

# Renewable superpower survey

EY and WWF-Australia  
October 2021

PREPARED FOR



AUSTRALIA

The EY logo, consisting of the letters 'EY' in a bold, white, sans-serif font, with a yellow diagonal line above the 'Y'.

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## RELEASE NOTICE

Ernst & Young (“EY”) was engaged on the instructions of World Wide Fund for Nature Australia (“WWF”) to prepare this report capturing findings from industry experts in relation to Australia’s future in the clean manufacturing and renewable export industry (“Report”), in accordance with the engagement agreement dated 8 September 2021, including the General Terms and Conditions. This Report must not be relied upon by any party other than WWF. EY disclaims all responsibility to any other party for any loss or liability that the other party may suffer or incur arising from or relating to or in any way connected with the Report, the provision of the Report to the other party or the reliance upon the Report by the other party.





# ACKNOWLEDGEMENT OF COUNTRY

WWF-Australia acknowledges the traditional custodians of the land on which we work throughout Australia. We acknowledge their continuing connection to their lands, waters, and culture. We pay our respects to Elders - past and present, and their emerging leaders.



# FOREWORD FROM DERMOT O'GORMAN, WWF-AUSTRALIA CEO



**Australia has some of the best renewable energy resources in the world and we now have a pivotal opportunity to harness them for national and global good.**

The UN Framework Convention on Climate Change Conference of the Parties (COP26) in Glasgow in November is the biggest moment in the global climate calendar since the Paris Agreement. The eyes of the world will be on countries such as Australia to demonstrate an ambition to deliver a cleaner, greener future.

This is why WWF-Australia has been working with many partners to advocate for Australia to step up and become the world's leading exporter of renewable energy by 2030.

With our endless sunshine, abundant space, powerful winds, world-class expertise, and strong trade relationships, we can produce enough renewable energy to power the nation, with plenty left over to sell to our neighbours.

But what action is required to achieve this ambitious goal? We engaged EY to conduct this Superpower Survey to see what the experts think.

More than 50 experts and leaders from organisations that undertake research, invest in, or manage renewable energy and clean manufacturing export opportunities were surveyed, representing businesses, think tanks, peak bodies, academic institutions, research groups and NGOs.

Those surveyed agreed that Australia has all the natural resources and expertise to become a renewable export superpower. The majority of experts also agreed that WWF-Australia's goal of 700% renewables by 2050 is achievable. However, the majority also feel Australia is being held back by a lack of clear policy direction and investment at the federal level.

The message from the experts is clear: Australia needs to act quickly as we face significant competition from other countries.

Seizing the full scope of opportunities in front of us will require an unprecedented scale of action and leadership from the Federal Government. Australia is uniquely placed to thrive in the global net-zero economy, but we need policy to match the scale of our ambition and potential.

The global race for renewables is on. We cannot afford to be left behind.

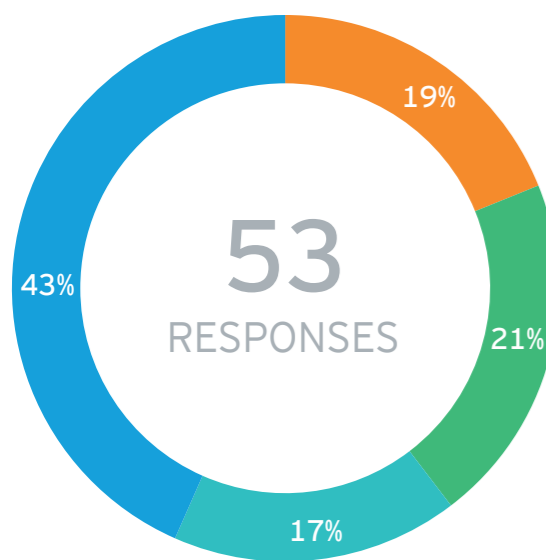
I'd like to thank EY for their work on this survey and all the participants, who generously shared their insights and expertise.



# EXECUTIVE SUMMARY

“(Australia has) good infrastructure, wealthy country, good education system and workforce - we are the country with greatest potential to be a renewable energy superpower with clean green manufacturing and energy efficient homes, businesses and industry.”

“(Australia has) tremendous natural resources advantages, established supply chains to Asia and Europe, and the economic foundation to be a successful exporter. Government coordination and market-based mechanisms are our only inhibitors.”



