WWF AUSTRALIA

RENEWABLES NATION

RENEWABLE SUPERPOWER SCORECARD #3 2022

MAKING AUSTRALIA A RENEWABLE EXPORT SUPERPOWER

WWF-Australia Renewable Superpower Scorecard, Third Edition, December 2022

Acknowledgements

WWF-Australia acknowledges the Traditional Custodians of Country throughout Australia and their continuing connection to land, water and culture. We pay our respects to their Elders – past, present and emerging.

WWF-Australia wishes to express our gratitude to the following individuals and organisations who contributed advice and expertise to assist in developing this report, but responsibility for the content rests with the authors (WWF-Australia, Acacia Sustainability [Daniel Zelcer / Sydney Neijmeijer] and Louise Matthiesson):

- Nicky Ison;
- Tim Baxter;
- RE-Alliance;
- Clean Energy Investor Group; and
- A wide number of climate and environment organisations who provided their knowledge and input.

WWF is one of the world's largest and most experienced independent conservation organisations, with over 30 million supporters and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

WWF-Australia is one of Australia's most trusted conservation organisations. For more than 40 years, WWF-Australia has worked to protect threatened species and habitats, meet the challenge of climate change, and build a world where people live in harmony with nature.

WWF-Australia National Office

Level 1/1 Smail Street, Ultimo NSW 2007
GPO Box 528, Sydney NSW 2001
Tel: +1800 032 551
enquiries@wwf.org.au

For contact details and further information, please visit our website at **wwf.org.au**

Front Cover photography:
© iStockphoto.com / Thurtell / WWF-Aus

© Adobe Stock / Tarnero / WWF-Aus

CONTENTS

© Adobe Stock / mark_gusev / WWF-Aus

FOREWORD

© WWF-Aus / Laurent Desarnaud

Dermot O'Gorman
CEO, WWF-Australia

I'm delighted to launch WWF-Australia's third consecutive Renewable Superpower Scorecard.

It was just three years ago that Ross Garnaut released his book *Superpower: Australia's Low-Carbon Opportunity*, laying out how Australia could become an economic superpower of the post-carbon world. At the time, the response from some Australian leaders was lukewarm. But what a difference three years can make!

Almost daily we are seeing new records for renewable power generation across the nation. Citizen power is leading the way - close to one-third of Australian households (that's 3.2 million households) now have solar on their roof, one of the highest rates in the world.[1] Commercial investment into big renewable-powered solutions continues to rapidly rise.

Since our first Scorecard, we have seen more and more Australian governments step up, in what is increasingly a race to achieve a net-zero future.

WWF-Australia congratulates the following governments for achieving outstanding results:

- NSW (71 points) has risen to first place with the highest total score of all jurisdictions - a win based on its breadth of policies and the implementation funds that have been put in place behind them.
- Tasmania (69 points) continues to shine, being only a couple of points behind in second place.
- Big shifts are underway in Queensland (+16 points), Western Australia (+15 points) and Victoria (+12 points) - all who have made big leaps forward over this last year.
- And the Australian Federal Government has made the biggest leap of all (+26 points), driven by a raft of policy and budget commitments since the 2022 election.

We are at the start of Australia's transition and so much more is possible. The Asia-Pacific region is home to half the world's people and its biggest and fastest growing economies. With unparalleled sun and wind resources, Australia is perfectly placed to redefine our role in the world - to become a renewable *exports* superpower, and a true global leader on climate solutions.

We can provide the Asia-Pacific region with renewable products, services and power that are good for people and good for the planet. This is also the best way for Australia to de-risk from our current dependence on polluting coal and gas exports.

The Australian Government recently announced its ambition to host the United Nations' Climate COP31 meeting in 2026, in partnership with Pacific nations. To ensure the support of other countries in securing our bid being successful, Australia will need to do more to lift its "credibility rating" on the global stage. Australia must demonstrate domestically smart and ambitious climate policy, and showcase our progress implementing solutions at speed and scale. And critically, the Australian Government will need to deliver well-funded policies that listen to, and incorporate, the experiences and knowledge of First Nations and Pacific peoples.

But it's not only about speed and scale. We need to do this well – and that means in ways that work for *people and nature*. As humanity we can not afford to approach these opportunities with a narrow industrial growth mindset. Nature and communities must be at the heart of the solutions.

According to the World Economic Forum (WEF), today we are in the midst of a "fourth industrial revolution … a new chapter in human development … merging the physical, digital and biological worlds and fusing technologies in ways that create both promise and peril." But, I believe we need to challenge nearly four centuries of industrial mindset, and instead make this the first "regenerative revolution".

What does a regenerative revolution look like?

It's about transforming our economy from a linear industrial machine - consuming resources relentlessly for growth - to an economy that is circular, purpose-driven, and renewably powered.

To do this transformation well, we need to look beyond the mitigation of impacts of renewables infrastructure on nature and communities, and instead embrace the opportunities to *regenerate* nature and communities. First Nations people must steer and benefit from the transition to renewables and Australia must step up to its development responsibilities to partner with its neighbours in the Asia-Pacific region.

The good news is that today we have the knowledge, technology and connectivity to design and drive this regenerative revolution - with renewables at the forefront. Australia has everything it needs to harness this opportunity and become a renewable energy export superpower.
Let's get to it.

1. https://www.roymorgan.com/findings/9091-solar-energy-systems-on-households-more-than-double-since-2018-now-at-nearly-a-third-of-all-households

EXECUTIVE SUMMARY - KEY FINDINGS

The Renewable Superpower Scorecard presents a snapshot of how Australia's states, territories and the Australian Government are performing in the race to become a world leading renewable superpower.

The scores are backed by a rigorous, fair and independent comparison of each jurisdiction's policies, actions and progress across 11 categories of policy action (see pages 16 to 19 to learn more about our methodology).

This third edition provides an update on progress over the past twelve months, from November 2021 to November 2022.

Here's a simple summary of which governments are leading the way in the renewable exports race.

On pages 22 to 25 you can learn more about how the scores have changed over time, and which governments are leading on particular policy categories. Then on pages 34 to 51 you can find the detailed results for each jurisdiction, including any 'shining strengths' alongside areas for potential improvement.

Given the important intersection between government policy and capital markets, this year we have invited the Clean Energy Investment Group to provide an investor perspective on policies that will encourage their members from around the world to bring capital to power up Australian renewables (see page 8).

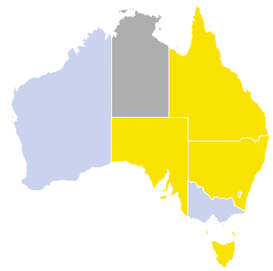
Seven policy themes that have emerged from our three years of policy assessment are outlined on pages 24 and 25. An overall theme has been the strong push to get the policy settings right for ramping up renewable energy, whilst falling short on developing renewable export strategies. Another key theme has been the increased policy focus on ensuring that First Nations, energy workers, low-income households and regional communities benefit from the energy transition and are meaningfully engaged in decision making.

On pages 26 to 29 we take a deep dive into policy considerations around the recycling of renewable technologies and opportunities for a circular economy.

Finally, to make things tangible, we have included three compelling case studies of Australian businesses that are well-placed as renewables exporters:

- 5B: Unique modular solar technology that enables the deployment of solar at speed and at scale;
- ReclaimPV Recycling: Australia's first solar panel recycler based in Adelaide, already expanded to South Australia and Queensland and with ambitions to go global; and
- Envirostream: Australia's first recycling company to safely transport, store and process batteries locally at the end of their life.

THE SCORES ARE IN

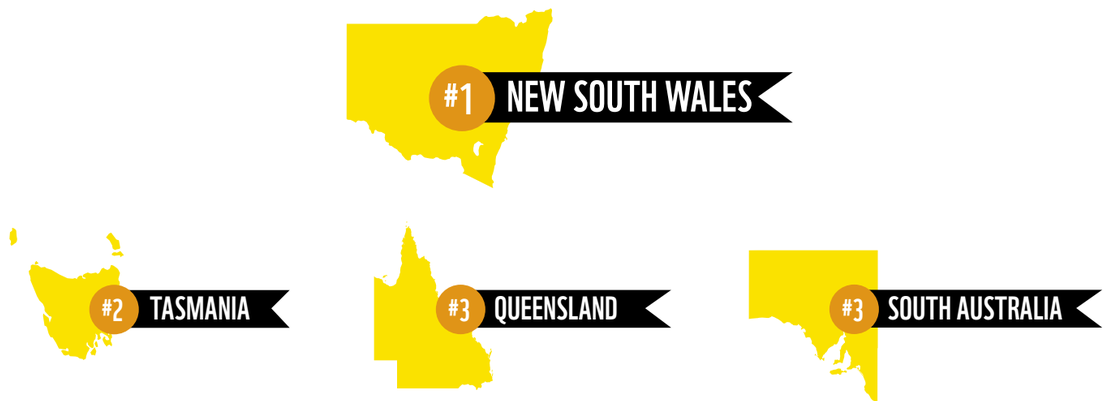


Which government is leading the way in the renewable exports race?

Government	Leaderboard	Score	Points change
New South Wales	#1	71	+12
Tasmania	#2	69	+8
Queensland	#3	64	+16
South Australia	#3	64	+9
Victoria	#4	59	+12
Australian Government	#4	59	+26
Western Australia	#5	54	+15
Northern Territory	#6	39	+2

Forecast: Shining Bright | Getting There | Must Shine Brighter

NSW leads the way, closely followed by TAS, QLD and SA.



INVESTOR PERSPECTIVE - CLEAR POLICY DIRECTION IMPROVES CONFIDENCE

Simon Corbell
CEO, Clean Energy Investor Group

Clean Energy Investor Group (CEIG) welcomes the WWF-Australia Renewable Superpower Scorecard because it tracks changes in government policies and that information helps investors and the public understand progress towards realising the energy transition.

Australia has vast, low-cost renewable energy resources that give us a competitive advantage in the global energy transformation. With the right policy settings, Australia could be well positioned to capture the opportunity to increase our export income through renewable powered materials, products and services such as hydrogen, critical minerals and green metals, advanced manufacturing, education and services.

The clean energy transition could deliver $320 billion in generation, storage and transmission investment just in the National Electricity Market (NEM) by 2050, according to the Australian Energy Market Operator's Integrated System Plan. This would see renewables delivering around 200% of the current capacity of the NEM. For Australia to electrify everything and capture the renewable export superpower opportunity, significant investment equivalent to around 700% of the current NEM will be required, as well as the creation of new jobs and economic development opportunities in existing and future industries.

CEIG is the voice for domestic and global renewable energy developers and investors in Australia. It represents domestic and global renewable energy developers and investors, with more than 11GW of installed renewable energy capacity across more than 70 power stations and a combined portfolio value of around $24 billion. CEIG members are also leading with major export-oriented projects beyond the NEM.

Last financial year, CEIG launched a quarterly survey of investor sentiment. This research consistently demonstrates that government policy vision and stability is critical to creating investable markets. The Q1 2022-23 survey found that investors reported improved confidence since the election of a new federal government which has passed the new Climate Act and is working cooperatively with states to manage the clean energy transition.

The new Australian Government has much more to do. There are legacy policy and regulatory obstacles in the National Electricity Market (NEM) which create elevated risk for investors. For example, the development of transmission networks is too slow. New clean energy projects face barriers obtaining access to the grid, and ongoing risks from grid congestion. These obstacles delay investment decisions and increase costs for consumers.

We are pleased to see governments are increasingly aligning with CEIG's Clean Energy Investor Principles in designing investable markets for clean energy investment. Ambitious state plans for storage, transmission and renewable energy zones, which are tracked in WWF-Australia's Scorecard, provide a good foundation for export-oriented growth.

We welcome state government initiatives to engage meaningfully with communities in Renewable Energy Zones and around transmission corridors. Governments are right to set expectations around benefit sharing. Investors support good policy that builds social licence for the massive investments in clean energy infrastructure that are required. Bringing communities along the journey will mean better local economic outcomes, higher quality infrastructure and lower risk for investors. For example, the NSW Government's work on benefits sharing for transmission projects and VicGrid's commitment to engage early with communities in areas of high intensity development are both positive developments.

