

30 November 2022



To the Joint Standing Committee on Trade and Investment Growth,

Thank you for the opportunity to make a submission regarding Australia's transition to Green Energy Superpower. [Beyond Zero Emissions](#) (BZE) is an independent, solution focussed think tank and our research demonstrates the benefits of driving this transition as rapidly and effectively as possible.

Australia has a wealth of renewable resources and is uniquely positioned to become a significant international player in green exports. In our 2021 Export Powerhouse report we identify a \$333 billion green export opportunity by 2050 (almost triple the value of 2019 fossil fuel exports¹). To achieve this, we need a rapid roll out of renewable energy generation, supported by an effective grid and sharp focus on reindustrialising the nation using Renewable Energy Industrial Precincts (REIPs) as a core model.

We welcome this consultation and in particular recommend the Government:

- set a national clean commodity export target of \$100 billion (including renewable hydrogen, green steel, green aluminium, and critical minerals) by 2035
- set green export investment as a priority for DFAT, Trade and Investment Growth
- drive rapid roll out of renewable energy generation (100% by 2030), supported by a fit-for-purpose Supergrid (including transmission, firming, distribution, system security and equitable access)
- invest \$6.3 billion to coordinate and launch seven Renewable Energy Industrial Precincts over the next 10 years and work towards 14 Renewable Energy Industrial Precincts in the longer term
 - launch by investing \$140 million to establish two first-mover locations in 2022-23.

Please find below our responses to the topics outlined in the inquiry Terms of Reference (ToR), we would welcome the opportunity to discuss this further.

Yours Sincerely,

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¹ Beyond Zero Emissions, 'Export Powerhouse: Australia's \$333 Billion Opportunity'.

Beyond Zero Emissions' response to an [Inquiry into Australia's transition to a green energy superpower](#)

TOR1: Trade and investment activities already having a positive impact

Beyond Zero Emissions (BZE) currently works in two locations considered optimal for Renewable Energy Industrial Precincts, Gladstone, QLD and the Hunter Valley, NSW. Renewable Energy Industrial Precincts are clusters of manufacturers powered by 100% renewable energy and storage. They protect and grow jobs in Australia's industrial and manufacturing heartlands by repowering existing industries with renewable energy and encouraging new industries to the region².

Our analysis of the trade and investments in these areas demonstrates appetite and global interest in renewable power manufactured products. For example, ASX-listed Alpha HPA was the first company in the area to commit to 100% renewable electricity to drive operations, with a Memorandum of Understanding with CleanCo³. Recent Federal investment (\$15.5 million Critical Minerals Accelerator Initiative (CMAI) grant) has accelerated Alpha HPA's construction of a Precursor Production Facility in Gladstone with a projected startup date of late 2022⁴. This is the first part of a multi-stage project, once completed, Alpha HPA is anticipated to produce over 10,000 tonnes of high-purity green alumina (4N5 or 99.995% pure) per annum from the project and to see annual free cash flow of \$280 million. The project will support around 120 new regional jobs.⁵

Additional trade and investment activities having a positive impact:

- US Inflation Reduction Act
- Fortescue target of producing 15 Mt of renewable hydrogen by 2030
- Sun Metals investment into renewables and green metals
- Rio Tinto/Tomago transitioning aluminium smelters to renewable electricity by 2030
- Hydrogen and decarbonisation targets from Japan, South Korea, Europe, UK and other key trading partners

At a 2021 investor roundtable co-hosted by BZE and Climateworks Centre to discuss the potential of Renewable Energy Industrial Precincts, business leaders representing Australia's largest fund managers, banks and institutional investment agreed that investment certainty through government policy/support was key to unlocking private investment.

² ACIL Allen, 'Regional Economic Impact Analysis of Renewable Energy Industrial Precincts Central Queensland REIP'.

³ Alpha HPA, 'Report on Activities for the Quarter Ended 20 June 2021'.

⁴ 'Alpha HPA Awarded \$15.5m Grant to Expand High Purity Alumina Production'.

⁵ Alpha HPA, 'Our Projects'.

Demand for green products accelerating = huge economic opportunity

Global decarbonisation is driving a rapid shift away from fossil fuel dependent industries and exports. Australia's industrial communities know change is coming and local industrial players such as Fortescue and Tomago Aluminium are championing the charge towards repowering with renewable energy through their commitments.

Australia has the opportunity to benefit from the transition to a net-zero world by firmly embedding itself within the supply chain of an international zero-emissions economy, supplying **critical materials, energy and green commodities** to trading partners. Our unique mix of abundant renewable resources, and strong energy and minerals export history give us the perfect platform to drive economic growth at home and decarbonisation around the world, but we must act now.

BZE's Export Powerhouse report shows that we can generate \$333 billion in revenue by 2050 by exporting renewable goods such as green steel/aluminium, renewable hydrogen and sustainably mined and processed critical minerals⁶. A number of independent reports show similar findings, summarised in Table 1 at the end of this section. To drive this we recommend the government:

- set a national clean commodity export target of \$100 billion (including renewable hydrogen, green steel, green aluminium, and critical minerals) by 2035
- set green export investment as a priority for the Department of Foreign Affairs and Trade, Trade and Investment Growth
- leverage existing trade partnerships to cement Australia's position as a reliable zero-emissions supply chain partner
- drive rapid roll out of renewable energy generation (100% by 2030), supported by a fit-for-purpose National Supergrid (including transmission, firming, distribution, system security and equitable access).