- NGOs
- Think tanks or peak bodies
- Academia or research groups
- Private business

## KEY FINDINGS FROM EY'S SURVEY INCLUDE:

93%

of respondents felt Australia currently holds the natural resources to become a world leading renewable and clean manufacturing exporter

70%

agreed that 700% renewables by 2050 is an achievable target.

80%

felt there are significant growth opportunities for their organisations through the renewable export market.

81%

agreed Australia is well placed to become a world-leading renewable and clean manufacturing exporter by 2040.

**Australian expertise** was seen to be the strongest short-term renewable or clean manufacturing export opportunity (2025), with renewable hydrogen and renewable manufacturing seen as the key medium and longer-term prospects (2030 and 2040).

74%

felt Australia has the skills to capitalise on the renewable and clean manufacturing market at present; however, 66% indicated there is a lack of national focus on growing these skills and capabilities for the long-term.

66%

of survey respondents felt Australia lacks sufficient Federal support to foster innovation and scale renewable and clean manufacturing opportunities and 81% felt Australia does not yet have clear federal policy focus on accelerating deployment to unlock Australia's clean manufacturing potential by 2030.

**On behalf of WWF-Australia, EY surveyed 53 experts from a range of organisations that undertake research, invest in, or manage renewable energy and clean manufacturing export opportunities, to explore their views on Australia's future role in the industry.<sup>1</sup>**

These organisations spanned private business, think tanks, peak bodies, academic institutions, research groups and NGOs.

Overall, there is a genuine optimism for Australia's future as a renewable energy and clean manufacturing exporter, with respondents citing Australia's abundance of resources, skills and expertise as key drivers to realise Australia's clean export potential.

Significant growth potential was observed by 80% of respondents, with 64% actively seeking to become more involved in the industry. This highlights a strong appetite across key Australian sectors to ramp-up involvement in clean exports.

On the flip-side, respondents also highlighted the need for further national policy development, clarity and ambition to unlock Australia's full clean manufacturing potential. The need for targeted action to meaningfully foster innovation and scale opportunities was identified as necessary to support the strength of Australia's budding export market. Without additional national support, this could open the door for Australia's key competitors to absorb key sections of Australia's prospective market by rapidly embracing clean energy exports.

<sup>1</sup> This survey was conducted over a period of two weeks in September 2021.



# INTRODUCTION AND APPROACH

**Renewable energy is a fundamental component of the transition to the decarbonised global economy. The energy, transport and manufacturing sectors are heavily exposed to this transformation, in which Australia could play a critical role as an exporter of renewable power products, expertise and hydrogen manufacturing.**

There has been a rapid uptake of renewables around the world due to cost parity with traditional electricity sources, including here in Australia. The global weighted-average levelised cost of electricity (LCOE) from new solar photovoltaic reduced 85% in the last decade (from USD 0.381/kWh in 2010 to USD 0.057/kWh in 2020), while LCOE from onshore wind decreased 56% over the same period (from USD 0.089/kWh to USD 0.039/kWh).<sup>2</sup>

Further, the share of global electricity generation from renewable sources increased from 20% in 2010 to 30% in 2021.<sup>3</sup> However, under a Net Zero Emissions by 2050 scenario, the global share of renewables should be at least 60% by 2030.<sup>4</sup> As an increasing number of countries make net-zero commitments, including Australia's key trading partners and global organisations, Australia can see these commitments as either a chance to capitalise on the decarbonising economy, or a risk to the status quo.

There is a growing market for renewable energy, critical metals and minerals that are key inputs for renewables, and renewable-powered products and services; with the experts in this survey determining Australia has the natural resources and knowledge to provide for our own country and as surplus to sell to many others. However, feedback from the survey demonstrated if we do not seize this opportunity, we risk being left behind as our key trading partners power towards a net-zero emissions economy.