With federal and state governments collaborating to build a positive investment environment in the NEM, they should now move to develop a coordinated framework to support renewable energy investment and exports.

A plan for clean energy exports has significant economic implications and should inform other areas of policy to ensure they are supportive. For example, CEIG has called on the Australian Government to ensure that superannuation reform supports long-term investment in clean energy infrastructure.

CEIG also supports the development of a credible Guarantee of Origin scheme to certify green hydrogen (and other commodities) which would help set the direction for Australia's exports and mitigate the impact of carbon border adjustments.

AUSTRALIAN INNOVATION FOR EXPORT-SCALE PROJECTS

5B - Unique modular solar technology

5B is an Australian company whose unique modular solar technology, the '5B Maverick', enables the deployment of solar panels at speed and at scale. Based in NSW, 5B delivers projects across Australia, as well as overseas, and have been named as the preferred technology supplier for the Sun Cable project in the Northern Territory. The Sun Cable project is a gigawatt-scale solar farm planned near Darwin that would see renewable energy exported to Asia via undersea cables. If constructed, it would be the largest solar and battery energy storage project in the world.

Accelerating the renewable transition at the speed needed to both make the most of Australia's opportunity and limit the effects of climate change is a real challenge. "To reach net-zero by 2050, we need to electrify almost everything, and we need to do it using clean energy," says Nicole Kuepper-Russell, 5B's Deputy CEO. "That means deploying upwards of 80 terawatts of renewable energy generation. It took the world 50 years to install the first terawatt of solar. The world now needs to install 80 times that - by conservative estimates - in half the time. We are not moving nearly fast enough. It's a challenge - but it's an enormous opportunity."

Solving the acceleration challenge is what 5B is most passionate about. 5B's Maverick technology can be deployed much faster than conventional solar arrays. This is because it is prefabricated in a factory and shipped to site. It is safer, faster, requires less people on site, and produces minimal waste. Soon it will be also deployed semi-autonomously. This allows for low-cost solar to be developed at speed and at scale.

With support from the federal government's Australian Renewable Energy Agency (ARENA) $14 million grant, 5B has been working to enhance their advanced manufacturing capability and robotic deployment program. 5B sees a real opportunity for governments to play a constructive supporting role that improves the employment prospects, particularly of young people living in remote and regional areas, where gigawatt-scale solar projects will be deployed. "The energy transition opens up amazing new opportunities for these communities and we're exploring a few options in this space at the moment," says Nicole. "Building the talent pool required to accelerate to net-zero will take time, and it is hugely important that this government - and all future governments around the world - continue to focus on and support education, development and re-skilling in this space." For 5B, becoming a renewable energy superpower means harnessing our opportunity with support from leadership and policy to do so. "Superpower status feeds through to higher levels of domestic employment, but also higher calibre intellectual property to export to demand markets like North America, Latin America and Asia. We've always thought of Australia as our sandbox, but to develop a world-class product, you need a world-class sandbox."

"We inspire (I hope) a generation of Aussie innovators and business entrepreneurs by demonstrating it can be done, and although it's cracking hard yakka, it's bloody fun too, and rewarding!"

“Without renewables there can be no future.”
Statement of UN Secretary General Antonio Guterres, made in September 2022 in the lead up to COP27

INTRODUCTION

Much has changed since our last Scorecard. The war in Ukraine has shown the stark reality of global reliance on fossil fuels and 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, including the US$369 billion package signed off by President Biden in the United States – perhaps the single boldest government investment in climate solutions yet seen.

With our world-best sun and wind resources, Australia has an unparalleled opportunity to become a renewable exports superpower and play a leadership role in decarbonising the Asia-Pacific region. This was laid out in the 2022 blueprint for the National Energy Market,[2] which included a detailed “Hydrogen Superpower” scenario that calculated Australia could do its part to hold global heating to no more than 1.5°C above pre-industrial levels by using renewable energy to produce four times our current electricity demand and establish a hydrogen export industry to help neighbouring countries decarbonise.

But we cannot take things for granted. If we are slow to act, other countries could beat us to the opportunity and our economic future could remain tied to polluting ‘sunset’ industries that are incompatible with a safe climate. In April 2022, the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report on Mitigation, starkly laid out the need for more rapid and deep emissions reductions in order to limit global warming to 1.5°C and prevent environmental and social disasters that would hit Australia and our neighbours hardest.

Accenture’s **SunShot Report**, commissioned by WWF-Australia in partnership with the Business Council of Australia, the Australian Council of Trade Unions and the Australian Conservation Foundation, identified six clean export opportunities that have the potential to generate $89 billion in gross value added (GVA) and 395,000 Australian jobs by 2040.[3]

To give some sense of the scale of the opportunity, this is larger than the GVA of Australia’s total current fossil fuel industry and represents 83,000 more direct jobs.

Each of these opportunities represents a substantial new industry, and together they would form a formidable new suite of Australian exports.

These industries would not just bring export revenue, they could also produce a range of jobs, many in regional areas. Highly-skilled jobs will account for 65% of the new jobs created, more than half of which in mining, manufacturing and professional services. A high proportion of these new clean export jobs could be in regions with existing high-carbon activities.

For Australia to fully realise these opportunities, sustained and coordinated effort across the public and private sectors will be required.

Whilst there is plenty of policy progress to celebrate in this year’s Scorecard, we are still at the early stages of our nation’s journey to become a renewables export superpower. This is illustrated by the overall scores.[4]

2. AEMO (2022) Integrated System Plan, p.31
3. Accenture 2021. *SunShot: Australia’s $89B clean energy export opportunity*. A report commissioned by ACF, BCA, WWF and the ACTU.
4. Whilst the average score of state and federal governments has risen from 42/100 (or 42%) in 2020 to 59/110 (or 54%) in 2022, there is still plenty of room for improvement towards a ‘full score’ (i.e. comprehensive policy package) across each jurisdiction. Even NSW in first position (71/110) could score an additional 39 policy points.

Since the second Scorecard was published in November 2021, the following policy highlights were achieved across Australia:

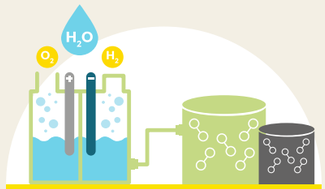
- The New South Wales Government is leading the way across six of the 11 categories of the Scorecard due to a range of new policy commitments including the release of First Nations guidelines for major energy projects.
- The Tasmanian Government has legislated a world-leading net-zero target by 2030, backed by a commitment for sectoral plans to support this ambition.
- The Queensland Government's Energy and Jobs Plan provides a set of supporting policies to significantly decarbonise their electricity sector.
- South Australia's Hydrogen Jobs Plan includes building one of the world's largest hydrogen electrolyser facilities, backed by $593 million in government funding.
- Victoria has announced Australia's first offshore wind target of at least 9 gigawatts (GW) by 2040.
- The Australian Government has declared Australia's first six offshore wind energy zones.
- The Western Australian Government has announced a plan to replace its state-owned coal power stations with renewable energy by 2030, and has committed to an ambitious global hydrogen market share goal, backed by 100GW of renewables by 2030.
- The Australian Government has legislated a national emissions reduction target, and allocated close to $40 billion[5] in the 2022-23 budget towards renewables opportunities, including the Rewiring the Nation plan that will unlock renewable resources across the country by financing a major expansion of the nation's electricity transmission infrastructure.

This Third Renewable Superpower Scorecard celebrates this progress and congratulates NSW in taking the leadership position. It also sets the agenda for the next major steps that will enable us to decarbonise the electricity sector, electrify transport and industry, and put us on the pathway to 700% renewables by 2050.

5. Deloitte Analysis: Federal Budget October 2022_page 21

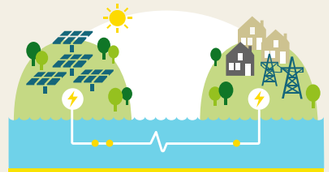
WWF-AUSTRALIA HAS IDENTIFIED 6 TYPES OF RENEWABLES THAT WE WILL BE ABLE TO EXPORT AS WE GET ON THE ROAD TO 700% RENEWABLES

6 TYPES OF RENEWABLE EXPORT



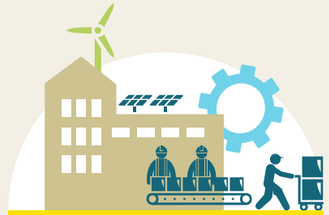
RENEWABLE HYDROGEN

Using renewable electricity to electrolyse water. Renewable hydrogen can then be converted into commodities like ammonia and synthetic fuels.



DIRECT ELECTRICITY TRANSFER

Via undersea cables like the Sun Cable plan to export electricity to Singapore.



SOLAR POWER PRODUCTS

Exporting embodied renewable energy in energy-intensive commodities such as green steel, advanced manufacturing, aluminium and more.

AUSTRALIAN EXPERTISE

In legal, financial, business and engineering, particularly in deploying and managing renewable energy systems, including education and training.

COMPONENTS AND RECYCLING

Of components for clean energy technologies, e.g. wind turbine blades, inverters, batteries and the minerals such as lithium and copper essential to their production.

SOFTWARE AND SERVICES

That support the operation of clean energy systems, e.g. the software and smarts needed for demand management, microgrids and grid integration of renewables.

RENEWABLES NATION

MAKING AUSTRALIA A RENEWABLE ENERGY EXPORT SUPERPOWER

WWF-Australia and its community and business partners are calling for Australian governments to adopt the vision, policies and investment we need to position ourselves as a world-leading renewable energy powered exporter.

Australia has the potential to become a renewable energy export superpower. However, seizing this potential requires leadership and urgent government action. If we fail to act, other countries could beat us to the opportunity, and our economic future could be tied to industries incompatible with a safe climate.

Specifically, WWF-Australia calls on all states and territories, and the Australian Government to:

- Develop bold renewable export strategies that capture the opportunity and put us on a path to 700% renewable energy;
- Deliver on the export opportunity through the creation of Renewable Energy Industrial Precincts, to enable clusters of traditionally hard-to-decarbonise industries to be powered by renewables and clean fuel feedstock;
- Develop policy to ensure the energy transition contributes to regenerating the environment and creates net-positive outcomes; and
- Deliver a fair transition that ensures First Nations people, low-income households, workers and regional communities all benefit from the renewables race.

WHY 700% RENEWABLES FOR AUSTRALIA?

WWF-Australia's **analysis shows** that to become a real renewable superpower, Australia must look to produce seven times the amount of electricity we currently consume through renewable sources by 2050. Reaching this target would enable us to:

- Meet Australia's total current electricity demand;
- Switch Australia's current transport, industry and building energy needs away from gas, coal and oil to renewables; and
- Produce renewable hydrogen fuels for export, send renewable power to Southeast Asia via sea cables, and manufacture new zero-carbon products like green steel and aluminium.

Considering the technical potential of the jurisdictions that form the National Energy Market to contribute to a 700% renewable energy target, our analysis found that AEMO's Hydrogen Superpower scenario requires a similar level of new build renewable generation and storage capacity to meet both domestic and export consumption.

As a renewable energy superpower, Australia wouldn't have to choose between a healthy environment or a booming economy. We can simultaneously grow our economy, create hundreds of thousands of new clean energy and manufacturing jobs, and lower our domestic carbon emissions.

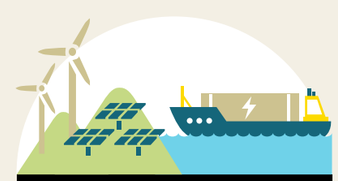
GETTING TO 700% RENEWABLE ENERGY

CLEAN OUR ELECTRICITY SYSTEM

Everything we do in Australia is powered by different types of energy. The main one is electricity, but we also use gas or petrol to give us heat and light and move vehicles and machines.

