

Sunshot in 2023: Accelerating towards Australia's renewable exports opportunity

Final report

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Commissioned by



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WWF-Australia is part of the world's leading conservation network and has been working to create a world where people live in harmony with nature since 1978. WWF's mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony with nature. At every level, we collaborate with people around the world to develop and deliver innovative solutions that protect communities, wildlife, and the places in which they live. Since 2019, WWF has been advocating for Australia to become a world leading renewable energy export nation through its Renewables Nation program.

Foreword

“Show us accelerated action in this decade and renewed ambitious net zero plans – or please don’t show up.”

UN Secretary-General Antonio Guterres’ message to government, business and society leaders ahead of the September 2023 Climate Ambitions Summit

In October 2021, our organisations came together, representing Australian business, workers, and our environment, to release *‘Sunshot: Australia’s opportunity to create 395,000 clean export jobs’*. The report identified the risks to Australia’s economy if we continue our reliance on fossil fuel exports and lays out an alternative vision for Australia’s future: six renewable export opportunities that now have the potential to generate over A\$100 billion in gross value added (GVA) and support over 400,000 good Australian jobs by 2040 – an increase on the GVA and jobs benefits projected by our 2021 Sunshot research. This is larger than the GVA of our fossil fuel industry today and with many more jobs.

Each of these opportunities represents a substantial new industry — a formidable suite of exports that can underpin Australia’s future prosperity, create well-paid jobs, and ensure Australia plays a leadership role in the global effort to achieve net-zero emissions and address the climate crisis.

In 2022, floods driven by climate change displaced 60,000 people across Australia and cost over A\$11 billion. It is in Australia’s urgent national interest to help ourselves and other countries decarbonise faster by utilising and selling our renewable resources, products, skills, and expertise — and, in the process, accelerating our own journey to becoming a renewable-powered nation.

Since the launch of the Sunshot report, however, much has changed. We have witnessed major developments in global climate policy and energy markets that are quickly transforming the terrain for Australian policy-makers. The war in Ukraine has shown the stark reality of global reliance on fossil fuels and the consequent impacts

on supply chains, energy security, and pricing. Not surprisingly, countries around the world have accelerated their shift to renewable energy through the introduction of new policies and investment plans.

A massive clean energy stimulus was signed by President Biden in August 2022 as part of the *Inflation Reduction Act* (IRA). This US\$369 billion (A\$550 billion) package will make America a heavy lifter on clean energy transition, and is already shifting the flow of global capital back towards the US. This is because a major focus of the IRA is incentivising clean-energy manufacturing and production within the US.

Unsurprisingly, many other nations have responded swiftly.

On 1 February 2023 the European Commission presented its €250 billion (A\$390 billion) ‘Green Deal Industrial Plan’, and a Joint US-EU Taskforce on the IRA has been established. South Korea allocated US\$61.9 billion to its ‘Green New Deal’ and aims to create 659,000 jobs by 2025. Japan intends to issue US\$150 billion (A\$220 billion) in green transition bonds. Canada announced plans to establish “an investment tax credit of up to 30% for investments in clean technologies... battery storage solutions and clean hydrogen”, framing this as a direct response to the IRA, and India’s government has responded with a budget that places “green growth” and subsidies for domestic renewables production front-and-centre. Even Saudi Arabia, a petrostate, announced plans to invest US\$266 billion (A\$400 billion) to become a world leader in renewable hydrogen exports.

Foreword continues on the next page...



Foreword continued

Huge pools of capital are now coalescing around clean technologies and the race to become a 'renewable superpower' is well and truly on. While this is decidedly good for the planet, Australia needs to recognise that competition for capital is high — meaning the time for significant action is now. Waiting too long could see the Australian economy boxed out of this race to the top and relegated to a minor role in an emerging green economy of which we might otherwise have been a cornerstone.

This leaves Australia at a critical juncture.

Even with some of the best sun, wind, *and* critical mineral resources in the world, and a geographical advantage positioned close to the major economies of Asia, we cannot assume that our window of opportunity (and capital) will remain open in perpetuity. Decisions are being made right now that will impact the scale, shape, and distribution of clean energy supply chains for decades to come.

Australia needs to match the countries already running at full tilt by delivering a landmark clean energy industrial policy — across the public and private sectors — that combines a north star of ambition with the incentives, investments, and workforce development needed to get there.

In our 2021 Sunshot report, we demonstrated how scaling up our ambition on renewable exports could realise our greatest contribution to global climate action, helping accelerate global decarbonisation while supercharging the Australian economy. In our 2023 update, we focus primarily on actions that must be taken immediately in the 2023-24 Budget to realise that ambition in light of newly intensified global competition.

This budget submission identifies three actions that should be taken in the 2023-24 Budget across three focus areas: clean industries and exports, renewable energy buildout, and just transition policy. None of these pieces in isolation is sufficient to transform Australia into a renewable superpower. But taken together, they can help vault Australia into a leading role in the global energy transformation, and leverage our unique comparative advantages to usher in a new era of Australian jobs and prosperity.

We believe everyone in Australia can and should benefit from the rapid shift to renewable energy and the jobs, prosperity, and climate safety that will come along with it. We also believe that the scale of the benefits we reap will be commensurate to the policy ambition we muster in the coming years.

It is time for Australia to go big.



Kelly O'Shanassy

Chief Executive, Australian Conservation Foundation



Michele O'Neil

Chief Executive, Australian Council of Trade Unions



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Australia has made great progress so far, but must move faster to decarbonise our economy and grow our renewable export opportunities

In 2021, we set a vision for Australia's low-emissions future with six renewable export opportunities which could support over 400,000 good, secure jobs and contribute over \$100 billion to the Australian economy.¹

Australia has a great opportunity to grow export industries in:

1. Critical minerals
2. Green metals
3. Batteries
4. Renewable hydrogen and ammonia
5. Education exports
6. Green professional services

To realise this vision and become a genuine renewable energy superpower, Australia must rapidly develop four mutually reinforcing pillars of the energy transition.

1. World-leading renewable exports industries
2. Sufficient domestic renewable buildout
3. Widespread electrification
4. Energy Transition Authority

Australia has made positive steps in each of these four pillars, with some good progress toward its export opportunities, but more must be done for Australia to become a leading exporter.

The Government has made some progress towards an accelerated transition, with the introduction of key policies like the National Reconstruction Fund and Rewiring the Nation. While it has made progress against some of its export opportunities, more progress is needed to fully realise our renewable export potential.