<sup>2</sup> International Renewable Energy Agency, 'Renewable Power Generation Costs in 2020', <https://www.irena.org/publications/2021/Jun/Renewable-Power-Costs-in-2020>, 2021

<sup>3</sup> International Energy Agency, 'Global Energy Review 2021', <https://www.iea.org/reports/global-energy-review-2021/renewables>, 2021

<sup>4</sup> International Energy Agency, 'World Energy Outlook 2020', <https://www.iea.org/weo>, 2020





Australia has long been a resource powerhouse and has the potential to greatly benefit from the global shift toward a zero-net emissions world. As part of WWF’s Renewables Nation program, WWF-Australia is calling on Australia’s leaders to make Australia the world’s leading exporter of renewable energy by 2030, and to put us on the pathway to a low-carbon future, with a goal of producing 700% renewables by 2050.<sup>5</sup>

Renewable energy is a fundamental component of the transition to the decarbonised global economy. Australia could play a critical role as an exporter of renewable power products, expertise and hydrogen manufacturing to help accelerate the shift to renewables in the global energy, transport and manufacturing sectors, which are currently heavily exposed.<sup>6</sup>

1	<b>Renewable hydrogen</b> , using renewable electricity to electrolyse water. Renewable hydrogen can then be converted into commodities like ammonia and synthetic fuel
2	<b>Direct electricity transfer</b> , via undersea cables (like the Sun Cable plan to export electricity to Singapore)
3	<b>Renewable power manufacturing</b> , exporting embodied renewable energy in energy intensive commodities such as green steel, advanced manufacturing, aluminium and more
4	<b>Australian expertise</b> , in legal, financial, business and engineering, particularly in deploying and managing renewable energy systems, including education and training
5	<b>Components and recycling</b> of components for clean energy technologies, i.e., wind turbine blades, inverters, batteries and the minerals such as lithium and copper essential to their production
6	<b>Software and services</b> , that support the operation of clean energy systems e.g. the software and smarts needed for demand management, microgrids and grid integration of renewables

<sup>5</sup> For more information on how Australia could achieve 700% renewables, follow this link: <https://www.wwf.org.au/what-we-do/climate/renewables#gs.cgddhh>

<sup>6</sup> <https://www.wwf.org.au/what-we-do/climate/renewables#gs.cgddhh>

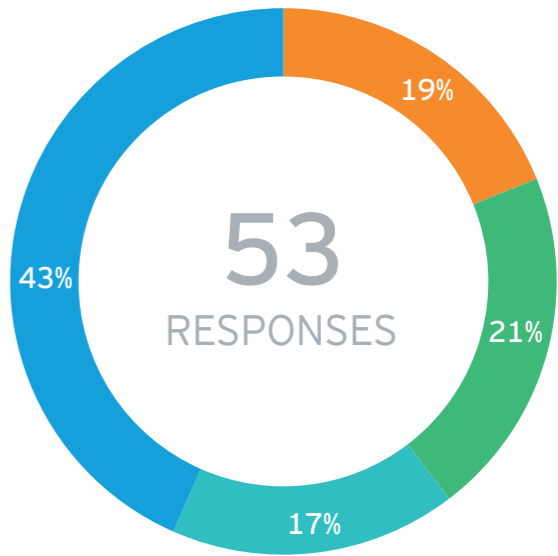
**Research approach**

To assist with exploring Australia’s opportunities to become a major renewable energy and clean manufacturing exporter, EY was engaged by WWF-Australia to conduct an industry survey with a range of leading experts and organisations spanning finance, insurance, policy, advocacy, law, energy generation and investment.

These organisations and experts were segmented into four sectors:

1. Private business
2. Think tanks and peak bodies
3. Academic institutions and research groups
4. NGOs.

EY’s survey was conducted over two weeks in September 2021, with 53 participants ultimately taking part.



- NGOs
- Think tanks or peak bodies
- Academia or research groups
- Private business

Results and insights drawn from the survey are set out in this report.



# KEY FINDINGS AND INSIGHTS

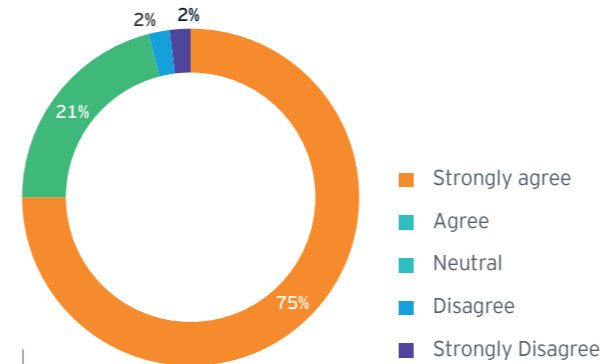


**Australia has a wealth of natural resources, skills, and capabilities to harness its clean export potential; however, this is offset by a lack of national focus and insufficiently targeted federal support to meaningfully propel the industry forward.**

Over 96% of survey participants noted that Australia has the natural resources to become a world leading renewable and clean manufacturing exporter. Key resources cited included wind, solar, pumped hydropower and minerals including silicon, aluminium, iron and lithium.