ELECTRIFY TRANSPORT AND INDUSTRY

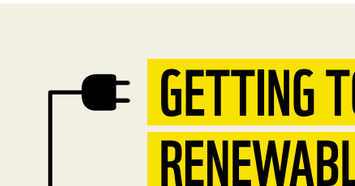
Some of our electricity already comes from renewable sources, but we need to make 100% of our electricity renewable and we need to replace those other types of energy with renewable electricity, too.



EXPORT TO THE WORLD

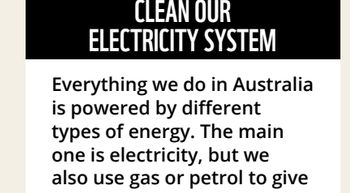
Our biggest opportunity is to sell Australian renewable power, products and expertise to the world.

700% RENEWABLES



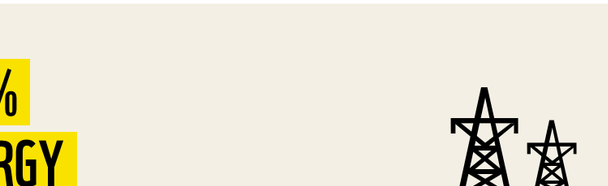
200%

We get to 200% when we convert our transport, industry and buildings to renewable electricity, too. Think of electric trucks and houses heated by solar instead of gas.



100%

100% is what we'll have when all Australian electricity is from renewable sources.



700%

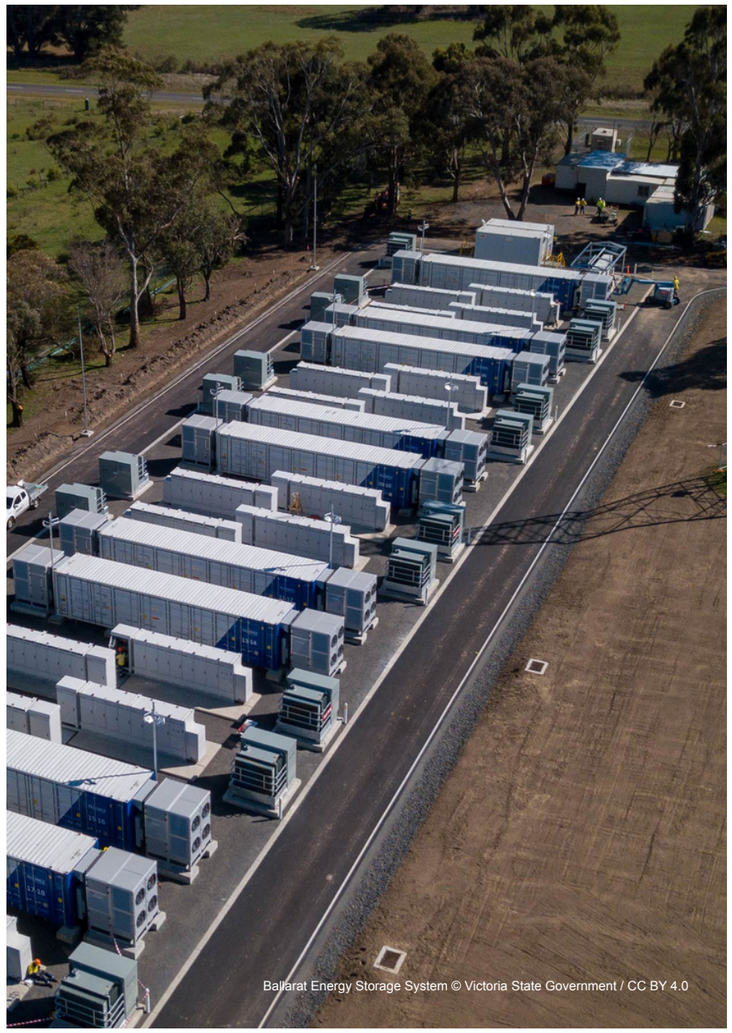
We get the last 200 - 700% through doing new things like: making clean renewable hydrogen - a fuel we can sell to the world.

Putting cables that can send solar power from Northern Australia to Southeast Asia.

New and increased onshore manufacturing of everything from steel to renewable energy equipment and devices.

ABOUT THE RENEWABLE SUPERPOWER SCORECARD

The Renewable Superpower Scorecard presents a snapshot of how Australia's state, territory and federal governments are performing in the race to become a renewable superpower.



Ballarat Energy Storage System © Victoria State Government / CC BY 4.0

The Scorecard ranks Australia's states and territories on their progress, not just in switching Australia's domestic energy system to renewables, but also on how quickly they are working to establish new renewable export industries for the nation.

The aim of the Scorecard is to celebrate success and encourage greater ambition, by producing a rigorous, fair and independent comparison of each jurisdiction's policies, actions and progress.

The Scorecard comprises 11 categories, covering the major building blocks needed to make Australia a renewable superpower (see Table 1 on the right). Each category contains one to four indicators (22 in total) against which the governments are scored. Each indicator is worth five points, making the maximum possible score 110 points. The **Behind the Scorecard - Technical Report** details these 22 indicators and the methodology used to assess progress.

Information is correct as of December 2022.

TABLE 1: The 11 categories assessed in WWF's Renewable Superpower Scorecard.

CATEGORY	WHY IT MATTERS	POINTS
1. Strong Renewable Energy Targets and Policies	Governments can position Australia to become a renewable superpower by adopting firm targets, timelines and policies to build sufficient firmed renewables to power our economy and build huge new clean export industries, putting Australia on the path to achieving 700% renewables by 2050.	15
2. Rolling out Renewable Energy	This is where the rubber hits the road. This category measures how much new renewable capacity was added over the past three years, and the percentage of renewables currently being generated by each state or territory, and nationally.	10
3. Renewable Energy Zones and Transmission	Renewable Energy Zones (REZ) are the best way to develop a cluster of new clean energy projects in a region. Off-grid mega-projects play a similar role to REZs in remote areas. New or upgraded electricity transmission lines are essential to transport renewable electricity to where it is needed.	10
4. Renewable Energy Industrial Precincts	A Renewable Energy Industrial Precinct is a cluster of manufacturers powered by 100% renewable energy. Energy-hungry industries like steel and aluminium production can gain a global competitive advantage from Australia's cheap, clean electricity.	5
5. Developing a Renewable Hydrogen Industry	Renewable hydrogen has a huge role to play in decarbonising the world's economies. It can be shipped overseas and used to generate electricity, or used here in heavy industry to produce essential products like green steel and aluminium.	10
6. Ensuring Equitable Benefits of the Energy Transition	People on low incomes must always be able to access affordable green power. Affected regional energy workers and communities must benefit from the transition. First Nations people should play a key role in any renewable energy projects on their Country and share in the benefits they bring.	15
7. Renewable Export Strategy	Australia needs a comprehensive strategy to develop a range of renewable exports and position the nation as a major player in international markets. State and federal strategies should include clear goals backed by government investment and effective policy mechanisms that play to each jurisdiction's strengths for renewable exports.	10
8. Energy Storage and Balancing the Grid	To make sure the supply of renewable energy is always balanced with demand, we need a lot more big batteries, pumped-hydro power stations, solar-thermal plants and flexible demand management programs.	10
9. Growing Demand for Renewable Energy and Exports	Governments can boost the production of renewable export products by developing new markets in Australia and overseas. This might include: Government procurement policies; incentivising consumers to switch from gas and oil to electricity in their homes and transport; or establishing relationships with international buyers.	10
10. Investment in Renewable Initiatives	Governments that place renewable energy and exports at the heart of their budgets can create many thousands of jobs, especially in regional areas, and also put their economies on a stronger footing for the future.	5
11. Mitigating the Impacts	To capture the benefits of the circular economy across the renewable energy sector, governments must ensure they have programs in place to minimise waste and support recycling.	5
Maximum score	**Points**	**110**

The Scorecard categories cover the three essential stages of becoming a renewable superpower:

1. Cleaning up our electricity system;
2. Electrifying transport, buildings and industry; and
3. Exporting our renewable energy and renewable-powered products to the world.

Many governments are already making good progress in cleaning up their electricity systems, such as setting firm renewable energy targets, supporting the rollout of renewables and storage, and ensuring the benefits for the energy transition are shared across key stakeholders.

The task of transitioning industry and transport from oil and gas to electricity is gathering pace. Driven by lower cost renewable alternatives, competition across the energy sector is growing. Like the advent of the automobile, change could happen exponentially.

Many governments have recognised the opportunities and have started to get behind renewable export industries, but so far actions tend to be fragmented. We need a comprehensive renewable export strategy tailored to a jurisdiction's strengths that sets the level of ambition required to take advantage of Australia's abundant renewable sector opportunities.

Changes since last Scorecard

There have been a few changes to the indicators and scoring system since the second Superpower Scorecard. The **Behind the Scorecard - Technical Report** explains these in detail. The most significant change involves how we evaluate the equitable benefits of the energy transition and the addition of a new category: Mitigating the Impacts.

WWF-Australia also undertook an internal review and consulted with a range of organisations and experts to gain a deeper perspective into any emerging policy areas that may not have been included in the previous versions of the Scorecard.

As a result, this Scorecard splits the previous category 6b into affected energy workers (6b) and regional communities (6c). This change ensures that the Scorecard can appropriately assess the support mechanisms for both regional energy workers and regional communities affected by the transition to renewable energy.

As mentioned above, the third Superpower Scorecard includes a new category: Mitigating the Impacts. The first indicator to be included under this new category covers recycling and the circular economy across the renewable energy sector. Although the waste created by renewable energy generation is a fraction of what's created by coal and gas generators, it's important to put in place policies and systems to manage renewable technology waste such as used solar panels at the end of their 25-30-year productive life.

Consequently, it is crucial that governments come up with a plan to apply circular economy principles to recycle and upcycle renewable technologies.

Important things to note

It's important to note that the Scorecard assesses government performance, so it gives less weight to private sector initiatives occurring in the state or territory that are not actively supported by government/s.

For many of the Scorecard categories, the Australian Capital Territory (ACT) cannot be subject to the same measures as other states and territories due to its unique situation as Australia's smallest, and only landlocked, jurisdiction. For this reason, the ACT has only been assessed on selected categories, and thus is not ranked against other jurisdictions in the national Superpower Scorecard. For other categories, where it is possible to score the ACT in the same way as other governments, these scores are presented in the ACT profile on page 50. See the **Behind the Scorecard - Technical Report**, for further explanation.

We've chosen to limit the scope of the Superpower Scorecard to the development of renewable energy generation and other renewable industries as the focus of WWF-Australia's Renewables Nation program.

For many categories, to ensure a level playing field, we have compared the jurisdiction's financial investment against its Gross State Product (GSP). This means that a state with a big economy is expected to do more than smaller states with fewer resources. The Australian Government has been compared against its Gross Domestic Product (GDP).

For further information about WWF-Australia's research and policies visit the **WWF Renewables Nation Policy Library.**

For details on the Superpower Scorecard methodology, see the **Behind the Scorecard - Technical Report.**

RENEWABLE SUPERPOWER SCORECARD

Which government is leading the way in the renewable exports race?

#1 New South Wales has moved into the leader position for the first time thanks to a range of policy measures such as expediting transmission and energy storage projects and supporting policy to ensure the benefits of the transition are felt across First Nations communities with the release of the First Nations guidelines for major energy projects.

#2 Tasmania has been overtaken as leader but remains in a strong position, thanks to its robust renewable energy targets and action across a broad range of policy areas. The island state is leading the way in developing a renewable hydrogen industry and has recently passed legislation that locks in a world-leading net-zero target by 2030, and the development of sectoral decarbonisation plans.

#3 Queensland has moved from the middle of the pack to a joint leadership position following the release in September 2022 of the Queensland Energy and Jobs Plan, which included new renewable energy targets and supporting policies to achieve the targets. With good implementation of the policies within the Plan, Queensland will be well positioned to become a renewable export superpower.

#3 South Australia remains in third position (joint) thanks to a large jump in points attributed to the Hydrogen Jobs plan which represents the largest investment per capita in renewable hydrogen of any government across Australia.

