3. **A CRITICAL** YEAR FOR EMISSIONS **TARGETS AND** ENERGY POLICY

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Tough decisions will be needed on energy policy this year to ensure Australia meets its emissions-reduction targets, while protecting energy affordability and reliability of supply. There are looming challenges on all three fronts, as policy uncertainty over the last 15 years has held back investment in the necessary generation, storage and network assets.

Reliability challenges are intensifying

Every mainland state will face reliability issues over the next decade based on current investment plans, with some states facing reliability issues from this year.

The Australian Energy Market Operator (AEMO) has warned that the reliability of the National Electricity Market is at risk unless there is urgent investment, with 62 per cent of coal-fired power plants expected to close before 2033.[61]

Considering only committed energy-infrastructure investment, AEMO says reliability risks will exceed the relevant standard from 2023-24 in Victoria and South Australia, 2025-26 in NSW and 2029-30 in Queensland.[62]

> If policies announced but not yet fully developed are implemented, emissions are estimated to fall by 42 per cent by 2030, just missing the 43 per cent target.

Western Australia's South West Interconnected System has a higher share of gas generation, providing greater flexibility. But in 2023, for the first time, AEMO identified looming generation shortfalls due to increasing demand and the planned retirement of coal-fired generators.[63]

Australia's east-coast gas market is forecast to have sufficient supply in 2024, but LNG producers will need to commit small amounts of additional gas to the domestic market to avert a shortfall in winter.[64] AEMO has estimated that businesses and households are at greater risk of winter shortfalls from 2027 onwards, amid dwindling production from the Bass Strait, the biggest source of domestic gas for the east coast.[65]

In WA, the gas market should be finely balanced until 2032, with some shortfalls from 2030 onwards as coal generation retirements increase demand for gas-fired power, along with a decline in production from existing gas fields.[66]

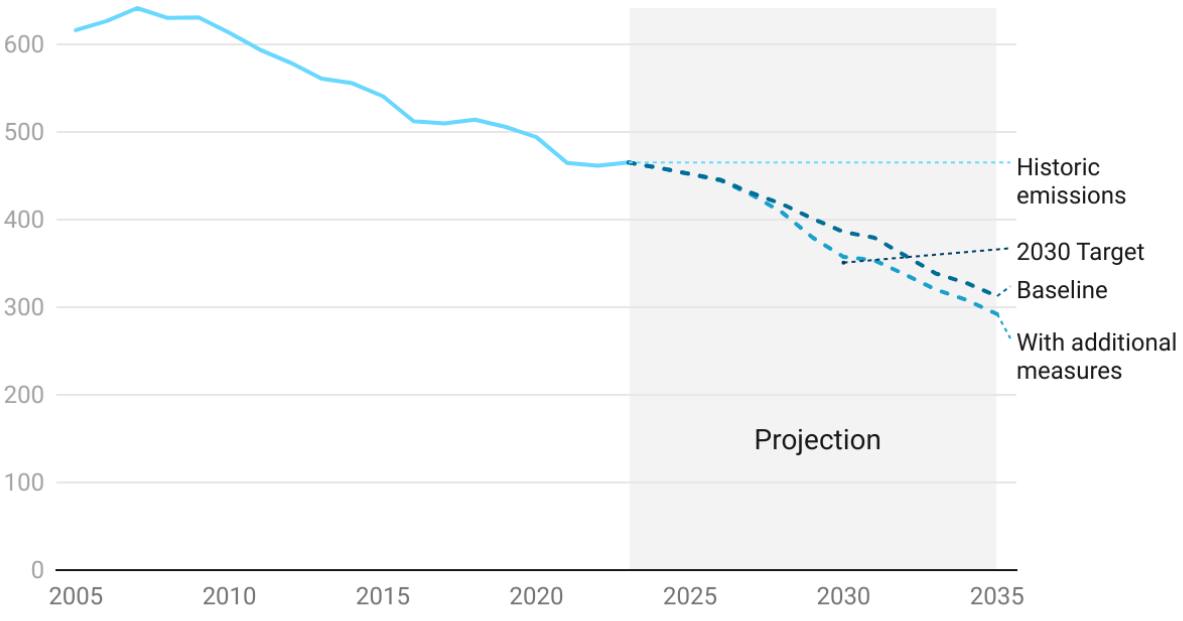
Emissions target in doubt

The Federal Government has legislated to achieve net-zero greenhouse-gas emissions by 2050, with an interim goal to cut emissions by 43 per cent from 2005 levels by 2030. Based on policies implemented or where design is well progressed, Australia is projected to cut its emissions by 37 per cent by 2030, missing its target by 35 million tonnes of carbon dioxide (Figure 1).