**“World leading resources exist in Australia.”**

**AUSTRALIA CURRENTLY HAS THE NATURAL RESOURCES AVAILABLE TO BECOME A WORLD LEADING RENEWABLE AND CLEAN MANUFACTURING EXPORTER.**

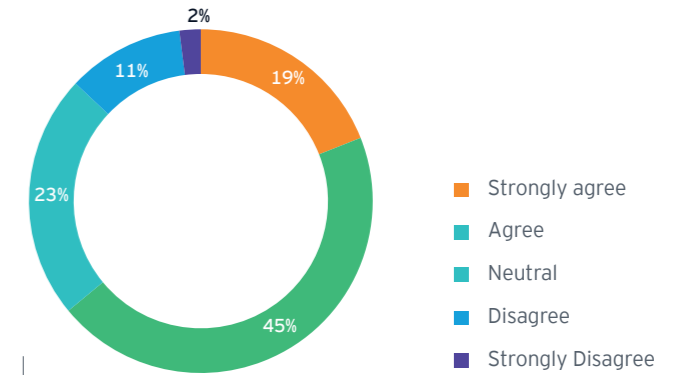


Complementing this, almost 65% of respondents noted that Australia has the skills and capabilities to support the industry, with only 13% in disagreement.

This indicates strong support for the role Australia’s skills and expertise will likely play in propelling the nation’s renewable and clean manufacturing exports, which is bolstered by an abundance of natural resources to accelerate this growth.

**“We have a large landmass, good quality natural resources to support cheap renewable electricity generation, a population large enough to support manufacturing and trade connections to support exports.”**

**AUSTRALIA CURRENTLY HAS THE SKILLS AND CAPABILITIES TO BECOME A WORLD LEADING RENEWABLE AND CLEAN MANUFACTURING EXPORTER.**

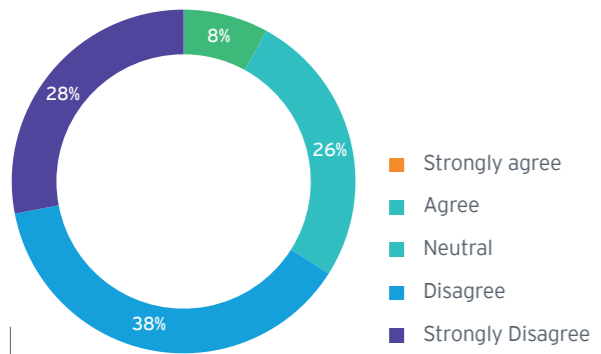


It was, however, noted that a lack of national focus on growing the relevant skills and capabilities to become a world-leading renewable and clean manufacturing exporter could hamper Australia’s ability to hold onto its current skills and resource advantage.

**“Australia’s access to solar and wind energy resources creates huge potential to accelerate progress in becoming a major renewable and clean energy exporter. However, this potential can only be realised with decisive action to set clear, strong targets, to invest in necessary infrastructure and skills.”**



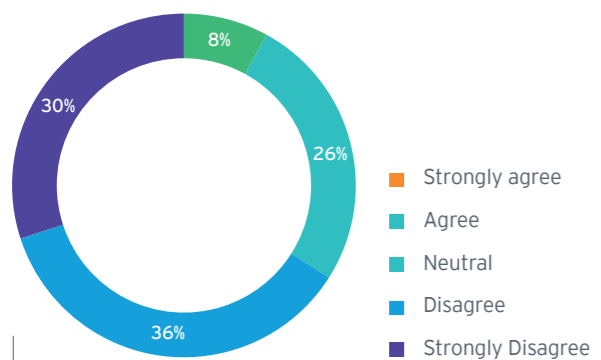
THERE IS SUFFICIENT NATIONAL FOCUS CURRENTLY PLACED ON GROWING SKILLS AND CAPABILITIES TO SUPPORT AUSTRALIA BECOMING A WORLD LEADING RENEWABLE AND CLEAN MANUFACTURING EXPORTER.



Compounding this perceived lack of national focus on clean and renewable exports, 66% of respondents felt that Australia currently lacks adequate targeted support from the federal government to foster innovation to develop and scale the clean manufacturing and renewable export industry.

“There is good support for some industries, however there isn't a lot of support to encourage consumer take-up and markets. There seems to be a preference to support legacy industrial companies, rather than supporting innovation.”

