyond 2030. These projections provide the starting point for consideration of Australia’s next emissions reduction target that will keep us on course to net zero.

State and territory targets

<table>
<thead>
<tr>
<th>State or Territory</th>
<th>Net zero commitments</th>
<th>Emission reduction targets</th>
<th>Renewable energy targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Capital Territory</td>
<td>Yes by 2045</td>
<td>50-60% by 2025</td>
<td>100% renewable electricity since 2020</td>
</tr>
<tr>
<td></td>
<td></td>
<td>65-75% by 2030</td>
<td>Transition away from gas by 2045</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90-95% by 2040 compared to 1990 levels</td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td>Yes by 2050</td>
<td>50% by 2030 compared to 2005 levels</td>
<td>12 GW of renewable energy by 2030</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Yes by 2050</td>
<td>No interim targets</td>
<td>50% by 2030</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>70% renewable electricity generation for Indigenous Essential Services communities by 2030</td>
</tr>
<tr>
<td>Queensland</td>
<td>Yes by 2050</td>
<td>30% by 2030 compared to 2005 levels</td>
<td>50% by 2030</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>70% by 2032</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>80% by 2035</td>
</tr>
<tr>
<td>South Australia</td>
<td>Yes by 2050</td>
<td>50% by 2030 compared to 2005 levels</td>
<td>100% by 2030</td>
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<td></td>
<td></td>
<td></td>
<td>500% by 2050</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Yes by 2030</td>
<td>No interim targets</td>
<td>100% renewable electricity since 2020</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>150% by 2030</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>200% by 2040</td>
</tr>
<tr>
<td>Victoria</td>
<td>Yes by 2045</td>
<td>28-33% by 2025</td>
<td>65% and 2.6GW of storage planned by 2030</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45-50% by 2030</td>
<td>95% and 6.3 GW of storage planned by 2035</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75-80% by 2035 compared to 2005 levels</td>
<td></td>
</tr>
<tr>
<td>Western Australia</td>
<td>Yes by 2050</td>
<td>80% emissions reduction target below 2020 levels for Government operations</td>
<td>State-owned coal fired power stations, under Synergy, will be retired by 2030</td>
</tr>
</tbody>
</table>

Correct as of November 2022

*Victorian commitments from the returning Victorian Government following 2022 State Election.
Australia’s emissions are projected to decline to 38% below 2005 levels in 2035 under the baseline scenario. Under the ‘with additional measures scenario,’ including the Safeguard reforms and the 82% renewable electricity target, Australia’s emissions are projected to be 48% below 2005 levels in 2035.

Beyond 2030, and for the first time since emissions tracking began in Australia, emissions from all sectors are projected to decline. The largest contributions come from the electricity, LULUCF, stationary energy and transport sectors. Emission declines from the electricity sector are projected to continue as renewables uptake increases to meet state targets. Projected emission declines from LULUCF reflect the impact of national and state policies, including the cessation of native forest logging, primarily in Victoria. Emissions from the stationary energy and transport sectors are projected to decline as a result of increased electrification of vehicles, buildings, mining and manufacturing processes.

Under the ‘with additional measures scenario,’ including the Government’s priority measures, Australia’s emissions are projected to be 48% below 2005 levels in 2035.

The Climate Change Authority in its advice has highlighted the importance of keeping the 2050 goal in sight and beginning planning for achieving net zero by 2050 now. The Government is already building Treasury’s modelling capability. This will provide crucial analysis for developing our plan to reach net zero by 2050, including Australia’s 2035 target and priority policies to achieve it.

There can be a long lead time between planning and the subsequent impact of emissions reduction. Developing new policy, implementing new programs, replacing existing stock, and developing new technology all take time to result in real emissions reduction at a national scale. This means we need to start thinking about policies and measures to sustain and accelerate reductions beyond 2030. By 2025, Australia will need to submit a new NDC and commit to a 2035 target. To be as ambitious and effective as possible, we are beginning the necessary work now.
5. RESPONSE TO CLIMATE CHANGE AUTHORITY ADVICE

The Australian Government is committed to restoring Australia’s climate leadership and governance. The Government made a key election commitment that the Climate Change Authority would be restored.