Over the last two years, global competition to develop renewable industries has intensified, requiring Australia to accelerate action across all its export opportunities.

Annual global government spending on renewable energy industries has increased by over 30% over the last five years. Large economies have increasingly delivered strategic industry development policies. The US *Inflation Reduction Act* will invest \$369b in domestic renewable energy projects, while the EU's proposed *Net-Zero Industry Act* aims to accelerate European public investment in renewables. To capture the economic opportunities from the global transition, Australian policy action must now be faster and more ambitious.

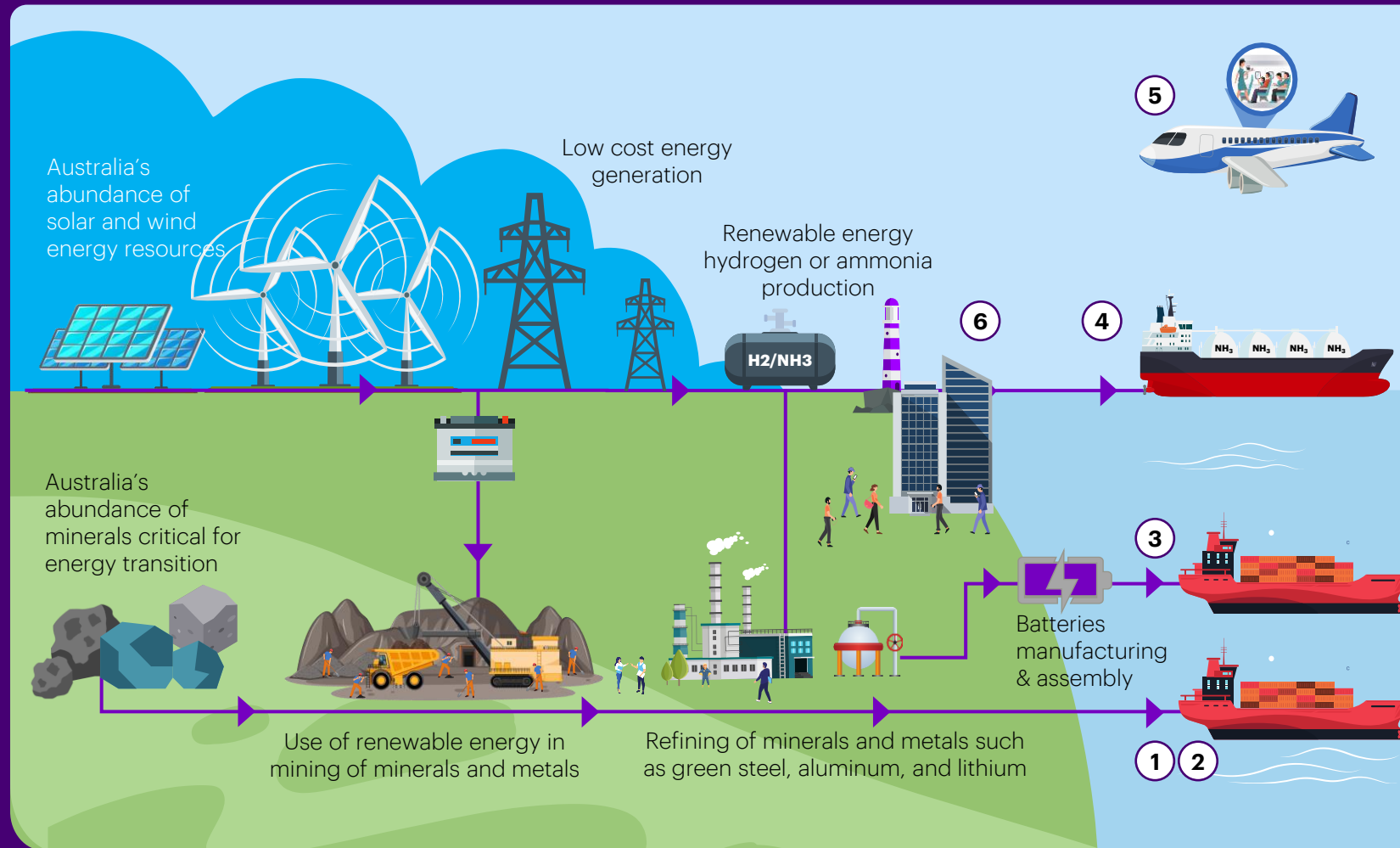
We recommend three Government actions for the 2023-24 Budget to accelerate our energy transition and grow our renewable export opportunities:

- **Recommendation 1:** Commit \$10 million in the 2023-24 Budget for the Net Zero Economy Taskforce to develop a National Renewable Exports Strategy.
- **Recommendation 2:** Develop a coordinated National Renewable Infrastructure Plan to urgently accelerate the development of new renewable energy in Australia.
- **Recommendation 3:** Establish and fund an independent national-level Energy Transition Authority.



In 2021, we set a vision for Australia's low-emissions future with six renewable export opportunities which could support over 400,000 jobs per year by 2040

Figure 1: Australia's renewable industries and exports ecosystem



Opportunities	2040 potential GVA, jobs
1 Critical minerals Export of critical minerals in raw or value-added form that are required for renewable energy technologies	\$20-25b 100k jobs
2 Green metals Processing and export of high-value metals (e.g., steel) produced using renewable energy	\$20-25b 100k jobs
3 Batteries Export of batteries or battery components manufactured in Australia	\$20-25b 100k jobs
4 Renewable hydrogen and ammonia Export of hydrogen and ammonia produced with renewable energy	\$20-25b 30-50k jobs
5 Education exports International student enrolments in renewable energy related fields of study at Australian universities	\$10-15b 50-70k jobs
6 Green professional services Export of services required to scale renewable energy projects globally (e.g., engineering, ICT)	\$5-10b 30-50k jobs

These export opportunities are now expected to contribute **\$100B+ in GVA** and support **400k+ jobs** p.a. by 2040.

To realise this vision, Australia must develop four pillars: export industries, renewable buildout, electrification, and an Energy Transition Authority

We can only achieve our vision of over 400,000 renewable industry jobs if we accelerate our energy transition. This requires us to develop four mutually reinforcing pillars: world-leading renewable export industries, sufficient domestic renewable buildout, widespread electrification, and an Energy Transition Authority. Each pillar is necessary, and none can be developed independently of the others.