FIGURE 1

Australia is not on track to meet its 2030 emissions target

Emissions projections under the baseline and with additional measures (Mt CO_2-e)



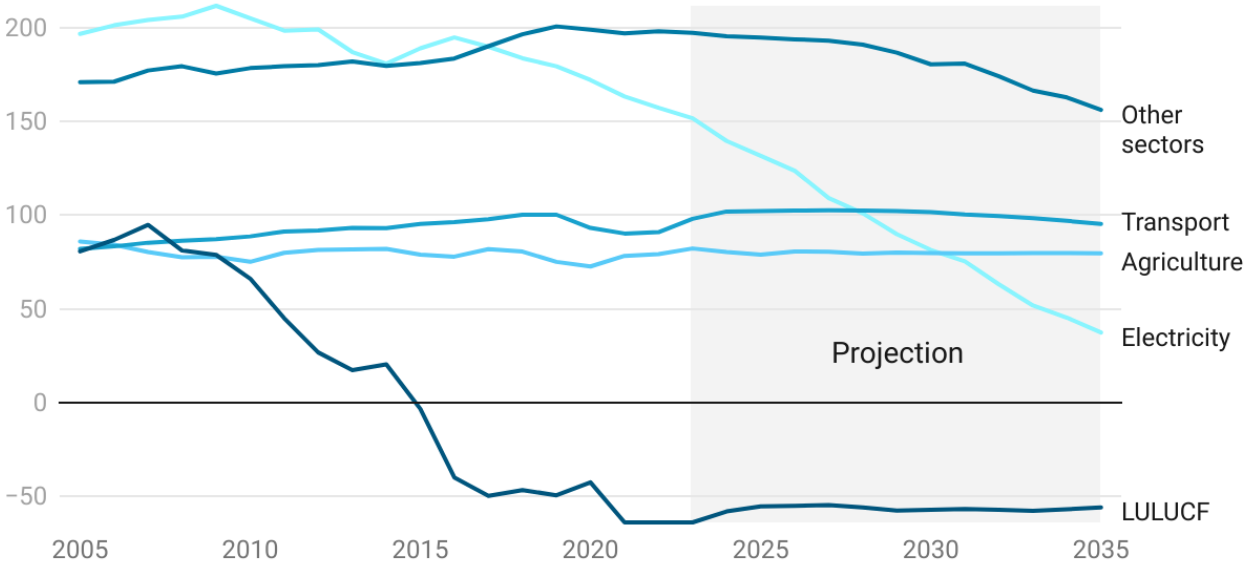
Source: Department of Climate Change, Energy, the Environment and Water • Created with Datawrapper

The Government's plans place much of the burden on the electricity sector (Figure 2). While this reflects the ready availability of renewable-generation projects, there are big challenges to recruit the skills, expand the networks and get the planning approvals necessary to roll these out at sufficient scale.

FIGURE 2

Emission reductions are expected to be mainly in electricity

Emissions projections under the baseline scenario, Mt CO_2-e



LULUCF = land use, land use change and forestry. Other sectors include industrial processes, waste, stationary energy and fugitives.

Source: Department of Climate Change, Energy, the Environment and Water • Created with Datawrapper

> There are big challenges to recruit the skills, expand the networks and get the planning approvals necessary to roll out renewable-generation projects at sufficient scale.

