

BCA

Business Council of Australia

# Achieving a **net zero economy**

OCTOBER 2021



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# Executive Summary

## **Purpose of this paper**

The Business Council of Australia (BCA) supports achieving a net zero emissions economy by 2050. This paper sets out a proposed transition pathway and a set of policy recommendations to enhance coordination across governments, regulators, industry and the community to deliver economic dividends for all Australians.

This paper has been informed by Australia's leading businesses and presents a business perspective on the most efficient and least costly pathway to achieving this goal.

We believe the level of ambition and policy architecture recommended in this paper is durable and capable of attracting support from the majority of the parliament. A coordinated pathway to net zero will create new industries, new jobs and ensure Australia remains competitive on the world stage.

The transition will be underpinned by technology change and innovation, with the early years focussed on bringing forward action in easier to abate industries while incentivising investment to close the technology gap in harder to abate sectors.

It must run in tandem with the nation realising greater economy-wide productivity gains, lifting international competitiveness and improving the ability to attract investment in order to accelerate economic growth and secure Australia's long-term prosperity. Decarbonisation is central to Australia's economic transformation and meeting the challenges of a rapidly changing world.



# The momentum for change is overwhelming

The BCA believes that the momentum for moving towards net zero by 2050 is unstoppable. The pace and scale of change is accelerating globally. Australia is at a crossroads: we can either embrace decarbonisation and seize a competitive advantage in developing new technologies and export industries; or be left behind and pay the price.

## The case for Australia to achieve net zero emissions by 2050 is compelling:

- **The science tells us the climate is changing at an unprecedented rate.** We must limit global average warming to as close to 1.5°C by 2050 and below 2°C, in alignment with current Paris Agreement objectives. Unchecked climate change over the next 50 years to 2070 would amount to a \$3.4 trillion loss to Australia's GDP (net present value).<sup>1</sup> The recent IPCC report underscored the urgency of action to limit temperature rises and increasingly frequent and extreme weather events.
- **The economic cost of inaction is significant.** The Technology Investment Roadmap estimates that low emissions technologies could deliver \$30 billion a year of new export revenue from energy-intensive, low emissions products by 2040. To capture this economic opportunity, Australia must act now to invest in the development and deployment of these new technologies and become a world leader.
- **Demand for our exports at risk.** Australia's major trading partners are reorientating their economies and shifting demand away from carbon-intensive imports. Fourteen of Australia's largest 20 trading partners — including the United States, United Kingdom, Japan and South Korea — have committed to achieving net zero emissions by around mid-century. This covers over 70 per cent of our two-way trade and 83 per cent of our exports. Our trading partners are also substantially increasing their 2030 ambitions, with the United States adopting a 50 to 52 per cent reduction on 2005 levels by 2030.
- **Capital markets are moving.** Former Bank of England governor Mark Carney recently warned that banks and asset managers controlling \$120 trillion worth of balance sheets wanted disclosure of investments in fossil fuels. In meetings with shareholders, BCA members report that environmental, social and governance (ESG) and specifically decarbonisation plans are no longer a separate or side issue, but have become core to investors' portfolio allocation decisions.
- **Net zero from the bottom up.** All states and territories have signed on to the 2050 target and are taking decisive actions such as increasing their interim targets, implementing electric vehicle policies and creating renewable energy zones.
- **Business is leading.** Domestic and international companies are rapidly adopting net zero and ambitious internal decarbonisation targets. Net zero commitments made by ASX200 companies more than tripled in the past year. A quarter of ASX200 companies or 50 per cent of the collective ASX200 market capitalisation is now covered by net zero commitments. A recent survey by KPMG found that 84 per cent of Australian CEOs believe the upcoming 26th UN Climate Change Conference of the Parties (COP26) in Glasgow meeting must inject necessary urgency into the climate debate.

1. Deloitte Access Economics

## What's missing?

To achieve a net zero economy by 2050, the nation needs an unprecedented level of coordination, with bipartisan support, to align and accelerate investment signals, enhance regulation and provide much needed policy certainty for business and communities.

Australia's transition cannot happen without significant private sector investment, so capital markets and governments need to work together to send the right signals to stimulate the required investment.

The good news is that Australia does not need to start from scratch. As a nation, all governments and many agencies and initiatives are focussed on our long term emissions reduction strategy. This includes a robust greenhouse and energy reporting scheme, a comprehensive and dynamic technology roadmap and a suite of policies across all sectors of the economy that are designed to reduce Australia's carbon footprint. We have a solid foundation to build on.

In this paper, we argue that Australia needs to harness these existing policies and mechanisms by committing to greater policy coordination to deliver stronger investment signals. Without this level of coordination, we run the risk of distorting investment signals, deterring capital from coming to Australia and suffering a disorderly adjustment for industry, workers and communities.

Enhanced coordination will:

- Give certainty around medium- and long-term targets to drive new investment
- Bring forward early action in easier to abate sectors, including electricity and energy efficiency and establish a more robust offset market
- Accelerate early investment in new low and zero carbon technology and green industries, including in export facing harder to abate sectors to drive down the cost curve, gather all the learnings that comes with being an early mover, such that we are well positioned to scale investment and employment in the post 2030 period
- Invigorate investment in regional Australia and position the regions to be net economic beneficiaries of this transition, including through government and business partnerships, and
- Clearly assign roles and responsibilities between federal, state and local governments, regulators and business.





# The path we need to take



## Formally commit to the net zero target

Formally committing to a net zero by 2050 target under the Paris Agreement will give certainty to industry to invest.



## Introduce 10-year carbon budgets with five-year reviews

The Climate Change Authority would provide advice to parliament on calibrating carbon budgets based on technology readiness and economic impacts. Parliament would remain the ultimate decision maker, be responsible for legislating the budgets and be accountable for climate and energy policy.



## Lift the ambition for the the 2030 interim target

Lift the ambition for the 2030 emissions reduction target to a 46 to 50 per cent economy-wide range against 2005 levels.

We believe this range should be reviewed by the Climate Change Authority in 2025 as part of the five-yearly review cycles and be informed by the federal government's updated greenhouse gas emissions projections.

Not all sectors of the economy, nor businesses, have the same capability to contribute to the abatement task. A least cost apportionment of the national target should be used to determine the abatement potential of each sector.

A 46 to 50 per cent emission reduction range is both pragmatic and ambitious.

The quantum of the target's range was guided by top down macroeconomic modelling — tracing a least-cost emissions reduction path between 2020 and 2050 — and bottom up economic analysis, which assessed the practicalities of investing in abatement technologies and infrastructure in different sectors of the economy between 2021 and 2030.

The ambition is designed to bring forward easier to abate activities and deploy commercially viable technology faster. The electricity sector is expected to do the heavy lifting, where there is tremendous opportunity to invest in renewable generation capacity in the national electricity market.

A higher range will also send a signal to invest in new technologies and innovations to address harder to abate activities beyond 2030. Technologies such as deep storage in the electricity sector and carbon capture and storage in industrial processes will be important to meeting this ambition in 2030.

Accelerating our decarbonisation efforts now with known, commercially viable technology will reduce the cost of transition later and make it easier for Australia to achieve a net zero economy by 2050.

The Appendix to this report documents the decarbonisation commitments of BCA members. These commitments make clear that the ability for companies to decarbonise and to reduce carbon emissions by 2030 varies significantly by sector and industry. By proposing an economy-wide goal and transition path, the BCA is in no way suggesting that every company or every sector is expected to follow the same emissions reduction path or to arrive at the same individual target reduction level in 2030.



### **Change the Safeguard Mechanism to deliver a strong carbon investment signal**

- Reduce the eligibility threshold for entities covered by the Safeguard Mechanism from 100,000 tCO<sub>2</sub> per year, down to 25,000 tCO<sub>2</sub> per year
- Reduce baselines predictably and gradually over time to achieve the Climate Change Authority's proposed emissions budgets out to 2050
- Support Australian businesses in internationally exposed, hard to abate sectors where and while key technology gaps remain to avoid unnecessarily sending jobs and investment offshore.



### **Deepen our offsets market**

Expand and deepen the domestic carbon offsets market to efficiently balance abatement activity between the easy to abate and hard to abate sectors of our economy.



### **Invest in technology and innovation**

The Technology Investment Roadmap is an important part of our pathway to net zero by identifying priority technologies to support Australia's transition. Increasing co-investment between government and business through expanding the size and impact of the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC) to develop, finance and help commercialise low and zero emissions technologies will underpin the Roadmap's success.



### **Low carbon regional roadmap**

Create a National Regional Transition Taskforce and establish partnerships between government and business in regional Australia to proactively manage the transition, forming part of a broader regional growth strategy.



### **Adaptation planning**

Development of the new National Climate Resilience and Adaptation Strategy as an ongoing national process, capable of keeping pace with the escalating nature of the physical risks associated with climate change.



### **Policy integration and coordination led by the Climate Change Authority**

The Climate Change Authority must be further empowered and resourced to become Australia's trusted, independent climate advisory body responsible for advising all governments on all aspects of the national overarching climate policy framework in pursuit of the net zero emissions policy goal.

# Harness world class coordination

## Role of the federal government and its authorities

### ■ The federal government needs to:

- coordinate a national policy framework
- set national targets and carbon budgets
- recalibrate the carbon constraint on high emitting industries
- set milestones and align funding for new low, zero and negative emissions technologies
- proactively manage and partner with states, industry and communities to develop a roadmap for regional transition
- take the lead on sector specific policies to drive down emissions, including implementing vehicle emissions standards
- stay connected with international policy developments and seek to influence international frameworks, schemes and standards to ensure Australia's policies and approach is aligned to other countries.

## Role of state and territory governments

### ■ State and territory governments need to:

- avoid fragmenting the National Electricity Market (NEM) and recommit to the NEM
- plan and develop renewable energy zones (REZ) and supporting transmission
- fast-track planning approvals for high value renewable energy and low carbon projects
- work with the federal government, industry and communities to develop and support a roadmap for regional transition
- adopt world's best practice industry building standards
- coordinate a national approach to road-user charging and avoid fragmented, state-based approaches that will slow the transition to electric vehicles (EVs)
- manage climate risk and facilitate adaptation of public goods, services and assets including infrastructure, emergency management, transport, land-use planning, environment, health services and public housing.

## Role of local governments

### ■ Local governments need to:

- manage climate risk and vulnerability assessments and adaptation planning for public infrastructure, local emergency responses, building regulation and planning, public health and environmental management.

## Role of regulators

### ■ Regulators need to ensure disclosures and reporting:

- disclosures and reporting meets the appropriate standards in line with global capital market expectations
- disclosures and reporting accurately reflect the risk environment in which the business operates.
- consistency, cooperation, and integration across one another
- certification and standards and international consistency (eg Hydrogen Guarantee of Origin).



## Role of industry

### ■ Business has to:

- understand the impact of a 1.5°C and 3.0°C scenario on their business, and develop appropriate mitigation and strategic growth plans in a warming but decarbonising world
- adopt a comprehensive reporting arrangement where sustainability reporting is integrated into financial reporting and annual reports
- review, respond and fully report on their climate risk in accordance with the Task Force on Climate-related Financial Disclosures (TCFD) guidance
- support the establishment of the International Sustainability Standards Board (ISSB) at the COP26 Conference and the proposal to develop global sustainability reporting standards
- partner with government/s on regional transition and be willing to lead these investments
- be at the forefront of research and development by investing in new technologies.

## The pay off

Over the next 50 years, modelling by Deloitte Access Economics estimates that the economic dividend from a smooth transition to net zero emissions by 2050 — aligned to our proposed strategy — is estimated to be a \$890 billion increase to GDP (net present value) due to higher productivity levels and over 195,000 additional jobs by 2070.

On average Australians are around \$5,000 better off per person in the year 2050 (in today's dollars) — with regional Australians projected to be disproportionately better off than the national average.<sup>2</sup>

The potential investment between now and 2030 to transform the electricity grid —leaving aside required investments in other sectors — could be in the order of \$50 billion for new renewable generation assets alone. This doesn't include the significant capex requirements also required in transmission, storage, network augmentation and system stability and security services.

The greater penetration of renewables in the grid will result in lower electricity prices for consumers while market reforms will ensure reliability and security of the system is maintained.



2. Deloitte Access Economics



# **PART 1** The case for change





# What is net zero?

Changing the permanent structure of the economy to achieve net zero emissions by 2050.

A permanent adjustment to the Australian economy by 2050 does not mean carbon producing industries will be completely phased out.

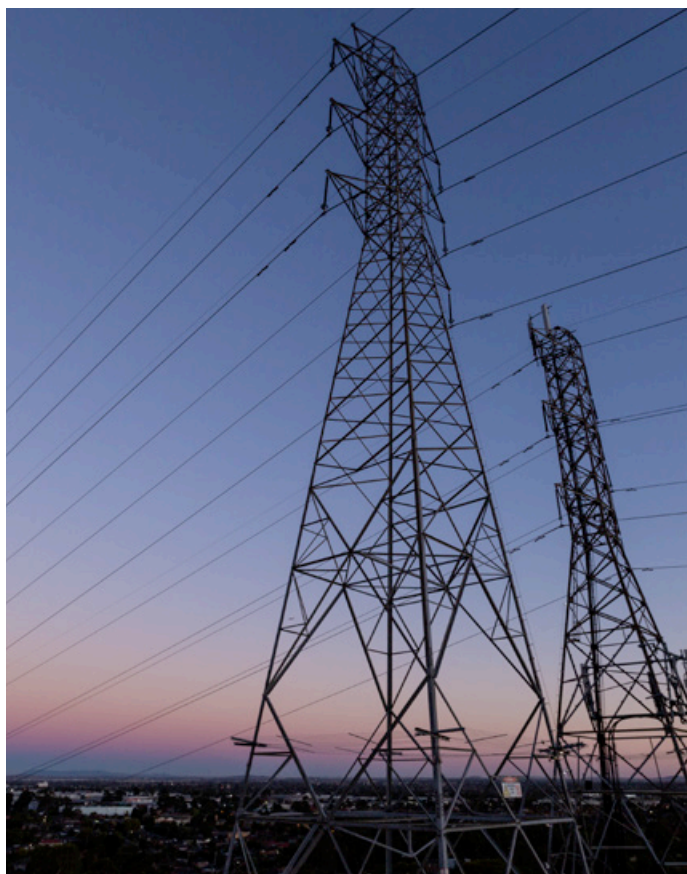
These emissions will need to be offset to ensure Australia's total economic output isn't a positive carbon contribution.

The composition of the economy will need to change, focusing on low emissions technologies coupled with mechanisms to offset emissions that are technologically impossible to eliminate.

Australia has been travelling well. Since 2005 our economy has simultaneously grown by more than 40 per cent while, in the same period, our emissions have reduced by 20 per cent. But we need to act in a more coordinated way to reduce friction and give investors, industry and the community certainty.

The 2021 Intergenerational Report summed up Australia's performance on climate to date, by saying that:

- Australia has made, and continues to make, a significant contribution to global emissions reduction efforts, reducing emissions faster than many similar advanced economies, as well as the OECD and G20 averages
- Australia is at the forefront of adopting low emissions technologies, with the highest level of solar photovoltaic capacity per person of any country in the world, and more solar and wind generation capacity per person than any country outside Europe.



# Why net zero?

## Why is net zero the goal?

The science tells us that to avoid catastrophic climate change average global warming must be limited to as close to 1.5°C by 2050 and below 2°C. This means achieving net zero emissions by 2050 globally.

The impacts of climate change are already causing significant damage to the natural world, livelihoods and economic prosperity.<sup>3</sup> CSIRO and the Bureau of Meteorology's most recent State of the Climate report summarises the impacts of climate change on our continent.<sup>4</sup>

- Australia's climate has warmed on average by 1.44°C (± 0.24) since national records began in 1910, leading to an increase in the frequency of extreme heat events
- there has been a decline of around 16 per cent in April to October rainfall in the southwest of Australia since 1970 — across the same region May to July rainfall has seen the largest decrease, by around 20 per cent since 1970
- in the southeast of Australia there has been a decline of around 12 per cent in April to October rainfall since the late 1990s
- there has been a decrease in streamflow at the majority of streamflow gauges across southern Australia since 1975 — while streamflow has increased across parts of northern Australia since the 1970s
- there has been an increase in extreme fire weather, and in the length of the fire season, across large parts of the country since the 1950s, especially in southern Australia — while there has been a decrease in the number of tropical cyclones observed in the Australian region since 1982
- oceans around Australia are acidifying and have warmed by around 1°C since 1910, contributing to longer and more frequent marine heatwaves
- sea levels are rising around Australia, including more frequent extremes, that are increasing the risk of inundation and damage to coastal infrastructure and communities.

In part one of its Sixth Assessment Report on climate change, the International Panel on Climate Change (IPCC) concluded that: <sup>5</sup>

- warming is accelerating and some impacts are irreversible — “many of the changes observed in the climate are unprecedented in thousands, if not hundreds of thousands of years, and some of the changes already set in motion ... are irreversible over hundreds to thousands of years”
- deeper and more urgent emissions cuts are required — “strong and sustained reductions in emissions of carbon dioxide and other greenhouse gases would limit climate change — while benefits for air quality would come quickly, it could take 20-30 years to see global temperatures stabilize”.

The IPCC report underscores the importance of accelerating Australia's decarbonisation efforts and implementing enhanced policy measures to ensure the next decade is focussed on keeping the Paris goals within reach.

3. The Academy of Social Sciences (2020), *Efficient, Effective and Fair Climate Policy: A Discussion Paper*, June 2020.

4. CSIRO and BOM (2020), *State of the Climate 2020* (the sixth biennial report).

5. See 'Summary for Policymakers' released 9 August 2021 as part of the Working Group I contribution to the IPCC's Sixth Assessment Report on climate change.



## Global momentum for action

### Major investment partners

Fourteen of our largest 20 trading partners covering 83 per cent of our exports have signed up to net zero emissions by mid-century.

Our major trading partners are reorientating their economies and shifting demand away from carbon-intensive imports.

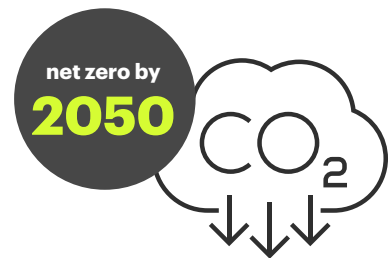


#### **14 of Australia's largest 20 trading partners**

**including the United Kingdom, Japan and South Korea — have committed to achieving net zero emissions by around mid-century.**



**These nations cover over 70 per cent of our two-way trade and 83 per cent of our exports.**



**All G7 nations now have net zero pledges.**

In addition to the global momentum towards net zero, over the past year many countries have also increased their short- to medium-term ambitions. Much of this increased ambition was announced around President Biden's *Leaders' Summit on Climate* in April this year.

## Increased ambition globally in 2021



### Previous commitment

The nation's emissions target was 26 to 28 per cent below 2005 levels by 2025

### New commitment

The United States has submitted a nationally determined contribution under the Paris Agreement setting an emissions target of a 50 to 52 per cent reduction below 2005 levels by 2030



### Previous commitment

The nation has pledged to peak its emissions before 2030 and achieve net zero by 2060

### New commitment

China will join the Kigali Amendment, strictly control coal-fired power generation projects, and phase down coal consumption. China has committed to no longer fund coal-fired power plants in other countries.



### Previous commitment

The nation's emissions target was 26 per cent below 2005 levels by 2030

### New commitment

Japan has committed to cut emissions 46 to 50 per cent below 2013 levels by 2030, with strong efforts toward achieving a 50 per cent reduction — a significant acceleration from its existing 26 per cent reduction goal



### Previous commitment

The nation has enshrined net zero emissions by 2050 into law

### New commitment

The United Kingdom is putting into law a 78 per cent emission reduction, below 1990 levels by 2035 to achieve net zero emissions by 2050



### Previous commitment

The nation's emissions target was 30 per cent below 2005 levels by 2030

### New commitment

Canada committed to cut emissions by 40 to 45 per cent by 2030 compared with 2005 levels



### Previous commitment

EU Member States had a 2030 target of reducing emissions by at least 40 per cent below 1990 levels

### New commitment

The European Union is putting into law a target of reducing net greenhouse gas emissions by at least 55 per cent below 1990 levels by 2030 and a net zero target by 2050

Recently, the prospect of carbon border adjustments – essentially trade tariffs – being imposed on our carbon-intensive exports by our trading partners has become a reality.

- The European Union is drafting legislation for the implementation of a carbon border adjustment mechanism that will include iron, steel, cement, natural gas, oil and coal.
- While the economic damage to Australia of the proposed mechanism is expected to be limited, the United States, Canada, the United Kingdom and Japan, are also currently considering design options for the potential adoption of carbon border adjustment mechanisms in the future, which could have a much larger, negative impact on Australian exports.<sup>6,7</sup>

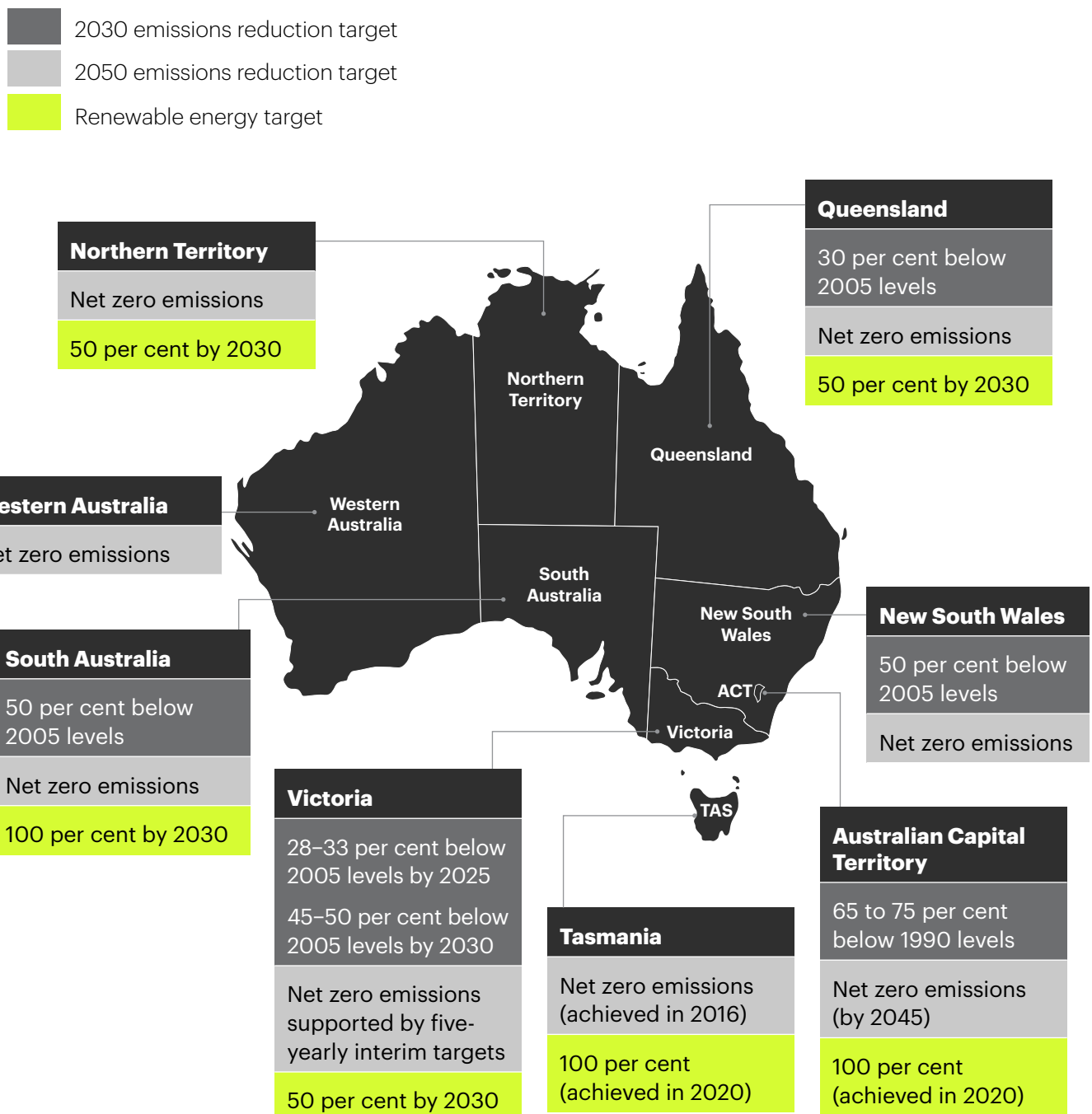
6. TD (Bank) Economics, *A Primer on Carbon Pricing and Carbon Border Adjustments*, 7 June 2021.

7. Australian Industry Group, *Swings and Roundabouts the unexpected effects of Carbon Border Adjustments on Australia*, August 2021.

## All states and territories

All states and territories have committed to net zero. But for greatest impact, the patchwork of state and territory targets needs national coordination.

**Figure 1: State and territory governments' climate commitments**



## Capital markets moving

International investment trends are moving faster than government action. Market signals must ensure Australia remains an investment magnet.

Global investors are taking significant steps to decarbonise investment portfolios and drive more proactive corporate responses to climate risk. The power of the global financial community has been mobilised in pursuit of the net zero emissions goal, underpinned by an acceptance of the climate science and a fear of the global financial consequences associated with mismanaging the impacts of climate change. The movement of the world's finances and assets is increasingly out of step with government action.

- In July 2021 global sustainable mutual fund assets — focussed on ESG related issues — hit a record high of \$US2.3 trillion.<sup>8</sup>
- The world's largest investment manager, BlackRock, with \$US8.7 trillion under management, wrote to the CEOs of all its client investors in 2020 stating that "climate risk is investment risk ... [and that] climate change has become a defining factor in companies' long-term prospects ... [and that] there will be a significant reallocation of capital" in response to climate risks.<sup>9</sup>
- Reserve Bank of Australia Governor Philip Lowe has said: "Increasingly, overseas investors are asking about the carbon content of production and that's a trend that is only going to continue."<sup>10</sup>
- Former Bank of England governor Mark Carney recently warned banks and asset managers controlling \$US120 trillion worth of balance sheets wanted disclosure of investments in fossil fuels. He estimates that the scale of investment required to finance a sustainable global energy system equates to \$US3.5 trillion every year for 30 years.<sup>11</sup>
- Moody's has forecast that sustainable bonds will grow by 32 per cent to \$US650 billion around the world this year, double the \$US324 billion level of two years ago. Of this, green bonds will comprise about \$US375 billion.<sup>12</sup>

Australia, representing less than two per cent of global GDP, needs to signal to the international investment community that we are transforming our energy system and economy in order to attract this finance.

