

ACF Submission to the Inquiry into Australia's transition to a green energy superpower

The Australian Conservation Foundation (ACF) welcomes the opportunity to provide a submission to the Joint Standing Committee on Trade and Investment Growth Inquiry into Australia's transition to a green energy superpower.

Introduction

ACF is Australia's national environment organisation. We are over 700,000 people who speak out for the air we breathe, the water we drink, and the places and wildlife we love. We are proudly independent, non-partisan and funded by donations from our community.

ACF believes that Australia and the world face an unprecedented climate and mass extinction crisis caused first and foremost by digging up and burning fossil fuels like coal, oil, and gas. However, Australia is also home to some of the world's best renewable resources and with coordinated policy action, we believe Australia can position itself as a global leader in the growing net-zero world market.

Together with the Business Council of Australia, the Australian Council of Trade Unions and WWF-Australia, in 2021 ACF commissioned leading analysts at Accenture to develop and publish "*Sunshot: Australia's Opportunity to Create 395,000 Clean Export Jobs*" ('The Sunshot Report'). This report outlined the impacts of the global energy transition on Australia's exports – particularly coal, gas and high-embodied emissions goods, Australia's natural advantage and potential economic opportunities associated with clean energy exports and policy recommendations. Critically, the report outlines that Australia cannot have it both ways, and if we are to thrive in a net-zero global economy – we must prioritise quickly diversifying and transitioning to renewable-powered exports.

ACF recommends the Net-Zero Economy Taskforce develops a 'Renewable Export Strategy' with the view for the Strategy to be legislated by the Federal Government. A Renewable Exports Strategy would include a whole-of-government approach and signal to workers and communities affected by the energy transition, Australian businesses, investors, regional areas and our trading partners, the direction Australia is heading. After nearly a decade of inaction, providing a sense of certainty will be critical to ensure a smoother, more effective transition for all stakeholders.

Recommendations:

Recommendation 1: The Net-Zero Economy Taskforce develops a Renewable Exports Strategy with clear targets, to be legislated by the Federal Government. A Renewable Exports Strategy is a comprehensive strategy to develop a wide range of renewable export industries and establish international markets for renewable energy products and services and is a cooperative, unifying national approach bringing together governments, industry, unions, First Nations people, R&D and the education sector.

Recommendation 2: Incentivising new mines to develop domestic refineries: The Federal Government should incentivise the development of refineries alongside new mines given the nascent scale of the refinery industry in Australia. Barriers to developing new industries such as high capital expenditure costs and low existing industry experience can be overcome by providing incentives to companies that wish to develop new mines. For example, an incentive could take the form of a



royalty discount to promote refining, similar to processing discounts implemented by Western Australia and Queensland.

Recommendation 3: Developing a targeted workplace and skills strategy, including policies to ensure there is a sufficient pipeline of workers and students trained in critical minerals sector will ensure there is the workforce in place to meet the increased demand. This demand could be met through retraining of coal miners given their existing relevant skills. Enrolment and completion of resources related training and education have significantly decreased and policy is required to ensure there is an adequately trained workforce.

Recommendation 4: Incentivising R&D in renewable-powered minerals refining. Policies that encourage the research and development of new methods of extracting and refining minerals using renewables will improve Australia's competitiveness and energy efficiency in the extraction and refining process. Australian specific R&D could develop processes for Australian-specific minerals that differ in composition to other countries. This expertise would enhance Australia's local extraction industry.

Recommendation 5: Co-investing in renewable hydrogen production facilities. Through co-investment, governments can directly support flagship projects to drive the scale-up of Australia's clean export industries, attract global investment and accelerate the diversification of Australia's exports. Co-investment would ensure that renewable hydrogen production facilities can scale and reach the cost competitive stage despite the existing cost gap.

Recommendation 6: Creating carbon contracts for difference. Carbon contracts for difference (CCfDs) bridge the cost gap between hydrogen produced with renewable energy and hydrogen from fossil fuels, helping support demand for the zero-carbon fuel. By providing reliable price support, CCfDs provide an attractive risk profile for investment. CCfDs are highly effective but can be expensive in the early stages of market development when the cost gap is wide. The cost of CCfDs declines over time as the cost gap narrows.