THERE IS CURRENTLY ADEQUATE SUPPORT FROM THE FEDERAL GOVERNMENT TO FOSTER INNOVATION AND HELP DEVELOP AND SCALE AUSTRALIA'S RENEWABLE AND CLEAN MANUFACTURING EXPORT OPPORTUNITIES.



Further and ongoing investment in research and development is required to secure Australia's position as leading renewable power exporter. Some respondents highlighted that other nations are investing more rapidly in renewable and clean manufacturing opportunities, which could result in Australia losing out on attracting investment due to improving opportunities abroad. This could ultimately weaken the development of a domestic clean export industries and see Australia slip behind these other leading nations, with Australia's key competitors such as China, USA, Germany, Brazil, Chile and UAE all ramping up their renewable export efforts.

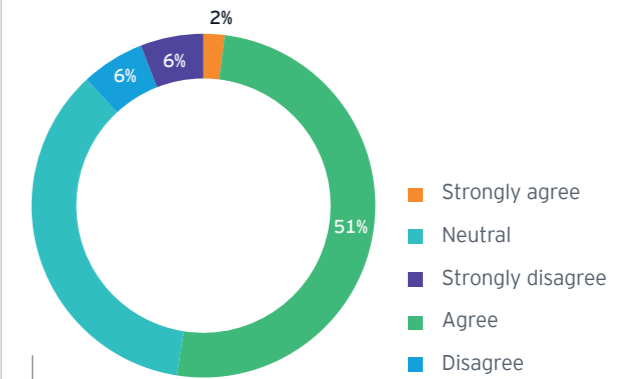
“There is significant funding for innovation and preparatory steps for export, but a) this could be much larger, and is in other advanced economies; b) there is little support for the demand side, which is the largest barrier to expanding clean production.”

Respondents noted that while the states' efforts around developing investment conditions to support the renewable industry are more tangible and visible, there is a lack of coordination driving change across states and territories. Some noted a lack of Federal focus was contributing to this gap.

53% of respondents agreed that state and territory governments are actively developing the right investment conditions to support renewable and clean manufacturing export opportunities, with a further 36% neutral. Of those who agreed, many noted that state and territory governments are leading the way in propelling renewable and clean manufacturing opportunities through investing in renewable energy zones, creating subsidies for the industry and engaging with the private sector to form partnerships.

“State governments are all contributing to their local industry development with subsidies, REZ programs and engagement with industry.”

STATE GOVERNMENTS ARE DEVELOPING THE RIGHT INVESTMENT CONDITIONS TO SUPPORT RENEWABLE AND CLEAN MANUFACTURING EXPORT OPPORTUNITIES.



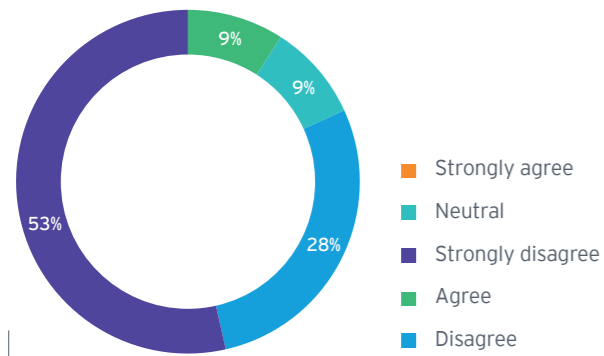
Respondents did, however, note a lack of coordination of efforts between states and territories weakened the capacity to scale national renewable and clean export opportunities. It was observed that establishing the right investment conditions and de-risking transactions through coordinated and efficient policy and regulatory settings are critical to unlocking capital, particularly into large scale fixed assets or projects with a longer return period.

“State government policies are not co-ordinated with each other in any meaningful way which is a real problem for nationally operating businesses or investors.”

At the time of writing, 81% of those surveyed indicated Australia lacks a clear federal policy mandate. Further developing national policy direction was therefore highlighted as critical to accelerating Australia's renewable and clean manufacturing opportunities.



**THERE IS A CLEAR FEDERAL POLICY DIRECTION WHICH WILL ACCELERATE AUSTRALIA'S RENEWABLE DEPLOYMENT AND UNLOCK OUR CLEAN MANUFACTURING POTENTIAL OVER THE COMING DECADE.**



Beyond impacting the state's abilities to coordinate around renewable and clean manufacturing export opportunities, respondents also noted that the absence of targeted federal policy support for the industry was sending mixed signals to consumers and prospective renewable industries in Australia.