*"Climate risk has become one of the key issues raised in my discussions with CEOs, investors and counterparts, here and overseas. And it is no different for boards and executives of Australian firms in their discussions with global investors. Markets are moving as governments, regulators, central banks and investors are preparing for a lower emissions future. It's a long-term shift, not a short-term shock. The world signalled its ambition when more than 190 parties committed at Paris to keep the rise in average global temperatures to below two degrees. This has been followed by 129 countries committing to reaching net zero emissions by 2050. Markets are responding as participants make their own judgments as to what this new dynamic means for their existing portfolios and their future investment decisions...*

*Australia's interest lies in our markets functioning effectively, so that the financial system remains stable, investors can make informed and timely decisions, and capital can be accessed at the lowest possible cost...*

*Reduced access to these capital markets would increase borrowing costs, impacting everything from interest rates on home loans and small business loans, to the financial viability of large-scale infrastructure projects. Australia has a lot at stake. We cannot run the risk that markets falsely assume we are not transitioning in line with the rest of the world."*

Hon Josh Frydenberg MP, Treasurer of Australia

8. Reuters, Analysis: UN climate report increases urgency for green investment funds, August 2021.

9. <https://www.blackrock.com/au/individual/larry-fink-ceo-letter> and <https://corpgov.law.harvard.edu/2021/01/30/letter-to-ceos/>

10. <https://www.afr.com/policy/energy-and-climate/rba-warns-of-climate-finance-risks-20210929-p58v8r>

11. <https://www.theaustralian.com.au/commentary/finance-power-will-drive-pm-to-net-zero/news-story/84d1a1e999865dc3570ef0821c3ba626>;

<https://www.bbc.com/news/business-55944570>

12. Moody's, [https://www.moody.com/research/Moodys-Sustainable-bond-issuance-to-hit-a-record-650-billion--PBC\\_1263479](https://www.moody.com/research/Moodys-Sustainable-bond-issuance-to-hit-a-record-650-billion--PBC_1263479)



## Companies are committing

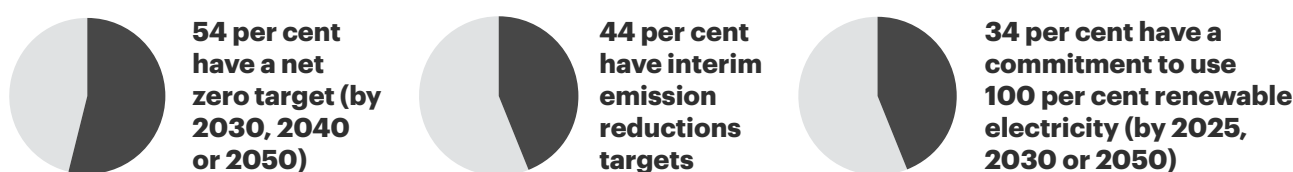
In response to international markets, Australian companies are increasingly adopting net zero targets and investing to decarbonise their operations. Corporate Australia's actions and government policies need to be in sync for maximum impact.

A growing number of companies are making net zero commitments, which includes banking institutions committing to reduce their financed emissions to net zero. This year the Energy and Climate Intelligence Unit in the United Kingdom estimates that at least one fifth of the world's 2,000 largest public companies, representing sales of nearly \$US14 trillion, have committed to meet net zero targets.<sup>13</sup>

According to a KPMG study, in 2020 78 per cent of ASX100 companies acknowledged climate change as a business risk, and 58 per cent drew on the TCFD framework in their reporting.<sup>14</sup>

In Australia, there is clear momentum and leadership from many companies on setting net zero commitments. The number of ASX200 companies making net zero commitments more than tripled between 2019 and 2020 — representing about 50 per cent currently.

**Figure 2: In 2020, of the ASX-50 companies**



**Figure 3: Examples of BCA member company commitments**



Telstra has been certified carbon neutral in its operations by Climate Active since July 2020, and is Australia's largest certified carbon-neutral company.



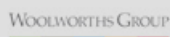
To achieve carbon neutrality by 2030 (Scope 1 and 2). To achieve net zero Scope 3 emissions by 2040, Fortescue Future Industries (FFI), a global supplier of green energy, will be a key enabler.



The Bendigo and Adelaide Bank met its commitment to be carbon neutral by June 2021. Bendigo and Adelaide Bank's target is to purchase 100% renewable energy by 2025. It has 30 branches with rooftop solar installed. Electricity for its "Large Sites" power contract was matched with renewables during 2HFY21. This includes the bank's Bendigo, Docklands and Sydney offices along with its Data Centre.



Ambition to deliver net zero greenhouse gas emissions by 2050 and for the entire Coles Group to be powered by 100% renewable electricity by the end of FY25.



Net positive carbon emissions by 2050 (if not sooner) and 100% green electricity by 2025.

**See Appendix for a snapshot of what BCA member companies are to tackle climate change and reduce their carbon footprints.**

13. Energy and Climate Intelligence Unit, <https://eciu.net/analysis/reports/2021/taking-stock-assessment-net-zero-targets>  
14. KPMG, 2020 <https://assets.kpmg/content/dam/kpmg/au/pdf/2020/towards-net-zero-climate-risk-au-supplement.pdf>

## Net zero is an economic opportunity for Australia

Australia has a head start in pursuing new industries as part of our economic diversification with an abundance of rare earths and minerals and existing infrastructure that can be adapted.

Australia maintains several comparative advantages which it can leverage to create economic wealth in an increasingly emissions constrained trading environment.

- natural endowments like solar, wind and rare earth metals are direct inputs in the production of renewable electricity, clean hydrogen and ammonia, lithium-metal batteries, and indirect inputs into the production of a range of clean, mineral based products such as green steel and green aluminium

*"Green steel uses hydrogen, produced from renewable energy, to replace metallurgical coal to reduce iron ore to iron metal. Australia's extensive wind and solar energy resources mean we can make hydrogen, and therefore green steel, more cheaply than countries such as Japan, Korea, and Indonesia. To do this at a global scale will require big industrial workforces – such as those found in the coal-mining regions of central Queensland and the Hunter Valley in NSW."*

Grattan Institute

- existing transport and mining infrastructure to enable Australia to produce zero emission hydrogen and other mineral based products, such as green steel and green aluminium
- existing energy infrastructure, such as our extensive gas pipeline network, can be converted and repurposed for green molecules such as green hydrogen or other green gases, particularly in regional Australia
- proximity to, and existing trading relationships with, governments and businesses in the Asia-Pacific region which provide good access to many of the largest and fastest growing global markets for green products
- a highly educated and skilled workforce that can supply specialist service industries within the finance, education and consulting sectors, required to support emerging decarbonised global supply chains
- accumulated scientific knowledge and technical know-how making us valued participants in emerging international collaborations to develop and deploy low, zero and negative emissions technologies
- world leading export industries, including vast amounts of coal and gas in combination with geological structures necessary for carbon capture and sequestration
- significant potential as a globally significant source of carbon sequestration in our soils.

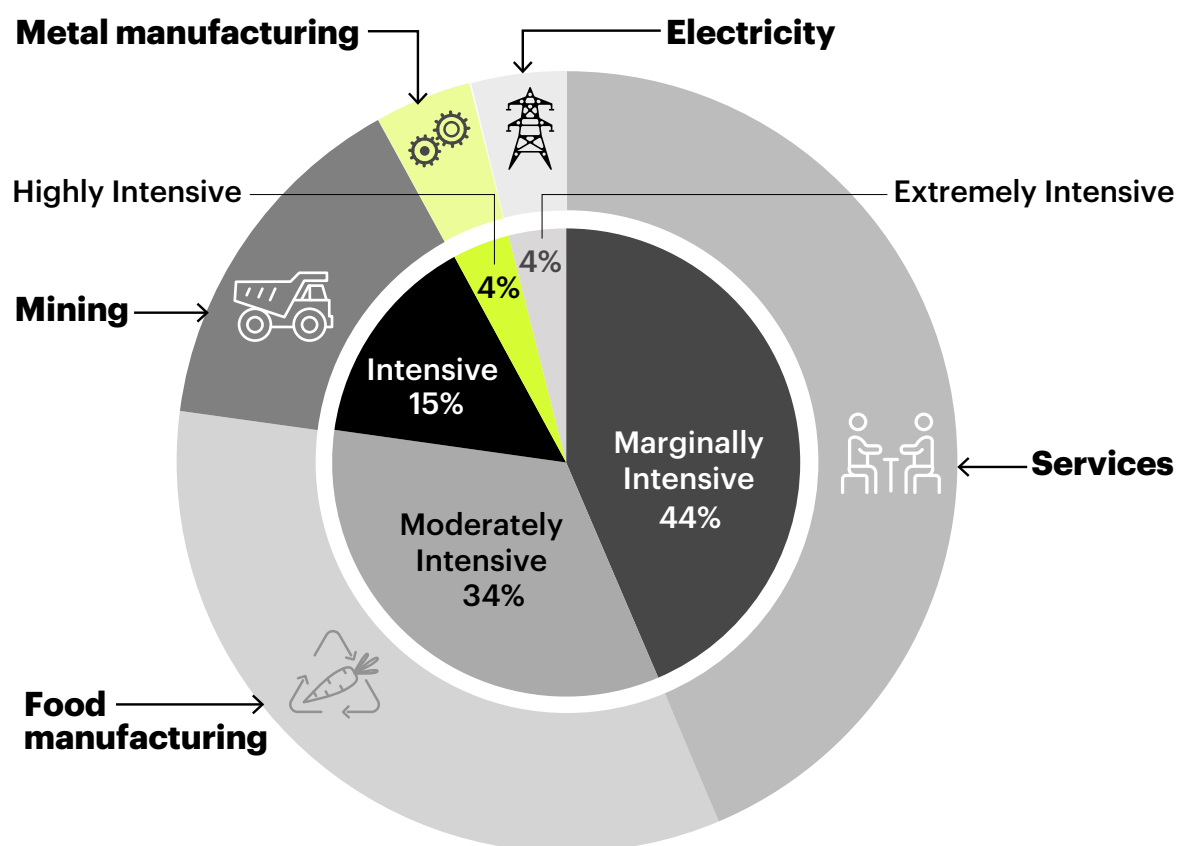
*"Australia has significant competitive advantages for developing a substantial hydrogen export industry. It has all the natural resources needed to make clean hydrogen. It has a track record in building largescale energy industries. It has an established reputation as a trusted energy supplier to Asia. It can compete with any other nation."*

Australia's National Hydrogen Strategy

## Risk of not moving now

Our economy is heavily reliant on emission intensive industries for much of its wealth creation — with one in four jobs currently in emission intensive industries.

**Figure 4: Industries that are the most emissions intensive represent a quarter of employed Australians**

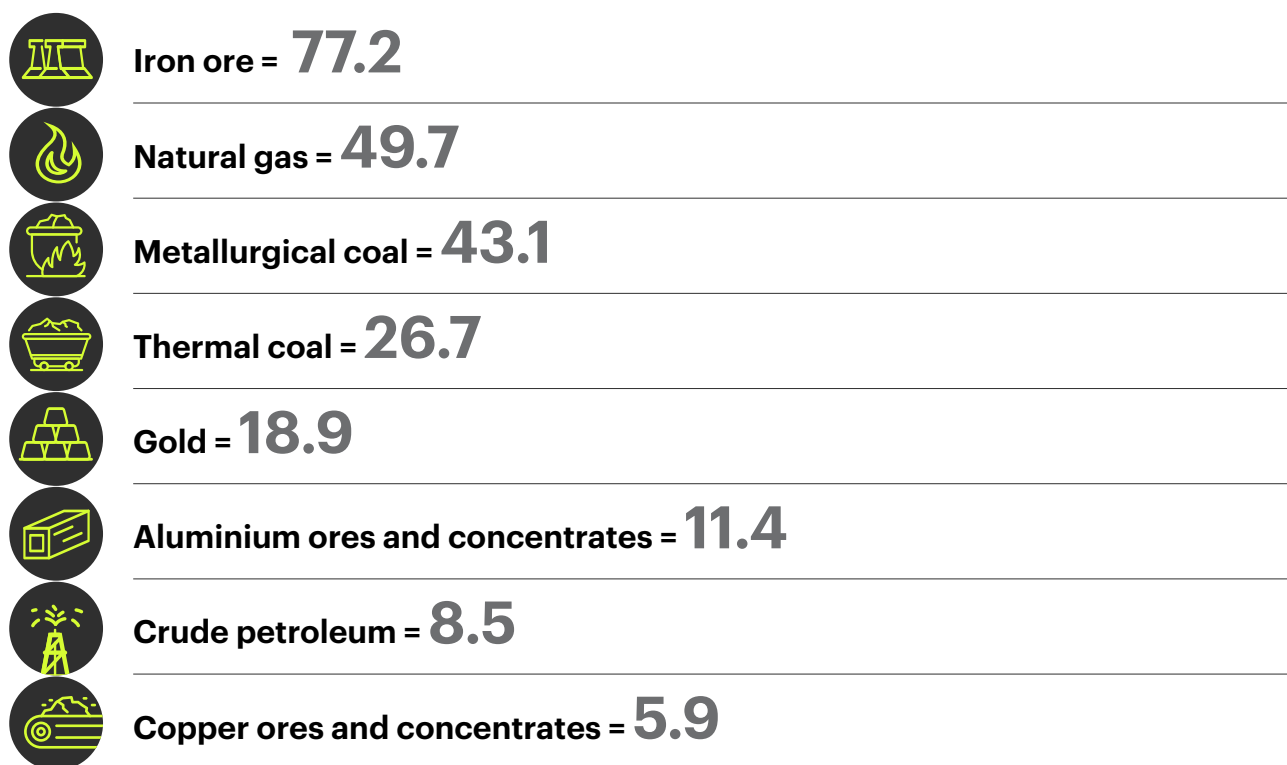


Source: Deloitte Access Economics

*"Much of how this opportunity will evolve remains uncertain, but there are risks in not acting early."*  
Australia's National Hydrogen Strategy

- Much of Australia's economic wealth has been built on its abundant endowment of minerals and fossil fuels — which (often in combination) have created our highly profitable and carbon-intensive export industries.
- Australia is a major supplier of energy and minerals to the world — including coal, natural gas, iron ore and gold.
- These commodities make up over 10 per cent of our GDP — well over \$200 billion per year — and about 50 per cent of our total export value. (Figure 5)

**Figure 5: Value of commodities (2019 \$billions)**



## Economic dividend for getting this right

The dividend of reducing climate change is worth \$890 billion to Australia's economy by 2070.

The cost of inaction on unchecked climate change is high and damaging to economic growth and jobs. In contrast, coordinated and early action will generate net economic growth and jobs.

Over the next 50 years the economic dividend from a smooth transition to net zero emissions by 2050 — aligned to our proposed strategy — is estimated to be a \$890 billion increase to GDP (net present value) and over 195,000 additional jobs by 2070.

On average Australians are around \$5,000 better off per person in the year 2050 (in today's dollars) — with regional Australians projected to be disproportionately better off than the national average.<sup>15</sup>

The net gain of \$890 billion reflects higher average economic growth over the period, when compared to Australia's average growth in a no climate action scenario.

The underlying source of this boost to growth relates to higher productivity and participation levels resulting from:

- the modernisation of the capital stock and technology in the economy
- the avoided warming damages to the economy
- the trade and domestic benefits of low cost renewable electricity production

15. Deloitte Access Economics



# What is the transition task?

We exceeded the 2020 target, we're on track to beat the 2030 target.

Going harder and going faster now means that the Australian economy will meet changing demand and export imperatives sooner. Australia will be best positioned to achieve a competitive advantage and capture market share before other countries and global businesses are able to do so.

Without this competitive edge, Australia will risk experiencing sub-optimal growth and fewer jobs will be created.

## Australia's emissions performance

Australia's projected emissions to 2030 have been falling since 2012 as the national energy market decarbonises and the overall economy becomes more energy efficient— however, full decarbonisation by 2050 will be a challenge as the economy continues to grow.

Australia emits about 500 Mt each year— about one per cent of the world's emissions, ranking Australia around 14th in aggregate terms globally.

Australia beat its 2020 emissions reduction target — its final commitment under the Kyoto Protocol — which was to reduce national emissions to 5 per cent below 2000 levels.

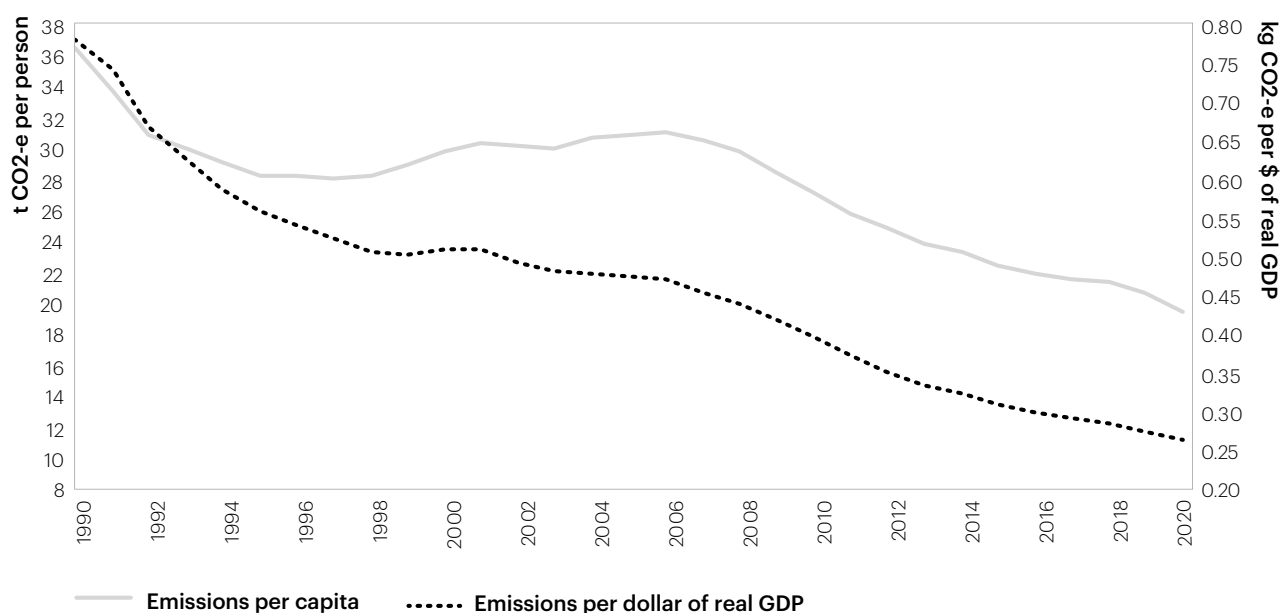
In the year to December 2020, emissions per person and the emissions intensity of the economy were at their lowest levels in 31 years. Emissions per person were 47 per cent lower than 1990, while the emissions intensity of the economy was 66 per cent lower than 1990.

Australia's emissions have declined 23 per cent since their peak in the year to June 2007, and in 2020 were 20 per cent below emissions in the year to June 2005.

*"New investments are generating more jobs, particularly in our regions, as our economy has simultaneously grown by more than 40 per cent since 2005 while, in the same period, our emissions have reduced by 20 per cent."*

Hon Josh Frydenberg MP, Treasurer of Australia

**Figure 6: Emissions per capita and per dollar of real GDP, actual, year to December 1990 to 2020**

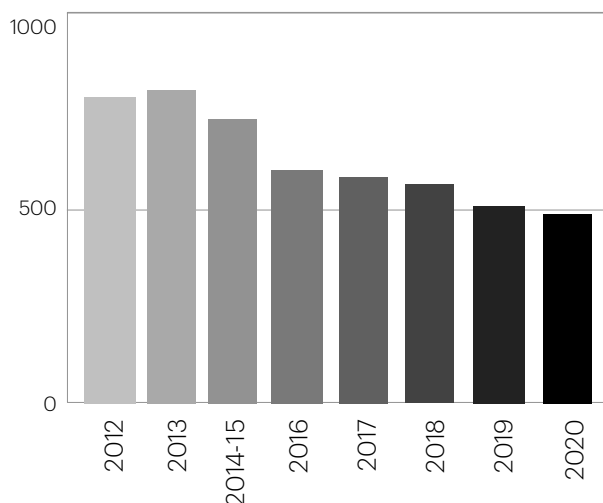


Australia's abatement task to meet the 2030 target is projected to be between 56 Mt (26 per cent reduction) and 123 Mt (28 per cent reduction) over the period 2021 to 2030.

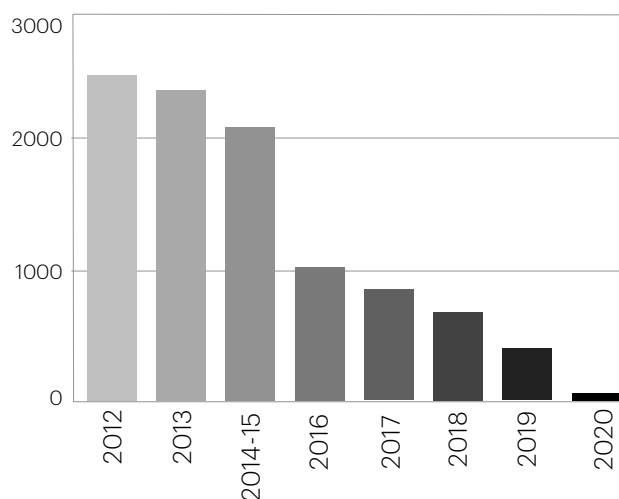
This is equivalent to between 1.2 per cent of the emissions budget (for a 26 per cent target) and 2.6 per cent of the emissions budget (for a 28 per cent target) and does not include past overachievement.

Under a scenario aligned with the Technology Investment Roadmap, emissions are forecast to be 436 Mt in 2030, which is 29 per cent below 2005 levels.

**Figure 7: Emissions projections for the year 2030, 2012 to 2020, Mt CO2-e**



**Figure 8: Cumulative emissions reduction task to achieve 2030 target, Mt CO2-e**



Source: DISER, Australia's emissions projections 2020

## Domestic transition

Policies must accelerate early action in the roll-out of commercially viable technology, and incentivise investment in research and development to create new solutions in hard to abate sectors.

### Start with decarbonising the electricity grid

Nearly three quarters of the decarbonisation task in our economy, and indeed the global economy, relates to production and consumption of energy, and in particular electricity. Decarbonisation of virtually all other sectors in our economy is only possible if they have access to affordable, reliable and fully decarbonised electricity.

*"A massive expansion of clean electricity is essential to giving the world a chance of achieving its net zero goals."*

Dr Fatih Birol, International Energy Agency

A lot of heavy lifting has been accomplished with respect to decarbonising Australia's electricity sector over the past 20 years and this will need to continue at pace over the next decade.

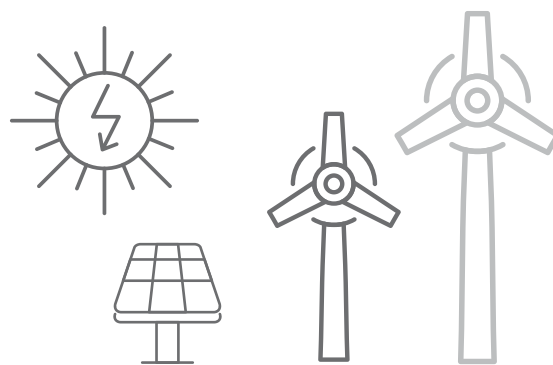
According to the Australian Energy Market Operator (AEMO), since 2012 ninety cents of every dollar invested in electricity generation in Australia has been in wind and solar.

We are leading the world in renewable generation installation per capita, installing new renewables at double the rate of the next fastest country, Germany, and about 10 times the average worldwide.

# 1000% domestic increase in solar farms

**The number of large-scale solar farms has increased by 1000 per cent in the past three years while the number of wind farms has doubled.**

Source: AEMO



*"But the pace of change in Australia continues to accelerate. So, the goal that I'm setting for us, Australia's independent system operator, is to harness the talents, capabilities, experience and know-how across the industry, to engineer grids that are capable of running at 100% instantaneous penetration of renewable energy. And do this by 2025! So, that's a grid able to manage 100 per cent renewables penetration – at any moment in any day – by 2025. That's not decades away. It's just a few years' time."*

Australian Energy Market Operator

The continued decarbonisation of the electricity system – combined with wind and solar driving down electricity prices – will unlock opportunities for other sectors to electrify and reduce emissions. AEMO's 2021 Electricity Statement of Opportunities provides a projection of the NEM's output to 2050 and projects a scaling up between two to five times the NEM's current output based primarily on electrification of the transport sector and development of a hydrogen export industry in Australia.<sup>16</sup>

Increasing the share of renewable generation in our electricity system is not just important for reducing emissions, it's fundamental to driving down electricity prices for consumers establishing new export industries.

A joint collaboration between CSIRO and AEMO found that solar and wind continue to be the cheapest sources of new electricity generation capacity in Australia, even when the integration costs, such as storage and new transmission infrastructure, are included. The 2020-21 GenCost Report states:

- Solar and wind continue to be the cheapest sources of new-build electricity.
- Battery costs fell the most in 2020-21 compared to any other generation or storage technology and are projected to continue to fall. Lower battery storage costs underpin the long-term competitiveness of renewables.
- Pumped hydro is also important and is more competitive when longer durations of storage (above eight hours) are required.<sup>17</sup>

## **To achieve deeper emissions cuts by 2030, our energy system will need to transition robustly and rapidly from where it is today. An expedited and effective energy market reform process is the key to this.**

Renewable electricity generation is currently responsible for about 25 per cent of the NEM's total annual output and 28 per cent of total national electricity output.<sup>18</sup> A net zero emissions electricity sector requires this percentage to approach 90 to 95 per cent. We clearly have a lot of work to do between now and 2050 and it is critical that the pursuit of net zero emissions is balanced with the interrelated and equally important goals of energy reliability and energy affordability.<sup>19</sup>

*"Successfully transitioning to zero net emissions while delivering a secure and reliable source of electricity that is affordable to customers is complex. Gas-powered generation has an important role to play in enabling lower-emissions generation sources, underpinning security of electricity supply. It also has an important role to play in providing reliability and maintaining affordability during peak demand periods and during extended periods when renewable generation is low."*<sup>20</sup>

Frontier Economics

In response to a request from energy ministers in March 2019, the Energy Security Board (ESB) developed a set of recommendations for creating a fit-for-purpose national electricity market design as we continue to transition from thermal to renewable technology.

16. AEMO, 2021 Electricity Statement of Opportunities.

17. CSIRO, AEMO, 2020-21 GenCost Report

18. Total renewable energy accounted for nearly 25 per cent of total system energy supplied in 2020 for the NEM, up from 21 per cent in 2019.

19. These interrelated policy goals were firmly established by an Independent review into the future security of the National Electricity Market, led by Dr Alan Finkel AO, Chief Scientist, in 2017.

20. Frontier Economics, Potential for Gas-Powered Generation to support renewables - A report for the Australian Pipelines and Gas Association, 15 February 2021



The ESB identified four key challenges when creating a fit-for-purpose national electricity market design:<sup>21</sup>

- being prepared for old coal retirement — maintaining resource adequacy as aging thermal generators exit
- backing up power system security — fixing the security challenges that come with new technologies
- unlocking benefits for consumers — integrating distributed energy resources and flexible demand
- opening the grid to cheaper renewables — keeping pace with the grid access needs of new renewables.

The ESB developed an integrated package of reform options to address these challenges and ultimately balance the achievement of all three energy policy goals in the interests of household and business users of electricity.

The ESB provided its advice to the Energy National Cabinet Reform Committee in July 2021. On 1 October the National Cabinet endorsed the final package of reforms for the post-2025 National Electricity Market, as agreed by the Energy National Cabinet Reform Committee.

### Case study: AGL



In 2020, AGL committed to achieving net zero emissions by 2050.

### Case study: EnergyAustralia



EnergyAustralia has committed to reach net zero greenhouse gas emissions (scope 1, 2 and 3) by 2050 and reduce direct carbon dioxide emissions by over 60% on 2019-20 levels in 2028-2029.

### Case study: Origin



Origin aims to reach net zero Scope 1 and 2 emissions by 2050 and is in the process of updating its emissions reduction targets to be consistent with a 1.5°C scenario. Origin is progressing the decarbonisation of its business. In 2017, it became the first company in Australia to set science-based emissions targets independently approved by the SBTi. Its medium-term targets commit Origin to halve its Scope 1 and 2 greenhouse gas emissions on an equity share basis by 2032 from its FY17 baseline. Origin has also committed to reducing Scope 3 emissions by 25% by 2032.

21. Energy Security Board, <https://esb-post2025-market-design.aemc.gov.au/>

## Develop and deploy new technology for hard to abate sectors

In sectors where asset design lives span multiple decades, the technology gap can mean that emissions are locked in for decades (even after that gap has been closed). If emerging zero and low emission technologies are uncommercial at the time decisions regarding asset enhancement or replacement are being taken, then businesses are more likely to invest in incumbent, higher emission technologies to remain competitive. In some cases, asset replacement and enhancement decisions are made many years before commissioning, which means the emissions lock in period could be 30 years or more.

The Technology Investment Roadmap is designed to be a dynamic strategy that tackles the big technology challenges to ensure our natural endowments and competitive advantages are the bedrock of our economic prosperity as we transition to a more carbon efficient economy. The Roadmap identifies priority emerging technologies where government and business co-investment can solve for market failure.