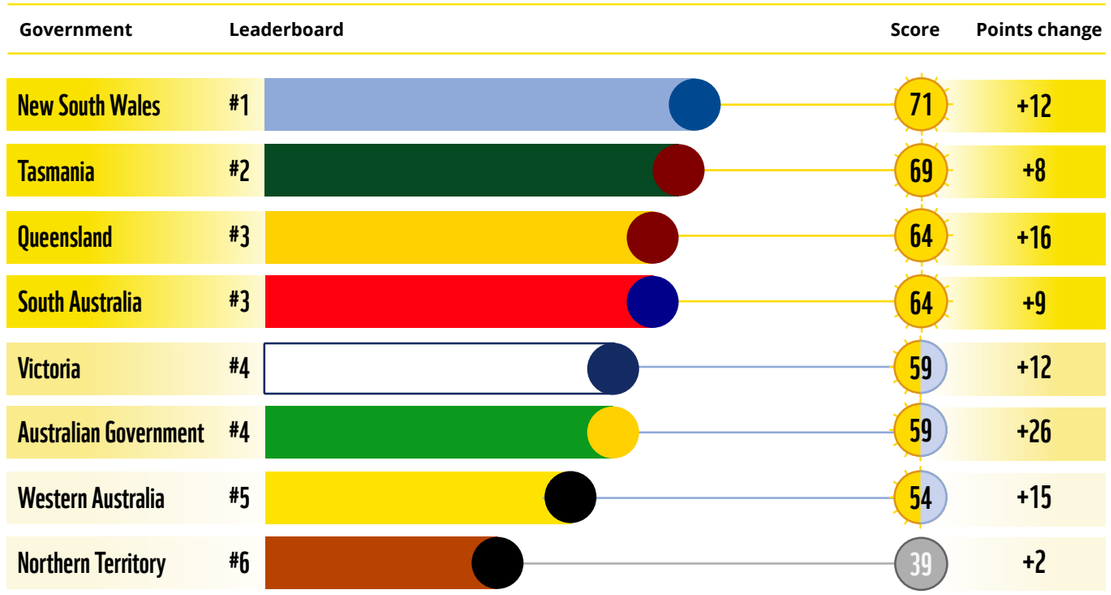
#4 The Australian Government has gained the most points out of any government and jumped from last place in 2021 to joint fourth. Points were gained across 15 of the 22 metrics largely based on new policies contained within the Powering Australia Plan including Rewiring the Nation, the National Reconstruction Fund and Powering the Regions Fund. These are now being implemented with funds allocated in the October 2022 Federal budget.

#4 Victoria has moved up into joint fourth position displaying significant leadership at the national level with the release of the Victorian Offshore Wind Target and Energy Storage Target which will provide further supporting policy to achieve its renewable energy targets. The release of the Gas Substitution Roadmap and the Victorian Transmission Infrastructure Framework are examples of how the state is working on getting the settings right to become a renewable export superpower.

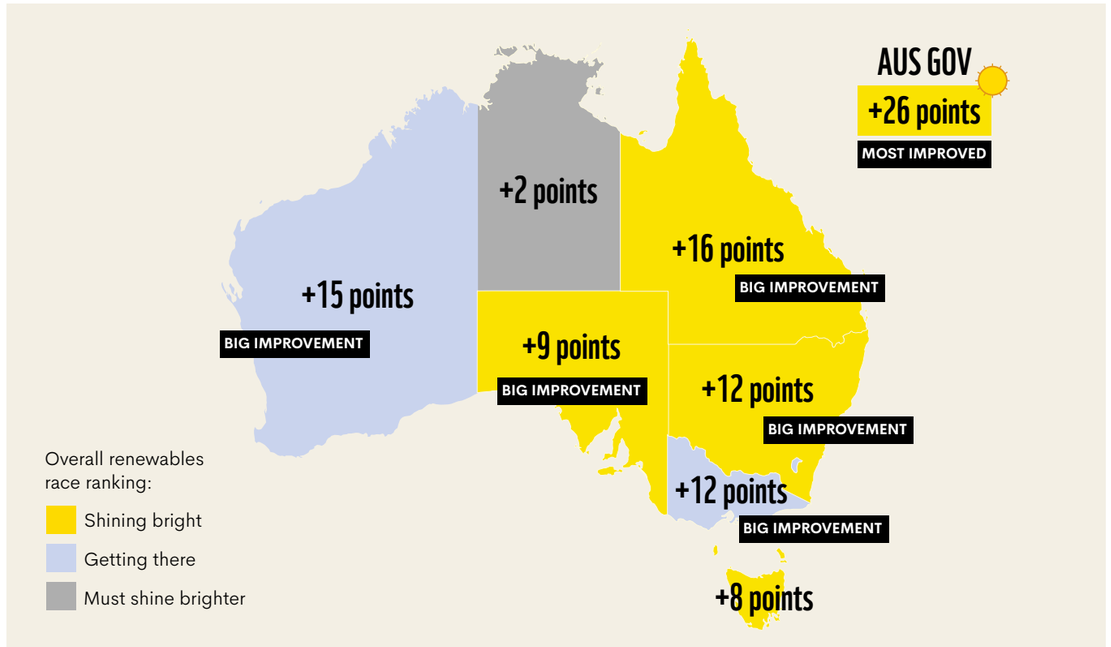
#5 Western Australia is showing signs it will significantly enter the race to become a renewable export superpower with a promise to invest $3.8 billion in new green power infrastructure across the state including in Collie where the government has made a significant investment to support the transition of energy workers. Western Australia has also made a significant announcement to replace state-owned coal-fired power stations with renewable energy. With new policies to promote WA's abundant renewable resources, for example around how to achieve its goal of 12% global market share for green fuel by 2030, WA could quickly rise up the ranks.

#6 The Northern Territory is sitting at the bottom due to a loss in points for budget support of hydrogen from fossil fuels as part of the Middle Arm Sustainable Development Precinct. This is despite improvements being made through the introduction of new legislation which will lead to opportunities for manufacturing related to the Sun Cable project and the appointment of the Indigenous Essential Services Advisory Committee.

FINAL SCORES



BIG CHANGES



CATEGORY LEADERS

CATEGORY	LEADER(S)	THE LEADING MOVES ...
1. Strong Renewable Energy Targets and Policies	**Australian Capital Territory**	The ACT's renewable energy target includes a legislated mechanism to increase the supply of renewable electricity as demand grows and more sectors decarbonise. This means their effective target is around 200% renewable energy. Tasmania and South Australia also have strong targets of 200% and 500%, respectively, to support new renewable export industries.
2. Rolling out Renewable Energy	**Tasmania**	Tasmania is Australia's first state to reach 100% renewable energy generation and continues to further develop their renewable energy in order to achieve their new target of 200% renewable energy.
3. Renewable Energy Zones and Transmission	**New South Wales**	NSW is scoring full points for this category thanks to continued action to develop Renewable Energy Zones and expediting transmission projects.
4. Renewable Energy Industrial Precincts	**New South Wales**	NSW's Clean Manufacturing Precincts program remains the best-in-field for supporting supporting the establishment of Renewable Energy Industrial Precincts.
5. Developing a Renewable Hydrogen Industry	**New South Wales and Tasmania**	South Australia has gained significant traction, however, falling just behind NSW and Tasmania in the lead on supporting the growth of the renewable hydrogen industry.
6. Ensuring Equitable Benefits of the Energy Transition	**Victoria, Queensland and New South Wales**	Victoria now shares its leading position with NSW and QLD. Notably, NSW released the First Nations guidelines for major energy projects and allocated $1.2 billion to fast-track transmission and energy storage projects with QLD announcing a raft of policies within the Queensland Energy and Jobs Plan including the Job Security Guarantee and Energy Workers Charter.
7. Renewable Export Strategy	**Australian Government and Western Australia**	Both these governments have a range of strategies and programs that include supporting new renewable exports, including batteries, critical minerals and green metals.
8. Energy Storage and Balancing the Grid	**Tasmania and South Australia**	With the country's highest renewable energy generation, both South Australia and Tasmania have a diverse range of polices to support energy storage and grid balancing including big batteries, virtual power plant projects, synchronous condensers and demand management, and the most energy storage technology deployed per capita.
9. Growing Demand for Renewable Energy and Exports	**New South Wales, South Australia, Tasmania and Australian Capital Territory**	ACT has set a date to ban the sale of fossil fuel cars and released a plan towards electrification. SA is set to abolish the electric vehicle tax and is creating demand for renewable exports through their Hydrogen Jobs plan. NSW is driving demand for critical minerals through a range of supporting policies and Tasmania is engaging globally.
10. Investment in Renewable Initiatives	**New South Wales**	The NSW government has maintained its lead in this category, however, this may change in the next Scorecard as we are likely to see inclusion of WA's promise to invest $3.8 billion in new green power infrastructure across the state in their next budget.
11. Mitigating the Impacts	**Australian Capital Territory and Victoria**	In this new category, ACT and Victoria have taken the lead for supporting policy to reduce waste from landfill across the sector.

Note: The ACT was only scored on eight of the 11 Scorecard categories, due to its unique situation as Australia's smallest, and only landlocked, jurisdiction. Thus, the ACT is included as a category winner where appropriate, but not included in the national Superpower Scorecard rankings. For further details, see the Technical Report.

WHAT THE SCORECARD TELLS US

THE RESULTS OF THE SUPERPOWER SCORECARD ASSESSMENT SHOW THAT:

#1 There is a strong push to get the policy settings right

The new Australian Government made the biggest gains by releasing the Powering Australia Plan with significant funding support within the new 2022-23 Federal Budget of close to $40 billion. South Australia also made a significant renewable hydrogen funding commitment of $593 million with the release of the Hydrogen Jobs Plan, and Queensland has taken substantial strides with a $62 billion commitment to the clean energy system through the Energy and Jobs Plan.

#2 Targets deliver supporting policies

Below are some leading examples of policy announced since the last Scorecard that will support the delivery of renewable energy targets:

- Victoria's offshore wind target of 2GW offshore generation by 2032 and 4GW by 2035, and an energy storage target of 2.6GW energy storage capacity by 2030 and 6.3GW by 2035.
- The Australian Government's $20 billion Rewiring the Nation plan will be instrumental in rebuilding and modernising the electricity grid to achieve 82% renewables in the National Energy Market by 2030.
- Queensland Energy and Jobs Plan has announced a plan to legislate renewable energy targets of 70% renewables by 2032 and 80% by 2035, with supporting policy to replace the state's coal-fired power stations by 2035.
- Although Western Australia does not have a legislated renewable energy target, they have commitments to close two state-owned coal fired power stations and develop a renewable hydrogen target. They have also committed to an ambitious global hydrogen market share goal, backed by 100GW of renewables by 2030 and 200GW by 2040. Delivering 200GW of renewables by 2040 would be equal to a renewable energy target of 1200%!

#3 Increased investment in renewable hydrogen

Since the second Scorecard was published in November 2021, the new South Australian Government has committed almost $600 million to support a hydrogen facility in the Whyalla region, spring-boarding the state into a world-leading position with other global leaders providing more than 0.1% of GSP (Gross State Product) in funding programs to support renewable hydrogen (see Figure 2).

#4 Lack of Renewable Export Strategies

The next vital step is for governments to think bigger and more broadly, by developing a comprehensive Renewable Export Industry Strategy that covers a range of potential export types which play to each jurisdiction's strengths and sets ambitious targets for the next three decades. This would give other growing renewable export industries (such as expertise and renewable-powered products) the kind of boost that's been seen for renewable hydrogen.

#5 Light is starting to shine on ensuring the benefits of the energy transition

Since the previous Scorecard, there has been an increased focus on ensuring that First Nations, energy workers, low-income households and regional communities benefit from the energy transition and are meaningfully engaged in decision making. Notably, NSW's First Nations Guidelines for Major Energy Projects; Victoria's Transmission Investment Framework; Tasmania's Renewable Energy Coordination Framework; Western Australia's Collie transition funding; and the Queensland Energy and Jobs Plan will all work towards ensuring the energy transition benefits are shared.