**"The potential is there - in our sun, wind and space opportunities plus our technical capabilities plus our superannuation fund capital and other investment access. The unstable, inconsistent policy environment tempers that potential."**

It is particularly noteworthy given that respondents identified 'a strong and credible Federal Australian climate policy' as the key enabler to unlocking Australia's renewable and clean manufacturing export options.

What do you believe is needed to unlock Australia's renewable and clean manufacturing export options?

1 (40%)	A strong and credible Federal Australian climate policy
2 (15%)	Strong renewable energy targets and associated policy levers
3 (13%)	Development of renewable energy zones and transmission infrastructure
4 (11%)	Explicit green or renewable market incentives to facilitate investment

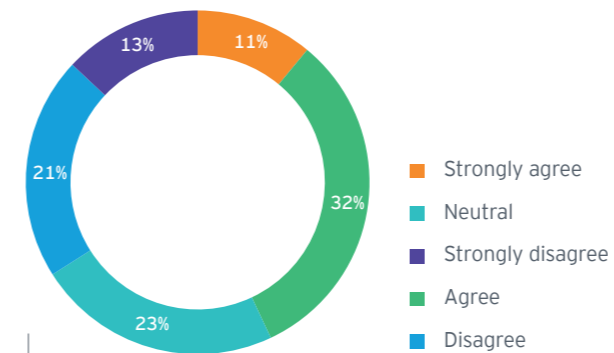
**"With clear and consistent policy to set the foundation for renewable energy ... and a move away from subsidising fossil fuels and destabilising the investment market with uneconomic investments ... the federal government could unleash massive investment and progress."**

**Australia holds necessary trade relationships to support its growth in renewable energy products, commodities and services; however, Australia's regulatory environment impacts Australia's strength as an exporter.**

43% of respondents agreed that Australia's top trade relationships support growth in the nation's renewable energy products, commodities, and services, with a further 23% neutral. Respondents noted that Australia's proximity to major export markets in Asia and the strength of existing relationships strongly position Australia to expand its clean energy exports.

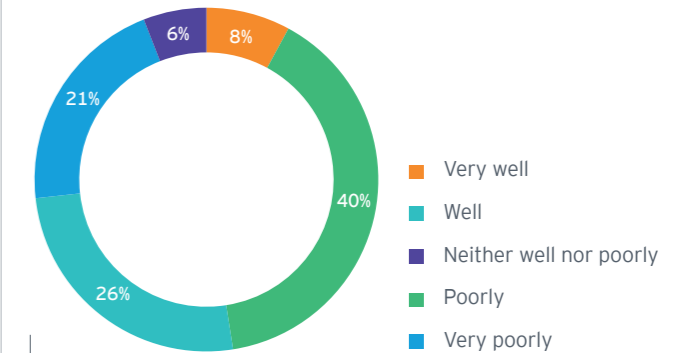
**"Excellent solar and wind resources, abundance of land, low population density, trust trading partner with key Asian markets."**

**AUSTRALIA'S TOP TRADE RELATIONSHIPS SUPPORT GROWTH IN RENEWABLE ENERGY PRODUCTS, COMMODITIES AND SERVICES.**



48% of respondents agreed that Australia is well positioned compared to other countries as a prospective world leading renewable and clean manufacturing exporter, with a further 26% neutral. Respondents noted that Australia's access to natural resources, skilled and educated population, infrastructure and wealth represent key enablers.

**HOW DOES AUSTRALIA, AS A PROSPECTIVE WORLD LEADING RENEWABLE AND CLEAN MANUFACTURING EXPORTER, COMPARE TO OTHER COUNTRIES?**

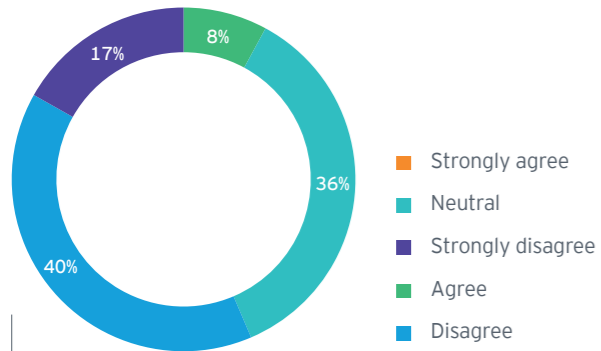


Additionally, 57% of respondents noted that Australia's regulatory environment does not readily enable export of renewable energy products and services, with only 8% feeling that it was structured to support the industry. Respondents observed that Australia's current regulatory environment has proven to be disruptive to international trade and has ultimately hampered Australia's access into the export market.