Recommendation 7: Legislating targets for electrolyser capacity. Specific, measurable, and time-bound targets for electrolyser capacity underpinned by credible policies would encourage the expansion of hydrogen production capacity.

The Economic and Social Opportunities for Australia through Renewable-Powered Exports

Australia holds almost all of the renewable resources required for Australia to succeed in the growing net-zero economy, as well as assisting many of our trade partners. An abundance of sun and wind, a commitment for a national transmission plan (being 'Rewiring the Nation'), large quantities of the critical metals and minerals required for both industrial development and decarbonisation, as well as highly skilled workforce, strong trading relationships and a proximity to Asian markets. However, strong, and certain policy direction is essential to complete Australia's natural competitive advantage.

The Sunshot report focused on six types of renewable energy export opportunities that can fuel Australia's growth in the low emissions economy:

1. Exporting hydrogen or ammonia produced with renewable energy
2. Processing and exporting higher value metals (e.g. steel and aluminium) using renewable energy
3. Exporting minerals critical for production of clean energy technology
4. Exporting batteries manufactured in Australia
5. Exporting education and training services built on our strong clean energy economy
6. Providing clean energy services.



These six renewable export opportunities are significant. By conservative estimates, they have the potential to generate \$89 billion of gross value added and 395,000 jobs for Australia in 2040. This is 19% greater revenue, 11% greater value add and over 83,000 more direct jobs in 2040 than the current fossil fuel industry (metallurgical and thermal coal mining, oil and gas extraction) generated in 2020.¹ A significant proportion of the jobs will be in regional Australia and where carbon-intensive industries are currently concentrated—specifically, regional WA, Central and Outback Queensland and South Australia, Illawarra and the Hunter Valley.²

These opportunities create employment prospects for workers across qualification levels: 31% of jobs don't require post school qualifications, 34% require a bachelors degree and 31% require a Certificate III. Every state and territory would benefit from Australia embracing renewable exports:³

- Queensland: approximately 77,800 jobs. The top three opportunities are in critical mining and refining (38k), green metals (15k), and education and training (9k).
- South Australia: approximately 30,700 jobs. The top three opportunities are in green metals (14k), education and training (4k), critical minerals mining and refining (5k).
- Western Australia: approximately 68,500 jobs. The top three opportunities are in critical minerals mining and refining (23k), green metals (28k), renewable hydrogen (8k).
- Northern Territory: approximately 6,300 jobs. The top three opportunities are in critical minerals mining and refining (4k), green metals (1k) and other opportunities (1.3k).
- New South Wales: approximately 98,700 jobs. The top three opportunities are in critical minerals mining and refining (23k), green metals (34k), education and training (19k).
- Victoria: approximately 67,500 jobs. The top three opportunities are in critical minerals mining and refining (24k), batteries (14k), green metals (13k).
- ACT: 4,100 jobs. The top three opportunities are in education and training (1.7k), critical minerals mining and refining (1k), and green metals (0.7k).
- Tasmania: approximately 11,200 jobs. The top three opportunities are in green metals (5k), critical minerals mining and refining (3k), and education and training (1k).
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Momentum is growing quickly – Australia is already leading the world for holding the largest share in the announced “pipeline” of green hydrogen electrolyser projects. We are the home to approximately 95GW out of a global pipeline of 375GW.⁴ However, Australia must act quickly with policy interventions to retain the mantle as Europe and Asia charge ahead.

The Impacts of the Global Energy Transition on Australia's Existing Exports

Australia's export portfolio is currently dominated by fossil fuels (such as thermal coal and LNG), high embodied emission goods (such as aluminium) and inputs into high emissions or energy-intensive products (such as iron ore and metallurgical coal). The top 10 exported goods represent 60% of Australia's total export value and 16% of Australia's GDP, of which 97% are fossil fuels or have high embodied emissions – leaving Australia's economy extremely vulnerable to global market changes as our trading partners decarbonise.⁵