#6 Need for Renewable Energy Industrial Precincts

Major players in the steel and aluminium industries are starting the switch to renewable energy to produce low-carbon commodities, but government industry policies are lagging behind. By planning and supporting the establishment of Renewable Energy Industrial Precincts, governments can superpower regional Australia and help local industries gain a global competitive advantage and secure local jobs.

#7 Policy action required to identify and achieve regenerative outcomes through the renewable transition

The speed and scale of the renewable transition required must be balanced with protecting and enhancing Australia's unique biodiversity which is facing multiple threats. Consideration must also be given to recycling end-of-life products from renewable energy technologies. In future Scorecards, WWF-Australia plans to incorporate more indicators assessing each government's progress on achieving regenerative outcomes for nature and consideration of the circular economy.

Change in Overall Scores Between Scorecards

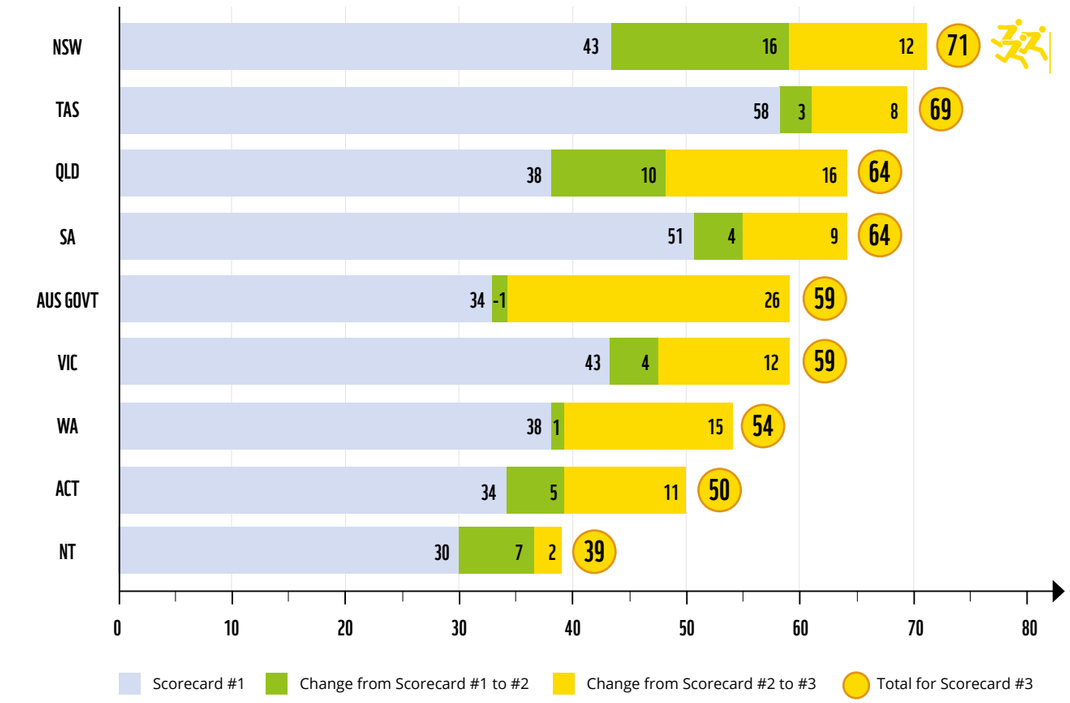


Figure 1. Most governments have made significant progress in the race to become a renewable export superpower, with NSW taking the lead away from TAS for the first time. The Australian Government made the biggest gains followed by QLD.

Investment in Renewable Hydrogen

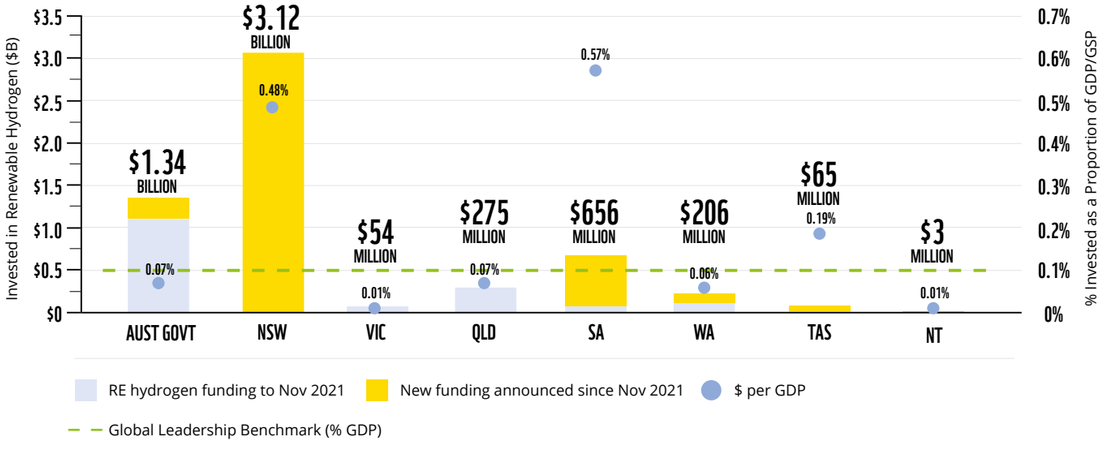


Figure 2. This figure shows each government's promised funding of renewable hydrogen against a global leadership benchmark of 0.1% of GDP/GSP.[6]

6. The Global Leadership Benchmark line is based on government funding from renewable hydrogen Germany, France and Spain who have collectively committed over US$20b in support for renewable hydrogen or greater than 0.1% of their respective GDP.

RECYCLING AND THE CIRCULAR ECONOMY

As Australia reduces its consumption of fossil fuels in favour of renewable energy, there is a role for policy makers to consider how to mitigate the impacts of the energy transition by considering the end-of-life waste from renewable energy products.

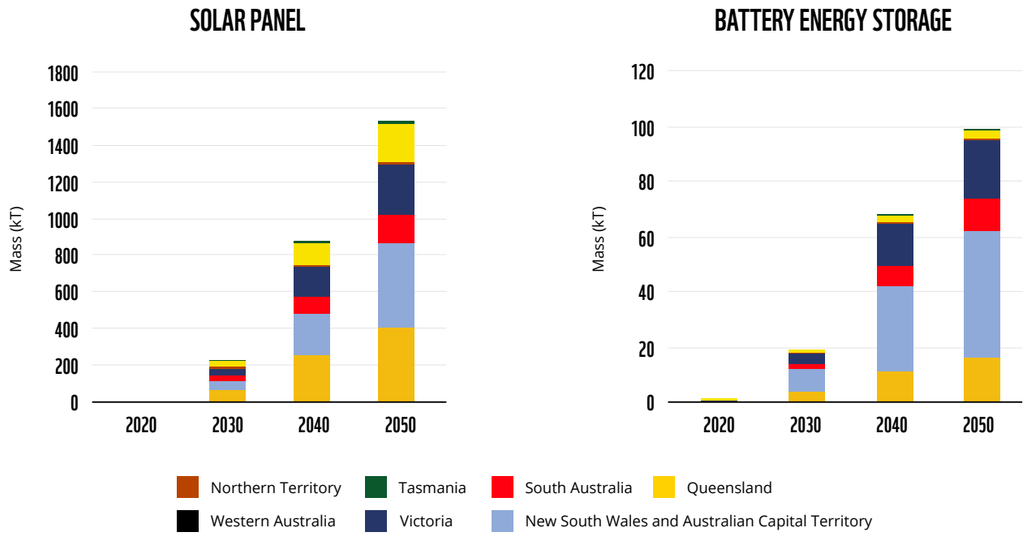
Unlike fossil fuels, which can be burnt only once, the minerals and metals that make up renewable technologies can largely be reused and recycled at the end of the technology's life cycle. This creates an opportunity for the minerals and metals to remain in circulation.

Like any electronics industry, renewable technologies can cause environmental hazards if they are not appropriately recycled. We need closed-loop systems to prevent any leakage of contaminants into the environment. It is becoming increasingly important that governments come up with a plan for entering the circular economy, one which recycles and re-purposes renewable technologies.

With the significant uptake of solar panels and energy storage solutions in the past decade, coupled with the finite lifetime of the technology, renewable technology waste will increase over time. It is estimated that one million panels will require replacement annually by 2031. This calls for established facilities and systems to reuse, recycle or responsibly dispose of approximately 100,000 tonnes of solar panels waste by 2035.

"While the amount of solar panel and battery storage system waste is low at the moment, we want to make sure [we are] ahead of the curve with innovative ways of managing this emerging waste stream."

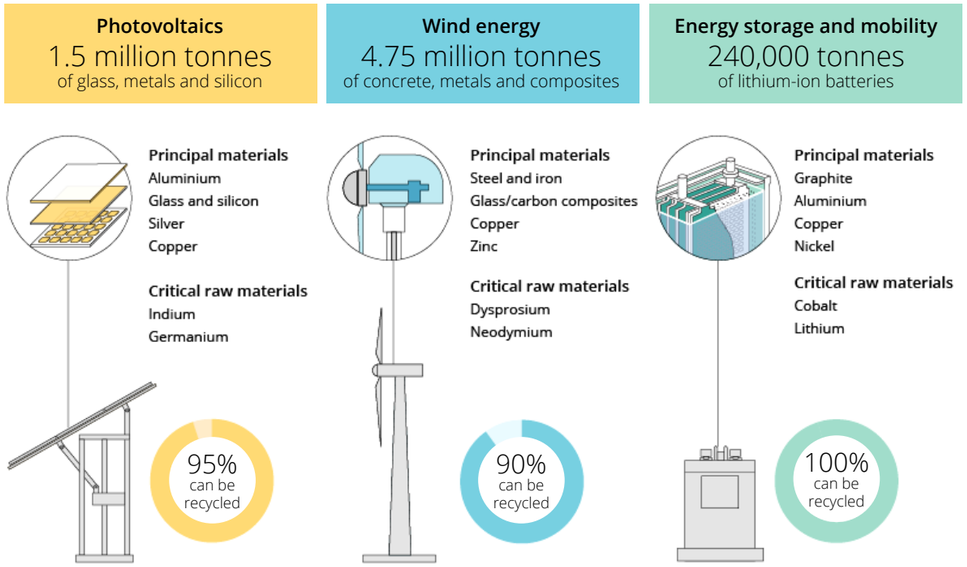
NSW Minister for Environment, James Griffin 2022



Mass of end-of-life solar panels (a) and battery energy storage (b) 2020-2050. Salim et al., 2019

Source: Griffith Sciences Impact

Solar panels have an lifespan of 25-30 years, while batteries last between 5-15 years. Fortunately, materials used to create renewable technologies are valuable and can be recovered and reused. Solar panels and batteries are made using materials such as metals, glass, lithium and lead; all of which are finite resources. Reusing materials from solar panels and batteries will ensure that a shortage of key materials will not slow our transition to renewable energy.



Material recovery opportunities arising annually from the clean-energy sector by 2030

Source: EEA

Within the Scorecard, WWF-Australia particularly focuses on financial and policy mechanisms that support the recyclability and reusability of solar panels, inverters and batteries. These technologies are the most widely used across Australia. As Australia moves ahead on the journey to becoming a renewable energy superpower, the increased rate of adoption of renewable energy technologies will place increased pressure on the resources needed to construct the technology as well as demand for recycling.

At this stage, all Australian governments are scoring low in this category of the Scorecard (see Figure 3), with the exception of the Australian Government and NSW, which have taken some beginning steps in advancing solar panel and battery recycling.