In many cases, deploying these new technologies at scale domestically is the first step. Successful domestic industries will provide the foundations for building new export opportunities for Australia.

### Green hydrogen

- Hydrogen, when mixed with oxygen, is a flexible, safe, transportable and storable fuel which can be used to power vehicles, generate heat, generate electricity, and can be used as a key ingredient in the production of steel and some chemicals such as ammonia and methanol.
- Four of Australia's top four trading partners (Japan, the Republic of Korea, the United States and China) have already made clear commitments to use clean hydrogen to decarbonise their energy systems.

### Blue hydrogen

- Derived from natural gas through the process of steam methane reforming, or coal gasification through the process of partial oxidation.

### Green steel

- Green steel uses green hydrogen to replace metallurgical coal to reduce iron ore to iron metal.
- Australia's abundant renewable resources can make it a more cost competitive place to make hydrogen, and therefore green steel, than countries such as Japan, Korea and Indonesia.

### Green aluminium

- Green aluminium uses renewable energy and more efficient smelter technology to reduce direct emissions from smelting and indirect emissions from bauxite ore mining and alumina refining (the key raw inputs for aluminium smelting).

### Battery supply chain

- Batteries are now the preferred technology for electric vehicles, outpacing hydrogen fuel cells and cost competitive with internal combustion EVs.
- Australia is the dominant player in the mining of battery materials (with around half the global lithium market) but completely absent further downstream in the value chain.
- Several countries including Germany, the United Kingdom, Finland and Canada are already vying to fill the emerging supply gap as demand ramps up, however, none have our access to raw materials or solid reputation as a clean and reliable supplier.

### Land-based carbon offsets

- Scientific assessments estimate that agricultural land in Australia has significant potential to store carbon, and to mitigate and offset emissions over coming decades.
- This creates an ongoing revenue base for farmers.

## **Carbon capture and storage**

- Carbon capture and storage (CCS) is a process that captures and stores carbon dioxide (CO<sub>2</sub>) before it is released into the atmosphere. CCS can be used to capture CO<sub>2</sub> released from energy generation and industrial processes.
- Large scale deployment of CCS will assist hard to abate sectors and industries to decarbonise and both the IPCC and the International Energy Agency (IEA) have said that CCS will be essential to mitigating climate change.

## **Enabling technologies**

- Integration technologies, particularly those of a 'soft' or digital nature, will be crucial to unlocking the full abatement potential of other 'hard' technologies.
- For example, digital technologies that enable the electricity grid to 'talk to' a future electric vehicle system, or network optimisation and demand side response optimisation tools that ultimately lower the cost of firming for higher levels of renewables penetration, or energy efficiency enabling technologies such as 5G-connected smart homes/appliances.

## **Energy storage**

- Utility-scale electricity storage will enable a greater penetration of solar and wind electricity into the grid by storing excess generation and firming the system as a source of reliable, dispatchable electricity.
- Pumped hydro, batteries and solar thermal energy storage are all likely to be part of the growing storage mix.

## **A balancing act**

Achieving the goal of net zero emissions by 2050 will require a deep and liquid domestic carbon offset market to efficiently balance abatement activity between the easy to abate and hard to abate sectors of our economy.

Scientific assessments estimate that agricultural land in Australia has significant potential to store carbon, and to mitigate and offset emissions over coming decades. This means the potential future supply of carbon offsets from the 85 million hectares of intensive-use agricultural land of Australia is well in excess of what is being drawn upon domestically today, in the form of Australian Carbon Credit Units (ACCUs). Subject to development of the necessary international trading frameworks under the Paris Agreement, some of this potential supply could conceivably be exported in the future.

The continued development of an offsets market will also provide an additional income stream for landowners and the agricultural sector.

## Export transition

A recent IEA report (May 2021) projects significant declines in demand for thermal coal, oil and natural gas by 2040, with further reductions expected to achieve net zero emissions by 2050. Given Australia's high exposure to fossil fuels, this reduction will have a significant impact on the market for Australian exports.



**Thermal coal falls by 90 per cent by 2050 (from 2020)**



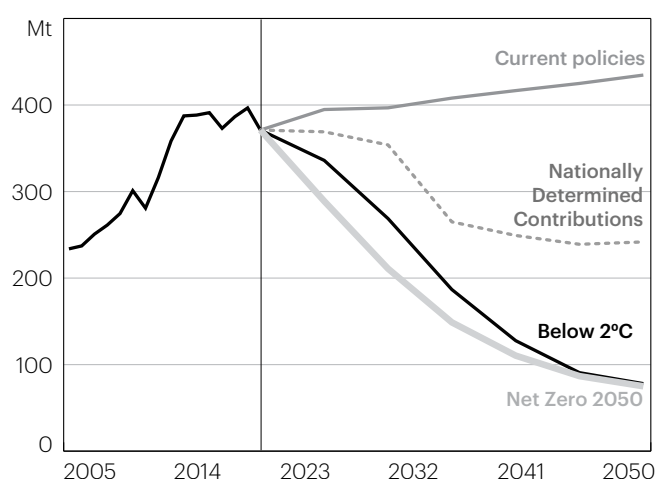
**Natural gas falls by 55 per cent by 2050 (from 2020)**



**Oil falls 75 per cent by 2040 (from 2020)**

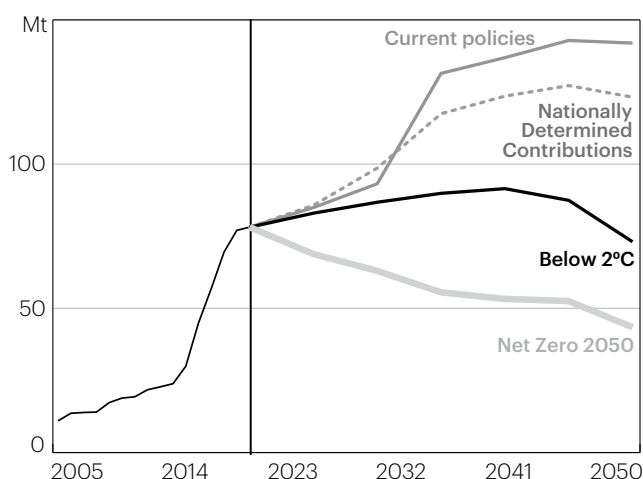
The Reserve Bank of Australia has looked at the outlook for Australian coal and liquefied natural gas (LNG) exports under future scenarios.

**Figure 9: Australian Coal Exports Scenario**



Source: RBA

**Figure 10: Australian LNG Exports Scenario**



There are opportunities to develop technology that reduces emissions in these traditional export industries, whether that be from the deployment of carbon capture and storage technology at scale or the development of technology and processes that can make a material reduction in emissions in supply chains, such as reducing the carbon footprint of steelmaking.

As our traditional exports decline over the coming decades in line with global demand, Australia can harness its competitive advantages in natural endowments, like solar, wind, rare earth metals, as well as existing ports and gas pipelines, existing expertise from the LNG industry to create new, green industries that have the capacity to outperform today's exports in both scale and value.

A recent piece of analysis by the Grattan Institute highlighted that by maintaining our current market-share in critical mineral industries, Australia's exports of the minerals required to build a de-carbonised world would be more than two and a half times the value of our current coal export market. (Figures 11 and 12)

### Case study: BHP



BHP's long-term goal is to achieve net zero operational emissions (Scope 1 and 2) by 2050. While it cannot ensure the outcome alone, for its reshaped portfolio, BHP is pursuing the long-term goal of net zero Scope 3 GHG emissions by 2050 to support the transition that the world must make.

A short-term target to maintain operational GHG emissions at or below FY17 levels by FY22, while BHP continues to grow its business. A medium-term target to reduce operational GHG emissions by at least 30% from FY20 levels by FY30. As a result of actions taken in FY20 and FY21, particularly securing the supply of renewable energy for some of its operated assets, its forecasted operational GHG emissions are currently tracking in line with its FY22 and FY30 targets.

### Case study: Rio Tinto



Rio Tinto's goal is to reach net zero emissions across its operations by 2050. Rio Tinto's targets are to reduce its absolute emissions by 15% by 2030 and emissions intensity by 30% relative to its 2018 equity baseline. They are supported by its commitment to spend \$1 billion on emissions reduction initiatives from 2020-24. 75% of Rio Tinto's electricity is from renewable sources.



# The transition from fossil fuel exports to critical minerals exports

Figure 11: Global market value (US Dollars, 2019 prices)

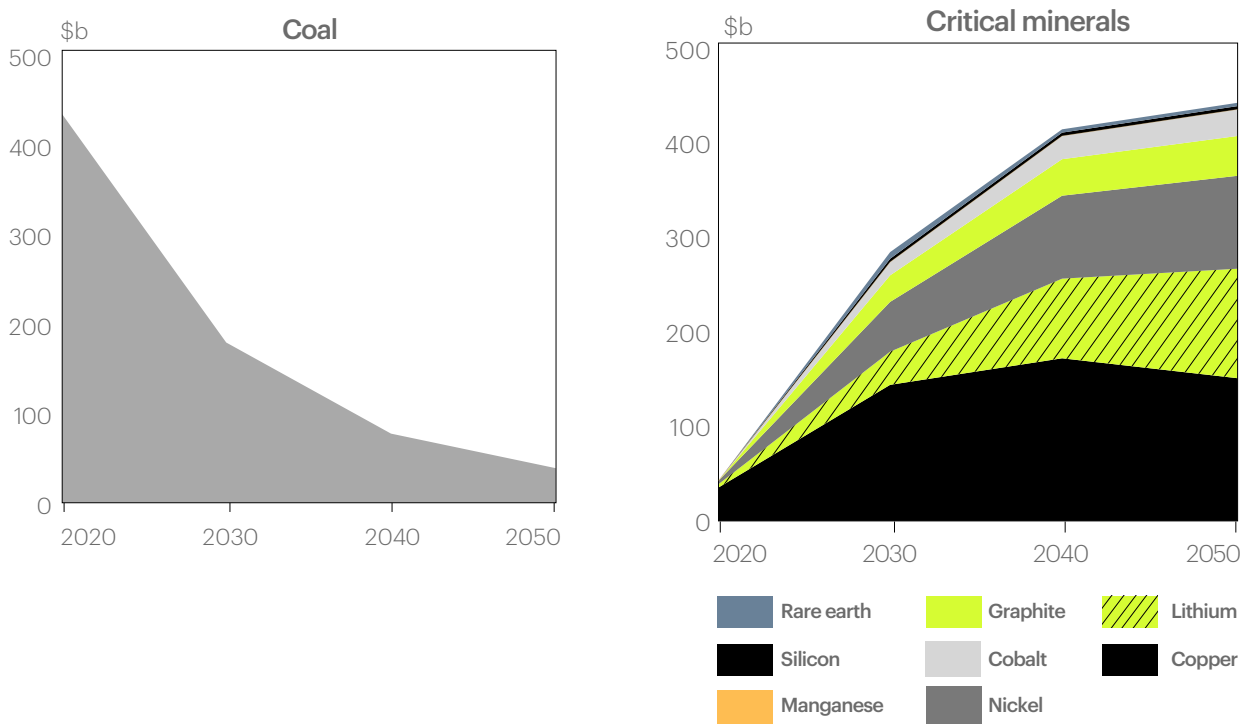
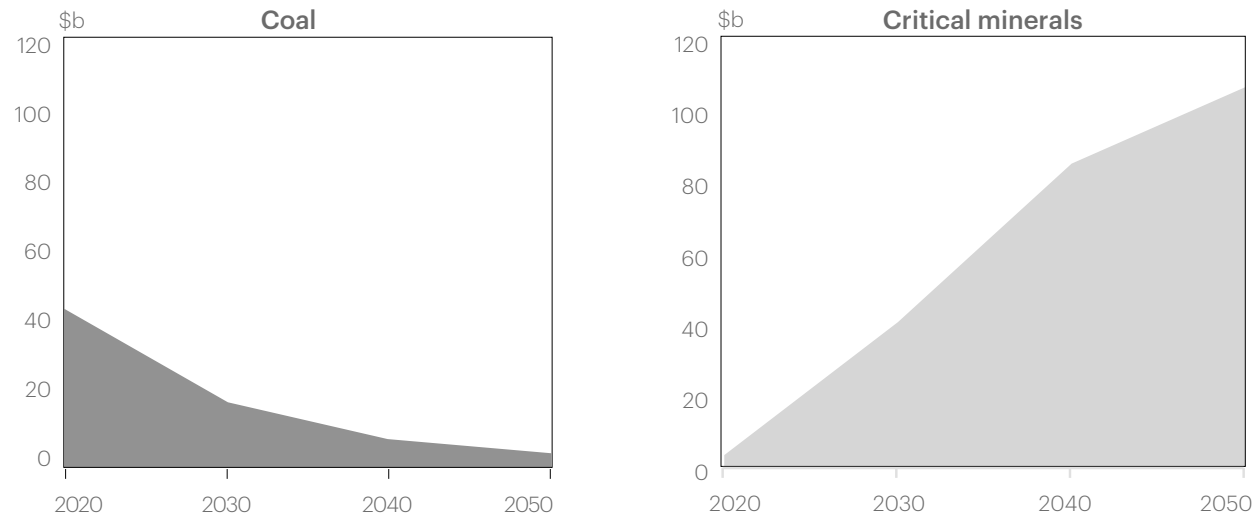


Figure 12: Australian revenue assuming constant market share



Source: Grattan Institute

## New green export industries and projected growth

Australia's current and projected levelised cost of renewable electricity production is competitive with other countries, such as China, Norway, Qatar, United States, Korea, Singapore and Japan.<sup>22</sup> An expedited and effective energy market reform process will ensure that additional transmission and storage costs are minimised.

As we expand our renewable energy capacity, adjacency of renewable energy production and new green export industry infrastructure will be critical to maximising Australia's competitiveness. This applies to domestic supply chains that produce clean energy for export (such as hydrogen, ammonia or synfuels), and to domestic supply chains that process commodities into products (such as green iron, green steel, and green aluminium/alumina) for export.

Many of these opportunities can be realised in regional areas Australia, with a high concentration of fossil fuel based industries — such as the Bowen Surat basin in Queensland, the Hunter Valley in New South Wales, the Pilbara in Western Australia and the Gippsland basin in Victoria.

*“Low emissions technologies could position Australia for over \$30 billion a year of new export revenue from energy-intensive, low emissions products by 2040. This scenario would see Australia developing into a world-leading exporter of hydrogen and a significant international producer of low emissions metals and industrial products. The Grattan Institute's recent Start with steel report estimated the potential for \$65 billion in export revenue, creating 25,000 manufacturing jobs in Queensland and New South Wales (assuming Australia captures 6.5% of the global steel market in 2050).”*

First Low Emissions Technology Statement – 2020

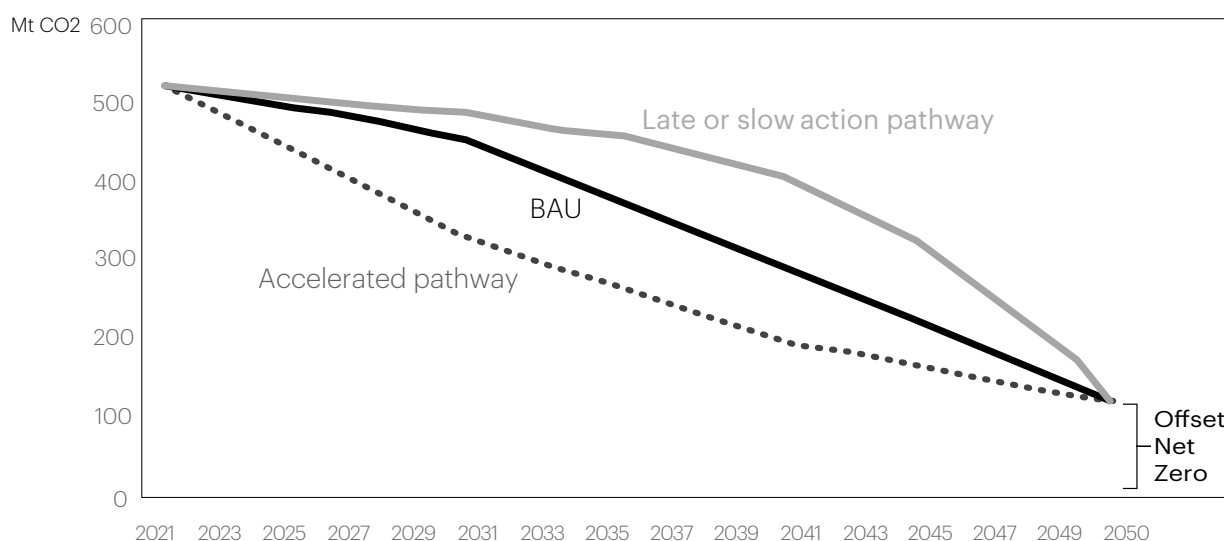
22. Opportunities For Australia From Hydrogen Exports Acil Allen Consulting For Arena, August 2018.

# What is the optimal pathway?

Moving faster and earlier reduces the burden and cost in later years.

## Three scenarios

**Figure 13: Moving faster and earlier reduces the burden and cost in later years**  
(Stylised chart only)



\*The dotted line pathway represents 3 ten year emission budget periods from 2021 to 2050, rather than specific emission levels for each year. Each ten year budget would be set to reach an annual target at the end of the budget period, for example, a 46 to 50 per cent emissions reduction target in the year 2030 (against 2005 emissions). Annual emission levels between say 2021 and 2030 may not necessarily move down in the smooth stylized fashion shown in this figure.

## Benefits of moving earlier and faster

The economic benefits of Australia decarbonising faster and earlier are twofold: local regional transitions can be better planned and therefore come at a lower economic and social cost; and economic growth will be stronger off the back of a greater share of new green export industries.

In business this is referred to as an early-mover advantage. Pursuing an early-mover strategy often leads to market leadership positions once an industry matures, where the hard benefits that come with economies of scale, combined with the softer benefits of a trained and skilled workforce, efficient supporting service industries and local intellectual property, combine to form a sustained, long-term competitive advantage.

Accelerating Australia's decarbonisation opportunity can be approached in two stages:

- **2021-2030** – focus on driving investment to bring forward abatement in easy to abate industries and sectors, which includes improvements in small- and large-scale energy efficiency and enabling greater penetration of renewable energy in the national electricity market, where the unit economics are already commercially viable and therefore won't raise, and in many cases will lower prices for customers
- **2030-2050** – closing the technology gap for harder to abate sectors industries and sectors by supporting the development and deployment of emerging technologies at scale via increased R&D, demonstration hubs and investment precincts, until their costs fall enough to be at parity with incumbent alternatives

## How much acceleration is optimal?

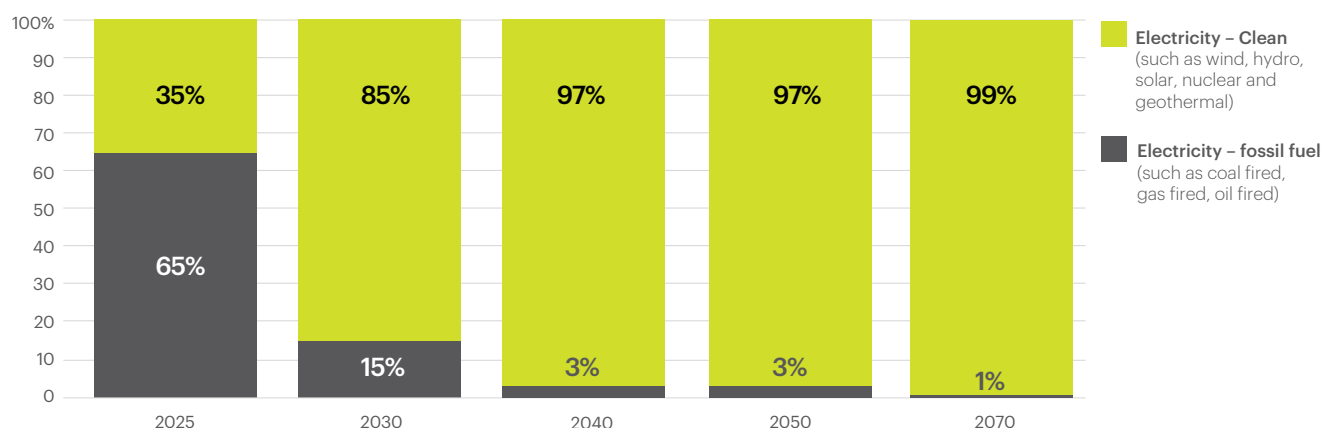
We believe that a 46 to 50 per cent emission reduction range for 2030 (on 2005 levels) is both pragmatic and ambitious. The quantum of the target's range was guided by top down macroeconomic modelling — tracing a least-cost emissions reduction path between 2020 and 2050 — and bottom up economic analysis, which assessed the scope to invest in abatement technologies and supporting infrastructure in different sectors of the economy between 2021 and 2030.

### Top down modelling

Deloitte Access Economics (DAE) was engaged to provide a top down macroeconomic view of the benefits of a coordinated transition to a net zero in economy 2050. The DAE modelling defined a 54 per cent emission reduction target by 2030 on the path to a net zero economy in 2050, which results in a \$890 billion increase to GDP and over 195,000 additional jobs by 2070.

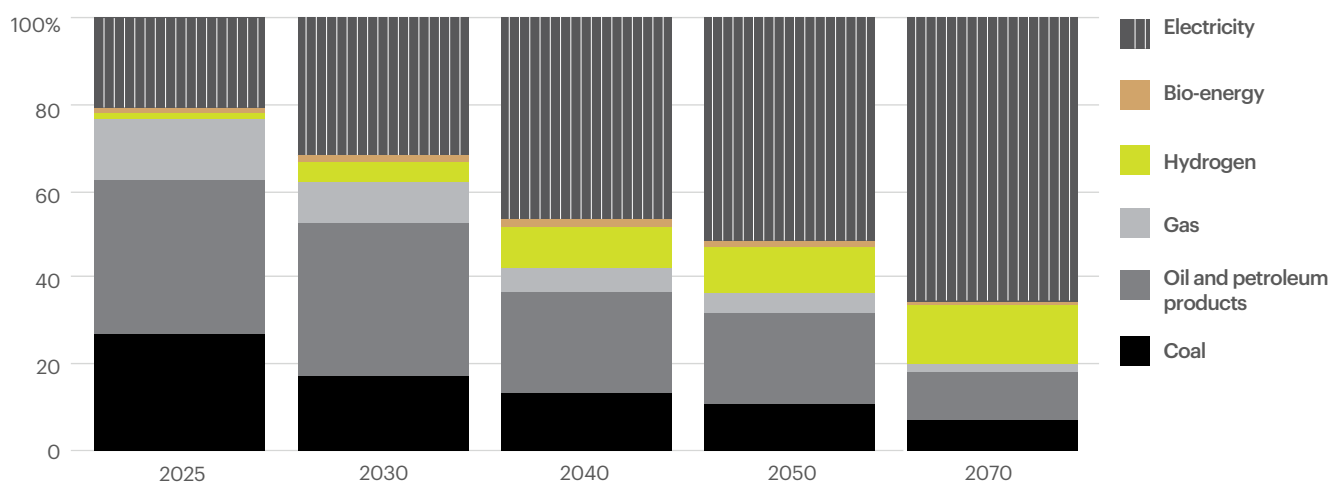
The transition associated with the DAE modelling is illustrated in the three figures below.

**Figure 14: Australia's electricity mix, to 2070**



Source: Deloitte Access Economics

**Figure 15: Australia's energy mix, to 2070**



Source: Deloitte Access Economics

**Table 1: Key technology deployments on a smooth transition pathway\* (indicative)**

| 2025  | 2035  | 2040   | 2045   | 2050   |
|---|---|--|--|--|
| <ul style="list-style-type: none"> <li>■ Accelerating the pace and scale of electrification</li> <li>■ Accelerating energy efficiency across the economy</li> </ul> | <ul style="list-style-type: none"> <li>■ Renewable electricity approaches 100%</li> <li>■ Accelerating the pace and scale of green hydrogen and decarbonising industrial processes and CCS/CCUS technologies</li> </ul> | <ul style="list-style-type: none"> <li>■ Near 100% renewable electricity and storage capabilities</li> <li>■ Electrification</li> <li>■ Deep energy efficiencies</li> <li>■ Hydrogen</li> <li>■ CCS/CCUS technologies</li> <li>■ Decarbonised industrial processes</li> <li>■ Electric and fuel cell vehicles</li> </ul> | <ul style="list-style-type: none"> <li>■ Near 100% renewable electricity and storage capabilities</li> <li>■ Electrification</li> <li>■ Deep energy efficiencies</li> <li>■ Hydrogen</li> <li>■ CCS/CCUS technologies</li> <li>■ Decarbonised industrial processes</li> <li>■ Electric and fuel cell vehicles</li> </ul> | <ul style="list-style-type: none"> <li>■ Near 100% renewable electricity and storage capabilities</li> <li>■ Electrification</li> <li>■ Deep energy efficiencies</li> <li>■ Hydrogen</li> <li>■ CCS/CCUS technologies</li> <li>■ Decarbonised industrial processes</li> <li>■ Electric and fuel cell vehicles</li> </ul> |

\* Note: DAE did not explicitly model specific technologies but provides an indicative pathway of technological development and deployment required to realise the renewable energy capacity and decarbonised industrial processes within the economy on a smooth transition pathway.

Source: Deloitte Access Economics

This modelling also indicated that the regional benefits of a coordinated transition were disproportionately delivered to regional Australians.

On average Australians are around \$5,000 better off per person in the year 2050 — with regional Australians around three times better off compared to capital city residents.



## Bottom up analysis

The BCA undertook further economic analysis on a sector by sector basis to test and corroborate the ‘on the ground’ practicalities of an acceleration in Australia’s emission reduction to 2030.

We concluded that an economy-wide ambition to lift the 2030 emissions reduction target to a range of 46 to 50 per cent below 2005 levels is achievable — with the electricity sector being the largest contributor to further emission reductions, followed by industry, transport, agriculture and the land sector.

We believe this range should be reviewed by the Climate Change Authority in 2025 as part of the five-yearly review cycles and be informed by the government’s updated greenhouse gas emissions projections.

This acceleration in Australia’s current emission reduction ambition is designed to bring forward easier to abate activities and commercially viable technology – particularly in the electricity sector – while sending an immediate signal to invest in new technologies and innovations to address harder to abate activities beyond 2030. A range of close to deployable and emerging technologies, such as deep storage in the electricity sector and CCS in industrial processes, will be important to meeting this ambition in 2030.

We note that the size of the abatement task is very much determined by the projected emissions at any point in time. Current policies and a range of technology and market related factors are already in motion and driving the economy towards a ‘business-as-usual’ reduction of emissions in 2030.

The federal government’s national greenhouse gas projections — the best available estimate of business-as-usual emissions — indicates that we are on track to achieve a 22 to 29 per cent emission reduction by 2030 (against 2005 levels).

Using bottom up analysis we have analysed the additional abatement task associated with a 46 to 50 per cent target using the lower bound of 479 Mt in 2030 (22 per cent reduction on 2005 levels). The federal government is expected to update its projections shortly.

We also note that our target is an economy-wide target and not a blanket reduction target for each sector. Efficiency, technology, job impacts and a range of other factors will determine how much abatement each sector is capable of and therefore will be incentivised to undertake. A least cost apportionment of the national target will lead to very uneven abatement across individual sectors, as it will be among different businesses (even within sectors).<sup>23</sup> At no point should the 2030 target be applied evenly to every sector nor every business – sectors and businesses will contribute to the overall, economy-wide target depending on their abatement potential and the cost of doing so. The Appendix sets out the commitments of BCA members to decarbonise and reduce their carbon footprint.