The International Energy Agency's Net Zero by 2050 scenario outlines the steps to decarbonise and reach net-zero energy-related and industrial process greenhouse gas emissions globally by 2050. This scenario projects a significant decline in demand for thermal coal, oil and natural gas by 2040. Specifically, demand for thermal



coal—which represents 6% of Australia’s current exports—is expected to decline 80% globally by 2050 in the IEA’s net zero by 2050 scenario due to the significant uptake of renewables to replace coal in energy supply.⁶ The emissions embodied within Australian exports must also become a stronger priority for Government. Many countries, including our major export destinations (e.g. China, Japan, Korea) have adopted net zero carbon targets and regulations that tax carbon-intensive imports such as the European Union’s Carbon Border Adjustment Mechanism (‘CBAM’) have already come into effect. For Australia to align with the emissions reduction ambitions of our export customers and be competitive with other exports, we must prioritise growing our use of renewable energy to decrease the embodied emissions within our export portfolio.

Harvard University’s *Atlas of Economic Complexity* ranks Australia 86th in the world for economy complexity. This reflects the minimal diversity – how many products exported – and higher ubiquity –how many other countries export the same product – of our exports. Australia’s complexity ranking reflects Australia’s exports being more concentrated in a small number of sectors compared to other countries, with a more diverse and therefore more resilient economy. While fossil fuel and emissions-intensive exports have been in high-demand, Australia has reaped the economic benefits, but as demand shifts – Australia risks being stranded in a low-emissions market.⁷

It must also be noted that Australia’s exports, and particularly coal and gas exports, are Australia’s biggest contribution to global greenhouse gas emissions and therefore climate change. Australian communities around the country are already experiencing the impacts of ongoing climate events – such as extreme floods, bushfires, heatwaves, weather events and droughts. Australia’s economy faces significant risks, as described, from failing to transition to low-emission exports – but everyday Australians face greater risks to their lives and livelihoods if Australia continues to export fossil fuels and drive the climate crisis to higher levels of devastation.

Emerging and Possible Future Trends and Accelerating Areas of Growth:

With the International Energy Agency warning that no new fossil fuel projects can be developed if we are to reach net-zero by 2050, the United States recently passing the Inflation Reduction Act to shift to a cleaner energy economy, and Russia’s illegal invasion of Ukraine - the race away from fossil fuels towards cleaner energy is set to continue picking up speed.

Diversifying global supply chains through value-adding to Australia’s critical minerals:

Improving Australia’s market share over low-emissions technology and energy supply chain holds benefits for the security of Australian businesses, industry and jobs, as well as having flow-on benefits to our trading and diplomatic partners. Put simply, the more we manufacture and produce in Australia – the more Australia benefits.

The IEA NetZero by 2050 scenario predicts a significant increase in global demand of critical minerals by 2040 by as much as 6 times 2020 levels. This means that the projected demand for copper, nickel, lithium, cobalt and rare earth minerals will become a \$500 billion global market by 2040. These demands are driven by the dramatic expansion of clean energy technologies such as solar PV, wind turbines, and battery storage as well as the rapid uptake of electric vehicles. All low-emissions energy technologies require critical minerals as inputs. The minerals most commonly in demand across all technologies are copper, aluminium, nickel, and chromium. Other critical



minerals such as lithium, cobalt and rare earths that are not inputs across all technologies are nonetheless central inputs for specific technologies such as battery storage.⁸

China currently has the majority global share of processing of all the critical minerals of interest, including copper, nickel, cobalt, lithium and rare earth elements. In 2019, China was responsible for processing a 65% share of Cobalt, 58% share of Lithium and 87% share of rare earths. China has developed the expertise and infrastructure for processing that has led to the cornering of the market.

Meanwhile, Australia has significant reserves of five minerals critical for the energy transition: copper, nickel, lithium, cobalt and rare earth elements (REE), but we fail to process these domestically, exporting raw materials to be value added by overseas economies instead of our own.

Mineral	Australia Currently Producing	Known Reserves in Australia
Lithium	49% of annual lithium produced globally	22%
Cobalt	4.1% of annual Cobalt produced globally	20%
Nickel	7% of annual Nickel produced globally	21%
Copper	4.4% of annual Copper produced globally	20%
REE	7.1% of annual REE produced globally	2%

Within the lithium market, there are two main chemicals that are traded globally: lithium carbonate and lithium hydroxide. Lithium hydroxide is expected to increase in market share as battery chemistry shifts towards nickel-rich NCM-811 batteries. Currently Australia primarily mines minerals and does not have a developed refining industry, and hence is not capturing the additional value add and jobs. Yet Australian spodumene concentrate is currently more cost-competitive to produce into lithium hydroxide than other brine producers. Australia is well placed to capture these additional benefits through expanding into processing.⁹

Given Australia's mining expertise, extensive infrastructure and ports, political stability and ability to scale up quickly to demand – Australia is a desirable supplier and home for investment.