**"Australia is not the only country with renewable resources - there is competition for new, renewable powered export industries ... Australia will miss out on investment in new industries and jobs if we fail to create more certain policies to support renewable energy and exports."**



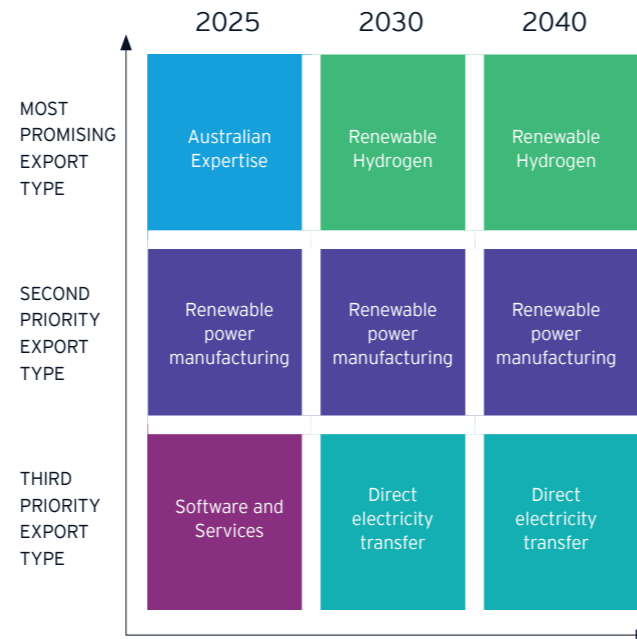
THE CURRENT REGULATORY ENVIRONMENT IS STRUCTURED IN A WAY THAT READILY ENABLES EXPORTING RENEWABLE ENERGY PRODUCTS AND SERVICES.



“Transmission costs and attitude of regulatory bodies to the transition and exports reduces Australia’s competitive position.”

Australia’s key renewable export opportunity is Australian expertise in the short-term (2025), with renewable hydrogen and renewable power manufacturing, products and commodities the key medium (2030) and longer-term (2040) prospects.

Of the six renewable energy and clean manufacturing exports that WWF-Australia has identified, 43% of respondents indicated that Australian expertise was the most promising prospect in the immediate term (2025); supporting the sentiment that Australia currently has the skills and capabilities to drive a strong renewable and clean manufacturing export market. 26% of respondents observed renewable power manufacturing as Australia’s second strongest prospect over this time horizon.



“Australia has renewable resources that are the envy of the world, a relatively stable political environment, excellent technical skills, and a very small population.”

Over the medium (2030) and longer-term (2040), renewable hydrogen and renewable power manufacturing were identified as Australia’s strongest export prospects. For the 2030 horizon, 38% viewed renewable hydrogen as the strongest export opportunity, with 32% selecting renewable power manufacturing. For 2040, 43% indicated renewable hydrogen as the primary export, with 32% again selecting renewable power manufacturing.

Respondents noted that Australia’s wealth of natural resources, strength of manufacturing capability and existing infrastructure placed the nation well to focus on renewable hydrogen and renewable manufacturing as key export opportunities over the medium and longer-term.



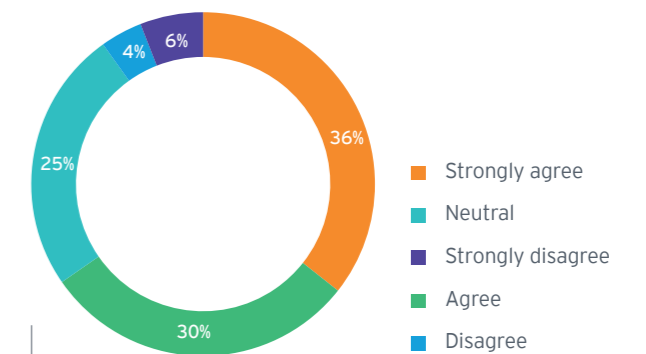
“We have the renewable resources, the minerals, the manufacturing capability and the know-how to transform our exports. The core ingredients to Australia being a renewable superpower are in place. We just need to bake the cake.”