**Table 2: Achieving a 46 to 50 per cent emission reduction**

| 2030 Target % | Total emissions 2005 | Total emissions 2020 | BAU projection in 2030 | Target projection in 2030 |
|---------------|----------------------|----------------------|------------------------|---------------------------|
| 46%           | 615 Mt               | 513 Mt               | 479 Mt                 | 332 Mt                    |
| 50%           |                      |                      |                        | 308 Mt                    |

23. Another important factor to take into account when comparing emission reduction targets between different sectors and different businesses is the base year being used. While the use of different base years does not alter the physical abatement task, it can drastically alter the numerical percentage of a target. For example, the BCA’s proposed 46 per cent target is based against the 2005 emissions level and results in an emissions level of 332 Mt in 2030. If we were to rebase this same emissions level of 332 Mt in 2030, against the 2020 emissions level, the resulting reduction target would be 35 per cent by 2030.

**Table 3: Bottom up sector analysis (indicative only)**

| Sector: Electricity           |  |                            |    |
|-------------------------------|--|----------------------------|----|
| 2030 abatement potential (Mt) | 90   | Contribution to target (%) | 61 |
| Investment                    | About 30 GW of additional renewable generation will need to be installed across Australia’s electricity system over the next decade. The costs of this generation investment could be in the order of \$50 billion. However, other significant capex requirements are also likely, including transmission and distribution network augmentation, and storage to provide system stability and security.<br><br>To achieve this, we need a four-fold increase in renewable infrastructure build in the NEM over the next eight years, compared to the previous decade. |                            |    |
| Key assumptions               | Rapid transition to 70% renewable generation by 2030, primarily driven by an increase in wind and solar energy.<br><br>Effective and expeditious implementation of the ESB’s energy reforms, and related transmission and storage investment, are critical enablers of this level of renewable penetration in the grid.  |                            |    |
| Sector: Industry              |  |                            |    |
| 2030 abatement potential (Mt) | 35   | Contribution to target (%) | 24 |
| Key assumptions               | Mining specific technologies.<br><br>Resources sector changes the sources of their electricity, typically from diesel or gas, to renewables; and reduces flaring/venting.<br><br>Adoption and investment in CCS technology across large metals manufacturing, industrial process and energy facilities.<br><br>Electrification of processes and energy efficiency improvements.  |                            |    |
| Sector: Transport             |  |                            |    |
| 2030 abatement potential (Mt) | 15   | Contribution to target (%) | 10 |
| Investment                    | Significant charging and network infrastructure investments required to support shift towards EVs and hydrogen-based vehicles.   |                            |    |
| Key assumptions               | EVs and hydrogen trucks.<br><br>An increased penetration of light electric vehicles in 2030, to 22%, compared to the Australian Government’s current projection of 7%.<br><br>At least 10% of truck fleet is hydrogen-fueled in 2030.  |                            |    |
| Sector: Agriculture           |  |                            |    |
| 2030 abatement potential (Mt) | 6  | Contribution to target (%) | 4  |
| Key assumptions               | Increased electrification in agricultural operations<br><br>Increased deployment of targeted breeding techniques, methane supplements and fertiliser management.<br><br>Highly dependent on the commercial viability of these technologies, which are still in their infancy.  |                            |    |
| Sector: Land                  |  |                            |    |
| 2030 abatement potential (Mt) | 1  | Contribution to target (%) | <1 |
| Key assumptions               | Increase in land restoration activities.<br><br>Requires a focus on awareness and direct support to encourage large-scale remediation of degraded land.  |                            |    |

# Challenges to overcome

## Technology gap

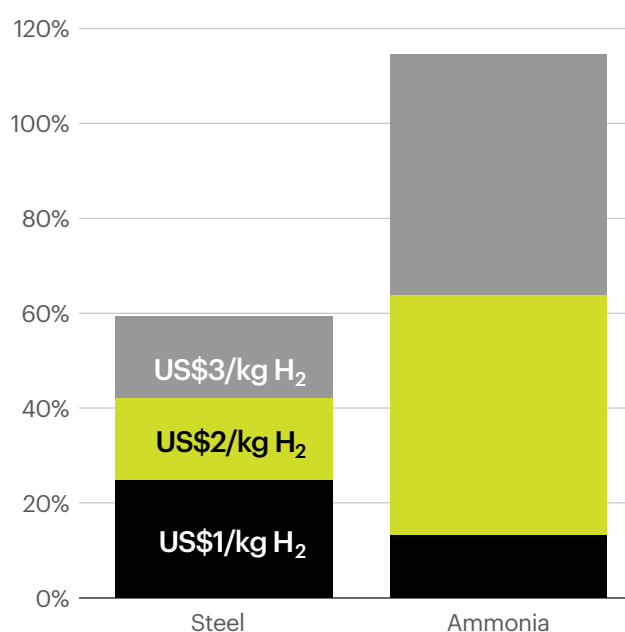
New low and zero emissions technologies must be developed and deployed at scale for many industries to have the ability to decarbonise. Australia is in the box seat to capitalise on this opportunity.

For example, today the delivered cost of hydrogen for export to Asia is about \$14 to 15/Kg H<sub>2</sub>. This needs to reduce to \$3 to 4/Kg H<sub>2</sub> to be competitive. Achieving H<sub>2</sub> under \$2/Kg at the site of production will be a key step in unlocking hydrogen industry growth.

**Table 4: Cost of hydrogen based product versus fossil fuel based product (for export and for steel making)**

| H2 price at production site (USD/kg) | Steel premium | Ammonia premium |
|--------------------------------------|---------------|-----------------|
| 1                                    | 25%           | 13%             |
| 2                                    | 42%           | 64%             |
| 3                                    | 59%           | 115%            |

**Figure 16: Green premium (additional cost of hydrogen-based product over cost of fossil fuel-based product) for Australian-made green steel and green ammonia**



Source: Grattan Institute

*"...reaching net zero emissions will require the widespread use after 2030 of technologies that are still under development today ... In 2050, almost 50 per cent of CO<sub>2</sub> emissions reductions ... come from technologies currently at demonstration or prototype stage".*

International Energy Agency

## Uneven impact of transition on regional communities and sectors

Unless addressed, the impacts and risks of climate change are unevenly distributed across Australia's workers and communities, with people in regional Australia experiencing the most adjustment. But if Australia can achieve a coordinated path to net zero, regional Australians stand to be the net beneficiaries of the transition.

The negative impact of global warming and the positive impact of economic growth through an early, coordinated path to decarbonisation, both have amplified impacts on regional Australia relative to the nation overall. In a classic scenario of attack being the best form of defence, seizing this regional opportunity and addressing this regional vulnerability is critical to Australia being able to transition smoothly — at least cost and with least disruption — to a net zero emissions economy.

Regional areas with a high concentration of fossil fuel-based industries — such as the Bowen Surat basin in Queensland, the Hunter Valley in New South Wales, the Pilbara in Western Australia and the Gippsland basin in Victoria — are especially vulnerable to the risks and impacts of climate change.

A recent analysis of Australian investment opportunities commissioned by the Investor Group on Climate Change, concluded that “some Australian communities will undergo a major transition in the coming decades as decarbonisation diminishes the demand for coal, oil and gas.”<sup>24</sup> Fortunately, these regions are also home to some of the critical infrastructure required by the potential growth industries of the future and will present regional Australians with new opportunities.

The BCA in partnership with the ACTU, ACF and WWF are currently undertaking a detailed assessment of the opportunities and threats to local economies in these regions.

## Maintaining competitiveness and trade exposed sectors

Our hardest to abate sectors generate the most export income, are the most trade exposed and are highly vulnerable to carbon border adjustments.

Heavy industry (cement, steel, chemicals and aluminium) and heavy-duty transport (shipping, trucking and aviation) are together responsible for nearly one-third of global emissions. As such, these sectors have a vital role to play in achieving the Paris warming goals.<sup>25</sup>

According to the World Economic Forum, these “economic sectors are referred to as ‘harder-to-abate’, not because we lack the technological solutions but because these solutions carry a higher abatement cost than current higher-carbon technologies”.<sup>26</sup>

24. Investor Group on Climate Change, *Empowering Communities, How investors can support an equitable transition to net zero*, July 2021, p.77.

25. <https://www.industrytransition.org/insights/net-zero-industry-public-private-partnerships/>

26. <https://www.weforum.org/agenda/2020/07/tackling-the-hard-to-abate-sectors-join-the-conversation/>



The cost differential between existing high emission technologies and decarbonised alternatives is particularly problematic when considered from the perspective of a small producer (price taker) in an international trade context. Unless many producers in a given sector invest in decarbonised technology alternatives, any single producer could be commercially penalised for doing so in isolation if the decarbonised technology is more expensive than incumbent technologies.

## Balancing the role of governments, regulators and business

World class coordination by governments, regulators and the business community is essential to achieving a smooth and least-cost transition, which leads to net growth in the Australian economy.

Greater coordination and integration of actions between state and federal governments, regulators and industry will be necessary to manage the adjustments required as Australia transitions to a net zero economy. This will be particularly important in regional Australia where the impacts of transition will be most acute.

## Policy settings to solve for this

Coordination on an unprecedented scale is needed to minimise disruption in the economy and to get ahead of the technology curve.

**Fundamentally the architecture must do two things:**

**1** accelerate deployment of commercially viable technology

**2** send investment signals for harder to abate sectors

**Our proposed high level policy architecture has seven foundations that work together to guide our transition to net zero and contribute to Australia's future economic prosperity. These policy foundations are based on the following principles:**

- Locking-in net zero to send a strong investment signal
- Establishing a process for interim targets driven by economic and technological capacity
- Using existing policy levers to accelerate change
- Creating a strong, durable economic signal to serve as a magnet for private investment
- Avoiding distortive and poorly targeted market interventions by government that crowds out private investment
- Incentivising innovation in low, zero and negative emissions technology development and largescale deployment of proven but emerging technologies
- Helping build new export industries and leveraging existing industry infrastructure and workers
- Proactively assisting regional communities and industries adversely impacted by decarbonisation
- Comprehensively assessing and adapting to the physical risks of climate change across the economy over time
- Integrating and coordinating multiple and interrelated policy levers through one central agency



# PART 2

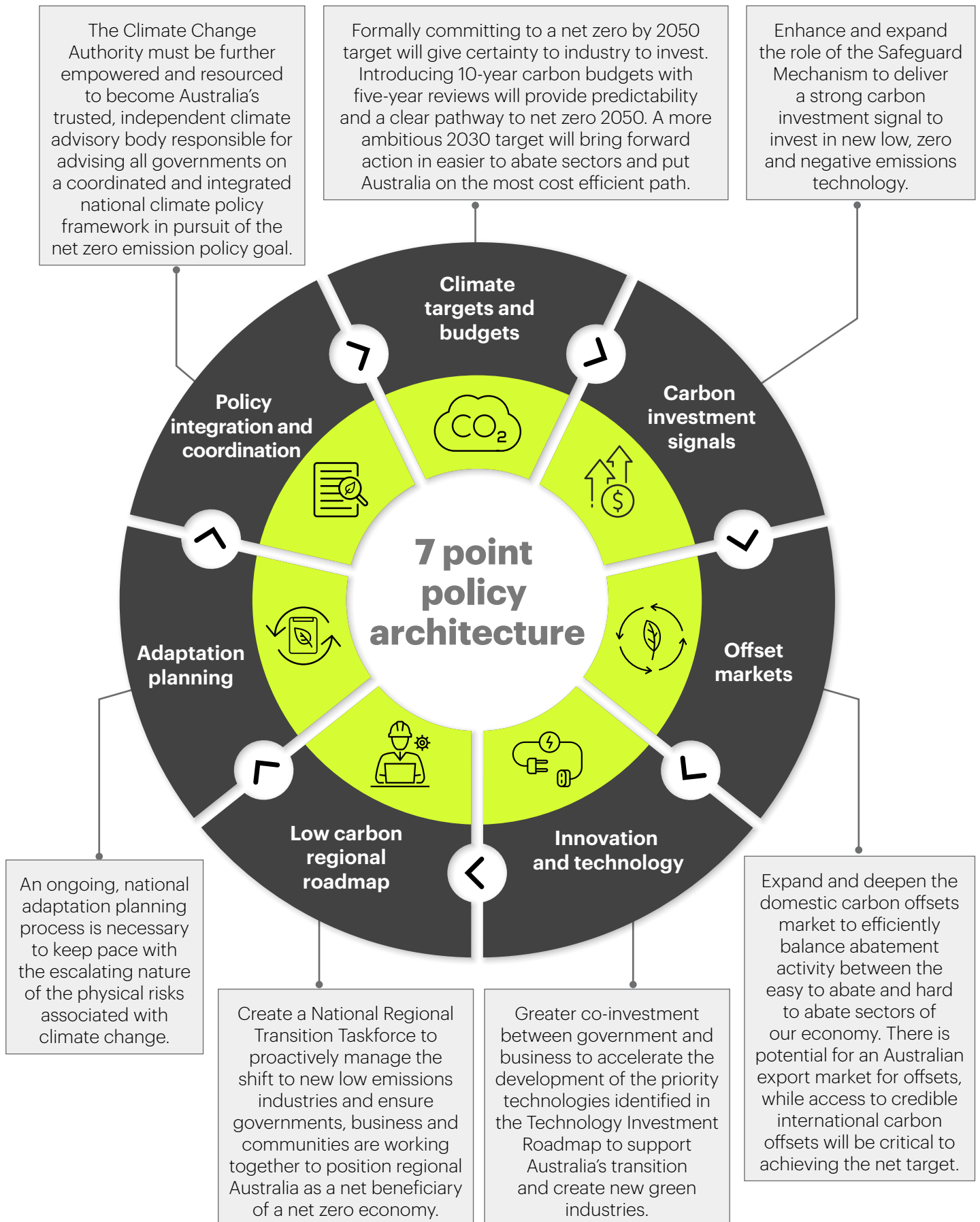
## Policy architecture





# 7 point policy architecture

An integrated policy framework to provide investment certainty and deliver a net zero economy



# Climate targets and budgets

Australia needs to commit to the target of net zero emissions by 2050 to drive investment in new low and zero emissions technology, attract finance to accelerate the transformation of our energy system, create new green industries and to avoid being locked out of global financial and trade markets.

Australia should lift its ambition for the 2030 emissions reduction target to a 46 to 50 per cent economy-wide range against 2005 levels. A more ambitious interim target will put the country on track towards a permanently restructured economy by 2050. The 2050 target should be supported by introducing 10-year carbon budgets with five-year reviews.

## Recommendations

|    |   |
|----|---|
| 1. | The Australian Government formally commit to a national, economy-wide target of net zero emissions by 2050 under the Paris Agreement.   |
| 2. | <p>The 2050 target be supported by a more ambitious 2030 emission reduction target and legislated emissions budgets between now and 2050, consistent with Australia's Paris Agreement commitment.</p> <p>The following emissions budget framework be legislated, with the Climate Change Authority undertaking the analysis required to inform the following budget periods (including five-yearly reviews):</p> <ul style="list-style-type: none"><li>■ 2021 to 2030 — lift the ambition for the 2030 emissions reduction target to a 46 to 50 per cent economy-wide range against 2005 levels</li><li>■ 2031 to 2040 — determined in 2025 following analysis and advice from the Climate Change Authority to reflect an appropriate interim emissions reduction target in 2040 against 2005 levels</li><li>■ 2041 to 2050 — reflecting a net zero emission level from the year 2050 onward</li></ul>                |
| 3. | <p>These ten year emissions budgets are to be reviewed by the Climate Change Authority and adjusted by the Australian Government (if appropriate) every five years in line with the Paris Agreement framework.</p> <p>Adjustments will be governed by explicit and agreed criteria, designed to reflect:</p> <ul style="list-style-type: none"><li>■ the rate at which the technology gap closes across various emerging technologies</li><li>■ integration with the Technology Investment Roadmap</li><li>■ distributional impacts across communities and workers — particularly in regional Australia.</li><li>■ international competitiveness concerns — particularly in hard to abate sectors.</li><li>■ cost, price and reliability impacts — particularly in the energy sector.</li><li>■ pace and scale of action by other countries, including Australia's largest trading and investment partners.</li></ul> |
| 4. | Australia does not use Kyoto carry over credits as part of its Paris Agreement commitment.  |



# Carbon investment signals

Under our proposed policy architecture, the Safeguard Mechanism — supported by the Climate Solutions Fund, a robust domestic offsets market and a fit-for-purpose innovation and technology strategy — is the principal vehicle for creating a carbon investment signal to achieve national emission targets and budgets out to 2050.

The purpose of the carbon investment signal is to help incentivise the deployment of zero and low emission technologies and closing critical technology gaps inhibiting the transition to a net zero emission economy in an economically efficient manner.

We note that a carbon investment signal can take many forms — it can be implicit or explicit, it can be broad or narrow, and it can be created using a range of different policy mechanisms. While an explicit, economy-wide carbon pricing mechanism is the Business Council's preferred option, it is by no means the only workable option. To that end the recommendations below leverage existing policy mechanisms over a carbon price.

## Recommendations

|     |   |
|-----|---|
| 5.  | The eligibility threshold for entities covered by the Safeguard Mechanism be reduced from 100,000 tCO <sub>2</sub> per year, down to 25,000 tCO <sub>2</sub> per year — to increase the scheme's coverage of emission point sources across the economy.   |
| 6.  | The Safeguard Mechanism emission baselines be reduced predictably and gradually over time to achieve the proposed emission budgets out to 2050 – and that this is done in a way that supports international competitiveness and economic growth.  |
| 7.  | <p>The policy architecture will need to explicitly support Australian businesses in internationally exposed, hard to abate sectors where and while key technology gaps remain. This can be achieved in several ways, including:</p> <ul style="list-style-type: none"><li>■ maintaining the carbon constraint but using the Climate Solutions Fund to support a proportion of businesses' offset costs to cover their use of high emission technologies in the interim (recommended approach)</li><li>■ maintaining the carbon constraint but using the Climate Solutions Fund to support a proportion of businesses' cost of investing in decarbonised technologies</li><li>■ deferring or loosening any carbon constraint under the Safeguard Mechanism for vulnerable entities or sectors.</li></ul> <p>Measures to support internationally exposed, hard to abate sectors should not come at the expense of other sectors in the economy.</p> <p>Any support should be underpinned by periodic assessments from the Climate Change Authority on the carbon leakage threat posed to Australia.</p> |
| 8.  | The Safeguard Mechanism rules be amended to enable the creation of Safeguard Credits where an entity 'beats' its emission baseline, and to allow these Safeguard Credits to be used as offsets effectively — consistent with the approach currently being developed by the Department of Industry, Science, Energy and Resources.   |
| 9.  | The Safeguard Mechanism rules be amended to enable Safeguard Credits to be traded among liable businesses, and banked for use in future periods, and on secondary markets   |
| 10. | The existing sectoral safeguard arrangement covering the electricity sector be maintained, and with a view to ensuring that the electricity sector continues to play its part in achieving the net zero emission policy goal.   |

*We note that many smaller point sources of emissions across the economy are not appropriately addressed by the Safeguard Mechanism, and as such require different policy tools (discussed in 'sector specific policies' as follows).*

# Offset markets

Achieving the goal of net zero emissions by 2050 will require a deep and liquid domestic carbon offsets market to efficiently balance abatement activity between the easy to abate and hard to abate sectors of our economy. Australia has the capacity to become a much larger supplier of carbon offsets to satisfy not only domestic requirements but international demand as well.

In the long term, we support the unfettered ability of businesses and other organisations in Australia to import and export high integrity carbon offsets from any sources for the use in both voluntary and regulatory purposes. Purchasing credible, international offsets should be managed by businesses and regulatory burdens minimised.

Today, the size and liquidity of the domestic market for offsets is limited on the demand side in the current policy environment. Legislated emissions budgets for the economy together with a strong durable carbon investment signal would go a long way to growing a deep and liquid carbon offsets market in Australia.

Businesses in all emitting sectors of the economy would have an economic incentive to directly invest in reducing their own emissions, or purchase offsets from another party to satisfy their obligations under the proposed Safeguard Mechanism arrangements.

In terms of supply side improvements, we support the King Review recommendations designed to improve method development and the applicability of new methods to the needs of businesses seeking to create offsets (discussed in sector specific policies as follows).

## Recommendations

|     |  |
|-----|--|
| 11. | The Australian Government continue to demonstrate leadership in the development of international emissions trading frameworks under the Paris Agreement (Article 6) with a view to leveraging Australia's market potential as an exporter of offsets in the future.      |
| 12. | In the interim of the full development of Article 6 under the Paris Agreement, Australia seeks to include carbon offsets in multilateral and bilateral trading arrangements.   |
| 13. | An expansion and increase to the effectiveness of the Climate Active Program by addressing specific barriers to its use by small and medium sized enterprises.   |
| 14. | The Climate Change Authority or Clean Energy Regulator reports annually on the co-benefits delivered from the creation of ACCUs each year, with particular emphasis on co-benefits in regional Australia.  |
| 15. | The Biodiversity Scheme currently under development move from the pilot scheme phase to full implementation as soon as practicable. Biodiversity benefits should be stacked onto ACCUs to create a layered approach or halo and traded through the existing ACCU market. |

# Innovation and technology

The Technology Investment Roadmap policy is a strong foundation that can be built upon to achieve a fit-for-purpose innovation and technology strategy for Australia.

Under our proposed policy architecture, the Technology Investment Roadmap would be calibrated to provide a detailed assessment of key technology gaps and fully integrated into the pursuit of emission targets and budgets out to 2050.

There is a strong case to build on the successful work and outcomes of existing agencies, like ARENA and CEFC, having operated to deliver support to emerging renewable energy technologies. In combination, the use of grant funding by ARENA and concessional financing by the CEFC is a very effective way to support the commercialisation of emerging technologies across all sectors.

It is critical that governments avoid poorly targeted interventions in the market, i.e. those which increase policy uncertainty, crowd out efficient private investment and inflate the cost of decarbonisation overall. The Underwriting New Generation Investments scheme is an example of this type of intervention.

## Recommendations

|            |  |
|------------|--|
| <b>16.</b> | Ensure there is sufficient co-investment from government to encourage private sector investment and participation in high-risk development and deployment activities, that would not otherwise be undertaken in a timely fashion (or at all).                        |
| <b>17.</b> | Set a national target for Australia to reach research and development investment parity with the OECD by 2025, with the existing gap to be made up by investment in low, zero and negative emissions research and development.                                       |
| <b>18.</b> | Leverage existing research and development support agencies — such as by expanding the size and impact of the CEFC and ARENA — to accelerate development and deployment of low, zero and negative emissions technologies across all emitting sectors of the economy. |
| <b>19.</b> | Set timelines, including interim milestones, for achieving the stretch goals established in the Technology Investment Roadmap, to ensure there is sufficient and timely public co-investment (together with private investment) to drive these outcomes.             |
| <b>20.</b> | The Technology Investment Roadmap updates must be aligned and integrated with the carbon budgets to inform technology readiness and the rate at which technology gaps can be closed.   |

# Low carbon regional roadmap

Proactive transition planning is needed to assist regional communities to attract new, low and zero carbon industries and to retrain and reskill local workforces. By invigorating investment in regional Australia, the regions can be positioned to be net economic beneficiaries of a net zero economy, including through leveraging government and business partnerships.

## Recommendations

|            |   |
|------------|---|
| <b>21.</b> | Create a National Regional Transition Taskforce, under the purview of the Climate Change Authority, to work with federal, state and territory governments and industry, to develop a low carbon regional roadmap for the most affected regions — for example the Hunter Valley and the Latrobe Valley.  |
| <b>22.</b> | <p>A low carbon regional roadmap would be a partnership between governments, business and communities to proactively assist displaced communities and workers transition to a net zero economy. A spatially based, regional transition plan is needed to identify in very practical terms:</p> <ul style="list-style-type: none"><li>■ regions, workers and industries at risk of displacement resulting from the transition to a net zero economy</li><li>■ auditing the capacity of existing industries to be converted into new, viable, decarbonised industries leveraging existing infrastructure, skill sets and other assets</li><li>■ the capacity to create new viable, decarbonised industries, that must be built from scratch in terms of new infrastructure, skill sets and other assets</li><li>■ opportunities to link to the Technology Roadmap and renewable energy zones</li><li>■ quantifying the level of investment required to create new industries</li><li>■ the type and quantum of assistance measures required to assist regions, workers and at residual risk — after the capacity options above referred to above has been exhausted.</li><li>■ tracking and planning for gaps in infrastructure</li></ul> |
| <b>23.</b> | Develop a national ‘climate ready’ manufacturing strategy for the 21st century to support the expanding role of new and emerging industries and investment in regional Australia — the Australian Government’s Modern Manufacturing Strategy is a strong foundation for this.   |
| <b>24.</b> | Establish national institutes to reflect the priority technologies in the Technology Roadmap in the regions most suited to building the new industries to drive innovation, for example a National Institute for Green Steel should be established in Port Kembla in partnership with the University of Wollongong.   |

# Adaptation planning

An ongoing, national adaptation planning process is necessary to keep pace with the escalating nature of the physical risks associated with climate change.

Constant assessment of infrastructure resilience, auditing of planning and zoning and management of public services is essential to a nationally consistent adaptation process.

In 2015 the Australian Government released a National Climate Resilience and Adaptation Strategy (NCRAS) outlining the risks of a changing climate and a set of principles to guide effective adaptation practice and resilience building.

A new NCRAS — providing a roadmap for Australia to understand, monitor and respond to a changing climate — will be launched in the leadup to the UNFCCC COP26 in Glasgow in November 2021.

The Australian Government is consulting with a broad cross section of public and private sector stakeholders in developing a refreshed NCRAS.

## Recommendations

**25.**

The Australian Government to continue development of the new National Climate Resilience and Adaptation Strategy as an ongoing national process, capable of keeping pace with the escalating nature of the physical risks associated with climate change.



# Policy integration and coordination

Sound climate policy decision making by governments requires the best advice and information based on an integrated perspective. The Australian Parliament appropriately has ultimate decision-making power within a fit-for-purpose, national overarching climate policy framework.

A single, well-resourced and highly regarded independent advisory body can provide this advice and expertise to governments. The critical roles to be performed by such a body include:

- advising on appropriate emissions budgets out to 2050 and reviewing these budgets every five years in line with the Australia's Paris Agreement commitment — which includes advice on Australia's nationally determined contribution targets, and when to adjust emission budgets in the interests of the economy and achieving the net zero policy goal
- advising on appropriate policy settings for the Technology Investment Roadmap and broader Innovation and Technology Strategy, the Safeguard Mechanism, the Climate Solutions Fund, Transitioning Planning and Adaptation Planning — which includes monitoring the performance of individual policies, raising 'red flags' where agreed interim policy milestones are not being met, and advising on adjustments to settings in the interests of the economy and achieving the net zero policy goal
- clarifying and monitoring the role and contribution of state and territory government climate-related policies to meeting the national policy goal — with a view to enabling national leadership of Australia's climate policy actions so that emission mitigation and adaptation efforts at the jurisdictional level contribute towards Australia achieving decarbonisation at least cost
- working with the Reserve Bank and other financial regulators to make Australia's financial system more resilient to the risks that climate transition and adaptation pose.

## Recommendations

|            |   |
|------------|---|
| <b>26.</b> | The Climate Change Authority be further empowered and resourced to become Australia's trusted, independent climate advisory body responsible for advising the Australian Parliament and all governments on all aspects of the national overarching climate policy framework in pursuit of the net zero emission policy goal |
| <b>27.</b> | The Australian Government be required to respond transparently and publicly to periodic advice from the Climate Change Authority on the administration of a fit-for-purpose, national overarching climate policy framework and each of its core policy elements   |
| <b>28.</b> | All Australian companies are encouraged to review, respond and fully report on their climate risk in accordance with the Task Force on Climate-related Financial Disclosures framework.   |

# PART 3

## **Sector recommendations**



While the high level policy architecture described above applies to all sectors of the economy, each major sector has specific additional policy needs which need to be addressed as part of a fit-for-purpose national overarching national policy framework.

These proposed sectoral policy measures are designed to target market failure and other barriers impeding effective and efficient emission reduction outcomes in these sectors.

This is particularly important for the many smaller point sources of emissions across the economy that cannot practically be covered by central policy tools such as the Safeguard Mechanism.