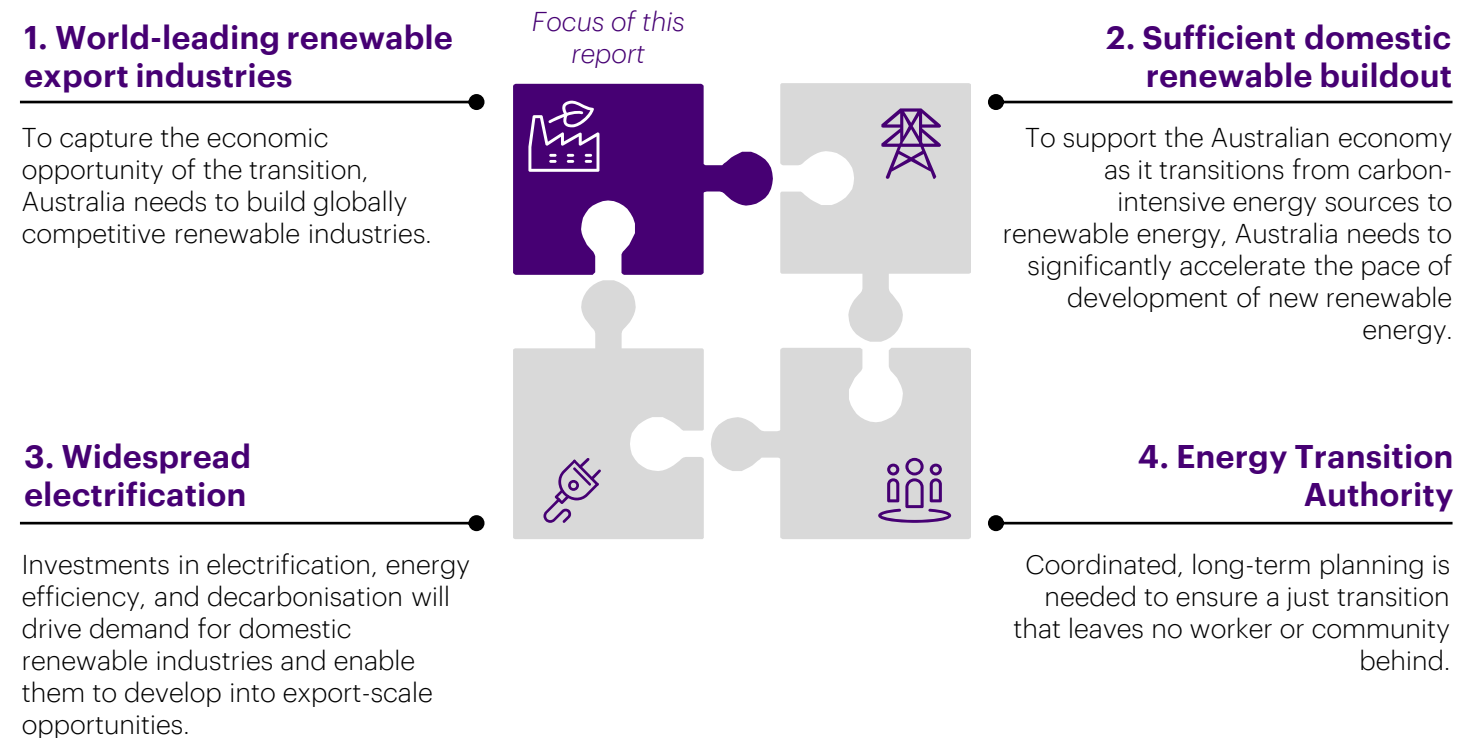
Australia must build world-leading renewable export industries to capture the economic opportunity of the energy transition, while doing our part to help the world combat climate change.

To realise our renewable exports opportunity, Australia will need the scale of domestic renewable energy to ramp up accordingly — by 2040, Australia's National Electricity Market (NEM) will need to support a sixfold increase in electricity generation to support these renewable export industries.

Our renewable export industries will also require widespread electrification. We must ramp up industrial electrification to ensure our burgeoning renewable export industries are powered by green electrons produced by that renewable buildout. We must also ramp up commercial and household electrification to create domestic demand, to scale up our renewable industries to export scale.

In realising our renewable exports potential, Australia also needs an Energy Transition Authority to ensure that we are maximising the benefits and minimising the risks of the transition, while ensuring that no worker or community is left behind.

Figure 2: Four mutually reinforcing pillars of the energy transition



Australia has started to lay the groundwork for the transition, with positive steps across all four pillars





Over the past year, the Federal Government made some positive steps towards all four pillars of the transition.

Our renewable industries and exports are poised for growth, with the Government committing up to \$3 billion from the National Reconstruction Fund for renewables and low-emissions technologies, and an additional \$1 billion for value-adding in resources.

Australia is now in a better position to accelerate its renewable buildout, with significant investment in grid infrastructure through Rewiring the Nation and the Capacity Investment Scheme. While there has been limited Government action to accelerate electrification, the Government has begun to explore lowering costs and emissions on the demand-side of energy markets through its consultations to develop its National Energy Performance Strategy.

The Government has, furthermore, established a Net Zero Economy Taskforce to make recommendations on national just transition policy, a process slated to conclude in the first half of 2023.

Figure 3: Examples of Government actions to support the transition

	Energy transition pillar	Government initiative	Progress
	World-leading renewable export industries	National Reconstruction Fund	A \$15 billion fund which provides loans, equity investment, and guarantees to finance projects that aim to develop strategic industries. A maximum of \$3 billion is allocated to renewables and low-emissions technology projects, with an additional \$1 billion for value-adding in resources.
	Sufficient domestic renewable buildout	Rewiring the Nation Capacity Investment Scheme	A \$20 billion fund for projects which modernise and rebuild Australia's electricity network, to enable greater integration of technologies like renewable hydrogen and batteries. A government revenue underwriting mechanism that will unlock around \$10 billion in public and private sector investment in zero-emissions dispatchable generation and storage technologies.
	Widespread electrification	National Energy Performance Strategy	The Government has commenced consultations to develop a new strategy to improve energy efficiency and affordability.
	Energy Transition Authority	Net Zero Economy Taskforce	The Net Zero Economy Taskforce aims to make recommendations to the Government around national-level just transition policy.

Note: Figures are in Australian dollars.