As Australia's like-minded trading partners seek to diversify from China's majority global share over critical mineral processing, Australia has an opportunity to improve its vertical integration: continuing to be the home to critical minerals mining, and value-adding through greater refining capacity, and higher levels of local manufacturing and assembling up the supply chain. This would develop the economic benefits to Australia – such as a greater number of jobs in regional Australia, greater supply chain security and higher diversity within our exports, but would also carry benefits to mining companies in Australia. Mining companies that expand down the value chain into refining have competitive advantages from secure supply of raw materials, reduced input costs for the raw material over companies that are not integrated, and lower logistics costs from on-site refining, and of course strengthening domestic supply chains without the need for increasing competitive inputs. Furthermore, transportation of raw materials is often highly inefficient, since often the ore contains a very small.¹⁰ In addition, such policies will reduce domestic manufacturing costs such as for the proposed Townsville 18GWh lithium-ion battery manufacturing factory and the Battery Manufacturing Precinct in Queensland.

Australia also has several key advantages to producing green steel domestically: we are the largest producer of iron ore in the world and have renewable energy potential in wind and solar to be used for direct reduction and



electric arc furnaces. World steel demand is expected to reach a market value of \$1.2 trillion in 2040 from the growth in construction, transport, industrial and clean energy sectors.¹¹ Illawarra, currently home to a steel-producing hub, could benefit enormously from a well-funded and coordinated transition to green steel – which could revive and grow an existing industry. Likewise, with the abundance of renewable resources as well as proximity to iron ores – the Pilbara region could benefit enormously from growing global demand for green steel.

Vertical integration and an emphasis on value-adding to Australia's critical minerals and metals would deliver the benefits of significantly more jobs – particularly in regional areas, and Australia's industries being more secure and resilient to global supply chain shocks. Likewise, given the potential human rights violations that currently exist in critical mineral mining¹², Australia can be a quality supplier that can help influence global standards in the market – which adds to our investment attraction to like-minded trading partners.

Green hydrogen:

The International Energy Agency has projected the global renewable hydrogen market size to be \$750 billion by 2040 as sectors decarbonise. The cost of electricity makes up approximately 75% of hydrogen's production cost and therefore, a significant supply of cheap renewable energy is necessary.¹³ Australia holds a competitive advantage given the high-capacity factor for renewables and opportunities for solar and wind energy to be co-located. Electrolysers contribute approximately 17% to production costs – however the cost is projected to drop substantially by 2030¹⁴ with a Bloomberg NEF report predicting that renewable hydrogen will become the cheapest source of hydrogen in Australia as early as 2027, and cheaper than blue hydrogen from natural gas across the world by 2030.¹⁵

Other nations are moving quickly to seize the opportunity and the demand for green hydrogen is growing quickly.

- Chile announced an ambitious National Green Hydrogen Strategy in 2020 that sets an ambitious target of 5GW of electrolysis capacity operation or under development by 2025, and 25GW electrolyser capacity by 2030. The Government of Chile has committed \$50 million in financing for pilot projects to reach three main goals: 1) to reach 5 GW of electrolysis capacity under development by 2025, 2) produce the most cost-efficient green hydrogen by 2030, and 3) be within the top 3 exporters by 2040. Chile has similar renewable energy resources to Australia and hence a similar competitive advantage to producing hydrogen.¹⁶
- Germany announced a national hydrogen strategy in 2020 that set a target of 5 GW of electrolyser capacity by 2030. To reach this target, 38 measures across hydrogen production, fields of application, research, education and innovation are introduced. Several examples of these measures include funding for hydrogen and fuel cell technologies, Carbon Contracts for Difference (CCfD) to target steel and chemical industries and increasing demand for low-emissions products.¹⁷
- The Port of Rotterdam, Europe's largest port in the Netherlands, has plans to deliver 4.6 million tonnes of hydrogen to north-west Europe each year by 2030 – most of which would come from imports (up to 4 million tonnes by 2030).¹⁸ Within the RePowerEU plans is a target to import 10 million tonnes of green hydrogen, alongside the EU producing 10 million tonnes by 2030 to replace gas, coal and oil in hard-to-decarbonise industries and transport sectors.¹⁹