Individual government scores for Scorecard category #11: Mitigating the Impacts

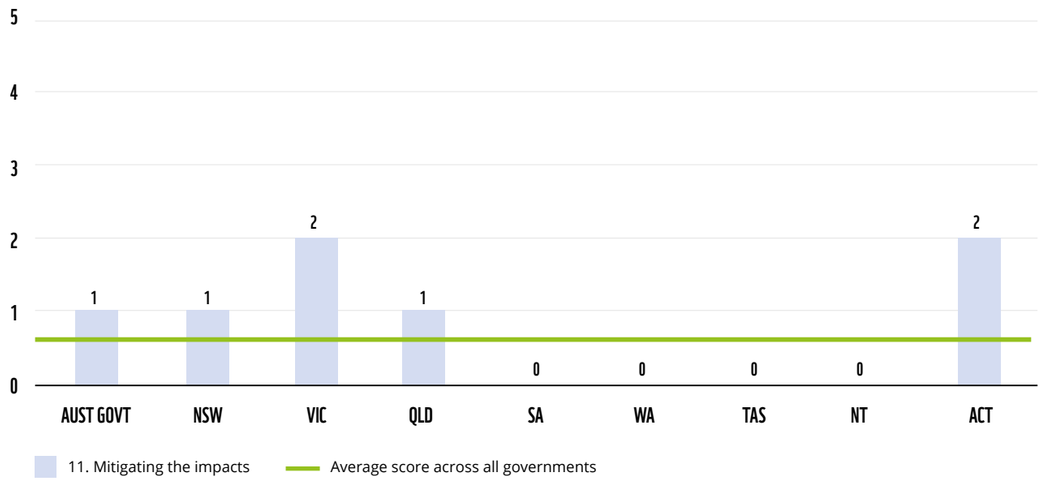


Figure 3. The green line shows the average score across all governments, out of a maximum 5 points.

WWF-Australia is calling on governments to adopt a circular economy approach to renewable energy by developing reuse, recycling and upcycling programs.

SHINING EXAMPLES FROM AROUND AUSTRALIA

ReclaimPV


Supplied: Reclaim PV / Clive Fleming

ReclaimPV Recycling is Australia's first solar panel recycler, based in Adelaide with facilities in South Australia and Queensland. They recycle and repurpose solar PVs at the end of their life, either through breaking down to raw materials and minerals using their Pyrolysis technique, or supplying re-usable PVs to organisations who provide low-cost panels to communities experiencing energy poverty.

While the energy produced by solar PV is renewable, the raw minerals used to produce solar PVs are not. ReclaimPV was founded by solar PV industry veteran, Clive Fleming, who wanted to provide a viable solution to extract valuable resources such as aluminium, silver, silicon, and copper from solar panels at the end of their 25-year working life.

ReclaimPV is able recycle 95-98% of materials in solar panels, which is, as Clive explains, "essential to transition from the use of virgin materials, to materials with lower embodied carbon. Recovered materials are on-sold, as locally as possible, to provide high-value materials such as aluminium to local manufacturing with a much smaller carbon footprint than before. This flows on to lower embodied carbon in the next product that's made." For ReclaimPV, becoming a renewable energy superpower means "looking at the whole lifecycle of renewables."

ReclaimPV is excited and motivated by "being able to change part of the industry for the better and enabling the transition to a new way of doing things." ReclaimPV's modular system is inexpensive to establish and allows processing capacity to be increased easily when required, with current processing rates at 70,000 panels per year at each of their warehouses in Queensland and South Australia. This design also facilitates the technology to be set up easily and relatively cheaply in new locations, something that ReclaimPV is exploring with our nearest neighbours in Southeast Asia. Using the business to provide an income stream for lower-income nations and communities, while providing a solution to a problem and addressing energy poverty, is something that excites ReclaimPV. ReclaimPV's goal is to provide "low-cost recycling centres globally, enabling lower resourced groups and governments to access recycling technology that allows high yield of material recovery." Clive believes Australia has a responsibility to lead by example and share our knowledge across the globe.


Supplied: Reclaim PV / Clive Fleming

Envirostream


Supplied: Envirostream

Envirostream is Australia's first recycling company to process batteries locally at the end of their life. A wholly owned subsidiary of ASX-listed Lithium Australia, Envirostream is based in Victoria and is responsible for collecting, transporting and recycling batteries across Australia, enabling the valuable materials they contain to have a second life. Envirostream accepts all types of batteries, from smartphones and other e-waste, as well as larger batteries, from electric vehicles and household energy storage. Envirostream collects used batteries nationwide with drop-off points at partner organisations including Bunnings, Officeworks and Battery World through the battery stewardship scheme, B-cycle.

Envirostream was established in 2017 as a battery recycling company, however they quickly found that there were no existing safe processes to collect, store and transport used batteries. "When we started collecting, we realised how many issues and challenges there were for safe storage and transportation of used batteries," explains Jocelyn Foong, General Manager. "When there's no collection, there's no recycling."

Safe collection and transport proved to be the biggest challenge for battery recycling, so Envirostream developed a proprietary 'fire-resistant liner' product for their collection and transport containers. With the success of the liner solution, Envirostream now has thousands in use across Australia. This innovative solution has been shared with companies overseas, including the New Zealand metal and e-waste recovery team at Milwaukee tools, as well as Bunnings in New Zealand who use their proprietary battery collection unit. As battery recycling is a relatively new industry, Envirostream works closely with the Victorian EPA and fire departments to learn from each other through knowledge sharing around safe storage and processing of batteries.

Once batteries reach Envirostream's processing facility, they are processed to recover valuable materials like cobalt and lithium, which are then sold to a company in South Korea. They also recover steel, sold to local foundries, and plastics, which they are exploring using in recycled plastic asphalt for roads with local company, Close the Loop. Envirostream is supported by the Victorian Government to improve their processes through Victoria's Sustainable Infrastructure Fund. The company is committed to continuously improving its unique processes to maximise recovery of valuable materials.

Currently only 10% of used batteries in Australia are collected and recycled, so Envirostream would like to see growth in collection points with big retailers nationwide to increase convenience, public awareness and knowledge around proper battery recycling. Envirostream also sees opportunities for greater inter-governmental harmonisation and support, as there are currently challenges with inter-state transport due to different regulations. With the growth of batteries in Australia, in particular larger sized batteries in home energy storage and EVs, Envirostream sees there is a real opportunity for Australia to become a leader in the industry, sharing knowledge and experience around the world.


Supplied: Envirostream

© WWF-Aus / Adobe / Beboy

INDIVIDUAL GOVERNMENT RESULTS

New South Wales Government Scorecard

Ranking 1 **Score 71**

CATEGORY LEADER 3. Renewable Energy Zones and Transmission; 4. Renewable Energy Industrial Precincts; 5. Developing a Renewable Hydrogen Industry; 6. Ensuring Equitable Benefits of the Energy Transition; 9. Growing Demand for Renewable Energy and Exports; 10. Investment in Renewable Energy Initiatives

CHANGE SINCE LAST SCORECARD: +12 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	6	15
2. Rolling Out Renewable Energy	5	10
3. Renewable Energy Zones and Transmission	10	10
4. Renewable Energy Industrial Precincts	4	5
5. Developing a Renewable Hydrogen Industry	9	10
6. Ensuring Equitable Benefits of the Energy Transition	14	20
7. Renewable Export Strategy	6	10
8. Energy Storage and Balancing the Grid	5	10
9. Growing Demand for Renewable Energy and Exports	6	10
10. Investment in Renewable Energy Initiatives	5	5
11. Mitigating the Impacts	1	5

Forecast: Shining Bright | Getting There | Must Shine Brighter

Shining Strengths

- NSW has delivered a suite of policies across the state with funding support to bring it to superpower status, including: the Strategic Benefit Payments Scheme; renewable energy and storage auctions; grant support for critical minerals projects; the formation of the Renewable Energy Sector Board; expansion of the solar for low-income households offer; declaring several renewable energy zones; and developing the REZ Access Standards.
- To support First Nations' considerations in the emergence of new renewable energy projects across the state, NSW, along with First Nations communities, developed the First Nations Guidelines. The Guidelines will ensure that new energy projects demonstrate long-term benefits to First Nations communities and recommends that an Aboriginal Participation Plan be put in place to support engagement and Aboriginal interests.
- Following the announcement of the early Eraring Power Station closure in 2025, NSW announced a comprehensive plan to ensure that the state has clean, reliable and affordable electricity. To support the transition, NSW is developing a Transmission Acceleration Facility that will fast-track the delivery of critical transmission infrastructure and increase capacity.

How to Shine Brighter?

- With a suite of nation-leading policies, NSW now needs to focus on getting the implementation right to ensure communities and nature are considered in all aspects of future renewable energy projects.
- NSW is supporting the transition to decarbonise their electricity sector, however we should like to see export-scale long-term renewable energy targets in line with AEMO's Hydrogen Superpower scenario and our 700% renewables trajectory.

Fast-tracking the construction of renewable energy is the best way to reduce our exposure to … risks and take advantage of cleaner, cheaper power sources."

NSW Treasurer and Minister for Energy, Matt Kean, June 2022

Tasmanian Government Scorecard

Ranking 2 **Score 69**

CATEGORY LEADER 2. Rolling out Renewable Energy; 5. Developing a Renewable Hydrogen Industry; 8. Energy Storage and Balancing the Grid; 9. Growing Demand for Renewable Energy and Exports

CHANGE SINCE LAST SCORECARD: +8 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	12	15
2. Rolling Out Renewable Energy	8	10
3. Renewable Energy Zones and Transmission	8	10
4. Renewable Energy Industrial Precincts	3	5
5. Developing a Renewable Hydrogen Industry	9	10
6. Ensuring Equitable Benefits of the Energy Transition	8	20
7. Renewable Export Strategy	5	10
8. Energy Storage and Balancing the Grid	9	10
9. Growing Demand for Renewable Energy and Exports	6	10
10. Investment in Renewable Energy Initiatives	1	5
11. Mitigating the Impacts	0	5

Forecast: Shining Bright ☀ Getting There ◐ Must Shine Brighter ○

Shining Strengths

- The Tasmanian and Australian Governments signed a Partnership to jointly fund the **Marinus Link transmission project** which is expected to deliver increased renewable energy generation and storage when combined with Tasmania's **Battery of the Nation** projects.
- The Tasmanian Government is matching the Australian Government's $70 million to help transform Bell Bay into a renewable hydrogen hub. The investment supports the Tasmania Renewable Hydrogen Action Plan's goal to become a global green hydrogen exporter by 2030.
- Tasmania is following through on its commitments in the Renewable Energy Coordination Framework by implementing a **Register of Interest (ROI) to kick-start new green hydrogen and green manufacturing development**.
- Tasmania has recently legislated a world leading commitment of net-zero by 2030, and the ensuing sectoral decarbonisaiton plans to support this commitment present a further opportunity to accelerate the state to becoming a renewable energy superpower.

How to Shine Brighter?

- The Tasmanian Government has been a strong advocate for renewable hydrogen and is promoting Bell Bay as a future hydrogen hub, however the government does not yet have an integrated program to develop Renewable Energy Industrial Precincts around the state, to capitalise on its global competitive advantage as a net-100% renewable state.
- Detailed policy and implementation of Renewable Energy Coordination Framework elements is required, specifically regarding the development of renewable energy zones and leadership of First Nations people for the transformation.

"Through Tasmania's world-class wind energy resources and deep hydro storages we can take a leadership role in emissions reduction that will provide generational benefits through more jobs, lower power prices and a cleaner world."