Sources: Department of Industry, Science and Resources (2022); Prime Minister of Australia (2022); Department of Climate Change, Energy, Environment and Water (2022, 2023a, 2023b); Department of Prime Minister and Cabinet (2023).

While Australia has made progress against its export opportunities, more action is needed for Australia to become a leading exporter

To become a global leader, more progress is needed across all opportunities. In particular, Australian governments should focus on the largest opportunities that require the most additional government support: critical minerals, green metals, and batteries.

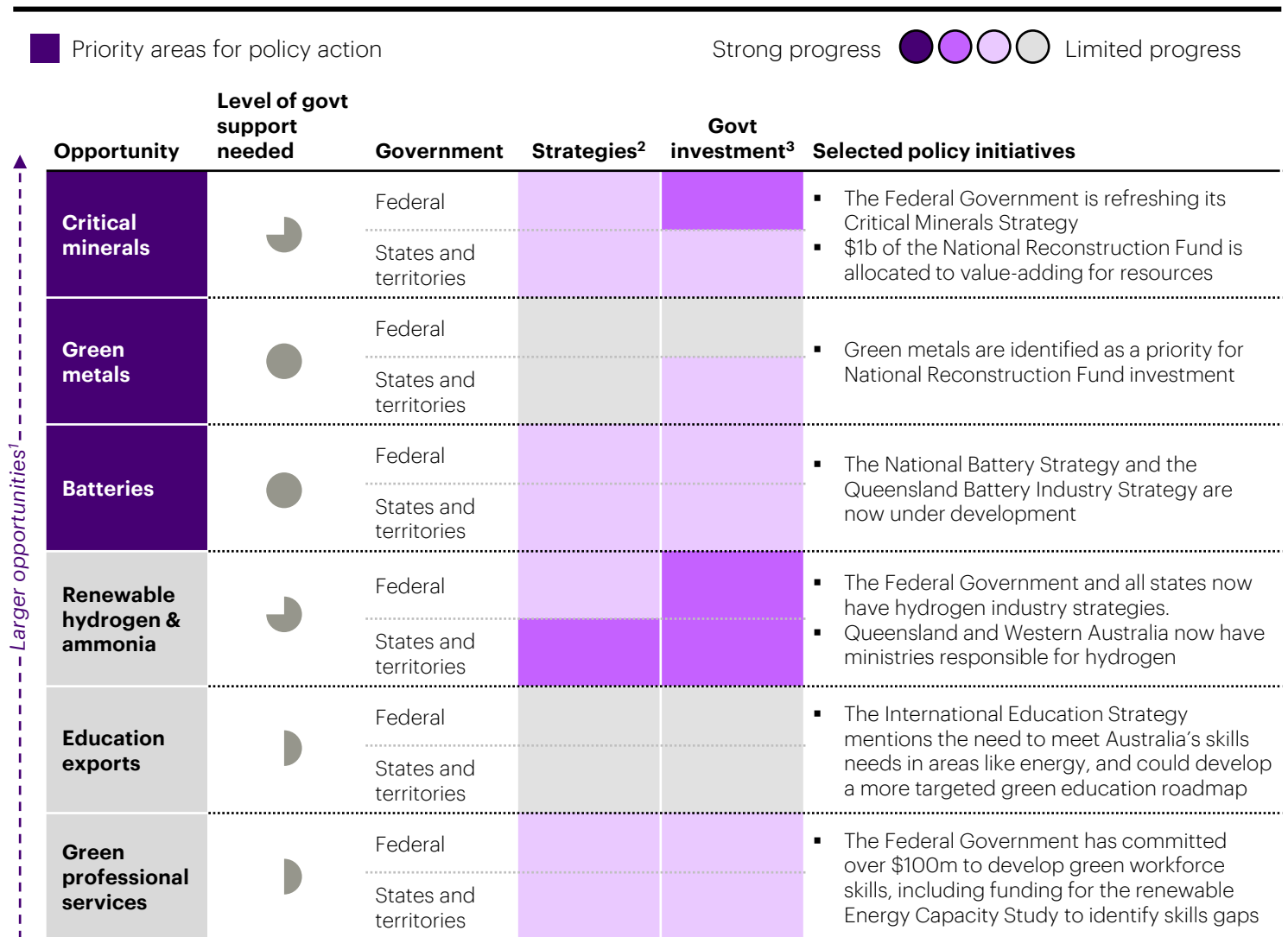
For critical minerals, \$1 billion of the National Reconstruction Fund has been allocated to value-adding for resources. However, greater investment is needed to match the scale of the critical minerals opportunity.

The green metals sector has also been identified as a priority for National Reconstruction Fund investment. There is now an opportunity for governments to commit significant investments in green metals, informed by new national and regional-level industry development strategies.

Governments have also made some progress in batteries with the National Battery Strategy and Queensland Battery Industry Strategy currently under development, but more action is now needed for Australia to become a leading exporter in batteries.

Notes: (1): Opportunity size assessed by jobs and GVA potential. (2): Strategy progress is based on an assessment of the number and quality of strategy documents published. A detailed assessment of strategies is in the appendix. (3): Government investment is based on the amount of funding committed since 2022. A detailed assessment of investment is in the appendix.

Figure 4: Government policy progress against the six key export opportunities



A detailed assessment of government policy progress is in the appendix.

The global race to develop renewable industries has intensified, requiring Australia to accelerate its policy action across all opportunities

Since the first *Sunshot* report was released in 2021, governments across the world have accelerated and amplified their investments in their local renewable energy industries. For Australia to remain competitive, we need stronger policy action, faster.

Globally, growth in government investment in renewable energy industries has soared from 1% p.a. in 2016 – 2020 to 12% p.a. in 2020 – 2022. Many countries have accelerated their renewables investments to insulate themselves from energy price volatility. This is particularly true in Europe, where gas prices increased tenfold from 2021 to 2022. Further, there has been increased public and private sector pressure to accelerate the energy transition, with ESG funds growing from 3% to 16% of global assets under management between 2015 and 2021.

Governments are also implementing increasingly ambitious policies to support their domestic renewable industries. Most notably, in 2022, the US enacted the *Inflation Reduction Act* which includes \$US369 billion of renewable energy subsidies and grants. More recently, the EU responded with its proposed *Net-Zero Industry Act*, which aims to unlock state subsidies to accelerate European renewable industry development. This worldwide shift in policy means that Australia must urgently deliver policy action to avoid being left behind in the new global race for green capital.