The 2022–23 October Budget delivers $47.1 million over four years to restore the Climate Change Authority’s capability and empower it to deliver independent climate change advice, including on setting and tracking Australia’s climate change targets and policies. The additional funding will also support the Climate Change Authority’s new role of providing advice to the Government on the delivery of the Annual Climate Change Statement to Parliament.

The Government has recently expanded the membership of the Climate Change Authority, appointing three new members—all experienced climate change experts. The appointments of Dr Virginia Marshall, Professor Lesley Hughes and Ms Sam Mostyn also improve the Climate Change Authority’s gender balance, reflecting the value the Government places on equality in decision-making.

The Government acknowledges the efforts of the Climate Change Authority and thanks them for preparing advice to inform this Annual Statement, recognising the limited resources and tight timeframes of this first year. In future years, with the additional resources provided through the 2022–23 October Budget, the Climate Change Authority’s advice will be more comprehensive.

The Government accepts all of the Climate Change Authority’s advice and conclusions, which are available on its website. Key conclusions include:

- Climate change impacts are intensifying, highlighting the need for stronger adaptation and resilience efforts.
- 2021–22 was a significant year in Australia for climate mitigation, with the adoption of a net zero by 2050 target and a stronger 2030 target, subsequently legislated, and implementation of the Powering Australia plan commencing.
- Australia needs a momentum shift in emissions reductions, including decarbonising at an average annual rate that is more than 40% faster than it has since 2009.
- Everyone in Australia must be on a path to net zero. A long-term plan can ‘light the way’ to net zero and beyond. Business has limited time to demonstrate sufficient progress is being made. Achieving national goals will take leadership and a new era of Commonwealth, state and territory, and local government cooperation.
- The technologies for meeting the 2030 target exist, but supply chain, workforce and planning and approval issues should be examined and, where possible, addressed. A plan for technology research, development and deployment could be complementary to the Powering Australia plan.

The Climate Change Authority has indicated that it will develop leading indicators to help track Australia’s progress and identify where action is needed to address insufficient progress and policy gaps.

The Government commits to the development of a net zero plan that will provide the strategy to guide us to net zero by 2050. This will enhance policy certainty for businesses and communities and support an orderly and widely beneficial transformation of the economy as global markets change. In developing this plan, we will undertake detailed consultation with the states and territories, business, industry bodies, communities and First Nations people. While we recognise the Climate Change Authority’s emphasis on creating this strategy as soon as possible, we need to make sure we take the time to get it right.
6. CONCLUSION

Urgent action is needed to tackle the climate crisis, and urgent action is underway. This first Annual Statement gives an overview of where Australia is at and the scale of the task ahead. This includes the climate impacts, risks and challenges Australia faces, and what actions the Government is taking and is committed to taking.

Powering Australia presents a substantial set of policy measures, with significant investment to decarbonise our electricity sector and modernise our grid, so it is ready as other sectors of the economy electrify. Through the $20 billion Rewiring the Nation plan, we will deploy the much-needed upgrades to Australia’s electricity grid to manage the growth in demand for renewable electricity and make sure affordable, renewable electricity is transmitted to where it is needed. The reforms to the Safeguard Mechanism will align it with Australia’s national targets by providing a gradual and predictable signal to guide long-term planning and capital investment decisions in low-emissions technologies. The National Energy Transformation Partnership is a cornerstone agreement between the Australian Government and the states and territories to deliver the energy sector upgrades and emissions reductions we, as a nation, are committed to.

The Government has committed to regularly assess whether our policies are working as we expected, whether more action will be needed or whether we can encourage others to act. The Annual Statement is the opportunity for this assessment.

The 2022 projections show the Government’s actions so far, including our reforms to the Safeguard Mechanism and the 82% national renewable electricity target, will significantly reduce our emissions and put us on track to 40 per cent reductions on 2005 levels by 2030. Good progress has been made, but more work remains to be done to achieve our goals. More policies and programs will be implemented in the coming year and will be reflected in next year’s projections. These will further align our emissions reduction trajectory to our targets and towards net zero.

Global efforts to decarbonise present both challenges and enormous opportunities for Australia, particularly for our regional communities dependent on emissions-intensive industries. Communities have been vocal in asking all levels of government to work together to develop a coordinated and well-managed approach to regional transformation in the context of Australia’s net zero commitments. The Australian Government wants to ensure regional communities collectively seize and benefit from the opportunities the net zero economy presents.