Tasmanian Premier, Jeremy Rockliff, June 2022

© Adobe Stock / Clive / WWF-Aus

Queensland Government Scorecard

Ranking 3 **Score 64**

CATEGORY LEADER 6. Ensuring Equitable Benefits of the Energy Transition

CHANGE SINCE LAST SCORECARD: +16 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	6	15
2. Rolling Out Renewable Energy	5	10
3. Renewable Energy Zones and Transmission	9	10
4. Renewable Energy Industrial Precincts	3	5
5. Developing a Renewable Hydrogen Industry	8	10
6. Ensuring Equitable Benefits of the Energy Transition	14	20
7. Renewable Export Strategy	5	10
8. Energy Storage and Balancing the Grid	6	10
9. Growing Demand for Renewable Energy and Exports	5	10
10. Investment in Renewable Energy Initiatives	2	5
11. Mitigating the Impacts	1	5

Forecast: Shining Bright Getting There Must Shine Brighter

Shining Strengths

- Queensland released its most ambitious renewables plan to date: the Energy and Jobs Plan. The Plan sets a target to achieve 80% renewables by 2035 which is supported by $62 billion and plans for 22GW of new wind and solar, 11.5GW of rooftop solar, a new "super grid" and the biggest pumped hydro project in the world.
- To ensure that the Energy and Jobs Plan delivers equitable benefits, workers at Queensland's state-owned coal-fired power stations will be supported with a legislated 'Job Security Guarantee' and a new 'Energy Industry Council', 'Queensland Renewable Energy Jobs Advocate' and 'Future Energy Workforce Roadmap' will be established. Local benefits will also be ensured through the rollout of a 'Regional Energy Transformation Partnerships Framework' which aims to ensure communities, industry and an inclusive Remote and First Nations clean energy strategy will be designed.
- To ensure the new build generation meets the demand, the Energy and Jobs Plan sets out a range of policies to expedite the rollout of the transmission network including four new high-voltage projects across the state totaling approximately 1500km of transmission lines. This increase in transmission will decarbonise the electricity grid and meet growing export demand.

How to Shine Brighter?

- Building upon the Queensland Energy and Jobs Plan, the development of a comprehensive Renewable Export Strategy and planning for electricity demand to ramp-up to meet the needs of export-scale renewable exports is required to capture the state's potential to become a renewable export superpower.
- We welcome the Queensland Government's increased renewable energy targets that will drive the decarbonisation of the electricity sector and look forward to stronger export-scale targets.

"Today I am launching the Queensland Energy and Jobs Plan. The most ambitious energy and jobs plan of any government in Australia. It's aim is to shape Queensland as a serious, dedicated energy superpower. It's aim is to see Queensland lead the globe."

Queensland Premier, The Honourable Annastacia Palaszczuk, September 2022

© Plumbing Industry Climate Action Centre

South Australian Government Scorecard

Ranking 3 **Score 64**

CATEGORY LEADER 8. Energy Storage and Balancing the Grid; 9. Growing Demand for Renewable Energy and Exports

CHANGE SINCE LAST SCORECARD: +9 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	10	15
2. Rolling Out Renewable Energy	7	10
3. Renewable Energy Zones and Transmission	7	10
4. Renewable Energy Industrial Precincts	3	5
5. Developing a Renewable Hydrogen Industry	7	10
6. Ensuring Equitable Benefits of the Energy Transition	8	20
7. Renewable Export Strategy	4	10
8. Energy Storage and Balancing the Grid	9	10
9. Growing Demand for Renewable Energy and Exports	6	10
10. Investment in Renewable Energy Initiatives	3	5
11. Mitigating the Impacts	0	5

Forecast: Shining Bright ☀ Getting There ◐ Must Shine Brighter ○

Shining Strengths

- South Australia has committed to build hydrogen electrolysers and a renewable hydrogen-fueled power station to balance the state's electricity grid through the $593 million Hydrogen Jobs Plan. The projects are anticipated to create a supply of cheaper, more secure green hydrogen power to South Australian manufacturing businesses and mining companies and fast-track a hydrogen export industry in the state.
- The Hornsdale Power Reserve in South Australia gained approval to become the first big battery to deliver grid-scale inertia services. The battery will help manage the grid's transition to 100% renewables with no reliance on coal plants and gas generators.
- South Australia rose to a leadership position in the adoption of wind and solar energies by reaching 146% of electricity demand generated from renewables on 14 September 2022. This represents the world's highest share of renewables as a percentage of demand, the excess of which was exported to Victoria.

How to Shine Brighter?

- South Australia is fast approaching an electricity grid powered by 100% renewable energy. Legislating the 500% Renewable Energy Target would see South Australia set a clear policy direction to become a renewable export superpower.
- Given the high penetration of renewables in South Australia, further consideration should be given to the circular economy, as well as First Nations people and remote communities' inclusion and benefits from the energy transition.

"We have positioned our State as a world leader in renewable energy, and the green hydrogen industry is the next step as we head towards net zero carbon emissions."

South Australian Premier, Peter Malinauskas, July 2022

Craig Johnston, Operations Supervisor at sonnen batterie factory, Adeliade, SA © WWF-Australia / Craig Johnston

Australian Government Scorecard

Ranking 4 **Score 59**

CATEGORY LEADER 7. Renewable Export Industry Strategy

CHANGE SINCE LAST SCORECARD: +26 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	5	15
2. Rolling Out Renewable Energy	5	10
3. Renewable Energy Zones and Transmission	9	10
4. Renewable Energy Industrial Precincts	3	5
5. Developing a Renewable Hydrogen Industry	3	10
6. Ensuring Equitable Benefits of the Energy Transition	12	20
7. Renewable Export Strategy	7	10
8. Energy Storage and Balancing the Grid	6	10
9. Growing Demand for Renewable Energy and Exports	4	10
10. Investment in Renewable Energy Initiatives	4	5
11. Mitigating the Impacts	1	5

Forecast: Shining Bright | Getting There | Must Shine Brighter

Shining Strengths

- The Australian Labor Government released the Powering Australia Plan which has a target to boost renewable energy. The Plan is focused on creating jobs and lowering power bills and is predicted to increase the share of renewables in the National Electricity Market to 82% by 2030.
- The Australian Government's Climate Change Act 2022 has enshrined into law an emissions reduction target of 43% from 2005 levels by 2030 and net-zero emissions by 2050. This legislation provides energy and investment certainty, and has been accompanied by significant funding allocations in the October 2022-23 budget, such as the $20 billion Rewiring the Nation plan to rebuild and modernise the grid.
- The Australian Government is exploring six regions that have offshore wind potential and has begun consultation with communities on the plans. The consultation will encourage an Australian offshore wind industry based on community collaboration and support.

How to Shine Brighter?

- While the Climate Change Act 2022 is on the right path, Australia should focus on not only targets, but concrete actions to accelerate the country's energy transition beyond domestic decarbonisation. The Act, which importantly sets Australia's 2030 emissions target as a floor, not a ceiling, provides a springboard for more ambitious policies to be developed for Australia to realise its potential as a renewable export superpower and do more to limit warming to 1.5 degrees Celsius.
- We look forward to seeing the Australian Government steer national direction through a comprehensive renewable export plan that supports the development of renewable energy industrial precincts and the subsequent creation of 395,000 new jobs, as highlighted in the Sunshot Report.

"Australia has the workers, the resources and the capacity to become a renewable energy superpower."

Prime Minister Anthony Albanese, July 2022

© Adobe Stock / scharfsinn86 / WWF-Aus

Victorian Government Scorecard

Ranking **4** Score **59**

CATEGORY LEADER 6. Ensuring Equitable Benefits of the Energy Transition

CHANGE SINCE LAST SCORECARD: +12 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	6	15
2. Rolling Out Renewable Energy	4	10
3. Renewable Energy Zones and Transmission	9	10
4. Renewable Energy Industrial Precincts	1	5
5. Developing a Renewable Hydrogen Industry	2	10
6. Ensuring Equitable Benefits of the Energy Transition	14	20
7. Renewable Export Strategy	4	10
8. Energy Storage and Balancing the Grid	8	10
9. Growing Demand for Renewable Energy and Exports	6	10
10. Investment in Renewable Energy Initiatives	3	5
11. Mitigating the Impacts	2	5

Forecast: Shining Bright Getting There Must Shine Brighter

Shining Strengths

- Victoria has announced a new **renewable energy storage target** with funding support for 2.6 gigawatts (GW) of renewable energy storage capacity by 2030, with an increased target of 6.3GW of storage by 2035. In addition, the state has set ambitious **offshore wind targets** for 2GW of offshore generation by 2032, 4GW of offshore wind capacity by 2035, and 9GW by 2040.
- Victoria has announced an intention to **increase their 65% share of renewables** on its electricity grid by 2030, 95% by 2035, and net-zero emissions by 2045. We look forward to further details and legislation of increased renewable energy targets following the Victorian State Government election.
- Victoria-New South Wales Interconnector **KerangLink** (also known as VNI West), received approval following a decision from the AEMO that the new transmission infrastructure will provide capacity for significant local generation of solar, wind and battery. Victoria has also signed agreements with the Australian and Tasmanian governments to jointly fund the **Marinus Link interconnector** which will connect Victoria and Tasmania and unlock critical firming services for Victorian VRE.

How to Shine Brighter?

- Building upon the state's policies to support its renewable energy targets, Victoria is now in a position to increase its level of ambition and establish export scale long-term renewable energy targets and will benefit further from a comprehensive Renewable Export Strategy focusing on the state's renewable export opportunities.

"We've cut emissions by more than any other state, tripled the amount of renewable energy and created thousands of jobs. We're not just talking about climate action – we're getting on with it."

Victorian Premier, Daniel Andrews, September 2022

Sea Surveying Offshore Windfarm © XOCEAN XO-450 / CC BY-SA 4.0

Western Australian Government Scorecard

Ranking 5 **Score 54**

CATEGORY LEADER 7. Renewable Export Industry Strategy

CHANGE SINCE LAST SCORECARD: +15 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	11	15
2. Rolling Out Renewable Energy	4	10
3. Renewable Energy Zones and Transmission	6	10
4. Renewable Energy Industrial Precincts	3	5
5. Developing a Renewable Hydrogen Industry	3	10
6. Ensuring Equitable Benefits of the Energy Transition	9	20
7. Renewable Export Strategy	7	10
8. Energy Storage and Balancing the Grid	5	10
9. Growing Demand for Renewable Energy and Exports	5	10
10. Investment in Renewable Energy Initiatives	1	5
11. Mitigating the Impacts	0	5

Forecast: Shining Bright | Getting There | Must Shine Brighter

Shining Strengths

- Western Australia has announced that all state-owned coal power stations will be retired by 2030. If WA closed both the Collie and Muja power stations and replaced their current generation with renewables, we estimate the South West Interconnected System (SWIS) would be 72.3% renewable. This is in addition to further reiterating WA's aspirational goal for the state to have a significant global market share of the green fuel market by 2030, leading to the development of 100GW of renewables by 2030 and up to 200GW by 2040. Our analysis suggests that these commitments result in a renewable energy target for the state of approximately 600% by 2030 and 1200% by 2040.
- Western Australia is hoping to attract renewably-powered magnesium smelters for the coal-dominated Collie region by supporting affected communities transitioning to new industries with $547.7 million through the Collie Transition Package. To support further investment into WA's battery and critical minerals industries, the state government has released a battery and critical minerals prospectus, allocated $6 million in state funding for research and development in critical minerals, and has launched a cathode precursor production pilot plant in Perth.
- The Western Australian Government has promised to provide Synergy with $3.8 billion which will be invested in new green power infrastructure in the SWIS. This investment supports the SWIS's commitment to transition out of coal-fired power generation by 2030.

How to Shine Brighter?

- WWF-Australia welcomes the Western Australian Government's announcement to shut down state-owned coal-fired power stations connected to the SWIS, however, we would like to see clear policy direction to decarbonise WA's electricity sector across the entire state.
- Stronger policy support to achieve WA's goal to have 12% global market share of green fuel by 2030 would be welcome to achieve this level of ambition.

"Western Australia's status as a leading global supplier of battery and critical minerals is just the start of what the state has to offer investors around the world."