Sources: International Energy Agency (2022); BBC News (2022); BCG (2022); PwC (2022); Equal Ocean (2022); The Economist (2023); European Commission (2022, 2023); Energy Storage News (2022); Accenture analysis.

Figure 5: Global government spending on renewable energy projects

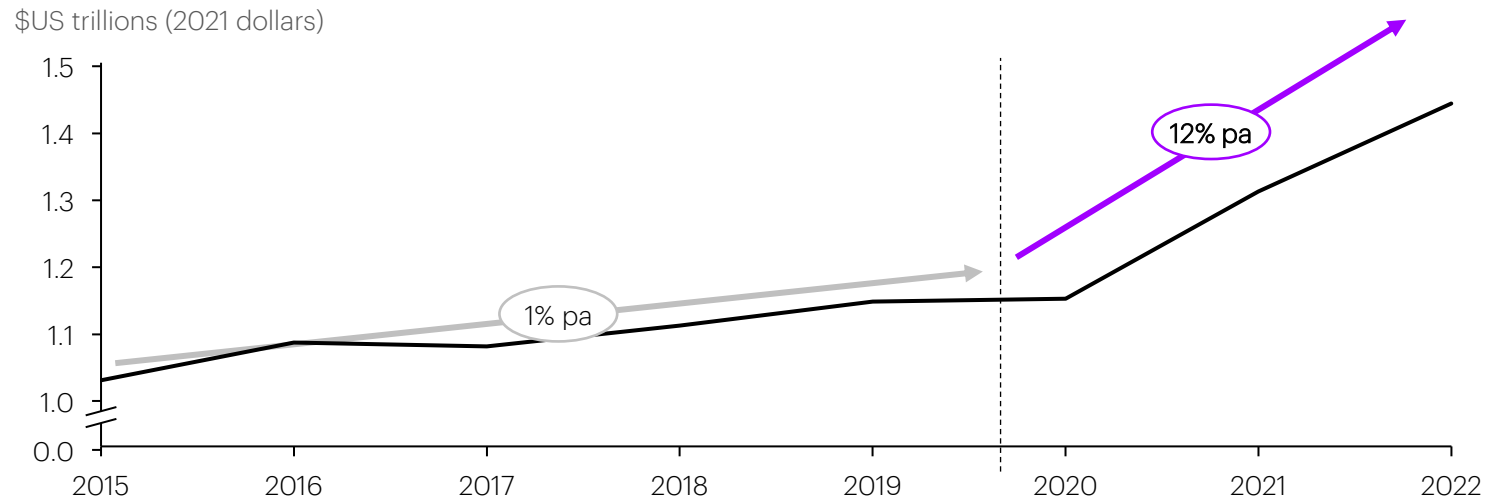


Figure 6: Examples of domestic renewable industry policies

Economies	Examples
US	Inflation Reduction Act: \$US369 billion (A\$550 billion) in investment in renewable energy and climate change projects, with significant local content requirements for some subsidies.
EU	REPowerEU: A comprehensive policy strategy which aims to improve EU energy security while accelerating the EU's transition to renewable energy through more than €210 billion (A\$330 billion) in investment over the next five years. Net-Zero Industry Act: A proposed temporary relaxation of state aid rules to facilitate and expedite industry subsidies.
Canada	New investment tax credits for renewables: Canada has announced plans to introduce 30% refundable tax credits for technologies like solar PV, batteries, and hydrogen.
India	Production Linked Incentives: US\$2 billion (A\$3 billion) in grants to support plans to build 5GWh+ gigafactories.

To develop competitive renewable industries, Australia should pursue three priorities to accelerate our energy transition




To accelerate the energy transition and achieve our vision for Australia’s low-emissions future, Australia should pursue three priorities in the 2023-24 Budget.

To develop our renewable industries and exports, Australia should commit to a National Renewable Exports Strategy in the 2023-24 Budget. This Strategy will unify technology and jurisdiction-specific initiatives to grow our renewable industries from infancy to export-scale.

Australia should also accelerate its renewable buildout by funding and developing a National Renewable Infrastructure Plan to accelerate the pace of development of new renewable energy. Australia will require significant additional generation and transmission capacity to support our economy as it transitions from carbon-intensive energy sources to renewable energy. Alongside the increased uptake of renewable energy, ongoing decarbonisation efforts are critical for ensuring Australian industries and businesses remain competitive for export opportunities.

Australia should also develop an Energy Transition Authority, which will bring together representatives from government, industry, unions, and affected communities to ensure workers and regional economies are well-supported as Australia transitions to a low-carbon economy.

Figure 7: Three policies to accelerate Australia’s energy transition

Energy transition pillar	Recommendations for the 2023-24 Budget	Why this matters
World-leading renewable export industries	 <p>1. Commit \$10 million in the 2023-24 Budget for the Net Zero Economy Taskforce to develop a National Renewable Exports Strategy.</p>	A national strategy is needed to unify technology-specific initiatives across different levels of government, and to unlock key trade opportunities.
Sufficient domestic renewable buildout	 <p>2. Develop a coordinated National Renewable Infrastructure Plan to urgently accelerate the development of new renewable energy in Australia.</p>	A plentiful and stable supply of renewable energy is needed to support world-leading renewable industries, and to power the electrification of households, industry, and transport.
Widespread electrification		
Energy Transition Authority	 <p>3. Establish and fund an independent national-level Energy Transition Authority.</p>	An Energy Transition Authority supports workers and communities impacted by the transition, while ensuring they have diversified economies with good jobs, and that Australia has the workforce needed to power its renewable industries.

Australia needs a National Renewable Exports Strategy that develops renewable industries domestically and unlocks export opportunities



Recommendation 1:

Commit \$10 million in the 2023-24 Budget for the Net Zero Economy Taskforce to develop a National Renewable Exports Strategy.

The Government should allocate \$10 million in 2023-24 Budget funding to extend the mandate of the existing Net Zero Economy Taskforce to the development of a National Renewable Exports Strategy.

This Exports Strategy should set out a coherent national roadmap for public and private sector action to grow our renewable industries from infancy to export scale. The Strategy should be comprehensive, and cover a range of policy relevant considerations, including environmental, employment, education, and industry policy. The Net Zero Economy Taskforce is best-positioned to develop this Exports Strategy, which it should pursue after it has completed its initial mandate regarding just transition policy. The Net Zero Economy Taskforce's cross-agency reach, and consultations with communities and all levels of government, reflects the breadth of dimensions required to formulate a successful Exports Strategy.