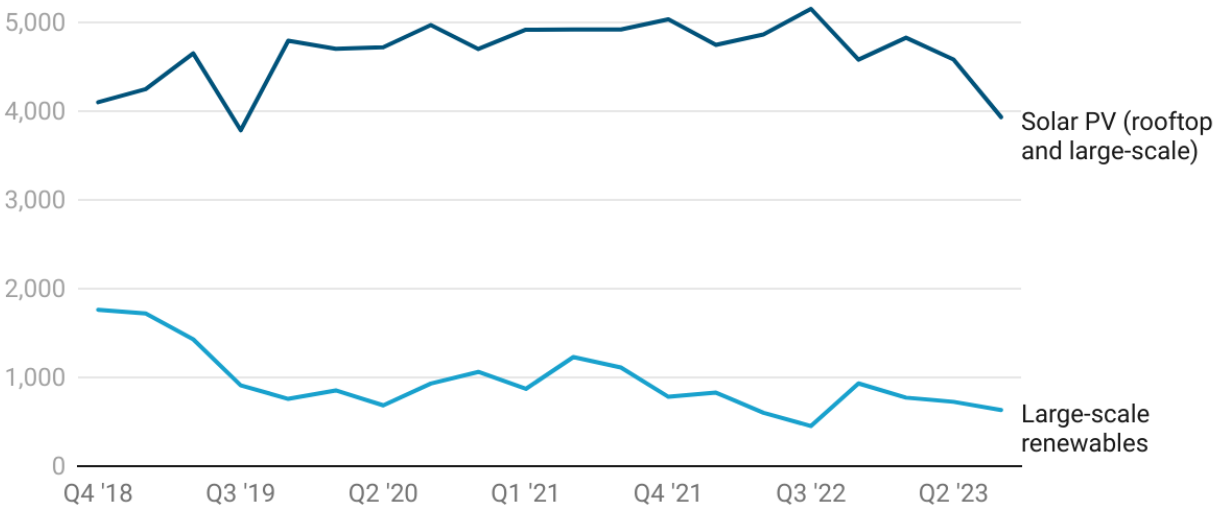
Investment in renewable energy has boomed over the past decade, but large-scale investment has been in gradual decline since the Renewable Energy Target was met in 2020, reducing the incentive for new generation (Figure 3). Prior to the expansion of the Capacity Investment Scheme in late 2023, state-based measures were only on track to deliver around 70 per cent renewables by 2030.[67] Investment slowed further over the past year due to higher project costs, complex permitting processes, a congested grid and intensifying global competition in the race to net zero.[68]

Meanwhile, we are missing significant opportunities for cheaper reductions in other sectors because we lack the economy-wide incentives that would come with broad-based emissions pricing. Australia also has failed to implement complementary policies that have been successful internationally, such as a fuel efficiency standard for light vehicles (the Federal Government is working to introduce a fuel efficiency standard that would apply from the start of 2025).

FIGURE 3

Rooftop solar is growing faster than large-scale renewables

Rolling 12-month average of new installed capacity (MW)



Large-scale renewable data are for financially committed generation projects. Solar PV data are for systems installed under the Commonwealth Government's Renewable Energy Target, with estimated data for recent months that adjusts for reporting delays.

Source: Clean Energy Council (2023) Renewable Projects Quarterly Report; Australian PV Institute (2024) https://pv-map.apvi.org.au/analyses • Created with Datawrapper

We can do more to reduce emissions of the powerful greenhouse gas methane at relatively low cost. In the energy sector, a significant share of methane emissions can be addressed with current technology at reasonable or no net cost, for example by using existing gas drainage systems to capture and use underground gas from coal mining, and wider use of leak detection and repair in oil and gas.[69]

Substantial low-cost methane emissions reduction is also available in agriculture, for example from feed supplements, selective breeding and reducing the time taken to get beef cattle to market.[70] In October 2022 Australia joined more than 120 countries working collectively to reduce global methane emissions across all sectors by at least 30 per cent below 2020 levels by 2030, but policy implementation lags this ambition.

More policy measures are in the pipeline

If policies announced but not yet fully developed are implemented, emissions are estimated to fall by 42 per cent by 2030, just missing the 43 per cent target (Figure 1 above).

These measures include expanding the Capacity Investment Scheme to support 9GW of clean dispatchable capacity (such as batteries) and 23GW of variable renewable-generation capacity. The expansion seeks to help achieve the Government's target of 82 per cent renewable generation by 2030. The chosen approach will provide a long-term revenue safety-net that decreases financial risks for investors, with government (and therefore taxpayers) bearing the risk. Government funding will also diminish incentives for energy-efficiency measures, compared with a system such as the current Renewable Energy Target that recovers costs through electricity prices.