The sector specific recommendations made as follows are by no means exhaustive and represent no regrets measures (including enhancements to existing measures) that can be implemented in the near term.

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## Electricity

Energy market policy needs to be nationally integrated, stable and durable, and technology agnostic in order to drive investment in the most efficient mix of technologies. Policy incentives need to target market failure, where the full cost and benefits would not otherwise be reflected in market signals.

Poorly targeted government interventions should be avoided because they ‘crowd out’ otherwise efficient private investments in the energy market and exacerbate market sources of uncertainty facing investors. The Underwriting New Generation Investments scheme is an example of this type of intervention.

## Recommendations

|            |  |
|------------|--|
| <b>29.</b> | Energy Ministers should expedite the implementation of the Energy Security Board post 2025 reform process in order to deliver a fit-for-purpose national electricity market design that will facilitate the accelerated decarbonisation of the electricity market whilst balancing the need for affordable and reliable electricity. |
| <b>30.</b> | Develop technical standards that advance quality and interoperability, and balance customer value against technical and system requirements, to drive the safe and efficient uptake of rooftop solar and batteries for electricity storage and self-consumption.   |
| <b>31.</b> | Develop a robust methodology to value the abatement potential of utility scale storage and other dispatchable renewable technologies — especially long duration storage technologies which are under-invested in, because their full value is not able to be monetised in the absence of a price or constraint on emissions.         |
| <b>32.</b> | Introduce a targeted white certificate energy efficiency scheme for low income households, either at the national level or by amending and harmonising existing state and territory energy efficiency schemes.   |

# Gas

Natural gas and natural gas infrastructure will have a critical ‘enabling’ role to play in the transition to net zero by 2050, and renewable gas will be part of the decarbonised energy mix in the future.

- Natural gas will be needed to provide critical peaking and firming capacity when wind, solar and other storage is not available. This will ensure reliability and security in the national electricity market
- Natural gas infrastructure is extremely reliable and ideally placed to store vast amounts of energy for times of need
- Natural gas will be needed as an industrial feedstock and as a fuel for industrial heating until viable alternatives are available
- Renewable gas alternatives to natural gas, such as syngas, biomethane and green hydrogen, are potential energy options which support the decarbonisation of both the electricity and gas networks over the longer term.

## Recommendations

|            |  |
|------------|--|
| <b>33.</b> | In consultation with stakeholders, develop and implement a renewable gas target to facilitate the commercialisation of zero emission gases such as hydrogen and biomethane.                              |
| <b>34.</b> | Amend the national energy laws to reflect the value of decarbonisation to customers and remove regulatory impediments to investments in repurposing gas infrastructure assets for a decarbonised future. |

# Transport

## Road

Implementing policy incentives to accelerate the uptake of low and zero emission vehicles are needed to create cost parity with internal combustion vehicles.

We support uniformity and harmonisation of jurisdiction electric vehicle strategies and consider the New South Wales Electric Vehicle Strategy to be a benchmark in this regard.

A national government-led transition plan is needed to coordinate the widespread roll-out of state-of-the-art low and zero emission vehicle charging infrastructure across Australia over time.

In addition, an equitable, user-pays approach to road infrastructure charging is required in the long term.

## Air

Australia can assume a regional leadership position in relation to the domestic production of advanced sustainable aviation fuel (SAF) technology. Adopting a whole of government approach, a comprehensive suite of policies should be developed with industry and implemented in order to set an ambitious domestic SAF production target, seek the best ideas from industry on how to meet such targets and implement targeted subsidies, incentives, grants, loan guarantees and tax credits to support further R&D, feedstock development and domestic production of SAF at a commercial scale / viable price.

Whilst Australia is a source of high-integrity carbon offsets, the aviation sector needs access to more Australian carbon credits at commercially reasonable prices if it is to meet its decarbonisation commitments. As demand for, and the price of ACCUs, continues to rise, Australia should support airlines by expanding the methodologies available to project originators, and in turn help to mitigate prevailing supply constraints.

## Rail

The development of incentive schemes for rail freight operators will hasten the investment in more environmentally friendly locomotives and the acceleration of the Inland Rail project will increase the sustainability of Australia's supply chains. According to the Commonwealth Government, moving freight by rail is four times more fuel efficient than moving freight by road.

Inland Rail will cut carbon emissions by 750,000 tonnes per year from 2050. It is anticipated that there will be 200,000 less trucks on the road per year by 2050 due to the enhanced capacity of Inland Rail.<sup>27</sup>

27. Australian Government, Department of Infrastructure, Transport, Regional Development and Communications



## Recommendations

|            |  |
|------------|--|
| <b>35.</b> | Implement national government procurement of low and zero emission fleet vehicles.   |
| <b>36.</b> | Implement luxury car tax exemptions for low and zero emission vehicles.  |
| <b>37.</b> | Progressively tightening of general vehicle emission standards in Australia (starting with the adoption of the Euro6 standard as soon as practicable).   |
| <b>38.</b> | Introduce mandatory national minimum reporting requirements with regard to low and zero emission vehicle sales data to enable the creation of geospatial charging data for use by energy market agencies and energy network businesses.  |
| <b>39.</b> | On a nationally consistent basis, phase out fuel excise charges and introduce road congestion and other forms of road infrastructure charging gradually over time, to avoid disincentives to electric vehicle uptake.  |
| <b>40.</b> | Incentivise fuel switching of heavy vehicles, such as hydrogen fuel cell trucks and other vehicles, in the resources, construction, transport and agriculture sectors.   |
| <b>41.</b> | All jurisdictions adopt the New South Wales ultra-fast charging infrastructure approach as part of their electric vehicle strategies, which includes co-investment in EV Super-Highways, EV Commuter Corridors and EV Offstreet Parking Chargers.  |
| <b>42.</b> | Government support for research and development, investment and adoption of new low-carbon technologies and alternative waste processing methods is needed to drive progress across aircraft efficiency and the aviation sector waste footprint, while preserving and upholding Australia's stringent biosecurity standards. |
| <b>43.</b> | Develop incentive schemes for rail freight operators to invest in more environmentally friendly locomotives.   |
| <b>44.</b> | Accelerate the timeline of the inland rail project to increase the sustainability of Australia's supply chains.  |

# Industry and resources

The recommendations made in relation to expanding and tightening the Safeguard Mechanism are the principal vehicle to reduce emissions in industry and the resources sector.

We support the development of a national climate-ready manufacturing strategy for the 21st century that aligns with the Modern Manufacturing Strategy and focus on targeting regional Australia.

Using supply side and demand side policy incentives will help facilitate the development and deployment of emissions reduction technologies specifically applicable to Australia's manufacturing, energy and mining operations. In addition, a comprehensive assessment should be undertaken of Scope 3 emissions in global supply chains with respect to Australia's manufacturing, energy and mining operations.

## Recommendations

|            |  |
|------------|--|
| <b>45.</b> | Implementation of King Review recommendation 5.1 — to award ACCUs on a compressed timeframe under the Emission Reduction Fund to reduce the barriers faced by projects with high upfront capital costs.  |
| <b>46.</b> | Implementation of King Review recommendation 6.2 — to establish a pilot method program to test new method ideas and expedite method preparation.   |
| <b>47.</b> | Implementation of a National Emissions Intensity Reduction Program to support businesses to transition their plant, equipment and processes to low emissions alternatives, where program funds will be allocated on a strategic basis over 10 years.   |
| <b>48.</b> | Fast track major project approvals to accelerate new investment in low or zero emissions projects to accelerate the economic transition to a net zero economy.   |
| <b>49.</b> | The Government's proposed Safeguard Crediting Mechanism needs to be designed in such a way that it can effectively target abatement via the deployment of low emission technology in often bespoke industry settings which are likely to vary from one manufacturing or mining operation to another. |

# Agriculture and land

Proactive government initiatives will provide support to agricultural producers in their efforts to invest in abatement and adaptation activities. The work being undertaken to develop soil carbon via the National Soils Strategy is an as an important long term national asset for Australia.

Soil carbon and sequestration opportunities have the potential to deliver revenue streams for farmers and new export opportunities.

## Recommendations

|     |   |
|-----|---|
| 50. | Implementation of King Review recommendation 6.7 — to create tailored small-scale methods under the Emission Reduction Fund with streamlined measurement, reporting and verification requirements, reducing transaction costs and driving participation from small agriculture projects.  |
| 51. | Implementation of King Review recommendation 6.5 — to establish a scheme to subsidise the costs of directly measuring the abatement associated with certain types of Emission Reduction Fund project activities, particularly the sequestration of carbon in agricultural soils.  |
| 52. | Implementation of King Review recommendation 6.6 — to establish dedicated small-scale Emission Reduction Fund methods with a fixed-price purchasing desk to allow access to the fund for landholders too small to participate in an auction.  |
| 53. | As per the Grattan Institute's recommendation, the Australian Government should establish a long term program — similar in design to previous 'Carbon Farming Futures Extension and Outreach' program — aimed at building on farmers' and land managers' knowledge of emissions management and lowering key barriers to the uptake of new technology and practices. |
| 54. | The stretch goal for soil carbon measurement in the Technology Investment Roadmap be accompanied by a set of time based milestones.   |
| 55. | As per the Grattan Institute's recommendation, state governments should continue to protect the remaining land based carbon sink, and aim to increase it over time by i) balancing any necessary additional land clearing in one area with ii) regrowth or land restoration in another.   |

# Built environment and infrastructure

Industry and governments can drive best practice in infrastructure design, operation and adaptation through the adoption of schemes such as Infrastructure Sustainability Council of Australia's Infrastructure Sustainability Rating Scheme and the Green Building Council of Australia's Green Star.

Australia's property sector has been world leading in sustainable buildings for many years, with a significant number of leading property companies committing to net zero emissions by 2030.

Progress can be made by implementing the plan jointly developed by industry participants through the Green Building Council of Australia and Property Council of Australia, which includes:

- setting a long-term vision for net zero buildings
- accelerating the transition to high performance buildings with planning incentives
- supporting a Zero Carbon Ready building code and improve enforcement and compliance
- supporting renters with minimum energy efficiency standards for rental properties
- unlocking the potential of distributed energy
- leading through government owned and leased buildings
- empowering owners, buyers and renters with a single national rating scheme for home energy performance.

## Recommendations

|     |   |
|-----|---|
| 56. | Implementation of King Review recommendation 8.3 — to expand the National Australian Built Environment Rating Scheme and the Commercial Buildings Disclosure scheme to a broader range of commercial building types.  |
| 57. | Implementation of King Review recommendation 8.4 — to develop an energy performance rating scheme for new and existing residential buildings based on the Nationwide House Energy Rating Scheme.  |
| 58. | Performance rating schemes must incorporate climate adaptation criteria for the built environment, actual building performance auditing, performance based-incentives for home and building owners investing in energy efficiency, and the use of low-carbon-lifecycle building materials into scheme revisions going forward.                        |
| 59. | Climate impacts must be factored into benefit and cost analysis in all business cases for government infrastructure projects, through Infrastructure Australia and each state and territory Treasury and infrastructure body.   |
| 60. | Implementation of the 2021 Australian Infrastructure Plan — to capture key opportunities to support growth in regional centres, invest in transformative technology to deliver affordable and sustainable infrastructure services, and to promote changes to behaviour around infrastructure use, empowering Australians to make sustainable choices. |

# Digital and technology

Energy management and emerging digital technologies, such as 5G, the Internet of Things and smart cities across Australia, are crucial to achieving a net zero emission economy. In particular, digital technologies are set to make energy systems around the world more connected, intelligent, efficient, reliable and sustainable.

## Recommendations



|     |   |
|-----|---|
| 61. | All major government funded infrastructure projects should promote 'smart infrastructure' solutions and include a digital layer to allow for monitoring, full visibility and real time insights to improve asset performance, reduce maintenance costs and increase asset control and safety. |
| 62. | Implementation of tax incentives for small to medium enterprises to invest in digital skills training, infrastructure, and services to support the transition to net zero economy.  |
| 63. | The Technology Investment Roadmap should continue to support and identify enabling emerging digital technologies to support decarbonisation across the economy.   |



# PART 4 Appendix



# Snapshot of BCA member companies' climate commitments and investments

|  |   |
|--|---|
| <b>Accenture</b>   |    |
| <b>Net-zero commitment (if applicable and year)</b>  |   |
| <p>Accenture's commitment is to achieve net zero emissions by 2025. Its initial focus is on achieving actual reductions in its emissions by powering its offices with 100% renewable energy, engaging key suppliers to reduce their emissions and equipping its people to make climate-smart travel decisions. To address remaining emissions, it will invest in proprietary, nature-based carbon removal solutions, such as large-scale tree planting, that will directly remove carbon emissions from the atmosphere.</p>  |   |
| <b>Company emissions reduction targets (and performance against these)</b>   |   |
| <p>Accenture is the largest professional services company to have a goal aligning with the Science Based Targets initiative (SBTi). Its target aims to reduce absolute greenhouse gas emissions by 11% against its 2016 baseline by 2025, including a commitment to reduce Scope 1 and 2 emissions by 65% and a 40% per unit of revenue intensity reduction for Scope 1, 2 and 3 emissions over the same period. Its progress: Total emissions - reflecting short term impacts of the pandemic - decreased by 32% from its baseline, exceeding one aspect of its 2025 target. Scope 1 and 2 were reduced by 39% and emissions per unit of revenue were reduced by 45%.</p>   |   |
| <b>Renewable energy targets (and performance against these)</b>  |   |
| <p>Accenture is committed to reaching 100% renewable electricity by 2023 as part of its participation in the RE100, a global corporate leadership initiative bringing together influential businesses committed to 100% renewable electricity. To date, it has increased its mix of renewable electricity to 30% in FY20, an improvement over its 26% renewable electricity rate in FY19.</p>  |   |
| <b>Case study</b>  |   |
| <p>In 2021, Accenture announced a partnership with Salesforce which provides all organisations with the ability to bring sustainability to the front office with visibility into real-time ESG data. This helps business leaders track, measure and act on their responsible business initiatives, such as carbon use, to meet regulatory requirements and develop new business models.</p>  |   |
| <b>AGL</b>   |  |
| <b>Net-zero commitment (and year)</b>  |   |
| <p>In 2020, AGL committed to achieving net zero emissions by 2050.</p>   |   |
| <b>Company emissions reduction targets (and performance against these)</b>   |   |
| <p>Other than net zero by 2050, AGL hasn't formally set emissions reduction targets, but has stated publicly that as part of the demerger scheme booklet to be released early next year it will publish climate change roadmaps for both companies, and for Accel Energy this will include specific decarbonisation targets showing clear progress relative to its existing emissions reduction trajectory (the baseline of which is a 23% reduction in greenhouse gas emissions by 2024, 60% reduction by 2036 and 100 by 2050, on FY20 levels). AGL also incorporates carbon transition metrics in its Long-Term Incentive Plan, which include controlled intensity, % controlled renewable and storage capacity and % green &amp; carbon neutral products &amp; services.</p> |   |
| <b>Renewable energy targets (and performance against these)</b>  |   |
| <p>AGL incorporates carbon transition metrics in its Long-Term Incentive Plan, including % controlled renewable and storage capacity. Under the FY21 LTI plan, 100% awards vesting will occur where this metric exceeds 34% at 30 June 2024; under the FY22 LTI plan 100% awards vesting will occur where this metric exceeds 36.9% at 30 June 2025. As at 30 June 2021 the proportion was 23.0%, up from 22.5% at 30 June 2020.</p>   |   |



## Amazon



### Net-zero commitment (if applicable and year)

In 2019 Amazon co-founded, and was the first signatory to, The Climate Pledge, with the goal of reaching net-zero carbon by 2040, a full 10 years ahead of the Paris Agreement. By joining The Climate Pledge, Amazon has not only committed to directly addressing its own carbon footprint through global operational changes and transparent carbon accounting and reporting on a regular basis, it will also play a critical role in stimulating investment in the development of low-carbon products and services that will be required to help other companies meet the pledge.

### Renewable energy targets (and performance against these)

Two years ago, Amazon made a long-term commitment to power its global infrastructure with 100% renewable energy. In 2020, it reached 65% renewable energy across its business and became the world's largest corporate purchaser of renewable energy. It is on a path to running 100% of its business on renewable energy by 2025 - five years ahead of its original target of 2030. Amazon now has more than 230 renewable energy projects around the world, which together have the capacity to generate over 10,000 megawatts (MW) of power. Included in these projects are Amazon's investments in three projects to date in Australia: the Hawkesdale Wind Farm, Victoria; Gunnedah Solar Farm, New South Wales; and Suntop Solar Farm in New South Wales. Combined, these projects will generate 717,000 MWh of renewable energy annually, the equivalent to the annual electricity consumption of almost 115,000 average Australian homes. And Amazon looks forward to making continued investments in Australian renewable energy projects, which are not only helping make its business, and our future, more sustainable, they are also helping to create investment and jobs in regional Australia, both during construction of these projects and long-term employment when they are operational.

### Case study

Amazon has also invested billions to accelerate innovation on a whole variety of other technologies and approaches that will help to drive decarbonization at a global scale, well beyond Amazon's own operations. These include the US\$2 billion Climate Pledge Fund to support the development of sustainable and decarbonizing technologies and services, the US\$100 million Right Now Climate Fund to restore and protect forests, wetlands, and peatlands around the world, as well as the AWS Clean Energy Accelerator Program. Collectively, these efforts will help to remove millions of metric tonnes of carbon from the atmosphere, and create economic opportunities for thousands of people around the world.

## ANZ



### Net-zero commitment (if applicable and year)

ANZ's 2020 climate statement confirms that it supports the Paris Agreement's goal of transitioning to net zero emissions by 2050.

### Company emissions reduction targets (and performance against these)

ANZ set a target to reduce Scope 1 and 2 emissions by 24% by 2025 and by 35% by 2030 (against a 2015 baseline) and it is currently tracking ahead of this with a 42% reduction to date.

### Renewable energy targets (and performance against these)

100% renewable energy target by 2025. ANZ is currently at 17% currently.

## APA



### Net-zero commitment (if applicable and year)

2050 Net Zero Operational Emissions

#### Company emissions reduction targets (and performance against these)

Interim targets will be announced EoFY22

#### Renewable energy targets (and performance against these)

Interim targets will be announced EoFY22

#### Case study

In February 2021, APA announced a landmark hydrogen conversion pilot project to turn 43-kilometres of Parmelia Gas Pipeline in Western Australia into Australia's first 100% hydrogen-ready transmission pipeline. The project aims to make the Parmelia Gas Pipeline one of only a few natural gas transmission pipelines converted to 100% hydrogen-ready in the world. Phase 1 of the project is already complete. Pipeline materials were tested at a laboratory in the University of Wollongong and compared against the US standard for hydrogen pipeline design to confirm the technical viability of the pipeline material to transport hydrogen. Phase 2 will focus on how the pipeline can be converted to transport hydrogen including identifying the above ground equipment modifications required; defining allowable operating conditions; and beginning stakeholder engagement with potential customers, the community and the State regulator. Phase 3 will prepare the pipeline for transformation, including rigorous in-situ testing and completing any modifications or upgrades required to meet technical, regulatory or customer requirements identified during Phase 2. APA is continuing its partnership with Future Fuels CRC to deliver Phase 2 of the project, leveraging their extensive knowledge and international industry connections.

## ASX



#### Net-zero commitment (if applicable and year)

ASX has made a commitment to be net zero scope 1 and 2 emissions from our operations by the end of FY25. Our commitment reflects ASX's view that we all have a part to play in transitioning to a low carbon economy.

#### Renewable energy targets (and performance against these)

ASX has committed to using 100% renewable electricity in FY23. This will reduce ASX's carbon emissions by over 85%.

#### Case study

Electricity derivatives provide price transparency for the value of electricity today and into the future, providing the forward pricing and hedging tools which enable the financing of investments into renewable energy. These products also provide the mechanism and liquidity to transact and transfer risk. In doing so, they provide renewable generators the ability to hedge electricity price risk, while providing a source of revenue which incentivises the development of storage infrastructure and flexible energy generation assets all of which contribute to the decarbonisation of energy. ASX has been enhancing its suite of energy derivatives to meet Australia's electricity sector's evolving needs as it decarbonises. Most recently, ASX launched its 5-minute settlement Electricity Cap futures to align with the underlying spot market settlement period which had been narrowed from 30 to 5 minutes by the regulator.

## Atlassian



#### Net-zero commitment (if applicable and year)

Yes, by 2050.

#### Company emissions reduction targets (and performance against these)

Atlassian is committed to reducing its absolute Scope 1 and 2 greenhouse gas emissions 50% by fiscal year 2025. Fiscal year 2019 baseline: 2,678.4 tCO<sub>2</sub>e; Fiscal year 2020 result: 967.9 tCO<sub>2</sub>e; Change: 63.9% decrease. Atlassian commits that 65% of its suppliers by emissions covering purchased goods and services and capital goods will have science-based targets by fiscal year 2025. Fiscal year 2019 result: Suppliers with science-based targets accounted for 6% of emissions. Fiscal year 2020 result: Suppliers with science-based targets accounted for 4% of emissions. Atlassian will reduce its absolute Scope 3 greenhouse gas emissions from business travel by 25% by fiscal year 2025. Fiscal year 2019 baseline: 21,702 tCO<sub>2</sub>e. Fiscal year 2020 result: 8,320 tCO<sub>2</sub>e. Change: 61.7% decrease

### Renewable energy targets (and performance against these)

Through the purchase of Energy Attribute Certificates, Atlassian met 100% of its operational energy requirements from renewable energy in 2020. This achieved its 100% renewable goal just one year from setting it and four years ahead of its RE100 commitment.

### Case study

Atlassian is the anchor tenant for the NSW Government's Tech Central precinct and it is are working with Dexus to re-develop the Railway Square YHA site in Central for its new headquarters. It is a priority that the new building is as sustainable as possible, in line with Atlassian's commitment to operate on 100% renewable energy and reach net zero emissions. This new building includes the following targets: 50% less carbon emissions in construction; 50% less energy consumption; and 100% renewable energy and solar panels in the vertical facades to generate green power on-site.

## Bendigo and Adelaide Bank



### Net-zero commitment (if applicable and year)

The Bendigo and Adelaide Bank met its commitment to be carbon neutral by June 2021.

### Company emissions reduction targets (and performance against these)

Reduce absolute emissions by 50% by 2030. 20% reduction in Scope 1 and 2 emissions was achieved between FY20 and FY21. The bank set a new baseline in 2020 aligned to Climate Active with an expanded range of Scope 3 emissions. It then set a target to reduce absolute emissions by 50% by 2030 from this new baseline. The full range of Scope 3 emissions have not yet been measured for FY21, so performance shown is for Scope 1 and 2 only.

### Renewable energy targets (and performance against these)

The bank's target is to purchase 100% renewable energy by 2025. It has 30 branches with rooftop solar installed. Electricity for its "Large Sites" power contract was matched with renewables during 2HFY21. This includes the bank's Bendigo, Docklands and Sydney offices along with its Data Centre.

### Case study

The Bendigo and Adelaide Bank's pilot project to assess the impact of new installations of PV Solar on energy consumption and costs was rolled out during 2018 and 2019 at seven branches across South Australia, Victoria and Queensland. To date, the pilot program has delivered significant reduction in electricity consumed from the grid which has resulted in both a reduction in carbon footprint and financial spend. Payback was estimated to take an average of five years however in five of the seven locations, payback is expected to be realised ahead of schedule. More branch and office sites are currently being assessed to expand this project. In addition, at least 23 Community Bank Branches have PV Solar installed taking the total number of branches with solar panels installed to 30.

## BHP



### Net-zero commitment (if applicable and year)

BHP's long-term goal is to achieve net zero operational emissions (Scope 1 and 2) by 2050. While it cannot ensure the outcome alone, for its reshaped portfolio, BHP is pursuing the long-term goal of net zero Scope 3 GHG emissions by 2050 to support the transition that the world must make. Within this, it has set these Scope 3 targets: BHP will target net zero by 2050 for the operational GHG emissions of its direct suppliers, subject to the widespread availability of carbon neutral goods and services to meet its requirements. BHP will target net zero by 2050 for GHG emissions from all shipping of its products, subject to the widespread availability of carbon neutral solutions including low/zero-emission technology on board suitable ships and low/zero-emission marine fuels.

### Company emissions reduction targets (and performance against these)

A short-term target to maintain operational GHG emissions at or below FY17 levels by FY22, while BHP continues to grow its business. A medium-term target to reduce operational GHG emissions by at least 30% from FY20 levels by FY30. As a result of actions taken in FY20 and FY21, particularly securing the supply of renewable energy for some of its operated assets, its forecasted operational GHG emissions are currently tracking in line with its FY22 and FY30 targets.

## Case study

BHP has achieved significant milestones in progressing its plan to reduce future emissions associated with the use of electricity. Examples of recent actions include: signing a renewable PPA, which is expected to supply up to 50% of BHP's electricity needs at the Nickel West Kwinana Refinery; working with TransAlta on plans to build two solar farms and a battery storage system to help power the Mt Keith and Leinster operations at Nickel West; securing renewable electricity via a PPA to supply approximately half of the electricity needs across Queensland Coal mines from low-emissions sources.

## BlueScope



### Net-zero commitment (if applicable and year)

Net zero greenhouse gas emissions by 2050 covering operational Scope 1 and 2 GHG emissions across BlueScope's global operations. Achieving the 2050 net zero goal is highly dependent on several enablers, including the commerciality of emerging and breakthrough technologies, the availability of affordable and reliable renewable energy and hydrogen, the availability of quality raw materials, and appropriate public policy settings.

### Company emissions reduction targets (and performance against these)

In addition to its net zero by 2050 goal, BlueScope has set targets of a 12% reduction in emissions intensity for its three global steelmaking operations by 2030 on a 2018 baseline, with a target run-rate of 1% year on year, and a 30% reduction in emissions intensity for its mid-stream (non-steelmaking) operations by 2030 on a 2018 baseline. Together, these 2030 targets cover 98% of the group's Scope 1 and 2 emissions. Company achieved 1% run-rate for its steelmaking sites between FY20 and FY21. Target for non-steelmaking sites announced in August 2021 and performance was reported as part of its Climate Action Report in September 2021.

### Renewable energy targets (and performance against these)

No formal renewable energy targets, but increasing the use of affordable and reliable renewable energy is one of the company's climate strategy focus areas. BlueScope has a power purchasing agreement (PPA) which underwrote the development of a 500,000 panel solar farm at Finley in NSW, generating the equivalent of approximately 20 per cent of their Australian Steel Products division's purchased electricity.

## Case study

Western Sydney Paint Line Natural Gas Reduction: Reducing the emissions intensity at BlueScope's major operations will be critical to meeting its 30% target for non-steelmaking activities. An example of the opportunities it is investing in has been implemented at its Western Sydney paint line. Through improved process control equipment and system logic, the team enabled the oven pressures and exhaust to be better managed, reducing the amount of cold air being drawn into the paint ovens. The result was the natural gas consumption was reduced by 25%, and electricity consumption by 10%. A key element in achieving this outcome was the use of digital technology to model plant operations and identify opportunities for efficiencies, and this approach has piloted the way for potential future energy savings opportunities at BlueScope's 17 global paint lines.

## Boston Consulting Group (BCG)



### Net-zero commitment (if applicable and year)



In 2020, the Boston Consulting Group (BCG) committed to achieving net zero climate impact by 2030, and beyond 2030, becoming climate positive by removing more carbon than it emits each year.

### Company emissions reduction targets (and performance against these)

In 2021, the Boston Consulting Group increased the ambition of its greenhouse gas (GHG) emissions targets, committing to cut emissions intensity in half by 2025. The SBTi has validated this goal as aligned with the aim of the Paris Agreement: to limit a global temperature rise to 1.5°C above preindustrial levels. This commitment includes reducing scope 1 and 2 emissions by 92% per FTE by 2025 (using 2018 as the baseline year) and business travel (scope 3) by 48.5% per FTE by 2025.