The Exports Strategy should explore targeted tax credits and low-interest loans to (e.g., via the Clean Energy Finance Corporation) to stimulate growth in renewables-powered exports in those parts of global supply chains where Australia has a clear competitive advantage. Focus areas of the strategy could include:



Building a cross-industry renewable exports ecosystem centred around renewable energy industrial precincts

Renewable energy industrial precincts can grow our renewable exports ecosystem by allowing producers to co-locate in an area that is preapproved for industry use. These precincts should be certifiably powered by abundant renewable energy resources, value-adding to existing industry and attracting new businesses and workers.



Workforce skills development to power the energy transition

To realise our renewable exports vision, Australia will need to upskill over 150,000 additional workers by 2050 in renewable energy industry skills. This includes trade skills to accelerate energy infrastructure buildout, and specialised expertise in batteries and hydrogen technologies. Our National Renewable Exports Strategy should set out a pathway to achieve the skilled workforce needed to accelerate our transition.



Interjurisdictional coordination between all levels of government

The Exports Strategy should coordinate key policies across all levels of government to ensure that Australia has a coherent approach to renewable industry and export development. For example, the Strategy could facilitate coordination between Rewiring the Nation and various federal and state hydrogen industry strategies to ensure that hydrogen's integration into the electricity network is considered in transmission infrastructure projects.



Strengthening Australia's trade relationships with key export partners

Our National Renewable Exports Strategy should include priorities to seek strategic export markets and to negotiate for lower trade barriers on Australia's key industry exports, like critical minerals and battery cells. For example, while Australia has an Economic Cooperation and Trade Agreement with India, India retains 15% tariffs on Australian lithium-ion battery imports. The Exports Strategy should seek to reduce such trade barriers to grow Australia's renewable export industries.

The Exports Strategy should accelerate progress on Australia's export opportunities, starting with its three priority areas: critical minerals, green metals, and batteries

Australia's National Renewable Exports Strategy should lay out a roadmap for industry development across Australia's six key renewable export opportunities. It should have a particular focus on actions that will have the greatest impact in green metals, batteries, and education exports. These actions could include:



Critical minerals:

Incentivise value-adding by prioritising approvals for critical mineral miners that contract to supply raw mineral inputs to domestic refiners

Value-adding in critical minerals has the potential to become a substantial driver of future prosperity in the Australian economy. By 2030, critical mineral refining could generate over A\$3 billion in GVA, while directly supporting over 15,000 jobs. However, with less than 1% of global market share in critical mineral refining, Australia requires significant policy action to capture this sizeable export opportunity.

A key challenge that is limiting the growth of critical minerals mining in Australia is the limited domestic raw mineral feedstock available to Australian refiners. This is particularly a challenge for Australian lithium refiners, who lack access to lithium spodumene due to the prevalence of international offtake agreements. To address this, as part of the current Critical Minerals Strategy refresh, the Government could prioritise mining approvals for critical mineral miners that contract to supply raw minerals to Australian refiners, ensuring that domestic refiners have access to sufficient quantities of feedstock.



Green metals:

Develop a National Green Metals Strategy with measurable targets by the end of 2023

Green metals exports has the potential to support over 100,000 jobs and contribute over A\$20 billion per year to the Australian economy by 2040. To achieve this, Australia needs to develop advanced metalmaking capabilities with a strong local supply chain. While green metals is identified as a priority area of investment under the National Reconstruction Fund, there are not yet any significant government strategy documents that set out how Australia can reach its 2040 vision. The development of a renewable hydrogen industry to deliver affordable and abundant renewable hydrogen will be critical for the growth of Australia's green metal capability and meeting this objective.

To become a global leader in green steel exports, Australia should develop a National Green Metals Strategy by the end of 2023, which dovetails into our National Renewable Exports Strategy.



Batteries:

Attract 'lighthouse' tenants in active materials and cell manufacturing to bolster domestic experience and capabilities

Australian governments could deliver policies to attract established global active materials and cell manufacturers, such as offers of tax credits, guaranteed refined lithium offtake, and expedited permitting. Locating 'lighthouse' tenants at the centre of a battery hub will facilitate knowledge transfer and accelerate the development of domestic capabilities.

Hastened policy action on the four pillars of the energy transition will lower the barriers to attracting established global producers by providing potential lighthouse tenants with reliable access to renewable energy and local supply chains with world-leading environmental, social, and governance credentials.

With Japan, the US, and Germany all developing renewable industry and export strategies, Australia urgently needs its own Renewable Exports Strategy to avoid being left behind

Australia's peers, including Germany, and the US, have developed renewable industry development and export strategies. Australia can now draw on progress from overseas to develop its own comprehensive National Renewable Exports Strategy.

Case study: Japan



Japan's Green Growth Strategy identifies 14 growth sectors that can help Japan realise carbon neutrality by 2050

The Green Growth Strategy aims to create a 'virtuous cycle of economy and environment' through ambitious policy and investment in key sectors of the economy. Key features of the Strategy include:



Identification of 14 growth sectors: The Strategy identifies 14 areas where the greatest emissions reduction progress can be made, including energy industries (e.g., offshore wind), manufacturing (e.g., batteries) and home/office industries (e.g., housing).



A US\$18b Green Innovation Fund: The Fund will support R&D and capital investment across the 14 growth sectors over the next 10 years to catalyse renewable industry innovation and growth.



A focus on strengthening international partnerships: The Strategy includes efforts to strengthen Japan's partnerships with the US and EU to develop strong and secure renewable energy supply chains.

Case study: United States



The US renewable industry strategy prioritises financial support, supply chain security, and workforce skills

While the US Renewable Energy Technology Export Competitiveness Strategy is currently under development, the Department of Energy's (DOE) transition strategy's priorities include:



Financial support to bolster international competitiveness: DOE calls increased funding for manufacturing facilities and infrastructure that support US exports.



Diversification and strengthening of global supply chains: The strategy includes leveraging international energy dialogues with 'like-minded' countries to bolster supply chains.



Attracting and supporting a skilled workforce: Relevant government departments will develop targeted plans to develop training and apprentice programs.