Beyond these specific policies, in 2024 the Government will develop six sectoral decarbonisation plans across:

Australia has joined 117 other countries backing a pledge at the COP28 climate conference to triple global renewable-energy capacity and double the rate of energy-efficiency improvements to over four per cent annually by 2030. To enable this, participants commit to adopt ambitious policies on renewable energy and energy efficiency, recognising the importance of enablers including accelerated permitting, expansion of grid connections and supporting research, development and innovation.

The investment needed is large, but not unprecedented

Substantial additional investment will be needed. In the electricity sector alone, around $12 billion per year will be required under the most likely scenario.[71] The Clean Energy Finance Corporation has estimated it will take roughly $20 billion in annual investment to transition the energy sector and meet our 2030 target. The Australian Industry Energy Transitions Initiative has estimated it will also take around $20 billion a year to meet our 2050 target.[72] This is in the same range as historical major investments in Australia, such as the $23 billion invested annually in new LNG projects between 2009 and 2022.[73]

Far more would be needed for Australia to become a big clean-energy exporter. A scenario with 18Mt of green hydrogen and 58Mt of green iron exports annually by 2050 is estimated to require $42 billion per year in investment to fund industry-abatement technologies and transition the energy system.[74]

Another study indicates that $67 billion in annual investment would be needed (excluding investment in new electric vehicles) to transition Australia's energy system and export 28.5Mt of clean hydrogen by 2050.[75] Fully replacing today's energy exports with clean-energy exports could require in the order of

It is estimated that it will take roughly **$20 billion** in annual investment to transition the energy sector and meet **2030** and **2050** targets.

In the **electricity** sector alone, around **$12 billion** of **investment** per year will be required under the most likely scenario.

Fully replacing today's energy **exports** with **clean-energy** exports could require in the order of **$200 billion** of investment per year.

$200 billion[i] of investment per year.[76] This amounts to 7.5 per cent of current GDP, or close to one third of total annual investment across the public and private sectors.

Australia has delayed its response to the US Inflation Reduction Act

The Federal Government has delayed its response to the US Inflation Reduction Act due to concerns about a lack of skilled workers and slow environmental approvals.[77] The expanded use of taxpayer-funded industry grants or US-style production credits (where producers receive a per-unit tax credit for production of clean technology or its component parts) is still on the table. Regardless of the measures chosen, governments will need to take a more active role in guiding the transition in the absence of a broad-based emissions price.

While supportive policy will be necessary, subsidies come at a cost (Box 1).

i Investment costs are somewhat lower, at around $190 billion per year rather than $230 billion per year, if these energy exports are embedded in onshore manufacturing of clean iron and aluminium.

BOX 1

There are cheaper ways to cut emissions than large-scale subsidies

Using subsidies to cut emissions will cost the US Federal Budget about $US1 trillion in the years to 2031. The average abatement cost of just over $US60 per tonne under such an approach is lower than the social cost of carbon (that is, the cost of the damage caused by one extra tonne of carbon emissions). However, achieving the same abatement via emissions pricing would cost roughly one-fifth as much.[78] That is, the US could save $US800 billion through better policy alone, such as emissions pricing.

There can be complementarities between emissions pricing and subsidies, for example to accelerate research and development of low-carbon technologies. If used alone, however, subsidies are not cost effective as they need to be financed by raising taxes and can increase energy consumption by reducing prices.[79]

Emissions pricing, in addition to providing clear signals to investors, would also assist the transition by reducing demand for energy and encouraging consumers to use lower-emission goods, for example through improving energy efficiency. It would also improve the Government's fiscal balance and diversify revenue sources, the importance of which was highlighted in the federal 2023 Intergenerational Report.

The benefits of a carbon price in terms of economic efficiency have long been recognised, but greater reliance on emissions pricing has proven to be politically difficult including because of disproportionate effects on low-income earners.

Alternative emission reduction policies such as mandatory standards, subsidies and regulation can also have concentrated negative effects on low-income households,[80] so complementary policy to support vulnerable households is likely to be necessary under a broad range of policy tools. One path forward is to continue to strengthen and expand the safeguard mechanism, which currently covers around 28 per cent of Australian emissions, while working to build public understanding and support for the beneficial uses of revenue from emissions pricing.