BCG established a global carbon accounting system in accordance with the GHG Protocol Corporate Standard. It independently verifies its emissions against the ISO 14064-3 standard on an annual basis covering BCG's global operations. The company measures and includes within its footprint the climate impact of greenhouse gas (GHG) emissions across Scope 1, 2 and 3. BCG reports its global GHG emissions and progress toward net zero climate goals in its Annual Sustainability Report.



| Renewable energy targets (and performance against these)  |   |
|---|---|
| In 2019, BCG shifted to 100% renewable energy for its offices,  |   |
| Case study  |   |
| BCG works with clients in Australia and other countries to accelerate progress towards a more sustainable, decarbonised world. It often invests with its clients, with this investment taking the form of time/ resources and sometimes equity investment. The majority of BCG's work cannot be disclosed for reasons of confidentiality. However, one example of an investment in Australia is OpenSC, which it co-founded with WWF.   |   |
| <b>BP</b>   |    |
| Net-zero commitment (if applicable and year)  |   |
| Become a net zero company by 2050 or sooner and to help the world get to net zero.  |   |
| Company emissions reduction targets (and performance against these)   |   |
| By 2030, cut operational emissions by 30-50%, reduce the emissions associated with the carbon in its upstream oil and gas productions by 35-40%, and reduce the carbon intensity of the products we sell by >15%. bp has already reduced Scope 1 and 2 emissions by 16% from 2019 to 2020, today emissions are down to 45.5MtCO <sub>2</sub> e, from 54.4MtCO <sub>2</sub> e in 2019. Emissions from the carbon in its upstream oil and gas production is down 9% from 2019 to 2020.  |   |
| Renewable energy targets (and performance against these)  |   |
| By 2030 bp will develop around 50GW of net renewable energy generating capacity, capture 10% share in core hydrogen markets, produce 100,000 barrels a day of bioenergy, and provide 70,000 electric vehicle charging points. bp has already grown its low carbon projects by 400% with 21GW in the pipeline today, up from 4GW in 2019. It has seven planned hydrogen projects already   |   |
| Case study  |   |
| Since partnering with bp in 2017 and entering the market in 2018, Lightsource bp has developed a significant pipeline of large-scale solar projects across Australia. Lightsource bp has secured planning approval for its Wellington North solar farm, adjacent to its recently constructed Wellington solar farm. Combined, the 1.173GWh hub can become the largest renewable energy power hub in NSW. It will produce enough renewable electricity to power 170,000 homes, saving 938,000 of carbon emissions annually. In June 2021, Lightsource bp also started construction of solar projects at West Wyalong in NSW and Woorooga in Queensland. These projects will produce approximately 673MWh of renewable electricity a year, enough to power nearly 100,000 homes and cut carbon emissions by 540,000MT tonnes. In addition, through a PPA with Snowy Hydro, the West Wyalong solar farm will supply 100% renewable energy to the 88 company-owned bp service stations across NSW from January 2023. These projects are in addition to Lightsource bp's pipeline of more than 1.5GW installed capacity, which will make Lightsource bp one of the largest solar developers to own and operate in Australia. |   |
| <b>Brookfield</b>   |  |
| Net-zero commitment (if applicable and year)  |   |
| In March 2021, Brookfield became a signatory to the Net Zero Asset Managers initiative. It is working to reach net zero emissions by 2050 or sooner by reducing the carbon emissions of its investments and accelerating the transition to a net zero carbon economy through its renewable power business and global transition investment strategy. Over the past 25 years, Brookfield has built one of the largest private renewable power businesses in the world. With installed renewable power generating capacity of 20 GW, it now produces more than enough green energy to power London and will more than double that amount once its development portfolio is brought online.  |   |

#### Company emissions reduction targets (and performance against these)

Brookfield has set an interim target for a proportion of assets to be managed in line with achieving net zero emissions by 2050 and reviewing it at least every five years, with a view to increasing it to 100% of assets over time. It will track and report GHG emissions consistent with GHG Protocol and PCAF standards. It will publish decarbonisation plans every five years consistent with the Paris Agreement. It continues to align its business with the TCFD recommendations and is targeting to incorporate TCFD disclosures for the 2022 fiscal year.

#### Renewable energy targets (and performance against these)

Brookfield is one of the world's largest investors in renewable power with US\$59 billion of renewable power assets under management. It currently has 21,000 megawatts of generating capacity across China, India, Europe as well as North and South America. Assets include Hydro, Wind, Solar, Distributed Generation and Storage. It is committed to accelerating the transition to a low-carbon economy through its renewable power operations. In 2020, Brookfield Renewable's power generation helped to avoid approximately 26 million metric tons of carbon dioxide emissions equivalent (mtCO<sub>2</sub>e) on a net basis. With its development pipeline, it expects to create enough power to avoid an additional 30 million mtCO<sub>2</sub>e per year.

#### Case study

The Brookfield Global Transition Fund, which has already attracted commitments of US\$7 billion, will focus on investments that support the global transition to a net zero economy by aiding the development and accessibility of renewable energy sources and facilitating the transformation of carbon-intensive businesses. The fund will target investments across: Business Transformation: transition utility, energy, and industrial businesses driving carbon dioxide equivalent reduction and decreased energy consumption through investment in greener production processes and energy efficiency. This will include investments in non-pure-play renewable opportunities, utility companies, industrial, and energy efficiency technologies such as smart meters and electric vehicle charging stations. Clean Energy: aid in the development and accessibility of renewable energy sources. This will include hydroelectricity, wind and solar development, green hydrogen, battery storage, electrical grid and distribution, and smart grids. Sustainable Solutions: solutions that drive the growth of a circular economy in areas such as waste management, resource efficiency and the development of resilient infrastructure. This will include heating and cooling, clean water concessions, waste management technology, recycling, and waste/sewage utilities.

## Clayton Utz

CLAYTON UTZ

#### Net-zero commitment (if applicable and year)

Clayton Utz invested early in sustainability practices and has been carbon neutral since 2016, essentially becoming net zero at this time. While it has not put in place any measures around further net zero targets, it is committed to taking action in reducing its carbon footprint and has already moved 50% of its purchased electricity to renewable sources.

#### Company emissions reduction targets (and performance against these)

Its Environment Management System commits the firm to taking actionable steps to reduce emissions each year, from FY16 to FY20 the firm decreased GHG emissions by 22%. Some areas of focus have included cutting its waste to landfill by more than 30%, upgrading its printing fleet nationally to a more waste efficient system, and encouraging its people to view, sign and share documents electronically to reduce paper use. Clayton Utz has reduced its electricity consumption nationally each year for the last four years.

#### Renewable energy targets (and performance against these)

From FY22, Clayton Utz will meet 50% of its purchased electricity needs from renewable sources through the procurement of 100% renewable electricity for its Sydney, Melbourne and Canberra offices. It will continue to explore ways to increase its electricity from renewable sources.

## Case study

Clayton Utz is a founding member of the Australian Legal Sector Alliance, an industry-led association working collaboratively to promote sustainable practices across the legal sector. Clayton Utz is committed to understanding the environmental impacts of its business operations, and taking meaningful action to minimise those impacts. This includes incorporating sustainability into the firm's strategic decision-making with respect to premises, technology, office fittings and supplier arrangements. Clayton Utz is proud of its commitment to climate action and achievement of being carbon neutral since 2016. It has offset all emissions through the purchase and retirement of carbon credits in various sustainability projects. All credits retired are eligible offsets under the Government's Climate Active Carbon Neutral Standard. Last year these projects included the purchase of Australian carbon credits from an Indigenous fire management project. These controlled burns using traditional burning practises reduce the risk of devastating bushfires, while also providing employment opportunities and preserving cultural knowledge.

## Coles



### Net-zero commitment (if applicable and year)

As part of its ambition to be Australia's most sustainable supermarket and drive generational sustainability, in March 2021, Coles launched its Together to Zero sustainability ambitions. A focus area is Together to zero emissions underpinned by new targets to accelerate climate action and reduce greenhouse gas emissions, as well as its ambition to deliver net zero greenhouse gas emissions by 2050. Coles understands its responsibility to minimise its environmental footprint and to show leadership in protecting our planet and climate.

### Company emissions reduction targets (and performance against these)

Under Together to zero emissions, we continue to reduce greenhouse gas emissions and implement initiatives in areas over which we have control and influence. Where practicable we seek to deploy mature and available technology to reduce our greenhouse gas emissions and work with industry and stakeholders to invest in knowledge and research to identify pathways to address difficult, or as yet unsolved, decarbonisation challenges. In March 2021, we announced our new target to reduce combined Scope 1 and 2 greenhouse gas emissions by more than 75% by the end of FY30 (from a FY20 baseline). As this target was set in FY21, Coles will report progress in our FY22 Sustainability Report. Coles reports annually on our greenhouse emissions in our Sustainability Report and in its NGERs submission.

### Renewable energy targets (and performance against these)

Our target is for the entire Coles Group to be powered by 100% renewable electricity by the end of FY25. We have made meaningful progress on this commitment including by: being the first Australian retailer in 2019 to announce a power purchase agreement with MYTILINEOS RSD (previously known as METKA EGN) to purchase more than 70% of the electricity generated by three solar power plants located outside the New South Wales regional centres of Wagga Wagga, Corowa and Junee with the Corowa plant becoming fully operational in June 2021; and signing landmark renewable electricity agreements with Lal Lal Windfarms, ENGIE, Neoen and CleanCo. These combined renewable electricity agreements are enough to power more than 750 average sized supermarkets. Once these agreements commence, they will represent more than 70% of the renewable electricity required for Coles to meet our FY25 target.

## Case study

Refrigeration can be a significant contributor to greenhouse gas emissions both through electricity consumed and through the impact of older style refrigerant gases. Coles' refrigeration management program includes increasing the use of natural refrigerant gases which have close to no global warming potential (GWP) compared with older synthetic refrigerant gases with high GWP. When building new Coles supermarkets, the majority (>90%) now use natural refrigerants. Coles has also converted two existing supermarkets to natural refrigerants. Moonee Ponds, Victoria and Ascot, Queensland both now use natural refrigerants, with the installation taking place while the supermarkets were trading.

## Deloitte



### Net-zero commitment (if applicable and year)

Globally, Deloitte has committed to achieving net zero greenhouse gas emissions by 2030 through science-based targets, in-line with the Paris Agreement's 1.5°C scenario.

#### Company emissions reduction targets (and performance against these)

In Australia, Deloitte has set a target to be net zero by 2025 in terms of its scope 1,2 and 3 emissions. An example includes the specific target of a 50% reduction in travel per FTE, on FY19 baseline by 2030. At present, Deloitte has seen a 92% reduction in travel per FTE (a practical reflection of COVID travel conditions).

#### Renewable energy targets (and performance against these)

Deloitte has a target of 100% renewable energy for buildings by 2030 and so far has achieved 100% renewable energy from 1/10/21 in Deloitte directly controlled purchased energy.

#### Case study

Deloitte is helping the Commonwealth Department of Agriculture, Water and the Environment build a free-to-use digital tool for farmers to understand their farm scale projected climate exposures at 2030 and 2050; utilise data driven insights, such as remotely sensed ground cover; self-assess their resilience to climate change across a range of interconnected environmental, financial, personal and social indicators; and select and track pathways to proactively build resilience. This tool, DR SAT (Drought Resilience Self-Assessment Tool), is being co-designed with farmers, alongside a broad range of existing agricultural stakeholders. Over the life of the project, the tool is expected to cover approximately 88% of the nation's farmers, representing 86% of production value. This presents an opportunity to positively impact farmers and their existing support networks, and progress climate resilience in Australian agriculture

### Dow



#### Net-zero commitment (if applicable and year)

Dow aspires to be carbon neutral (Scope 1 + 2 + 3 plus product benefits by 2050).

#### Company emissions reduction targets (and performance against these)

By 2030, Dow will reduce its net annual carbon emissions globally by 5 million metric tons vs. its 2019 baseline (15% reduction). Though the company will grow globally over the next 10 years, Dow's absolute greenhouse gas emissions will not exceed its 2006 baseline.

#### Renewable energy targets (and performance against these)

Dow will obtain 250 MW of its power demand from renewable sources by 2025.

#### Case study

Dow has sponsored the ground-breaking Net Zero Australia study, to help accelerate progress towards a carbon-neutral future for Australia. The study undertake a granular analysis of scenarios which range from 100% renewable energy to one which includes significant carbon capture and storage. It will assess the progressive impacts of each scenario on emissions, infrastructure, costs, employment, land use, air pollution and other important outcomes at a high level of geographic resolution. The project will also assess how Australia might export clean energy and low emission products, and thus contribute to the global decarbonisation task. It is a partnership between the University of Melbourne, the University of Queensland, Princeton University and Nous Group.

### Downer



#### Net-zero commitment (if applicable and year)

Downer has an absolute emissions target (Scope 1&2) of 45-50% by 2035 and net zero by 2050 from a FY18 baseline of 580,091 tCO<sub>2</sub>-e. In FY21 Downer outperformed it's absolute emissions target of 528,500 tCO<sub>2</sub>-e by emitting 506,124 tCO<sub>2</sub>-e. Downer also has a year on year intensity target, for FY21 the target was 42.75 tCO<sub>2</sub>-e / AUD\$m which Downer outperformed at 41.37 tCO<sub>2</sub>-e / AUD\$m.

#### Company emissions reduction targets (and performance against these)

Downer's has an absolute emissions target (Scope 1 and 2) of 45-50% by 2035 and net zero by 2050 from a FY18 baseline of 580,091 tCO<sub>2</sub>-e.

### Renewable energy targets (and performance against these)

In FY21 Downer has committed to roll out initiatives that will help increase the percentage of electricity derived from renewable sources (behind the meter) to 10% by FY25 for sites within Downer's operational control. Currently 5.6TJ (1.2%) of electricity is produced by renewables.

### Case study

Downer has replaced its Strathpine asphalt plant with a state-of-the-art plant at Downer's new Brendale Sustainable Road Resource Centre in Queensland. The plant is home to one of the most advanced production facilities in Australia. The facility has incorporated energy efficient and automated components, allowing it to exceed European standards for similar facilities and will use significantly less raw materials in the asphalt produced. The plant upgrades include covering stockpiles to reduce moisture content (and hence energy required to dry feedstock); increasing the insulation on bitumen tanks; adding a crash heater to the bitumen tank so if it is switched off for a period of time (rather than leaving it on), the crash heater can be used to intensely reheat the bitumen for a short time to bring it back up to temperature quickly; and introducing a counter flow hot recycled asphalt (RAP) dryer. In the counter flow hot recycled asphalt (RAP) dryer, recycled asphalt is fed into a purposed built dryer that uses convection heat rather than a direct flame. This means that the recycled asphalt can be heated to 160 degrees Celsius and is not reliant on heat transfer from super-heated aggregates in the same way as standard asphalt plants. The plant is therefore capable of producing a 100% recycled asphalt mix or high-quality mixes with 50 to 70% RAP as standard. The plant features multiple additive feed systems to incorporate both wet and dry recycled products such as recycled toner powder, soft plastics, recycled glass and recycled cooking oil to rejuvenate reclaimed bitumen. The plant lubrication system also utilises recycled oils as opposed to traditional highly refined release agents. The plant was commissioned in June 2021 with emissions savings from these projects are estimated to be 1,336 tCO<sub>2</sub>e pa (Scope 1 and 2).

## Endeavour Energy



### Net-zero commitment (if applicable and year)

Endeavour Energy is developing a net zero business case in FY22

### Company emissions reduction targets (and performance against these)

Based on science-based modelling, Endeavour Energy has set a target of 40% GHG reduction in Scope 1 and 2 emissions by 2035 (baseline FY19). Since FY19 it has reduced emissions by 7%.

### Renewable energy targets (and performance against these)

Solar PV systems operating from Endeavour Energy's Field Service Centres generated 2237 MWh of renewable energy and decreased grid electricity consumption by approximately 30%, saving over 2000t CO<sub>2</sub>.

### Case study

Endeavour Energy, smart metering company Intellihub, and 14 energy retailers partnered to revolutionise the way or-peak electricity systems operate by connecting 2,500 homes to smart meters to control hot water instead of using out-of-date network equipment. The new system, called Or Peak Plus delivers remarkable environmental and customer benefits. It enables 'solar soaking' where excess solar is used locally within the community for the cost of or-peak hot water, turning electric hot water systems into batteries. It will help to future proof the grid, allow more solar to safely connect to the grid, improve network performance, save customers money and speed up the transition to a low-carbon future. Endeavour Energy is planning to roll out the program across its rapidly growing network.

## EnergyAustralia



### Net-zero commitment (if applicable and year)

Reach net zero greenhouse gas emissions (scope 1, 2 and 3) by 2050.

### Company emissions reduction targets (and performance against these)

Reduce direct carbon dioxide emissions by over 60% on 2019-20 levels in 2028-2029.



### Case study

Closure of the Yallourn power station in mid-2028 will reduce EnergyAustralia's emissions by 60% compared with today. To complete an exit from coal-fired generation by 2040, it will engage with its Mt Piper power station workforce and the local community to deliver a carefully managed transition to closure.

## Facebook



### Net-zero commitment (if applicable and year)

Facebook is committed to reaching net zero emissions across its value chain (Scope 3) in 2030. It has already achieved net zero greenhouse gas emissions in its global operations (Scope 1 and 2) by reducing its emissions 94% on 2017 levels.

### Company emissions reduction targets (and performance against these)

On performance, Facebook discloses GHG emissions annually. It estimates its current net carbon footprint (2020) of Scope 3 emissions is 4m metric tons of CO<sub>2</sub>e.

### Renewable energy targets (and performance against these)

In 2011, Facebook announced its commitment to source 100% renewable energy to support its global operations. It achieved that goal in 2020, and is now focussing on supporting new wind and solar projects to enable more businesses to easily purchase clean energy.

### Case study

A core part of Facebook's renewable energy strategy is supporting new projects that increase access to renewable energy. Since 2019 Facebook has worked directly with market participants across the world, including in APAC, to create green tariffs. Green tariffs provide a structure for companies to source up to 100% of their electricity from renewable resources. Today, there are more than 36 green tariffs proposed or approved across 19 states within the U.S., supporting over 2,600 MW of new wind and solar capacity under these programs so far. These tariffs enable other companies and customers, not just Facebook, to access renewable energy. Facebook has also announced Singapore's first renewable virtual power purchase agreement to support its local operations - its offices and upcoming data centre - with solar energy from panels to be installed on the rooftops of more than 1,200 public housing residential units and 49 government buildings. Once operational, the rooftops are expected to total more than 100 MW of solar capacity.

## Fortescue



### Net-zero commitment (if applicable and year)

To achieve carbon neutrality by 2030 (Scope 1 and 2). To achieve net zero Scope 3 emissions by 2040, Fortescue Future Industries (FFI), a global supplier of green energy, will be a key enabler.

### Company emissions reduction targets (and performance against these)

In addition to long-term goals to achieve carbon neutrality (Scope 1 and 2) by 2030 and net zero Scope 3 emissions by 2040, medium-term targets have also been set to enable a reduction in emissions intensity levels from the shipping of Fortescue's ores and from steel making by Fortescue's customers.

### Renewable energy targets (and performance against these)

No explicit targets. However, Fortescue has an agreement with Alinta Energy to receive power from the Chichester Solar Gas Hybrid project. This consists of a 60MW solar PV generation facility and a transmission line linking the Christmas Creek and Cloudbreak mining operations with Alinta Energy's Newman gas-fired power station. Fortescue is committed to investing over US\$700 million in the PEC project consisting of a US\$250 million investment for the construction of a 275km high voltage transmission line linking its Solomon Hub, Iron Bridge and Herb Elliott Port. It also involves a US\$450 million investment on 150MW of gas-fired generation, a 150MW solar photovoltaic array, and large-scale battery storage facilities.

### Case study

Fortescue Future Industries has established a major facility at Hazelmere in Perth to trial and demonstrate technology on green hydrogen, ammonia and battery power for trains, ship engines, haul trucks and drill rigs. Specialist teams have to date achieved the following: Successful combustion of ammonia in a locomotive fuel, with a pathway to achieve completely renewable green fuel; Completion of design and construction of a combustion testing device for large marine (ship) engines, with pilot test work underway and a pathway to achieve completely renewable green shipping fuel; Finalised design of a next generation ore carrier (ship) that will consume renewable green ammonia, with the Classification Society giving in principle design approval; Testing of battery cells to be used on Fortescue haul trucks; Design and construction of a hydrogen powered haul truck for technology demonstration complete, with systems testing underway; Design and construction of a hydrogen powered drill rig for technology demonstration complete, with systems testing underway; Successful production of high purity (>97%) green iron from Fortescue ores; Successful initial trialling to use waste from the green iron process noted above, with other easily sourced materials.

## Fujitsu Group



### Net-zero commitment (if applicable and year)

Fujitsu Group has committed to achieving net zero CO2 emissions by 2050.

### Company emissions reduction targets (and performance against these)

The Fujitsu Group has established a roadmap for reducing CO2 emissions where it would gradually reduce them to zero in three phases by 2050, with its ambition to be a leading global ICT company striving to create a decarbonized society. The roadmap includes an ambitious target to reduce Fujitsu Group's carbon emissions by 71.4% by 2030 (against a baseline year of 2013). This emissions reductions target is aligned with the science of holding global warming to 1.5C above pre-industrial levels, and is endorsed by the SBTi. In 2020, Fujitsu was selected in the CDP A List for Climate Change for the fourth year in a row, demonstrating Fujitsu's commitment and action on climate change. Supporting Fujitsu's Group-wide target, Fujitsu Australia is reducing its emissions footprint through: increasing the energy efficiency of its operations; making carbon offsets available for its data centre customers, and to offset the fuel-related emissions of its ~200 vehicle commercial fleet; investing in rooftop solar at some business locations; and investigating options to procure renewable energy for Fujitsu's business operations. Fujitsu Australia has successfully reduced its total Scope 1 and Scope 2 GHG emissions by 20% over the last two years.

### Renewable energy targets (and performance against these)

Fujitsu has committed to increasing the use of renewable energy in the electricity consumed at its locations to at least 40% by 2030 and to 100% by 2050. Demonstrating Fujitsu's commitment, Fujitsu gained RE100 membership in July 2018.

### Case study

While Fujitsu investigates procuring renewable energy, it continues to take meaningful action to reduce its emissions footprint. In December 2020, Fujitsu completed the installation of a solar panel system on the roof of its Eight Mile Plains data centre in Queensland. The 99.6kW system will provide 148 megawatt hours of energy annually, which is the equivalent energy use of 22 homes. The solar panels were installed by Bunjil Energy, an Indigenous-owned, Supply Nation-certified business. The installation reflects Fujitsu's ongoing commitment to both its sustainability targets and its Innovate Reconciliation Action Plan. Fujitsu's Eight Mile Plains facility was the first data centre in Queensland to be rated by NABERS for energy efficiency, and is still the only data centre in Queensland to be rated. In 2019, the site improved its NABERS energy efficiency rating from 3 to 3.5 stars, meaning it is saving 478 tonnes of carbon dioxide equivalent annually compared to the market average data centre. The solar panel installation was part of a larger \$780,000 investment in energy efficiency at the NABERS-rated site during 2020, which also included the replacement of several large cooling units and LED lighting upgrades in the data halls and offices.

## Gilbert + Tobin



### Net-zero commitment (if applicable and year)

Gilbert + Tobin has not made an official public commitment to being a net zero law firm, but that has absolutely been its objective since joining the Climate Active (formerly NCOS) carbon neutral program in FY18. G+T has been carbon neutral since FY17. The firm first achieved Climate Active carbon neutral certification as an organisation in FY18 and Climate Active carbon neutral certification as a service in FY19. Over this time it has committed to avoiding, reducing and mitigating greenhouse gas emissions. In FY20 G+T became Australia's first law firm to source 100% of its tenancy electricity from renewable sources.

### Company emissions reduction targets (and performance against these)

Gilbert + Tobin has achieved a 74.5% reduction in greenhouse gas emissions since it began measuring its emissions in FY17. These outcomes have been achieved through the following actions: Since FY20 it has sourced 100% of its tenancy electricity from renewable sources. G+T's headquarters are in Tower Two, International Towers Sydney within the Barangaroo South precinct. In FY20, Barangaroo South became Australia's first carbon neutral precinct (reporting period 23 June 2015 to 30 June 2019). This certification covers, among other things, Gilbert + Tobin's base building and tenancy electricity, waste and commuter transport. Approximately 32% of the offsets at Barangaroo South are from Large Scale Renewable Energy Generation Certificates (LGC RECs) and the remainder Australian carbon offset credits; we have had an Australian Legal Sector Alliance (AusLSA) certified Environmental Management System since FY15: In its first EMS 2015-2018 it committed to reducing electricity consumption by 5% per head and paper consumption by 10% per head – both achieved. In its second EMS 2018-2020, it committed to the same targets (5% reduction in electricity consumption per head and 10% reduction in paper consumption per head) and both targets were achieved. Some of the reduction in its greenhouse gas emissions in FY21 and FY20 is due to the reduction in business travel due to the pandemic.

### Renewable energy targets (and performance against these)

Gilbert + Tobin has sourced 100% of its tenancy electricity from renewable sources since FY20. It purchases an amount of decoupled GreenPower from Tilt Renewables for its annual tenancy electricity consumption across all its Australian offices.

## Goodman Group



### Net-zero commitment (if applicable and year)

2025 carbon neutral operations target. Achieved in FY21, four years ahead of target.

### Company emissions reduction targets (and performance against these)

In Australia, Goodman's GHG emissions decreased by approximately 30% between 2015-2020.

### Renewable energy targets (and performance against these)

100% renewable energy globally by 2025. In FY21, Goodman's Australian operations transitioned to 100% renewable electricity for its operations, finalising a new GreenPower agreement. A global target of 400MW of solar PV installations, commitments or equivalent in operation by 2025. At 30 June 2021, it had installations and commitments of 125MW.

### Case study

As part of its carbon neutral achievement in FY21, Goodman completed an assessment of carbon offsetting opportunities and decided to invest in 100% Australian Carbon Credit Units. The manager of these projects is an entirely Aboriginal-owned and not-for-profit carbon farming business created by Traditional Owners in Arnhem Land who have customary responsibilities under active bushfire management. Apart from the carbon benefits, the savanna burning projects promote ecosystem health including biodiversity and soil erosion, as well as positive social benefits including employment opportunities and support for local indigenous communities with a focus on cultural practice.

**Net-zero commitment (if applicable and year)**

Google aims to be the first major company to achieve 24/7 carbon-free energy by 2030. To get there, it is pursuing new carbon-free energy generation and storage technologies.

**Company emissions reduction targets (and performance against these)**

In its founding decade, Google became the first major company to be carbon neutral. In its second decade, it was the first company to achieve 100% renewable energy. By 2030, it will aim to be the first major company to operate carbon free.

**Renewable energy targets (and performance against these)**

In 2007, Google was the first major company to commit to carbon neutrality and since 2017 it has matched 100% of its electricity consumption with renewable energy purchases. So what about those years between 1998 and 2006? Good question. As of today, Google has procured enough high-quality carbon offsets to neutralise all of its emissions since its founding.

**Case study**

Enable 5 GW of new carbon-free energy in manufacturing regions by 2030. Carbon-free energy is hard to source in many parts of the world, including in some of Google's key manufacturing regions. To help drive development of wind, solar, and other clean energy generation where it's needed most, Google is building on its previous investment to bring a total of five gigawatts online over the next ten years. That's more than all the solar capacity available in the state of Arizona today.

**Net-zero commitment (if applicable and year)**

HSBC aims to align its financed emissions – the carbon emissions of its portfolio of customers- to achieve net zero by 2050 or sooner, and to achieve net zero in its operations and supply chains by 2030 or sooner.

**Company emissions reduction targets (and performance against these)**

At its 2021 AGM, the HSBC board (backed by shareholders) resolved to phase out the financing of coal-fired power and thermal coal mining by 2030 in markets in the EU and OECD, and by 2040 in other markets. The bank's ambition is also to provide between \$US750bn and \$US1 trillion of financing and investment to support customers to lower carbon emissions over the next 10 years.