The Government’s climate policy extends beyond reducing emissions. We are committed to delivering reliable and affordable energy for all Australians, creating job opportunities, growing new industries, and supporting communities to adapt to a warmer world, while ensuring no-one is left behind. There will be challenges as Australia adapts to the massive changes underway in global markets due to decarbonisation. The Government is squarely focused on achieving the best possible outcomes for Australians, that set us up for prosperity in a net zero economy.

Australia has seen increasingly devastating floods, fires, storms and other climate impacts ravage parts of our nation throughout 2022. These disasters continue to result in severe property damage, environmental harm, loss of income and livelihoods and, most tragically, loss of life. They highlight the urgent need for adaptation and resilience building in communities across the country.

The Government has taken the first steps towards a national climate risk assessment to underpin our adaptation and resilience building priorities and plans. We are stepping up our climate information services to help the nation understand the risks and plan accordingly.

All Australians, including all governments, industries, businesses and communities, have a role to play in this transformation. We know we need to work with every sector in our economy and every part of our community to make sure we transition effectively and justly. It won’t just be a whole-of-government effort; it will be a whole-of-nation effort that will see us achieve net zero.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Abatement</td>
<td>Reducing greenhouse gases in the atmosphere, including mitigation and sequestration.</td>
</tr>
<tr>
<td>Adaptation</td>
<td>Practical action to build resilience and protect communities, economies and the environment from the impacts of climate change.</td>
</tr>
<tr>
<td>Carbon credit</td>
<td>A tradeable unit that represents 1 tonne of carbon dioxide equivalent (tCO₂-e) stored or avoided by a project.</td>
</tr>
<tr>
<td>Carbon farming</td>
<td>The process of changing agricultural practices or land use to increase the amount of carbon stored in the soil and vegetation (sequestration) and to reduce greenhouse gas emissions from livestock, soil or vegetation.</td>
</tr>
<tr>
<td>Carbon offset</td>
<td>A type of carbon credit that represents a reduction in emissions – whether prevented from entering the atmosphere or removed from the atmosphere – that is used to compensate for emissions that occur elsewhere.</td>
</tr>
<tr>
<td>Carbon neutrality</td>
<td>See net zero emissions.</td>
</tr>
<tr>
<td>CO₂-e</td>
<td>carbon dioxide equivalent.</td>
</tr>
<tr>
<td>Emissions budget</td>
<td>A cumulative amount of emissions that can be emitted, e.g. 4,000 Mt CO₂-e during a specified time period, e.g. 2021–2030.</td>
</tr>
<tr>
<td>Emissions intensity</td>
<td>A measure of the amount of emissions associated with a unit of output – for example, emissions per unit of gross domestic product or electricity production.</td>
</tr>
<tr>
<td>Emissions reduction</td>
<td>Reducing the emissions from an activity, such as through efficiency improvements.</td>
</tr>
<tr>
<td>Emissions removal</td>
<td>Activities that involve capturing and durably storing emissions from the atmosphere.</td>
</tr>
<tr>
<td>Fugitive emissions</td>
<td>Emissions that occur during production, processing, transmission and distribution of fossil fuels.</td>
</tr>
<tr>
<td>Greenhouse effect</td>
<td>The greenhouse effect is a natural process that warms the Earth’s surface. When the Sun’s energy reaches the Earth’s atmosphere, some of it is reflected back to space as lost heat, and some is absorbed and reflected back to the Earth by greenhouse gases. The absorbed and reflected energy warms the atmosphere and the surface of the Earth. This process maintains the Earth’s temperature at around 33°C warmer than it would otherwise be, allowing life on Earth to exist. An increase in greenhouse gases disrupts this balance, causing global temperature increases and a cascade of other climatic impacts.</td>
</tr>
<tr>
<td>Greenhouse gas</td>
<td>Any gas (natural or produced by human activities) that absorbs infrared radiation in the atmosphere, leading to warming effects. Greenhouse gases include carbon dioxide, methane and nitrous oxide.</td>
</tr>
<tr>