Western Australia State Development, Jobs and Trade Minister, Roger Cook, June 2022

Northern Territory Government Scorecard

Ranking 6 **Score 39**

CHANGE SINCE LAST SCORECARD: +2 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	4	15
2. Rolling Out Renewable Energy	3	10
3. Renewable Energy Zones and Transmission	6	10
4. Renewable Energy Industrial Precincts	3	5
5. Developing a Renewable Hydrogen Industry	1	10
6. Ensuring Equitable Benefits of the Energy Transition	5	20
7. Renewable Export Strategy	5	10
8. Energy Storage and Balancing the Grid	6	10
9. Growing Demand for Renewable Energy and Exports	4	10
10. Investment in Renewable Energy Initiatives	2	5
11. Mitigating the Impacts	0	5

Forecast: Shining Bright | Getting There | Must Shine Brighter

Shining Strengths

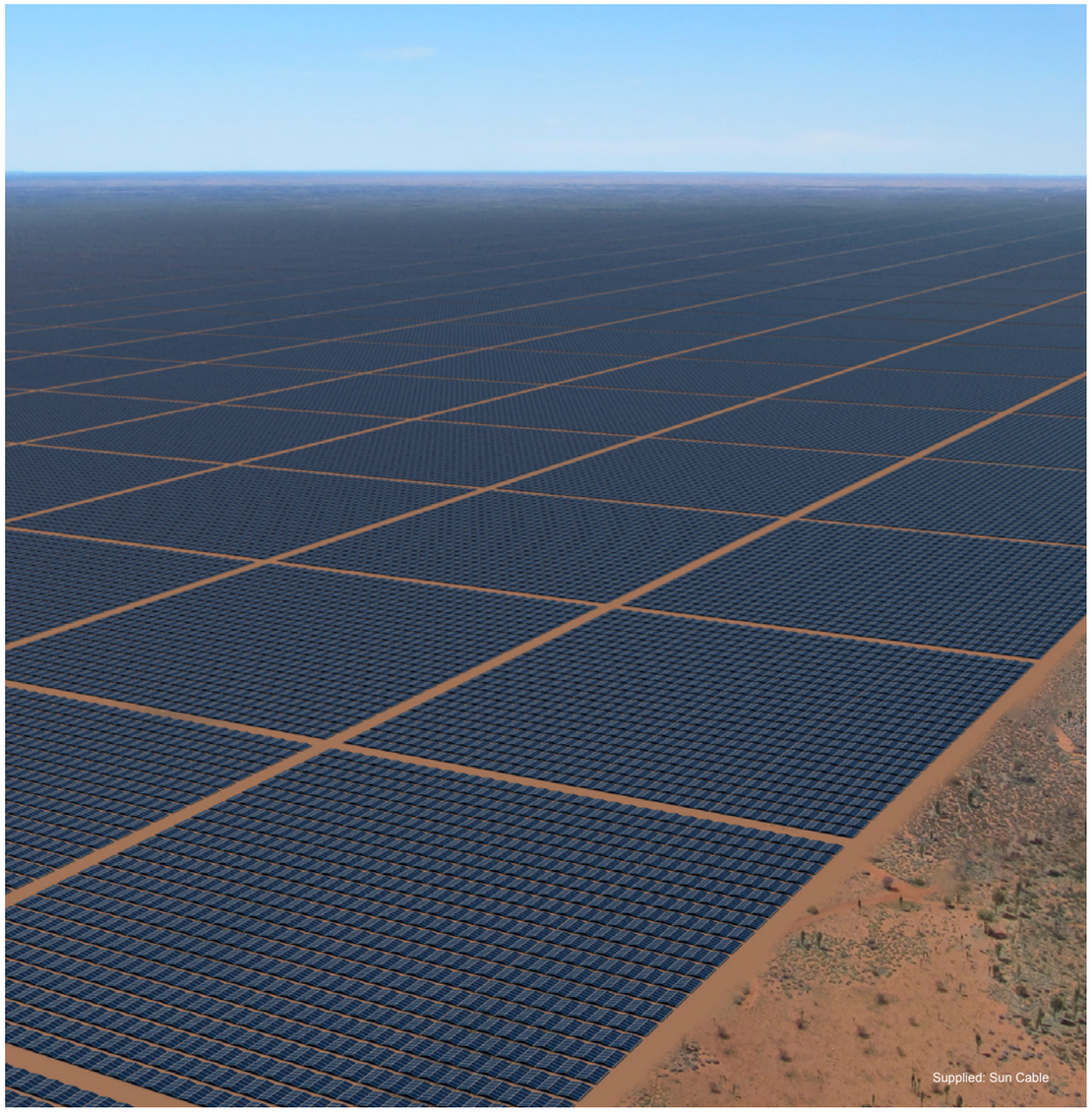
- The Northern Territory passed legislation to facilitate the Sun Cable Australia-Asia PowerLink project. The project will build a large renewable energy transmission system, including a solar farm and battery that will increase renewable energy export potential.
- The Northern Territory Government is fast-tracking the planning process for the 10GW Desert Bloom green hydrogen project by giving the project major status. The project aims to produce renewable hydrogen by capturing water drawn from the atmosphere.
- The Northern Territory has signed a Memorandum of Understanding (MoU) with renewable energy company Total Eren to develop a green hydrogen project in Darwin. The MoU outlines how the two parties will work together on the Darwin H2 Hub. The Hub will target both domestic and international markets.

How to Shine Brighter?

- As the world transitions away from the consumption of fossil fuels, the NT has a significant opportunity to leverage its abundant renewable energy resources and geographic advantage to create Renewable Energy Industrial Precincts producing renewable exports and manufacturing components for megaprojects like Sun Cable. The Northern Territory Government should develop a comprehensive renewable export strategy to ensure these opportunities are realised, with particular attention given to ensuring equitable benefits of the energy transition across First Nations communities, regional energy workers, regional communities and consumers.

"We're on track but we won't be easing back as we also enable our community to capitalise on the opportunities that a renewables-led economic transition will provide for a cleaner, brighter future."

Minister for Environment, Climate Change and Water Security, Lauren Moss, October 2022



Supplied: Sun Cable

Australian Capital Territory Government Profile

Score 50

CATEGORY LEADER 1. Strong Renewable Energy Targets and Policies; 9. Growing Demand for Renewable Energy and Exports; 11. Mitigating the Impacts

CHANGE SINCE LAST SCORECARD: +11 POINTS

Category	Score	The Goal
1. Strong Renewable Energy Targets and Policies	13	15
2. Rolling Out Renewable Energy	7	10
5. Developing a Renewable Hydrogen Industry	5	10
6. Ensuring Equitable Benefits of the Energy Transition	8	20
8. Energy Storage and Balancing the Grid	5	10
9. Growing Demand for Renewable Energy and Exports	6	10
10. Investment in Renewable Energy Initiatives	4	5
11. Mitigating the Impacts	2	5

Forecast: Shining Bright ☀ Getting There ◐ Must Shine Brighter ○

The ACT has some of the country's most ambitious and successful renewable energy policies. However for many of the Scorecard categories, the ACT cannot be subject to the same measures as other states and territories due to its unique situation as Australia's smallest, and only landlocked, jurisdiction. For this reason, the ACT has only been assessed on selected categories, and thus is not ranked against other jurisdictions in the national Superpower Scorecard.

For other categories, where it is possible to score the ACT in the same way as other governments, these scores are presented below. For further explanation, please refer to the **Behind the Scorecard - Technical Report**.

Shining Strengths

- The Australian Capital Territory announced that it will **phase out fossil fuel gas by 2045** by electrifying Canberra. The ACT will take a phased approach, starting with new suburbs and from 2023, no new gas connections will be permitted in developments.
- The sale of new fossil fuel-powered vehicles will be banned in the ACT from 2035. To support the ban, the ACT has released the **Zero Emissions Vehicles Strategy 2022-30**, which sets out to address the affordability of zero-emission vehicles such as incentives, extending stamp duty waivers for used ZEVs, and expanding the charging infrastructure.
- ACT's **Sustainable Household Scheme has won a national award at the Banksia National Sustainability Awards.** The $30 million scheme offers zero-interest loans to households to install sustainable products or purchase a zero-emission vehicle.

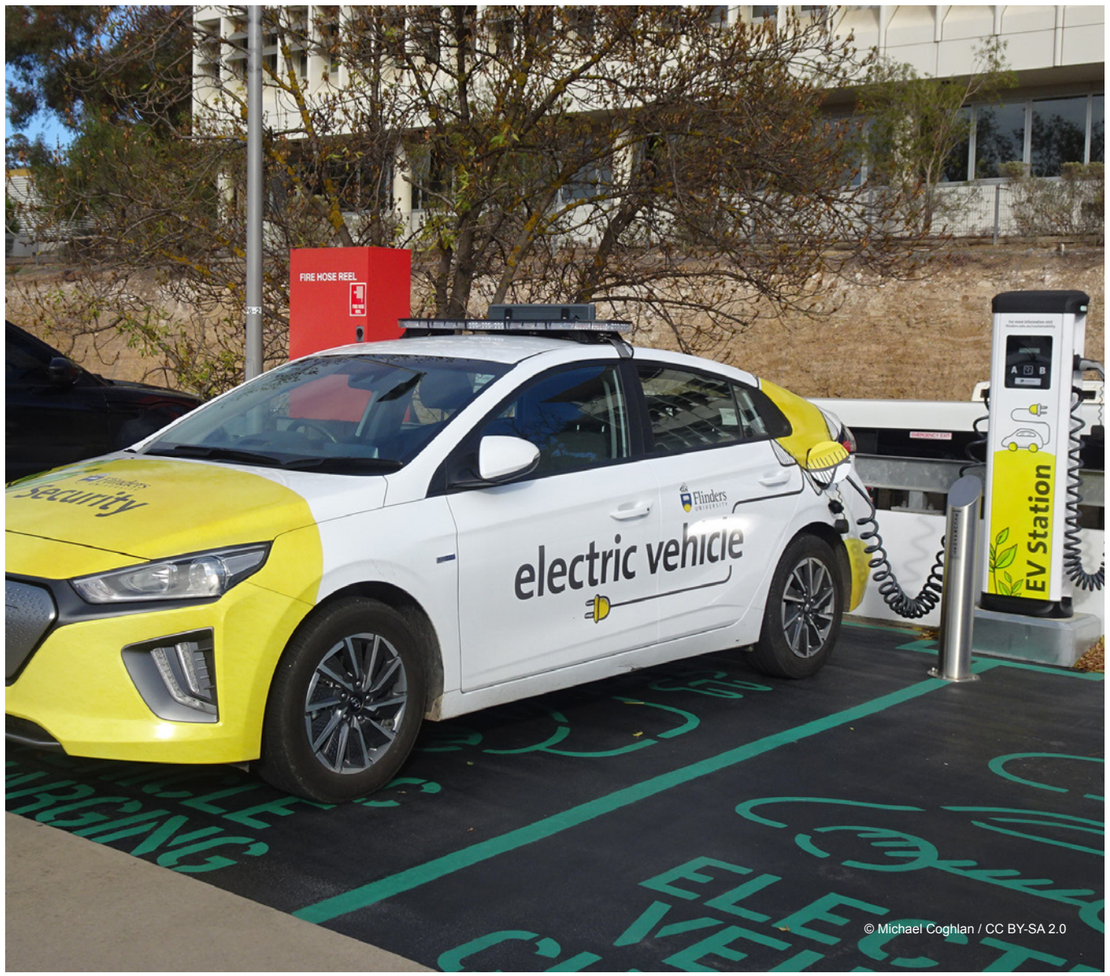
How to Shine Brighter?

- The ACT prides itself on being a knowledge economy and the government is **encouraging innovation** and entrepreneurship in the renewable energy sector through grants to projects like the **ACT Renewables Hub**.

However, there is an opportunity to scale up this vision by developing a strategy to export the ACT's clean energy technology and expertise to the world.

"The ACT is leading the nation on climate action. We are already powered by 100% renewable electricity, and the next step in our plan to reduce emissions and provide sustainable energy to Canberra households is the delivery of one of the largest battery storage systems in the Southern Hemisphere."

ACT Chief Minister, Andrew Barr, July 2022



© Michael Coghlan / CC BY-SA 2.0

THE CRITICAL DECISIONS WE MAKE TODAY WILL HELP SHAPE AUSTRALIA'S TOMORROW.

WWF

Working to sustain the natural world for the benefit of people and wildlife.

together possible™ wwf.org.au

WWF-Australia National Office

Level 1/1 Smail Street,
Ultimo NSW 2007
GPO Box 528
Sydney NSW 2001

Tel:+1800 032 551
enquiries@wwf.org.au
@WWF_Australia
wwf.org.au