**Renewable energy targets (and performance against these)**

Since 1 January 2020, HSBC has cumulatively provided and facilitated \$US87 billion of sustainable finance and investments. In the first half of 2021, HSBC helped raise more Green, Social, Sustainability and Sustainability-linked bonds for clients than the whole of 2020. These funds pay for green projects and new technology and initiatives that open up new opportunities and avenues to reach net zero. HSBC aims to set up a dedicated unit to support CleanTech innovation companies and target USD100m CleanTech investment within its technology venture debt fund.

**Case study**

HSBC has joined with World Resources Institute (WRI) and WWF to form a five-year philanthropic partnership to help climate solutions become commercial reality and have real-world impact. The Climate Solutions Partnership is powered by \$US100 million of philanthropic funding from HSBC and, with a network of local partners, aims to scale up climate innovation ventures, nature-based solutions and help to transition the energy sector towards renewables in Asia, by combining its resources, knowledge and insight.

**Net-zero commitment (if applicable and year)**

IAG committed to and has been net zero (climate neutral) on Scope 1 and 2 carbon emissions since 2012. IAG has also committed to net zero in its investments by 2050. IAG is currently reviewing its net zero on Scope 1, 2 and 3 emissions – aiming to have this published in the next IAG Climate and Disaster Resilience Action Plan in early November.

**Company emissions reduction targets (and performance against these)**

IAG has set science based absolute reduction targets for Scope 1 and 2 emissions against a 2018 baseline of 34,198 tonnes: 20% reduction by 2020 (27,441t CO<sub>2</sub>e); a 43% reduction by 2025 (19,360 tCO<sub>2</sub>e); 71% reduction by 2030 (9,993 tCO<sub>2</sub>e); and 95% (1,972 tCO<sub>2</sub>e) reduction by 2050. In FY21 IAG reduced Scope 1 and 2 greenhouse gas emissions to 18,059 tonnes CO<sub>2</sub> equivalent, already achieving a 47% reduction against the FY18 baseline and well ahead of its 2025 science-based emission reduction target of 19,360 tonnes.

**Renewable energy targets (and performance against these)**

No targets set but IAG has recently installed a 100kW solar pV system on its main data centre. IAG doesn't have large facilities where additional at scale renewable energy systems can be introduced, but are investigating power purchase agreements and energy procurement that will add renewable electricity to the energy mix in the near future.

**Incitec Pivot Limited**
**Incitec Pivot Limited**
**Net-zero commitment (if applicable and year)**

Incitec Pivot Limited has a long-term aspiration to net zero which it is committed to achieving as soon as practical.

**Company emissions reduction targets (and performance against these)**

IPL has reduced GHG intensity by 10% per tonne of ammonia since 2015. It has a 5% absolute reduction target by 2026 against a 2020 baseline. Its targets will be updated in conjunction with the release of its first ever fully aligned TCFD report in November, following its full year 2021 results. The 2020 GHG baseline is subject to adjustment due to unforeseen future expansions and acquisitions or divestments which may occur before the end of the 2026 IPL financial year.

**Renewable energy targets (and performance against these)**

IPL has installed rooftop solar at several sites across its global business and is currently investigating several additional sites in Australia and the USA. However, it does not have specific renewable energy targets at present, as purchased electricity makes up only 8% of IPL's total global operational (Scope 1&2) GHG emissions. IPL's net zero pathway is focused on its major emissions sources and therefore includes investigation of N<sub>2</sub>O abatement, alternative feedstocks for nitrogen-based products and carbon capture and storage.

**Case study**

In line with its commitment to reducing its GHG emissions, in 2020 IPL completed a \$2.7m feasibility study with ARENA to explore ammonia production from large-scale, renewable hydrogen. The study assessed the potential to use renewable hydrogen to increase ammonia production at its Moranbah manufacturing facility in Queensland. Renewable hydrogen can presently be made at very small plants using solar energy to split water into hydrogen and oxygen, allowing ammonia to be produced without the GHG associated with natural gas. The aim of the feasibility study was to determine whether renewable hydrogen can be made at an industrial scale and at a commercially competitive price. The study found solar ammonia at an industrial scale was technically viable and a facility was designed that could reliably provide a continuous supply of renewable hydrogen suitable for ammonia manufacturing. However, the study found that to be commercially feasible, there would need to be either: a price premium for the solar ammonia; a reduction in renewable energy prices; and/or an increase in grant funding. IPL is proud to have contributed valuable knowledge to the development of a renewable hydrogen industry in Australia and continues to investigate potential partnerships and pathways towards its use.



**Net-zero commitment (if applicable and year)**

In 2020 Jacobs achieved net zero carbon across its global operations and business travel, and plans to be carbon negative by 2030.

**Company emissions reduction targets (and performance against these)**

Jacobs has committed to reducing its absolute Scope 1 and 2 GHG emissions 50% by 2030 from the 2019 baseline year and further commits to reducing absolute Scope 3 GHG emissions from business travel and employee commuting by 50%, over the same timeframe. Jacobs successfully increased its annual sourcing of renewable electricity from 10% in 2019 to 100% in 2020, and will continue this annually, sourcing 100% renewable electricity. Jacobs commits that 65% of its suppliers by spend covering purchased goods and services, will have science-based targets by 2025. The SBTi Target validation team have classified Jacobs' Scope 1 and 2 target ambitions and have determined that it is in line with a 1.5°C trajectory.

**Renewable energy targets (and performance against these)**

Jacobs committed and successfully achieved a 100% renewable energy target for its operations in 2020. This means that its electricity needs are supplied through a variety of sources globally including, but not limited to, green tariffs, renewable energy certificates, energy attribute certificates and virtual purchase power agreements. As it lives its purpose to create a more connected sustainable world, Jacobs will lead, offering net zero solutions that support its clients achieving their decarbonisation targets; and it will challenge, offering alternative solutions to go further, faster to benefit our communities, recognising the need to ensure those most vulnerable to the impacts of climate change are prioritised.

**Case study**

Jacobs is committed to understanding, actively managing and disclosing its own climate risks in line with the framework provided by the Taskforce on Climate-related Financial Disclosures. We also work with our clients to help them understand and effectively manage their climate risks. Jacobs developed the Climate Risk Manager to help guide its journey to future proof its assets and operations and inform its own climate risk and opportunities assessment. Climate Risk Manager is a cloud-based platform that brings together global climate data and location intelligence, giving clients visual risk assessments, so they can make faster and more accurate decisions on where to invest limited resources and guard against climate risks.

**Net-zero commitment (if applicable and year)**

Jemena has an ambition to achieve net zero emission by 2050 and has commenced a detailed strategic process to work through how the company will achieve this objective.

**Company emissions reduction targets (and performance against these)**

Jemena is currently in the process of developing shorter term emissions reduction targets.

**Renewable energy targets (and performance against these)**

Jemena does not currently have a renewable energy target.

## Case study

Jemena believes that Australia is at an energy juncture and developing critical gas and electricity infrastructure will play a key role in moving towards a more sustainable, reliable, and affordable domestic energy market. Jemena is supporting the energy transition by investing in renewable energy projects along with the necessary transmission and firming assets to deliver a mix of reliable, affordable, and sustainable energy solutions for Australians. Jemena firmly believes in the role of gas and gas infrastructure in Australia's least-cost zero carbon future, and it is working to deliver it. Co-funded under ARENA's Advancing Renewables Program, Jemena's \$15 million Western Sydney Green Gas Project is converting renewable electricity to zero-carbon hydrogen, for use in network injection and storage, transportation and grid firming, and its \$14 million Malabar Biomethane Project will begin injecting zero-carbon biomethane into its Jemena gas network in 2022. These projects deliver the zero carbon gas demanded by Jemena's customers, while demonstrating how gas infrastructure can provide win-win decarbonisation solutions for hard-to-abate sectors like heavy transport and waste management.

## KPMG



### Net-zero commitment (if applicable and year)

Net zero by 2030, as part of a 1.5°C science-based target (KPMG International commitment).

### Company emissions reduction targets (and performance against these)

KPMG Australia has committed to the following targets by 2022: Carbon neutral on Scope 1, 2 and relevant Scope 3 (Climate Active certified); -15% Air travel emissions/ FTE (-82% in 2020); -50% energy emissions/ FTE (-74% in 2020); 100% renewable energy for tenancy use (50% in 2020); 90% diversion or recycling rate (76% in 2020).

## Case study

In 2017, KPMG launched its first Climate Change Strategy, setting commitments to address climate change, including a target for a net 10% reduction in emissions per FTE by 2020. In 2020, KPMG surpassed its target and refreshed its strategy, to focus not just on direct emissions reduction but also on supporting a transition to a net zero emissions economy. The initiatives in its current Climate Action Plan to 2022 serve as the beginning phase to achieving net zero by 2030. Under the CAP, KPMG became carbon neutral on Scope 1, 2 and material Scope 3 emissions and committed to achieving 100% renewable energy, zero waste to landfill, and reducing its air travel emissions by 15% by 2022. KPMG commenced renewable energy contracts for five of its offices, which became its largest investment in emissions reduction to date and accounts for approximately 75% of its tenancy energy-related emissions. KPMG also achieved carbon neutral certification under the Climate Active program and will continue to report publicly.

## La Trobe Financial



### Net-zero commitment (if applicable and year)

As at September 2021 La Trobe Financial achieved carbon neutrality.

### Company emissions reduction targets (and performance against these)

La Trobe Financial has pledged net zero emissions by 2030. A Formalised Company Carbon Reduction Plan is in force to support this pledge. La Trobe Financial has set timelines and review deadlines in its planning.

### Renewable energy targets (and performance against these)

La Trobe Financial is presently investigating sustainable climate responsible renewable energy offerings to help reduce emissions so as to meet its net zero emissions pledge.

## Case study

La Trobe Financial has offset its carbon footprint and invested in two Gold Standard projects that meet all 17 United Nations Sustainable Development Goals. The primary criteria was to select the most highest in quality and integrity standards in the projects that La Trobe Financial chose for its offsets program. These projects that fell within the strict criteria were highly recognised Gold Standard projects. These included: 'Sequestration': Australian Native Reforestation – Yarra Yarra Biodiversity Corridor, Vintage 2020 & 'Avoided Deforestation': Rimba Raya Biodiversity Reserve Project, Indonesia, Vintage 2014. These projects respectively support reforestation in Australia and avoided deforestation which includes endangered species such as Orangutans in Indonesia.

## Lendlease



### Net-zero commitment (if applicable and year)

In August 2020, Lendlease announced its most ambitious climate change targets. Its targets are fully aligned with the goals of the Paris Agreement and set a global benchmark for the real estate industry. Lendlease set a target to be a 1.5°C aligned company, committing to net zero carbon by 2025 for Scope 1 emissions, produced directly from the fuels it burns, and Scope 2 emissions from the power it consumes. It also set a target to be absolute zero carbon by 2040, eliminating all emissions, including Scope 3 emissions generated indirectly from its activities, without the use of offsets.

### Company emissions reduction targets (and performance against these)

To reach these targets, we've outlined a five-step pathway: 1. Create a decarbonisation investment strategy in 2021; 2. Phase out diesel and gas in its operations; 3. Use 100% renewable electricity before 2030; 4. Collaborate with supply chain partners to set pathways to achieve absolute zero carbon by 2040; 5. Collaborate with its tenants and residents to transition to renewable electricity and achieve absolute zero carbon by 2040.

### Renewable energy targets (and performance against these)

Globally, Lendlease is making significant progress against these targets and continues to work closely with its industry partners and supply chain. Some highlights from its Australian business include: In 2019, its Australian construction businesses became one of Australia's first carbon neutral construction service providers; in April this year its Funds Management Australian office portfolio was officially certified as carbon neutral; 100% of its total development pipeline has achieved or is targeting green certifications. In partnership with the NSW Government, Lendlease's Barangaroo South precinct in Sydney was named Australia's first Climate Active certified carbon neutral precinct in 2019; in 2019 Lendlease became the first property and investment company to become a full member of ResponsibleSteel, a group that brings together suppliers and manufacturers to reduce emissions across the steel supply chain. In 2020, Lendlease became one for the first companies to join SteelZero, a global initiative aimed at driving market demand for net zero steel. Earlier this year, it completed its second oversubscribed green bond in just five months, raising a total of \$800 million across the two transactions, Lendlease has become the largest non-bank ASX listed issuer of green bonds to date. Bond proceeds will be used to support the delivery of green buildings. The company is also making significant progress at a project level. For instance, at its Campbell Primary School redevelopment in the ACT, it has partnered with Boral Australia to trial a proprietary product that has reduced carbon emissions generated from the production of concrete by over 40%.

### Case study

In 2019, Barangaroo was named as Australia's first carbon neutral precinct (Scope 1, 2 and 3 emissions) under the national Climate Active certification scheme. Sustainability is embedded throughout the design, construction, and operation of Barangaroo South. This included reducing embodied carbon in the construction materials by 20%, raising the ground plain by almost a metre to accommodate future sea level rises, and installing 6,000 sqm of solar panels. All buildings are temperature controlled with the assistance of cool seawater from Sydney Harbour - a system that contributes to saving around 100 million litres of clean water every year. In its 77,000 sqm basement, tens of thousands of maggots help to process food waste from across the precinct, turning it into animal feed and fertiliser. The precinct reuses or recycles 19 different waste streams, including turning soft plastics into fuel for cement manufacturing, and used cooking oil into bio-diesel fuel. Making the most of every square meter, the rooftops of Barangaroo are home to over 17,000 plants and flowers as well as an insect hotel to encourage bees into the area. The foliage also helps to keep rooftop temperatures closer to 25 degrees on hot days, maximising the efficiency of the solar panels.

## Lion



### Net-zero commitment (if applicable and year)

Lion became Australia's first large-scale carbon neutral brewer in April 2020; complementing its ambitious carbon reduction programme with certified carbon credits that offset its remaining organisational footprint. Lion's New Zealand business also became a carbon neutral certified organisation in early 2021. Lion has also committed to a net zero value chain (Scope 1, 2 and 3) by 2050.

#### Company emissions reduction targets (and performance against these)

For direct (Scope 1 and 2) emissions, Lion has set a reduction target of 55% from a 2019 baseline by 2030. This aligns with the commitment made by its parent company, Kirin, in July 2020. At the same time as addressing its direct emissions, Lion recognises that a majority of its products' lifecycle emissions come from indirect (i.e. Scope 3) emission sources. These emission sources include ingredients and packaging used in our products as well as logistics services throughout the supply chain. That's why Lion has also set a science-based target to reduce its Scope 3 emissions by 30% by 2030 from its 2019 baseline. To achieve this, Lion is engaging with key suppliers to understand what causes these emissions and to identify opportunities for reducing them. Lion achieved a 28% absolute reduction in its carbon footprint in the period between 2015 and 2020, putting it on track to meet its carbon reduction target of 55% by 2030. Lion improved its GHG emissions intensity from 130 kgCo2 e/kl in 2019 to 106 kgCo2 e/kl in 2020.

#### Renewable energy targets (and performance against these)

Lion is committed to its 100% renewable electricity target for Australia and New Zealand operations by 2025. Through a NSW Power Purchase Agreement, Lion already sources 48% of its NSW energy needs from renewable sources.

#### Case study

Lion is an anchor partner in the world's first industry scale aggregated Power Purchase Agreement with the Australian Hotels Association NSW and Engie, allowing pubs in NSW to bypass more expensive retail energy prices, whilst reducing carbon emissions at Lion's biggest brewery – the Tooheys Brewery – by 40%. By pooling its energy needs in NSW with the needs of participating NSW hotels, Lion is utilising solar power from regional NSW in what is a highly effective initiative for industry, the economy and the environment.

### Mirvac



#### Net-zero commitment (if applicable and year)

Mirvac's ambitious sustainability strategy is called This Changes Everything. One of the commitments made as part of this strategy was to be net positive in carbon by 2030.

#### Company emissions reduction targets (and performance against these)

Mirvac has made excellent progress against its net positive target, with an 80% reduction in carbon emissions in just the last two years, as well as an 84% reduction in carbon intensity since 2013.

#### Renewable energy targets (and performance against these)

Mirvac's detailed net positive plan published in 2019 prioritises energy efficiency, building all-electric assets, and powering them with 100% renewable energy. Progress made toward reaching net positive targets come from high performing green assets, 18 of which are rated 5 Star NABERS Energy or above, and from the transition to renewable electricity. 100% of Mirvac's retail and built to rent assets are now powered in this way, along with over 90% of Mirvac's offices.

#### Case study

Mirvac negotiated a renewable energy supply agreement to supply the majority of its operational portfolio in NSW, ACT and Vic with 100 per cent, fully firm renewable electricity. Across the assets, this has helped deliver an approximately 80 per cent reduction in Mirvac's carbon emissions. This reduction accelerates progress against Mirvac's target to be net positive carbon by 2030. Mirvac also achieved a reduction in Scope 3 emissions through the on-selling of renewable energy to tenants within their embedded networks. The agreement provides certainty of pricing during which electricity pricing is expected to remain volatile.

## NAB



### Net-zero commitment (if applicable and year)

NAB is carbon neutral in its operations and has committed to a lending portfolio aligned to net zero carbon emissions by 2050. In 2019, NAB committed to the the UN Principles for Responsible Banking's Collective Commitment to Climate Action (CCCA) which requires it to align its lending portfolio to net zero carbon emissions by 2050. Additionally, its commitments require NAB to set and publish sector-specific targets to align to this goal within three years of signing (i.e. in 2022). In line with this commitment, in 2020 NAB calculated the Scope 3 attributable financed emissions associated with key segments of its Australian lending portfolio, including; residential mortgages, commercial real estate (office and retail), agriculture, power generation and resources (including coal, oil and gas). It also commissioned ClimateWorks Australia to apply their 2050 decarbonisation pathways to these sectors under two modelled scenarios; a 2°C and 1.5°C scenario. Using this information, NAB will work closely with 100 of their largest greenhouse gas emitting customers to support them in developing or improving low carbon transition plans by 2023. NAB is committed to supporting customers in working through their transition planning. A number of its customers are already advanced in the development of transition plans; industry associations that represent our customers are also working towards net zero carbon emissions by 2050.

### Company emissions reduction targets (and performance against these)

NAB has a range of targets to reduce consumption of resources, including a science-based GHG emissions target to reduce its emissions by 51% by 2025 (against a 2015 baseline). NAB also has a range of targets and initiatives in place to reduce its consumption of resources, such as energy and water. In the last year, in consultation with its landlords, NAB has reduced its energy needs across our portfolio. The bank has consolidated its staff in purpose built, energy efficient buildings and installed energy efficient LEDs in existing commercial buildings. Its printer fleet was recently migrated to right size, more energy efficient devices and door opening sensors were installed at branches to reduce required space conditioning. There have also been significant reductions in a range of activity levels (e.g. energy consumption, paper purchases, business travel) related to the impacts of COVID-19, such as business site shutdowns and lockdowns with a significantly increased proportion of NAB's workforce working from home since March 2020. To account for any emission generated in the course of its operations; emissions generated from colleagues working from home have been included in NAB's reporting from 2020 onwards. Based on the number of employees working from home, the calculator accounts for heating, cooling, lighting and equipment electricity use. NAB is a carbon neutral organisation under the Climate Active's Carbon Neutral Standard and has been for the past 10 years. This has been achieved through a concentrated focus on energy efficiency, the use of cleaner energy sources, and the purchasing and retirement of offsets to neutralise remaining emissions.

### Renewable energy targets (and performance against these)

NAB has committed to source 100% of NAB Group electricity consumption from renewable sources by 2025. NAB's proportion of electricity from renewable sources increased from 3% in 2019 to 30% at March 2021. It produces electricity through solar panels installed on its buildings (direct), in addition to purchasing energy from the grid (indirect). In 2020, NAB took significant steps towards powering its operations with renewable electricity by signing a three-year deal with ENGIE to purchase renewable energy certificates. As a result of this deal, NAB will be able to purchase enough large-scale generation certificates, generated from multiple wind and solar farms within ENGIE's renewable portfolio, to meet the electricity needs of our 600 branches, making them fully renewable by end of 2021. Approximately 80% of NAB's Australian buildings will be offset by renewable energy by 2023.

## Origin Energy



### Net-zero commitment (if applicable and year)

Origin supports the United Nations Framework Convention on Climate Change and the Paris Agreement, and measures to progressively reduce global emissions, including the aim to limit the world's temperature increase to 1.5°C above pre-industrial levels. It aims to reach net zero Scope 1 and 2 emissions by 2050 and is in the process of updating its emissions reduction targets to be consistent with a 1.5°C scenario, and it continues to review new information as it becomes available. Origin first committed to the Paris Agreement and net zero emissions in 2017.



#### Company emissions reduction targets (and performance against these)

Origin is progressing the decarbonisation of its business. In 2017, it became the first company in Australia to set science-based emissions targets independently approved by the SBTi. Its medium-term targets commit Origin to halve its Scope 1 and 2 greenhouse gas emissions on an equity share basis by 2032 from its FY17 baseline. Origin has also committed to reducing Scope 3 emissions by 25% by 2032. It is committed to delivering further reductions on its absolute emissions over the short-term and is targeting a reduction in Scope 1 equity emissions by 10% on average, over the three financial years to FY23, compared to its FY17 SBTi baseline. Origin's total Scope 1 equity emissions were 15,273 kt CO<sub>2</sub>-e in FY 2021, a decline of 8% of FY20, and a decline of 11% against the FY17 baseline.

#### Renewable energy targets (and performance against these)

Since March 2016, Origin has committed to purchase the offtake from approximately 1,200 MW of new wind and solar projects across South Australia and Queensland and Victoria. Once current solar developments come online, subject to development and commissioning timelines, Origin will meet its target of 25% of its owned and contracted generation capacity being made up of renewables and storage. As part of its We Mean Business commitments, Origin has committed to sourcing 100% of energy from renewable sources for its office premises and, where possible, all other operations by 2050.

#### Case study

Customers are at the centre of everything Origin does and connecting customers to the energy and technologies of the future is one of its strategic priorities. The energy markets around the world are rapidly transforming towards low-cost renewables and new digital technologies, and Australia is no exception. Continued penetration of decentralised generation and storage, combined with the rise of internet enabled devices, is changing the way its customers interact with Origin and use energy at home and in their businesses. It is developing a leading digital platform and analytics capability to connect millions of distributed assets and data points to provide more personalised and value-add services to customers, both in front of and behind the meter. It has developed a proprietary Virtual Power Plant (VPP) platform to connect, and use artificial intelligence to orchestrate, distributed assets such as air conditioning units, batteries, hot water systems and electric vehicle (EV) chargers. Through this platform, it has more than 159 MW from 79,000 connected services. Origin expects this to increase as it demonstrates the benefits to both customers and to the grid of optimising these distributed assets at critical times of market volatility.

## Qantas



#### Net-zero commitment (if applicable and year)

Qantas Group marks its commitment to reach net zero emission by 2050

#### Company emissions reduction targets (and performance against these)

Cap emissions at 2019 levels through fuel efficiency measures, utilising Sustainable Aviation Fuels (SAF) and carbon offsetting where possible

#### Renewable energy targets (and performance against these)

Qantas is finalising its commitment to use 100% renewable energy for 2022 and 2023.

#### One case study of climate action/project (preferably with financial investment made)

Qantas has been offsetting carbon pollution for more than a decade. Fly Carbon Neutral is its customer carbon offsetting program used to fund accredited environmental projects across Australia and the world. Since 2019, Qantas Frequent Flyer members and Qantas Business Rewards customers can earn 10 Qantas Points for every dollar spent on offsetting, and Qantas is matching dollar for dollar every contribution a customer makes to offset their emissions on a passenger flight, effectively doubling the program. Qantas has one of the highest uptakes of voluntary offsets by passengers around the world, averaging around 11% in recent months. It invested into more than 40 accredited projects including 50,000 years of knowledge is being used by Indigenous rangers to prevent wildfires in the North Kimberley, and thousands of hectares of native vegetation is being restored across Australia, including in the Great Barrier Reef catchment. In the last 2 years, the program has offset over half a million tonnes of CO<sub>2</sub> emissions.

## Rio Tinto



### Net-zero commitment (if applicable and year)

Rio Tinto's goal is to reach net zero emissions across its operations by 2050.

### Company emissions reduction targets (and performance against these)

Rio Tinto's targets to reduce its absolute emissions by 15% by 2030 and emissions intensity by 30% relative to its 2018 equity baseline. They are supported by its commitment to spend \$1 billion on emissions reduction initiatives from 2020-24.

### Renewable energy targets (and performance against these)

75% of Rio Tinto's electricity is from renewable sources.

### Case study

In June, Rio Tinto announced a partnership with ARENA to study whether hydrogen can replace natural gas in alumina refineries to reduce emissions. It will conduct a \$1.2 million feasibility study, equally funded with ARENA through a \$580,000 grant, into using clean hydrogen to replace natural gas in the calcination process of refining at the Yarwun alumina refinery in Gladstone. The study program includes work to be done at Rio Tinto's Bundoora Technical Development Centre in Melbourne, where Rio Tinto's in-house development capability has now been extended to hydrogen. In August, Rio announced a partnership with Sumitomo Corporation to study the construction of a hydrogen pilot plant at Yarwun and explore the potential use of hydrogen at the refinery.

## Salesforce



### Net-zero commitment (if applicable and year)

Salesforce is a Net Zero company across its full value chain. Salesforce achieved Net Zero emissions by: committing publicly to the shared, global goal of achieving a just and equitable transition to Net Zero, in line with a 1.5°C future; prioritizing reducing emissions as quickly as possible and aligning its own full value chain emissions (Scope 1, 2, and 3) to the global trajectory of ~50% emissions reductions by 2030, and near-zero emissions by 2040 (with Sustainability Cloud, Salesforce identified the most impactful opportunities to lower its carbon footprint); and compensating for any remaining emissions by purchasing renewable energy and carbon credits of high credibility, impact, and co-benefits. In the long-term: using removal credits only and in the near term using a combination of avoidance and removal credits.

### Company emissions reduction targets (and performance against these)

Salesforce developed emissions reductions strategies across Scope 1, 2 and 3 in four key categories - work from anywhere, infrastructure, business travel, and supply chain. Salesforce committed that suppliers representing 60% of our Scope 3 greenhouse gas emissions will set their own science-based targets (SBTs) by FY25 (fiscal year 25), and we are invested in supporting our suppliers in achieving their targets. Our Sustainability Exhibit will be a key mechanism in motivating suppliers to set SBTs and deliver carbon neutral products and services.

### Renewable energy targets (and performance against these)

Salesforce achieved 100% renewable energy for its operations this year. In 2021, Salesforce achieved 100% renewable energy, purchasing enough renewable energy to match all electricity it uses globally. Since first committing to this goal in 2013, Salesforce has been working to accelerate the global transition to clean and renewable sources of electricity with the aim for a future where renewable energy is powering the world around the clock.

## Case study

In October 2020, Salesforce announced the company's first international renewable energy agreement, with X-ELIO's Blue Grass solar farm, located in the Western Downs region of Queensland. Salesforce has contracted with 25% of the 200MW project which in total is expected to generate enough energy to power the equivalent of 80,000 Queensland homes, and save more than 320,000 tonnes of CO2 emissions each year. As a cloud pioneer and sustainability leader, Salesforce is responsible for the transition to clean and renewable sources of electricity this decade. Salesforce wants a future in which clean and renewable energy is powering the world around the clock. The Blue Grass solar farm is a key milestone on that journey and will match our electricity use for our operations in Australia. Construction commenced in December 2020, with 400 new jobs created in this phase of the project. Additionally, with financial support from Salesforce, Greenfleet is restoring degraded farmland at Pearson and planting 150,000+ native trees, linking two large patches of remnant woodland to increase biodiversity and ecosystems. We are engaging on this initiative with the traditional owners, the Dja Dja Wurrung people, who have played a vital role in the planning and execution of this project. The project will increase biodiversity on the property and provide new jobs for the local community.

## Scentre Group



### Net-zero commitment (if applicable and year)

In February 2020 Scentre Group announced it would achieve net zero (Scope 1 and 2) emissions by 2030 across its wholly-owned portfolio.