These results suggest that Australia can harness the strength of its expertise over the short-term, however, a transition to producing renewable products and services and a strong focus on renewable hydrogen are expected to be key to maintaining Australia’s strength as a major renewable and clean energy exporter over the medium and longer-term.

There is appetite to become more involved in renewable and clean manufacturing export opportunities, with significant growth potential observed.

66% of respondents noted that their organisation or members are already pursuing or exploring renewable export options. This indicates a moderate to high level of uptake of renewable exports across leading industries and research groups throughout Australia.

MY ORGANISATION OR MEMBERS ARE ALREADY PURSUING OR EXPLORING RENEWABLE EXPORT OPTIONS.

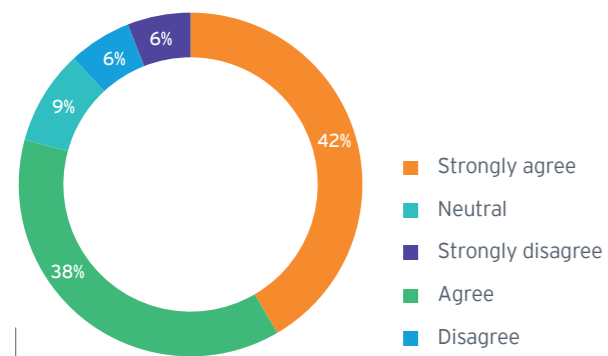




Complementing this, 62% are seeking to become more involved in renewable energy exporting, with only 14% of respondents indicating they are not looking to increase their involvement. Respondents did, however, comment that necessary preconditions, including a strong policy direction and necessary investment will be essential to increasing their involvement across the industry.

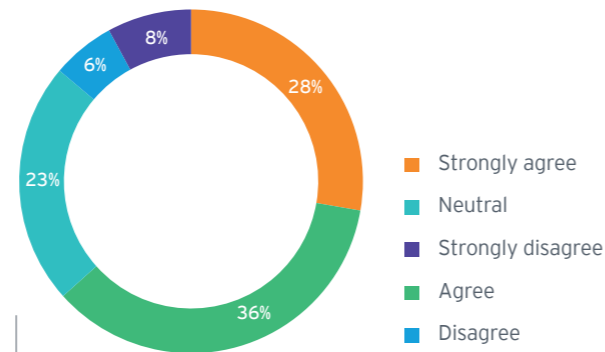
**“There are a lot of positives in recent years, however, the scale of investment required and challenges with energy transition mean the lack of Federal leadership continues to hamper efforts.”**

**MY ORGANISATION OR MEMBERS SEE SIGNIFICANT GROWTH POTENTIAL THROUGH TAKING PART IN THE RENEWABLE AND CLEAN MANUFACTURING EXPORTING INDUSTRY.**



Further, 80% of respondents saw significant growth potential through participating in the renewable and clean manufacturing export industry. Renewable and clean export options were observed to not only shape the growth trajectory of respondent’s organisations, but Australia as a nation through contributions to GDP, reduced utility bills and overall prosperity.

**MY ORGANISATION OR MEMBERS ARE SEEKING TO BECOME MORE INVOLVED IN RENEWABLE ENERGY EXPORTING.**



**“Anything that accelerates decarbonisation and reduces the physical impacts of climate change will benefit all sustainable businesses. This would be an important piece in that puzzle.”**





# CONCLUSIONS

**Results from this survey indicate clear support from a range of experts across different sectors for Australia transforming into a renewable energy superpower. The country is seen to have the resources, skills and capabilities to drive a robust, world-leading renewable and clean manufacturing export market, with the trade relationships able to buoy the industry. Accordingly, respondents were optimistic about the growth potential for the industry in Australia and many organisations or their members are actively pursuing new clean and renewable manufacturing export opportunities.**

Results do, however, indicate that while Australia is well positioned to become a leading exporter, a more coordinated national policy focus and targeted support for the growth of the industry will be critical to ensuring that Australia successfully and competitively positions itself for the growth of its clean energy exports and doesn't lose ground to key competitors over time.

Australia currently finds itself in an ideal window to harness its renewable and clean manufacturing export potential, however, results from this survey indicate that this window may start to close if further national efforts are not cast toward building out the industry in the immediate-term.<sup>7</sup>

<sup>7</sup> This report was prepared ahead of the federal government's COP26 update, where there may be more support announced as part of year two of the updated technology map.



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