Given Australia's proximity to Asian markets (particularly Japan, Singapore, Korea and China), and abundance of landmass and the low cost of producing renewable energy in Australia due to wind and solar resources, existing ports and infrastructure as well as transferable expertise from the LNG sector— Australia is well-positioned to be a major renewable hydrogen producer.²⁰

Climate-focused Foreign Policy

Failure to take responsible action on climate change is already affecting our economy, national security, access to international finance, credibility, and global influence. It undermines our ability to achieve our international objectives as allies and partners penalise Australia for refusing to do our fair share to keep global warming as close to 1.5 degrees as possible. Without stronger climate action Australia will find it increasingly difficult to attract foreign investment and may face trade penalties such as carbon border adjustment taxes and other potential sanctions.

Acknowledging some of the progress already achieved by the current Australian government, we support the recommendations from *Diplomats for Climate Action Now*²¹ and encourage the Australian Government to implement their 'Climate-Focused Foreign Policy'²² including to:

- establish bilateral and regional ministerial climate dialogues and leverage existing bilateral arrangements with key regional partners; and support one and two-track dialogues to discuss climate policy, best practice in emissions reduction, transitioning to a green economy, and building climate-change resilient communities.
- promote the rapid adoption of renewable energy in the region through bilateral business dialogues on renewables and the green economy, funding support for Australian renewable energy exporters, supporting joint renewable energy R&D projects.
- leverage existing Free Trade Agreements to boost renewable exports
- refocus Australia's aid programs to support development partners in their efforts to meet their Paris and COP commitments and support partner government agencies and civil society and business organisations to develop the regulations and skills needed to build green economies.

Australia already has memorandums of understanding (MOU) in place with countries including the Republic of Korea, India and Japan.²³ These MOUs have objectives such as building on investment in Australian critical minerals projects, boosting our exports and securing supply for the partner country. DFAT and Austrade should continue working with key trading partners to develop government-to-government and commercial arrangements that support both countries' critical minerals priorities, including supporting critical minerals investment and reliable supply.

Policy recommendation: The Federal Government Should Develop a Renewable Exports Strategy

The Business Council of Australia, the Australian Council of Trade Unions, the Australian Conservation Foundation and World Wildlife Fund for Nature Australia are all calling for the establishment of a renewable exports strategy with clear targets backed by credible policies. A Renewable Exports Strategy builds on domestic renewable energy and decarbonisation strategies but goes much further to unlock Australia's massive potential to thrive in a decarbonising world. It is a comprehensive strategy to develop a wide range of renewable-powered export industries and establish international markets for renewable energy products and services and is a cooperative,



unifying national approach bringing together governments, industry, unions, First Nations people, R&D and the education sector. A Renewable Export Strategy must include clear growth targets and be backed up by credible policies including co-investment and financial incentives to unlock the scale of the opportunity.

By capitalising on Australia's abundant sun, wind, space, expertise and trading relationships, Australia can power new export industries, creating thousands of new jobs and helping to accelerate the global effort to rapidly reduce greenhouse gas emissions. A national strategy would:

- Accelerate Australia's decarbonisation whilst creating hundreds of thousands of jobs, with many in the regions,
- Support workers and communities affected by the energy transition establishing an energy transition authority,
- Prepare the workforce by developing the long-term skills required,
- Create certainty and incentives for businesses and investors catalysing investment in renewable energy and the full range of export opportunities,
- Put in place the necessary infrastructure,
- Support research and development,
- Help other countries decarbonise faster by utilising and selling our renewable resources, products, skills and expertise,
- Signal to Australia's diplomatic and trading partners that we are serious about climate action.

By committing to develop a Renewable Exports Strategy with consultation from the relevant industry representatives, unions, First Nations people, climate and environment organisations and the education sector – the Government will have taken a critical step forward to ensuring Australia is positioned to truly be a renewable superpower in a net-zero world.