### Company emissions reduction targets (and performance against these)

Since the establishment of Scentre Group in 2014, emissions have reduced each year. In 2020, year-on-year emissions reduced by 12.6%. In August 2021, Scentre Group announced an interim target to achieve at least 50% of its net zero target by 2025. The Group's net zero emissions plan has three pillars: optimise energy efficiency, renewable generation sources (evaluate and roll-out on-site solar opportunities) and residual emissions (continue to assess on-site renewable energy procurement opportunities).

### Renewable energy targets (and performance against these)

Scentre Group's New Zealand portfolio will be powered by 100% renewable electricity from January 2022. Scentre Group generates more than 8,000 Mwh annually from solar installations at five of its Westfield Living Centres. It continues to evaluate and roll-out onsite solar opportunities as well as continue to assess off site renewable energy procurement opportunities.

## Case study

Asset efficiency optimisation is the first pillar in the Scentre Group's net zero emissions plan. Reducing energy use by optimising its building management systems is one of the initiatives contributing to energy savings. During 2020, its Next Gen Living Centres project implemented a new analytics platform that uses smart technologies, big data and learning algorithms across 11 Westfield Living Centres. The analytics Platform reviews around 60,000 individual data points from all 11 centres every 15 minutes. It then automatically generates insights to optimise the building systems and realise energy savings. Having access to this big data and analysing it in such minute detail over time provides opportunities that would otherwise not be available. At one centre, it highlighted that the location of temperature sensors meant they were inaccurate at critical times of the day. That one inaccurate data point was impacting how the building systems were operating, making them less efficient. By moving those critical sensors the data is accurate, which has improved the internal comfort for customers, people and retail partners, and saved energy by improving building system performance. 10,370 MWh saved in electricity usage.

## Shell



### Net-zero commitment (and year)

Shell's target is to become a net-zero emissions energy business by 2050, in step with society's progress in achieving the goal of the UN Paris Agreement on climate change. This target covers the emissions from Shell's operations and the emissions from the use of all the energy products it sells. And crucially, it includes emissions from the oil and gas that others produce and Shell then sells as products to customers, making the target comprehensive.

### Company emissions reduction targets (and performance against these)

To achieve net zero, Shell will continue with short-term targets that will drive down carbon emissions as it makes progress towards its 2050 target. This includes a new set of targets to reduce its net carbon intensity: 6-8% by 2023, 20% by 2030, 45% by 2035 and 100% by 2050, using a baseline of 2016.

### Renewable energy targets (and performance against these)

Integrated Power: Shell aims to sell some 560 terawatt hours a year by 2030 which is twice as much electricity as it sells today. Shell expects to serve more than 15 million retail and business customers worldwide. Shell aims to be a leading provider of clean Power-as-a-Service. Shell will make its investments go further by partnering with others with the emphasis for Shell being on managing clean electrons. Nature-based solutions: Shell expects to invest around \$100 million a year in high-quality, independently verified projects on the ground to build a significant and profitable business to help customers meet their net-zero emissions targets. Hydrogen: Shell will build on its leading position in hydrogen by developing integrated hydrogen hubs to serve industry and heavy-duty transport, aim to achieve double-digit share of global clean hydrogen sales.

### Case study

Shell Energy to power NSW Government with long-term power supply agreement backed by battery storage project: On 25 May 2021, Shell Energy announced it is pleased to be partnering with the NSW Government and Australian-owned and operated storage and renewable energy developer, Edify, to provide power for sites including schools, community and medical facilities, coupled with a 100MW/200MWh Battery Energy Storage System (BESS) to be built near Griffith. The 10-year 1.8TWh per annum electricity retailing contract and BESS development project, to be designed, built and operated by Edify, will play a key role in supporting the NSW Government's plan to reach net zero emissions by 2050. Construction of the battery is expected to be completed in 2023.

## South32



### Net-zero commitment (if applicable and year)

In 2016, within 12 months of South32 being established, it committed to supporting the objectives of the Paris Agreement, set its long-term goal of achieving net zero operational carbon emissions by 2050 and set a short-term target to keep its FY21 Scope 1 emissions below its FY15 baseline. While there is no definitive 'best pathway' to net zero and some of the innovations needed are not fully developed, South32 is working with others and transparently reporting its progress.

### Company emissions reduction targets (and performance against these)

In the 2021 financial year, South32 achieved its first short-term target of keeping its Scope 1 emissions below its FY15 baseline by implementing a range of decarbonisation projects, including low carbon fuel switching trials at Worsley Alumina, the installation of an off-grid solar photovoltaic system at its Cannington zinc-lead-silver mine and improved the rate of gas drainage at Illawarra Metallurgical Coal. South32 announced its next medium-term target to halve our operational carbon emissions by 2035, stepping up our ambition on climate change. South32's plans to achieve its medium-term target by investing in efficiency projects, switching to low-carbon energy, implementing technology and designing growth projects to be carbon neutral. Complementary to these decarbonisation programs, South32 is reshaping its portfolio through the lens of its climate commitments, investing further in the commodities needed in a low-carbon future. South32 is working with others to support the transition to a low carbon economy, targeting a reduction in value chain emissions and supporting a just transition.

### Case study

At South32's Illawarra Metallurgical Coal operation, high volumes of air in underground coal mine ventilation systems contains very low concentrations of methane (ventilation air methane or VAM) which cannot be effectively abated at scale, necessitating a commercial-scale technology solution. In partnership with Australia's national science agency CSIRO, South32 is supporting the development of VAM abatement technologies which aim to increase the effectiveness of methane capture at low concentrations in ventilation air in a safe manner. If successful, this would represent a significant advancement for the industry. A pilot plant scale trial of CSIRO's 'VAMMIT' technology is expected to be completed by March 2022, which will inform the technical capability of its potential deployment at Illawarra Metallurgical Coal.

## The Star Entertainment Group



### Net-zero commitment (if applicable and year)

The Star Entertainment Group has set a target to achieve net-zero carbon emissions for its wholly owned and operated assets by 2030 as a long term measure.

### Company emissions reduction targets (and performance against these)

The Star Entertainment Group remains committed to immediate action through its interim carbon and water targets to achieve a 30% reduction from 2013 – 2023 on an intensity basis.

### Case study

The Star Entertainment Group has long recognised its ability to impact its carbon emissions footprint by reducing energy consumption and by managing climate risk as part of its business processes. Climate change risk forms part of the company risk register and is managed under the normal risk processes with oversight from the Board. The Group acknowledges that climate change, particularly in relation to planning and contingency planning, may create a range of potential impacts therefore it conducts physical climate change risk assessments biennially to identify, measure and manage potential climate risks to assets. It has also committed to a low carbon future by setting a target to achieve net-zero carbon emissions for its wholly owned and operated assets by 2030 as a long term measure. We remain committed to immediate action through our interim carbon and water targets to achieve a 30% reduction from 2013 – 2023 on an intensity basis. In 2021, The Star conducted a carbon emissions scenario analysis and the associated financial modelling to understand the right pathway for it to achieve net zero carbon emissions for its owned and managed portfolio by 2030. This analysis considered its costs, stakeholders, investors, team members, operations, future developments and the broader industry sector. The Star has now established its pathway to 2030 which includes energy efficiency as a first priority, offsite renewables where it can, onsite renewable electricity purchases through Power Purchase Agreements, the reduction in refrigerant usage and innovative carbon offsetting and abatement projects that deliver both environmental and social benefits. To help manage these risks into the future and to design and build with a changing climate in mind, prioritised mitigation and adaptation actions have been developed and are included in The Star's Sustainable Design and Operational Standards that are required to be applied to all major projects.

## Stockland



### Net-zero commitment (if applicable and year)

Stockland's 2028 net zero target covers its scope 1 and 2 emissions produced by close to 170 active assets across its Workplace, Logistics, Retail Town Centre and community portfolios. This demonstrates its longstanding commitment to advancing climate action and bolsters its track record of ESG leadership in the global property sector. Stockland will achieve this target by relying on three key emissions reduction strategies: continuing its focus on energy efficient design and operations and the electrification of the portfolio; increasing its investment in on- and off-site renewable energy; and pioneering a number of innovations and technology to reduce our overall carbon footprint.

### Company emissions reduction targets (and performance against these)

Since the beginning of its focus on climate change and energy efficiency in 2006, Stockland has reduced the emissions intensity of its Commercial Property portfolio by 69%. This has resulted in \$138m of savings, with more than half passed on to tenants, demonstrating that it can grow its business while simultaneously reducing energy and emissions and delivering positive financial outcomes. Its emission reduction targets for FY22-24 are: 10% improvement in FY20 carbon intensity and 5% improvement in FY20 energy intensity for Commercial Property and 5% reduction in Retirement Living energy consumption and 15% reduction in carbon to FY20 baseline. Stockland has joined the UN Race to Zero Business Ambition for 1.5C to become a signatory to the SBTi and will continue to develop long term absolute emission reduction targets for scope 1, 2 and 3.

### Renewable energy targets (and performance against these)

As part of its net zero commitment, Stockland is targeting 100% renewable energy across its portfolio by 2028. FY21 saw it build on its commitment to powering its assets with renewable energy sources. In its Commercial Property portfolio, it installed further solar PV capacity across two business park assets and completed detailed designs for four additional assets, equating to a potential capacity of 2MW. This takes Stockland's total operational solar PV capacity to 18.7MW with an annual estimated generation of 24GWh, which represents an investment of over \$32m. The percentage of renewable energy used by our Retail Town Centre and Logistics portfolios was 38% and 78% respectively as at the end of FY21.



### Case study

Stockland's \$600m Stage 1 M\_Park development in Sydney isn't a typical business park. It sets out to break the mould, focusing on the things that matter and drive performance – wellness, convenience, human connection, and sustainability. Among its 'future-of-work' features is a target of 6 Star 'World Leadership' Green Star Rating and achieving Climate Active carbon neutral certification. The M\_Park precinct comprises a public green space and three commercial office buildings designed to respond to changing workplace contexts, embrace emerging technologies and amplify opportunities for collaboration with a focus on sustainability and energy efficiency. M\_Park's targets are one way Stockland is advancing climate action.

## Telstra



### Net-zero commitment (if applicable and year)

Telstra has been certified carbon neutral in its operations by Climate Active since July 2020, and is Australia's largest certified carbon-neutral company.

### Company emissions reduction targets (and performance against these)

Telstra has committed to reduce its absolute greenhouse gas emissions by at least 50% by 2030 (from a FY19 baseline). Emissions had been reduced by 11% as at the end of FY21.

### Renewable energy targets (and performance against these)

Telstra has committed to enabling renewable energy generation equivalent to 100% of its consumption by 2025. As at the end of FY21, 34% of that target had been achieved through three major solar and wind farm projects.

### Case study

In June, Telstra announced a third long term power purchase agreement in relation to the new Crookwell 3 Wind Farm in NSW. Telstra will pay a fixed price for 80% of the energy produced by that site over the term of the agreement. When Crookwell 3 comes online in 2023, and is combined with existing investments in Emerald Solar Park in Queensland and Murra Warra Wind Farm in Victoria, they will supply more than 150,000 homes' worth of non-renewable electricity consumption each year.

## Transurban



### Net-zero commitment (if applicable and year)



Achieve net zero across Scope 1, 2 and 3 greenhouse gas emissions by 2050. The commitment was made in 2020.

### Company emissions reduction targets (and performance against these)

Reduce its absolute Scope 1 and 2 GHG emissions by 50% by 2030 (tCO<sub>2</sub>e) (Emissions increased in FY21 due to significant growth in its asset base however, this is set to reduce dramatically over the next two years as supply commences from its renewable energy power purchase agreements in NSW and Queensland.) Reduce the carbon intensity of its major projects by 55% by 2030 (Scope 3 tCO<sub>2</sub>e from major projects, per \$M project capital cost) and reduce the carbon intensity of the goods and services it purchases from suppliers by 22% by 2030 (Scope 3 tCO<sub>2</sub>e from supplier spending, per kilometre travelled on its roads as a measure of our business output). (Total Scope 3 emissions reduced by around 200,000 tCO<sub>2</sub>e from FY20 to FY21 as major projects were completed).

### Renewable energy targets (and performance against these)

Transurban does not have formal renewable energy targets at this time but has started procuring renewable energy to meet 80% of its electricity needs for our NSW and Queensland roads going forward. It is also currently investigating renewable energy supply for its Victorian and North American markets.

|  |   |
|--|---|
| <b>Case study</b>  |   |
| <p>In FY21, Transurban undertook a data-driven investigation into how extreme weather events affect driving behaviours and its customers' decisions to use its roads, to ultimately understand the potential climate-related financial risk associated with extreme weather events and impacts on future revenue. The study focused on the impact of three extreme weather scenarios: a torrential heavy rain event, strong winds, and extreme heat. The key findings were: heavy rainfall and severe wind have the greatest impact; the default option is to delay a trip if considered non-essential; toll roads were considered more desirable in extreme weather.</p>  |   |
| <b>Uber</b>  |  |
| <b>Net-zero commitment (if applicable and year)</b>  |   |
| <p>Global commitment to 100% zero emission mobility by 2040. First steps on that locally include halving the service fee for all battery electric vehicles sharing rides with Uber for 12 months from 1 July 2021.</p>   |   |
| <b>Case study</b>  |   |
| <p>Halving the service fee for all battery electric vehicles sharing rides with Uber for 12 months from 1 July 2021.</p>   |   |
| <b>University of Sydney</b>  |  |
| <b>Net-zero commitment (if applicable and year)</b>  |   |
| <p>USYD Sustainability Strategy commits to achieve net zero emissions from Scope 1 and 2 sources by 2030.</p>  |   |
| <b>Company emissions reduction targets (and performance against these)</b>   |   |
| <p>To achieve its net zero emissions target by 2030, USYD has an emissions reduction target linked to its source one emissions (to source 100% of electricity from renewable sources by 2025). Source 1 emissions presently represent ~75% of its emissions linked to being net zero by 2030.</p>  |   |
| <b>Renewable energy targets (and performance against these)</b>  |   |
| <p>USYD Sustainability Strategy commits to source 100% of electricity from renewable sources by 2025 and to generate 3 megawatts on-site renewable electricity by 2025.</p>  |   |
| <b>Case study</b>  |   |
| <p>The University of Sydney won the inaugural AFR Higher Education Award-Sustainability for supporting chemist Thomas Maschmeyer and his game-changing innovations, including a solar light bench prototype rolled out on campus. Professor Maschmeyer's creation and commercialisation of two Eureka Award-winning technologies won the 2020 Prime Minister's Prize for Innovation and has been strongly supported by the university through research, testing and spin-out agreements for years, especially in the past 18 months in-line with development of its sustainability strategy. This includes support of Licella Holdings and Gelion Technologies, companies Professor Maschmeyer co-founded while at Sydney, which are commercialising the technologies. The first technology, the Catalytic Hydrothermal Reactor (Cat-HTR™) platform, can avoid landfill by chemically refining end-of-life plastic or other organic waste, into high-value products, including chemicals and plastics.</p> |   |

**Net-zero commitment (if applicable and year)**

UTS was the first Australian university to sign the Climate Emergency Declaration in 2019, committing to mobilise more resources for action-oriented climate change research and skills creation, committing to working towards carbon neutrality, and pledging to increase the delivery of sustainability education across curriculum, campus and community outreach programs. In 2019, UTS became a Signatory to Race to Zero, a pledge to reach net zero as soon as possible in line with global efforts to limit warming to 1.5C. UTS is currently developing its net zero plan which will outline the university's pathway to net zero and include targets for Scope 1, 2 and 3 emissions.

**Company emissions reduction targets (and performance against these)**

UTS has a target of a 30% absolute reduction in CO2 emissions on its 2007 baseline by 2020/21 as well as an intensity target of 105Kg CO2-e/m2 GFA by 2020/21. These are challenging targets given that the university has added 50% to its floor area since 2007. UTS is currently tracking at 96Kg CO2-e/m2 GFA and is on track to meet its 30% reduction target.

**Renewable energy targets (and performance against these)**

UTS has committed to sourcing 50% of its electricity demand from renewable sources. Having already maximised on-site solar installations on its campus buildings, the university is in the process of installing solar to a number of leased buildings and is actively sourcing off-site renewables. The university achieved an Australian first for renewable energy purchasing in 2015 by signing a Power Purchase Agreement (PPA) to buy the output of a solar farm in Singleton. In 2016, UTS signed its second PPA with a solar farm in Orange. In 2018, the university signed another PPA for a new large scale regional solar farm. Once built this on and off site solar will represent 50% of UTS's electricity demand.

**Case study**

UTS is leading the Reliable Affordable Clean Energy for 2030 Cooperative Research Centre (RACE for 2030), with 91 partners (eight universities and CSIRO, four state governments, eight energy networks, energy retailers, technology providers, energy users and consumer representatives) and investments of almost \$350 million in cash and in-kind over the next decade. Research programs will deliver new energy solutions to cut energy bills for consumers, boost business productivity, reduce carbon emissions, and optimise the energy grid to increase reliability. The UTS4Climate website outlines how UTS staff and students are taking action in response to climate change, with innovative research, the subjects the university teaches, how UTS engages with the community and how the campus is run.

**Net-zero commitment (if applicable and year)**

Net zero carbon by 2030, this is for Vicinity's wholly owned portfolio and covers common areas only.

**Company emissions reduction targets (and performance against these)**

Annual reduction of 3% in Scope 1 and Scope 2 emissions across managed portfolio.

**Case study**

In FY21, Vicinity's industry-leading solar program continues. Vicinity has installed a further 4.6 MW of solar across its managed portfolio at the end of FY21, completing installations at Ellenbrook Central, Karratha Centre, Runaway Bay and Whitsunday Plaza, during the year. The \$6 million project of more than 6,100 panels at Karratha Centre can generate over 3,900 MWh per year, enough to power approximately 400 average Australian homes. This takes Vicinity's total Solar installed to 30.6MW across its managed portfolio. Vicinity has committed \$73 million to Australia's largest shopping centre solar roll out, helping it to strongly reduce carbon emissions.

## Net-zero commitment (if applicable and year)

Net zero Scope 1 and 2 emissions ambitions for Wesfarmers' retailers by 2030 and for industrial businesses by 2050.

## Company emissions reduction targets (and performance against these)

Wesfarmers' non-retail businesses emissions reduction targets include a 2025 target of emissions per unit being below the mean of peers, and 13 ktCO<sub>2</sub>e ex-Coregas. Actions to achieve this include: investigation of renewable energy opportunities and ongoing energy efficiency improvements; continued investment to optimise the abatement effectiveness of existing catalyst in the nitric acid plants (this technology reduces nitrous oxide emissions by up to 85%); exploring a portfolio of options across emissions abatement and sequestration of Scope 1 emissions, and developing a transition roadmap to support net zero aspiration; partnering with CSIRO and the Australian Energy Transition Initiative to collaborate on the CO<sub>2</sub> roadmap and commoditisation research; reviewing the branch and distribution centre network to identify new sites suitable for LED lighting, replacement of early generation LED and solar PV installation over the next four years; introducing networked Building Energy Management Systems (BEMS) to monitor energy use and investigate anomalies; procuring additional energy requirements from renewable sources; exploring projects across clean hydrogen, solar, distribution efficiency and minimising fugitive emissions at Coregas.

## Renewable energy targets (and performance against these)

Wesfarmers' retailers have a target of 100% renewable electricity by 2025. To achieve this target, actions being undertaken include: installation of LED lighting across the remaining store network over the next four years; installation of additional solar PV systems across the store network (on accessible roofs) over the next four years; introduction of networked BEMS to monitor energy use, reduce heating, ventilation and air-conditioning usage, and investigate anomalies; the upgrade of the store construction brief to include additional insulation, more efficient cooling systems and remove skylights to reduce heat gain and loss; and procurement of remaining electricity requirements from renewable sources.

## Case study

With hundreds of stores across Australia and New Zealand using electricity for lighting, air conditioning and heating, Kmart Group spends a significant amount of money on utility bills and generates carbon emissions from these operations. Not satisfied with improving energy efficiency by 26.5 per cent, emissions intensity by 36 per cent per square metre of floor space and saving millions of dollars in avoided costs since 2015, Kmart Group has been exploring new ways to cost effectively take emissions reduction and cost savings to the next level. Much of the energy saving 'low-hanging fruit' has already been taken, such as lighting upgrades, audits and overnight load management. This has required Kmart Group to explore the information rich energy use data, insights and controls of store Building Management Systems (BMS) to find longer-term reductions in energy use. While this is easy to do one site at a time, Kmart Group has needed to develop and test systems and processes to scale its ability to gather data and achieve system interoperability across many store BMS at the same time in a cost-effective way. Through a pilot program conducted this year involving 10 stores, Wesfarmers has been able to develop systems and processes that allow the Kmart Group Energy Centre (analytics and engineering team) to remotely access store BMS to monitor the operation of lighting, heating and cooling systems in real time and identify and, importantly, remedy anomalies and energy inefficient or costly behaviours. This has reduced energy use and emissions at participating stores while saving \$166,000 in avoided operating costs at participating stores and the need for costly technicians having to attend stores to change a dial or setting. These savings have come from BMS insights that have led the team to finding issues that include air handling units and cold water chiller pumps running constantly, decreasing the energy efficiency of these stores but also increasing wear on equipment. More broadly, Kmart Group has also been able to reduce the operation of non-essential plant and equipment out of opening hours. During Good Friday while stores were closed, Kmart Group could ensure that only mission critical IT infrastructure and other equipment was operating. Additionally, peaks in energy usage that commonly occur throughout the day have been able to be smoothed to reduce strain on the electricity grid and reduce exposure to charges associated with high energy demand. Learnings from this pilot are now being implemented across targeted stores with the intention of being applied to all sites where it is technically possible and economically viable.

## Westpac



### Net-zero commitment (if applicable and year)

Westpac is committed to managing its business in alignment with the Paris Agreement and the need to transition to a net zero emissions economy by 2050.

### Company emissions reduction targets (and performance against these)

Targets are to reduce its Scope 1 and 2 emissions from a 2016 base year by 85% by 2025 and 90% by 2030. Target to reduce Scope 3 emissions from a 2016 base year by 35% by 2030. As at 31 March 2021, Westpac is on track to reduce its Scope 1 and 2 emissions by 50% and Scope 3 by 15% compared to FY 2016 baseline.

### Renewable energy targets (and performance against these)

Westpac is committed to sourcing the equivalent of 100% of its global electricity consumption through renewable sources by 2025. It commenced renewable electricity supply from Bomen Solar Farm in NSW in Q4 2020. It expects to source over 45% of its annual electricity requirement from renewables in 2021, and is on track to meet its commitment of 100% by 2025.

### Case study

Westpac was a joint sustainability coordinator for a \$300m sustainability linked loan facility for the NSW Land Registry Services. Embarking on a sustainability linked loan process links the ESG goals of the NSW LRS with long term financial outcomes. The selected Sustainability Performance Targets focused on greenhouse gas emissions reduction, gender diversity and inclusion, and continued leadership in the GRESB Infrastructure Asset Assessment. The targets also include developing an Indigenous Reconciliation Action Plan, which is believed to be an Australian first. To incentivise sustainable practices, the loan incorporates an interest rate adjustment matrix based on the agreed targets.

## Woodside



### Net-zero commitment (if applicable and year)

Aspiration of net zero by 2050 or sooner.

### Company emissions reduction targets (and performance against these)

Reduce by 15% (2025) and 30% (2030) on a Net equity Scope 1 and 2 emissions, below a baseline of the 2016-20 annual average. 2021 is the first year of these targets so performance has not yet been reported. The previous target (5% efficiency, 2016-20) was exceeded (8%). If the proposed merger between Woodside and BHP Petroleum proceeds, the baseline will be adjusted to incorporate the combined portfolio and the targets will be extended to the combined portfolio.

### Case study

Pluto gas plant power optimisation: Woodside's Pluto LNG gas plant was designed to operate with four gas turbine generators (GTG) – all of which were required to power the facility. Through increased plant reliability and upgrades to the electrical power system, Pluto can now operate safely and reliably year-round with less GTG, reducing the facility's energy intensity. This change has resulted in an additional 20,000 tonnes CO<sub>2</sub>-e of emissions savings per year.

## Woolworths



### Net-zero commitment (if applicable and year)

Net positive carbon emissions by 2050. Woolworths wanted to push itself beyond net carbon neutral, and has committed to become net positive by 2050 (if not sooner), meaning it's taking more carbon out of the atmosphere than it produces to deliver a net benefit to the environment.



#### Company emissions reduction targets (and performance against these)

On its path to net positive target, Woolworths has the following targets for 2030: reduce Scope 1 and 2 emissions by 63% from its 2015 baseline by 2030. At the end of June 2021, Scope 1 and 2 emissions were 27% below its 2015 baseline. Woolworths will reduce its Scope 3 emissions by 19% from its 2015 baseline. Working on its approach to its Scope 3 target is one of Woolworths' focus areas for this year and the company will have more to say on this in 2022.

#### Renewable energy targets (and performance against these)

100% green electricity by 2025. Woolworths has announced its first renewable power purchase agreement partnering with CWP Renewables on a new-build wind farm in NSW. From January 2022, the PPA will cover around 30% of Woolworths Group's NSW energy needs with the electricity required to power 108 supermarkets, avoiding almost 158,000 tonnes of carbon emissions each year. The PPA will support more than 100 jobs in the construction and operation of the Bango wind farm.

#### Case study

Low carbon fleet 'Eve' and 'Buzz', Woolworths' Electric Vehicles (EV), have continued to support supermarket deliveries in Sydney and Melbourne. They are proving the viability of EVs in this area, with payload and range continuing to perform to expectation. Eve and Buzz have been used to showcase what quieter delivery vehicles can achieve in support of delivery curfew flexibility and to remove vehicles from roads at congested times. The company will introduce new EVs for Woolworths Online to commence piloting their use for home deliveries in late 2021.

## WSP



#### Net-zero commitment (if applicable and year)

WSP pledges to achieve net zero emissions across its value chain by 2040. Through its net zero commitment, WSP also joins the Race to Zero, which brings together a coalition of leading net zero initiatives, with an objective to build momentum around the shift to a decarbonised economy ahead of COP26.

#### Company emissions reduction targets (and performance against these)

WSP has set science-based greenhouse gas (GHG) emissions reduction targets, approved by the SBTi. These commitments align WSP with the most ambitious aim of the Paris Agreement, to limit global temperature rise to 1.5°C. The company has committed to reduce absolute Scope 1 and 2 market-based GHG emissions by 60% by 2030 from a 2018 base year, and Scope 3 emissions by 30% over the same timeframe. WSP's Scope 3 commitment includes categories relevant to WSP's business, as defined by the GHG Protocol, including purchased goods and services, business travel, employee commuting, and other upstream emissions sources.

#### Renewable energy targets (and performance against these)

WSP commits to source 100% renewable electricity by 2030, supporting its operational GHG reduction efforts. WSP will also continue to focus on the energy efficiency of its facilities across the globe, as well as the emissions impact of its vehicle fleets, to drive reductions in Scope 1 and 2.

#### Case study

WSP has played a key role in helping the Green Building Council of Australia to progress its Green Star rating system. It has sought to expand Green Star's scope to encompass social sustainability issues, while ramping up the requirements in line with the 1.5°C Paris Agreement. WSP has also helped to map out modifications to Green Star rating for Buildings, and conducted research into world best practice sustainable precincts, in support of progressing Green Star rating for New Communities. As a technical partner, WSP provided advice to shape newer versions of Green Star's tools, which were progressively rolled out from late 2020. The first tool to be released, Green Star for Buildings, includes an ambitious trajectory for all certified buildings to achieve net zero emissions and 100% renewable energy from today through to 2030. Importantly, there will be no gas combustion in any building under this new set of requirements, marking a significant immediate challenge, but necessary move to align with a leadership position in limiting global warming to 1.5°C.



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## Achieving a **net zero economy**

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GPO Box 1472, Melbourne VIC 3001  
[www.bca.com.au](http://www.bca.com.au)