Case study: Germany



Germany's Energy Export Initiative supports energy businesses to enter export markets

The Energy Export Initiative primarily supports small and medium-scale businesses export renewable energy technologies (like smart grids and storage) by:



Catalysing partnerships with overseas firms and universities: The Initiative organises trade exhibitions and seminars to connect domestic renewable energy producers with potential customers or partner universities overseas.



Delivering trade events and expert mentoring: The Initiative offers expert mentoring to renewable energy businesses to help them overcome challenges in product development and export market entry.

Australia should establish a coordinated national plan to accelerate the development of new renewable energy to meet the needs of our future low-carbon economy



Recommendation 2:

Develop a coordinated National Renewable Infrastructure Plan to urgently accelerate the development of new renewable energy in Australia.

As an essential complement to the National Renewable Exports Strategy, the Government should develop a coordinated National Infrastructure Plan to accelerate the development of new renewable energy.

The Plan must ensure that Australia is on pace to meet and exceed its goal of 82% renewable energy in the NEM by 2030, and then to expand the capacity of the NEM by up to 6 times by 2040, in line with AEMO's 'Hydrogen Superpower' scenario — which lays out a pathway to maximising the value of renewable export industries.

As a first step, the Plan should explore and model the impacts of increasing and extending the legislated Renewable Energy Target (RET) beyond 2030, to at least 2035. The Plan should also explore a targeted federal investment program that leverages private and state investment in multi-user infrastructure on a precinct level (e.g., via the Powering the Regions fund). This Plan should complement other existing policies, including Rewiring the Nation, state-based policies (e.g., Long-Term Energy Service Agreements in NSW), and the National Reconstruction Fund.

Australia will need plentiful and reliable renewable energy to power its low-emissions future. Australia's renewable export industries will need a stable supply for renewable energy to operate. The electrification of households, industry, and transport — another essential piece of Australia's decarbonisation puzzle — will also rely on the development of an expanded grid run on renewable power. Significant public and private sector investment in new renewable generation and transmission will be needed to ensure that Australia has sufficient renewable energy to support an accelerated transition.

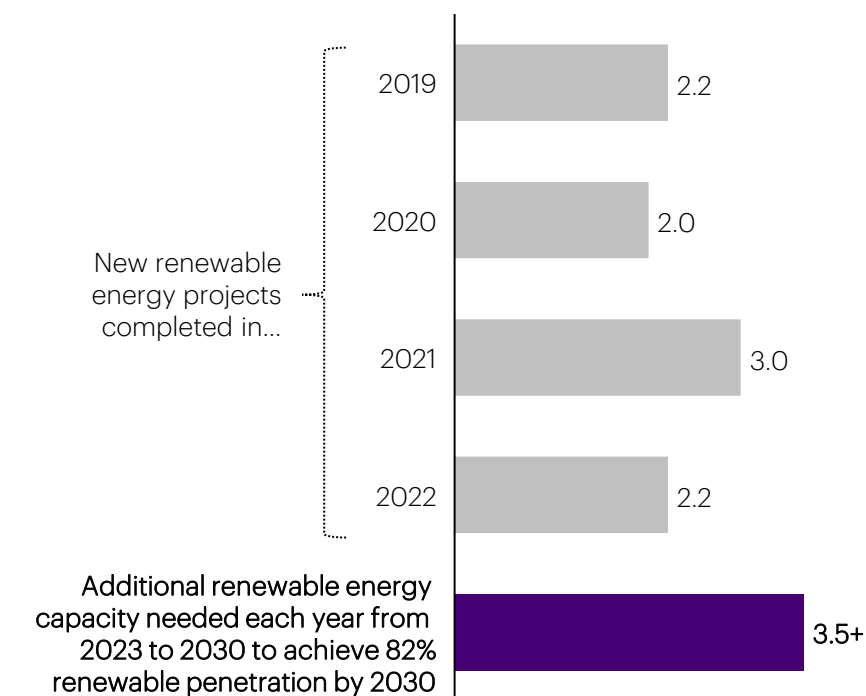
In the most likely future scenario ('Step Change'), Australia's NEM will need to:

- **Increase renewable energy penetration** from 28% in 2021 to 82% by 2030.
- **Accelerate the pace of grid-scale renewable deployment** from 2.2GW in 2022 to over 3.5GW per year from 2023 to 2030.
- **Add 10,000km of new transmission** by 2050 to efficiently deliver renewable energy to users.

To develop leading renewable export industries, Australia will need to go even further, with a sixfold expansion of the current NEM by 2040. Australia therefore needs a coordinated Plan to urgently accelerate renewable buildout with a long-term view of planning and delivering on Australia's energy needs in a manner that is good for communities and workers, and does not damage nature. We cannot deliver on a successful National Renewable Exports Strategy without ensuring we have the renewable power to undergird it.

Figure 8: Rate of grid-scale renewable energy deployment in the NEM

GW capacity of new grid-scale renewable energy, by year



Australia should also develop a new Energy Transition Authority to ensure an accelerated just transition that leaves no worker behind



Recommendation 3:

Establish and fund an independent national-level Energy Transition Authority.

The Government should immediately establish and fund a national Energy Transition Authority with regulatory power, financial sustainability, and a long-term independent mandate.

The Authority should be governed by representatives from government, industry, unions, and affected communities. It should work to support, coordinate, and complement existing region-led transition planning processes, starting with the regions experiencing closures of coal-fired power plants.

The functions of the Energy Transition Authority should include:



Worker support: Develop and administer comprehensive labour adjustment packages and policies to guarantee energy workers affected by the transition have access to quality, secure, and safe jobs. Policies should include industry-wide redeployment schemes, education and training, income replacement, relocation packages where necessary, and early retirement where appropriate.



Regional economic diversification: Support regional transition bodies to develop and fund robust and iterative economic diversification plans driven by local stakeholders, while using federal incentives and investments to drive new renewable energy industries into transitioning regions.



Education and training: Collaborate with Jobs and Skills Australia to develop new education and training packages, as well as new educational institutions as needed, to meet the workforce demands of new industries established in energy regions.

Case study: Spain



Spain's Just Transition Strategy includes an Urgent Action Plan which is backed by a Just Transition Institute and Just Transition Agreements

In 2019, the Spanish Government launched their Just Transition Strategy to maximise the benefits and address the challenges of the energy transition in the country's coal regions. The Strategy includes dedicated long-term funding covering three components:



Urgent Action Plan: Guarantees rapid-response economic support for workers and communities experiencing immediate closures of coal mines or coal-burning power plants.