<td>Industrial Processes and Product Use (IPPU)</td>
<td>Emissions from non-energy related industrial production and processes. Includes emissions from HFCs, which are used in refrigerants and air conditioning.</td>
</tr>
<tr>
<td>Kyoto Protocol</td>
<td>An international agreement adopted under the United Nations Framework Convention on Climate Change in 1997. It includes binding national targets for developed countries and flexible mechanisms including the Clean Development Mechanism (CDM).</td>
</tr>
<tr>
<td>Land Use, Land Use Change and Forestry (LULC)</td>
<td>Emissions and sequestration from activities occurring on forest lands, forests converted to other land uses, grasslands, croplands, wetlands, and settlements.</td>
</tr>
<tr>
<td>National Climate Resilience and Adaptation Strategy</td>
<td>A national strategy released in October 2021 that sets out what the Australian Government will do over the next five years to support efforts across all levels of government, business and the community to better anticipate, manage and adapt to the impacts of climate change.</td>
</tr>
<tr>
<td>Nationally Determined Contribution (NDC)</td>
<td>A submission by a party to the Paris Agreement that articulates the party’s efforts to contribute to the global task of decarbonisation and adapt to the impacts of climate change.</td>
</tr>
<tr>
<td>National Electricity Market (NEM)</td>
<td>Australia’s largest electricity grid, suppling the nation’s east coast including Queensland, New South Wales, Victoria, Tasmania and most of South Australia.</td>
</tr>
<tr>
<td>Net zero emissions</td>
<td>An overall balance between greenhouse gas emissions and removals.</td>
</tr>
<tr>
<td>Mitigation</td>
<td>Reducing greenhouse gas emissions in order to stop climate change getting worse.</td>
</tr>
<tr>
<td>Ocean acidification</td>
<td>The lowering of the pH of seawater as a result of the chemical processes of carbon dioxide dissolving in oceans.</td>
</tr>
<tr>
<td><strong>Ocean warming</strong></td>
<td>Increases in the temperature of oceans as they absorb increasing amounts of solar radiation due to the greenhouse effect.</td>
</tr>
<tr>
<td><strong>Paris Agreement</strong></td>
<td>An international agreement adopted under the United Nations Framework Convention on Climate Change in 2015. Under the Paris Agreement, the global temperature goal is to keep warming to ‘well below’ 2°C compared with pre-industrial levels, and to ‘pursue efforts to limit the temperature rise to 1.5 degrees Celsius’.</td>
</tr>
<tr>
<td><strong>Point target</strong></td>
<td>A level of emissions reduction to be achieved in a designated target year, compared to emissions in a base year. For example, 43% emissions reduction by 2030 based on 2005 levels.</td>
</tr>
<tr>
<td><strong>Scope 1</strong></td>
<td>The release of greenhouse gases into the atmosphere as a direct result of activities occurring within a responsible entity’s control (or geographic boundary).</td>
</tr>
<tr>
<td><strong>Scope 2</strong></td>
<td>The release of greenhouse gases into the atmosphere from the consumption of electricity or energy (e.g. heating, cooling or steam) that is generated outside of a responsible entity’s control (or geographic boundary).</td>
</tr>
<tr>
<td><strong>Scope 3</strong></td>
<td>Greenhouse gases emitted as a consequence of a responsible entity’s activities (other than Scope 2 emissions) but beyond the responsible entity’s control or geographic boundary. This can refer to emissions from an entity’s supply chain, or as a result of their products and services.</td>
</tr>
<tr>
<td><strong>Stationary energy</strong></td>
<td>The burning of fuels for energy used directly, in the form of heat, steam or pressure.</td>
</tr>
<tr>
<td><strong>Safeguard facility</strong></td>
<td>A facility with direct Scope 1 emissions of more than 100,000 t of CO₂-e per year.</td>
</tr>
<tr>
<td><strong>Safeguard Mechanism</strong></td>
<td>A legislated obligation on Australia’s largest greenhouse gas emitters, or ‘safeguard facilities’, to keep their net emissions below an emissions limit (a baseline).</td>
</tr>
<tr>
<td><strong>Sequestration</strong></td>
<td>Carbon sequestration is the process of removing with greenhouse gases from the atmosphere and storing it in another form that cannot immediately be released, like wood.</td>
</tr>
</tbody>
</table>
References

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