The Federal Government is also expected to announce its clean-energy industry policy in this year's Budget. Industry support should focus on innovation and building on comparative advantages rather than shutting ourselves out of global value chains. For example, Australia may have a comparative advantage in processing battery minerals, which is best undertaken close to critical minerals mining. In the case of battery manufacturing, however, proximity to electrical-vehicle production and cheaper labour may be more important for sustained competitiveness.[81]

Where grants, production credits or other industry supports are used to accelerate the energy transition, governments should be clear on their objectives and transparent in evaluating outcomes. An overarching analytical and data-driven framework needs to be applied to determine how funding is allocated.

"Regulatory certainty – including around approvals processes – is crucial to deliver the scale and pace of investment required.

Priorities for 2024

This year, we need long-term policy signals to underpin investor certainty. Regulatory certainty – including around approvals processes – is crucial to deliver the scale and pace of investment required. Bipartisan support for key measures would give a huge boost to policy certainty and thus investment signals. While bipartisanship has proven difficult in Australian energy policy, pragmatism around enabling a broad range of technologies and market solutions would help. This requires evidence-based analysis of the best ways to balance energy affordability, security of supply and emissions reductions.

Decisions should be driven by the balance between emissions, affordability and reliability, rather than ruling out specific technologies. For example, highly flexible gas-fired peaking plants can play an important complementary role alongside batteries and pumped hydro even as their infrequent use limits emissions, but were ruled out of the Capacity Investment Scheme.

We should monitor international developments and consider removing the current ban on nuclear energy as part of a non-ideological, all-technologies approach to ensure Australia has access to the best sources of power. Nuclear energy is an emissions-free source of baseload power that has contributed to lower emissions in countries including France, the US and UK. It could become more viable in coming decades if the cost of small modular reactors falls with greater deployment globally, with potential to replace solar and wind generators as they reach the end of their lifetime. Currently, however, energy-market modelling consistently indicates that nuclear is not an economic decarbonisation option for Australia, as it is significantly more expensive than renewables with firming and would take much longer to develop given the lack of local expertise in Australia.[82]

Australia can potentially play a huge role to help its trading partners decarbonise through exports of clean energy and critical minerals. Coordination across federal and state governments will be important to maximise Australia's opportunities. This includes working with trading partners to understand their transition paths and the implications for demand for Australia's traditional and new energy exports. Greater clarity on the national approach to gas exports, for example, should be provided this year in the Future Gas Strategy.

Incentives will be needed to reduce demand when supply is tight, with an important role for digital technologies to enable automatic and efficient responses. Demand flexibility will become even more crucial if and when Australia ramps up clean-energy exports, as the manufacture of products such as green ammonia (for fertilisers, explosives and possibly shipping fuel) can increase the flexibility and reliability of the energy sector by shifting demand to times when electricity is more plentiful and allowing renewable exports to the grid when prices are high.[83]

Governments must act immediately to enable the development and deployment of the workforce skills needed to deliver clean energy. There are looming shortages in crucial trades such as electricians. CEDA's 2023 report *Powering the Transition* showed shortages in other key occupations, such as engineering, are already constraining clean-energy businesses.

We must ramp up training and education in key occupations, while ensuring that policy settings enable Australia to make the best use of existing skills. This requires updating and harmonising relevant occupational licences to reduce barriers to worker mobility as new technologies are rolled out. The new Skills in Demand visa needs to be implemented to enable fast, simple visa pathways to bring highly skilled clean-energy workers into Australia.

Massive investment is needed to enable timely and thorough consultation with affected communities and environmental experts, while reducing the considerable risk of delays from planning approvals for large-scale renewable and transmission projects. Engagement needs to occur early enough to enable plans and/or locations to change where substantive issues are uncovered, and needs to be done in a strategic and coordinated manner rather than project-by-project. There are opportunities to streamline planning, for example for onshore wind in some states, but there also must be value provided and/or compensation for affected communities alongside protection of valuable ecosystems.

The transformation of Australia's energy sector will be challenging. There must be action on several fronts this year to mobilise investment, deliver long-term policy signals, accelerate progress on deep energy storage, sharpen incentives for demand response and build skills and streamline planning processes, while bringing affected communities along on the journey to net zero.

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