Just Transition Institute: An independent governmental body with the rank of Directorate General. The Institute is exclusively devoted to deploying measures to ensure a just transition the affected territories, supporting regional transition planning, and coordinating the inclusion of just transition needs in the Government's public policies.



Just Transition Agreement: place-based regional transition plans developed through a participatory negotiation process involving unions, workers, local governments, and community members and supported by the national Just Transition Institute. The Agreements — 14 of which have been negotiated so far — cover the provision of policies including clean energy job banks, education and (re)training for workers, early retirement packages where appropriate, ecological restoration projects employing former coal workers, and priority investment in local renewable projects, municipal infrastructure and small businesses.

Appendix

While there are some federal and state-level renewable industry strategies, many do not have clear production targets or time-bound targets

Government progress on strategies is assessed based on four factors:

1. The number of government strategy documents that have been published or are under development across Australian jurisdictions
2. Evidence of clear policy actions or next steps
3. Evidence of clear production targets, such as volume or production price targets
4. Evidence of time frames on targets

Figure A1: Government strategies for the six key export opportunities

Opportunity	Government	Name of strategy	Year first introduced	Clear options?	Clear production targets?	Time-bound targets?
Critical minerals	Federal	Critical Minerals Strategy	2019	✓	✗	✗
	NSW	NSW Minerals Strategy	2019	✓	✗	✓
	Western Australia	WA Future Battery and Critical Minerals Industries	2021	✓	✗	✗
Green metals	Federal	Low Emissions Technology Statement	2020	<i>Not a strategy document</i>	✓	✓
Batteries	Federal	National Battery Strategy	Under development	?	?	?
	Federal	Low Emissions Technology Statement	2020	<i>Not a strategy document</i>	✓	✓
	Queensland	Powering Queensland's battery industry	Under development	?	?	?
	Western Australia	Future Battery Industry Strategy Western Australia	2020	✓	✗	✗

While there are some federal and state-level renewable industry strategies, many do not have clear production targets or time-bound targets

Figure A1: Government strategies for the six key export opportunities (continued)

Opportunity	Government	Name of strategy	Year first introduced	Clear actions	Clear production targets	Time bound targets
Renewable hydrogen and ammonia	Federal	Australia's National Hydrogen Strategy	2019	✓	✗	✓
	Federal	Low Emissions Technology Statement	2020	<i>Not a strategy document</i>	✓	✓
	NSW	NSW Hydrogen Strategy	2021	✓	✓	✓
	Victoria	Victoria Renewable Hydrogen Industry Development Plan	2019	✓	✗	✗
	Queensland	Queensland Hydrogen Industry Strategy	2019	✓	✗	✗
	South Australia	SA Hydrogen Action Plan	2018	✓	✗	✗
	Western Australia	WA Renewable Hydrogen Strategy	2021	✓	✗	✓
	Tasmania	Tasmania Renewable Hydrogen Action Plan	2020	✓	✗	✓
	Northern Territory	NT Renewable Hydrogen Strategy	2021	✓	✗	✗
Education exports	<i>No significant strategy documents.</i>					
Green professional services	<i>No significant strategy documents.</i>					

Federal, state, and territory governments have committed varying levels of funding across the renewable export opportunities

Figure A2: Announced funding commitments across the six key export opportunities (non-exhaustive)

Opportunity	Government	Description	Source
Critical minerals	Federal	\$1 billion allocated from the National Reconstruction Fund for value-adding in resources.	Parliament of Australia (2022)
		\$50 million Critical Minerals Development Program, which involves competitive grants to support early and mid-stage critical minerals projects.	Department of Industry, Science, Energy and Resources (2022)
		\$50.5 million Critical Minerals R&D Hub.	Department of Industry, Science, Energy and Resources (2022)
		\$2 billion Critical Minerals Facility administered by Export Finance Australia.	Export Finance Australia (2022)
Green metals	Federal	Up to \$3 billion of the National Reconstruction Fund will be allocated to investments in green metals (steel, alumina and aluminium), clean energy component manufacturing, hydrogen electrolyzers and fuel switching, agricultural methane reduction, and waste reduction.	ALP (2022)
Batteries	Federal	\$100 million pledged for a battery manufacturing precinct in Queensland.	Australian Financial Review (2022)
	Victoria	\$119 million in funding for a 125MW big battery and grid forming inverter.	Premier of Victoria (2022)
	Queensland	\$500 million for Queensland publicly owned energy businesses to invest in battery projects.	Queensland Government (2023)

Federal, state, and territory governments have committed varying levels of funding across the renewable export opportunities

Figure A2: Announced funding commitments across the six key export opportunities (non-exhaustive, continued)

Opportunity	Government	Description	Source
Renewable hydrogen and ammonia	Federal	\$525 million in investments for in hydrogen hubs overall, including the \$454 million Regional Hydrogen Hubs program which covers projects in Gladstone, the Hunter Valley, the Pilbara, Port Bonython, and Bell Bay.	Department of Prime Minister and Cabinet (2022)
		\$70 million in investment to support the development of a hydrogen hub in Townsville.	Department of Prime Minister and Cabinet (2023)
		\$13.7 million grant for Fortescue Future Industries and Incitec Pivot to develop hydrogen facility through ARENA.	Department of Climate Change, Energy, Environment and Water (2022)
		\$50 million committed to the HyGATE initiative, a joint hydrogen innovation project with Germany.	Australian Renewable Energy Agency (2023)
	New South Wales	\$1.05 billion to build NSW's clean manufacturing base into new renewable technologies, including green hydrogen and green metals. This investment is in addition to \$3 billion in Government incentives in the NSW Hydrogen Strategy.	NSW Department of Planning and Environment (2022)
	Queensland	\$70 million to support the development of a hydrogen hub in Townsville (matching Federal funding).	Department of Prime Minister and Cabinet (2023)
Western Australia	\$3.8 billion investment in renewable energy and energy storage, which includes funding for battery projects.	Government of Western Australia (2022)	
Education exports	No significant targeted funding.		
Green professional services	Federal	Over \$100 million committed for 'Skilling the Clean Energy Workforce' as part of the Powering Australia Plan, which includes funding for a Clean Energy Capacity Study to identify and address green skills gaps.	Ministers of the Employment and Workplace Relations Portfolio (2022)
	Victoria	\$11 million for the Growing our Clean Energy Workforce package, which includes upskilling programs for workers in renewable energy industries.	Solar Victoria (2022)

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