Coordination through Renewable Energy Industrial Precincts will get us there faster

Renewable Energy Industrial Precincts (clusters of manufacturers powered by 100% renewable energy and storage) provide a unified and coordinated vision to make the most of this export opportunity. They eliminate the 'chicken and egg' problem of establishment and enable the coordination of infrastructure, energy and skills required to transform our existing manufacturing heartlands into thriving zero-emission industrial powerhouses.

Renewable Energy Industrial Precincts are a compelling and logical solution for rapid industrial decarbonisation while delivering economic opportunities that honour the industrial heritage and values of the local community. Renewable Energy Industrial Precincts provide the structure and support these plans need, ensuring a vision of continued leadership of these communities in Australia's energy and manufacturing future. Many elements are coming into

⁶ Beyond Zero Emissions, 'Export Powerhouse: Australia's \$333 Billion Opportunity'.

place already but federal support in coordination and planning is essential⁷. To drive this we recommend the government launch a national Renewable Energy Industrial Precinct activation plan to include:

- invest \$140 million in establishing two first-mover locations in 2022-23
- invest \$6.3 billion to coordinate and launch seven locations over 10 years in priority areas
- work towards 14 locations in the longer term.

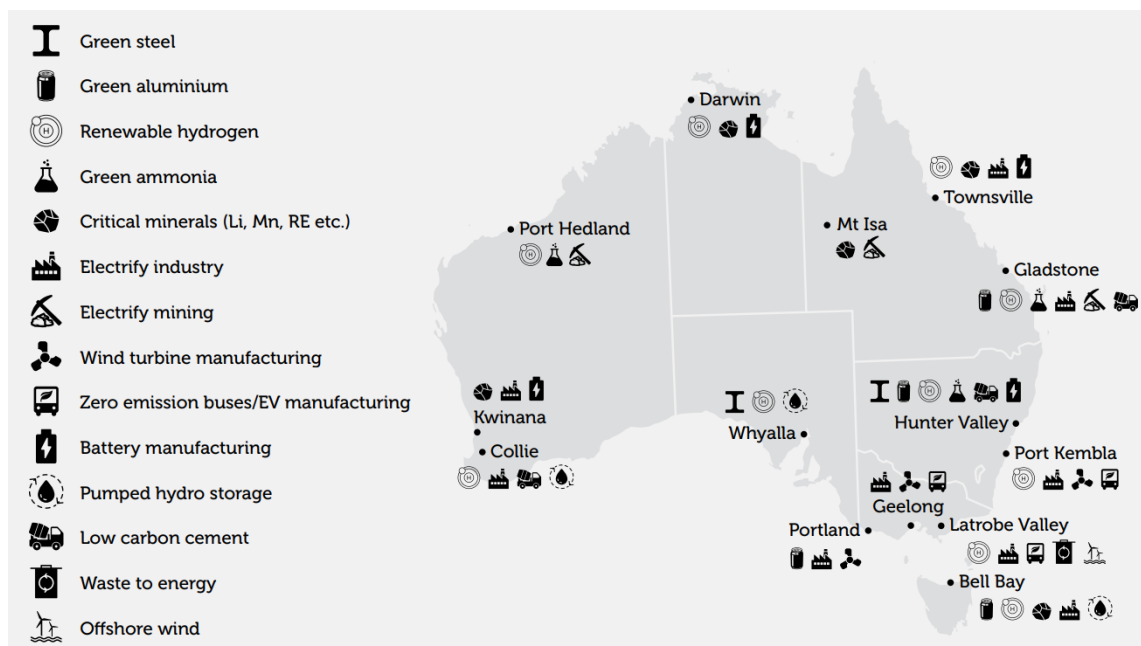


Figure 1: Renewable Energy Industrial Precinct locations around Australia and their potential industry opportunities.

Collaboration is of the essence

Collaboration between companies within Renewable Energy Industrial Precincts is already happening but more coordination and support will help this land better and faster. Our work on Renewable Energy Industrial Precincts emphasises this with a model that encourages regional collaboration, driving a sense of community and momentum. Developments in NSW around clean manufacturing precincts, their Net Zero Industry and Innovation program and the announcement of \$305 million to decarbonise heavy emitting industries reflect this.⁸ There are similar plans in Central Queensland, driven by the Statement of Cooperation between public and private stakeholders such as Rio Tinto, Orica, Alpha HPA and the Queensland Government.⁹

⁷ Dr Amanda Cahill and The Next Economy, 'What Regions Need on the Path to Net Zero Emissions'.

⁸ NSW Government, 'Net Zero Industry and Innovation'.

⁹ Queensland Government, State Development, Infrastructure, Local Government and Planning, 'Seizing the Clean Energy Industry Opportunity - Statement of Cooperation'.

BZE's work in the Hunter and Gladstone regions reveals a strong community desire for a well planned transition while maintaining economic prosperity^{10,11}. Economic analysis of **Renewable Energy Industrial Precincts** in these regions shows that it is possible to do both, creating over 45,000 new jobs and an increase in annual revenue of \$13 billion by 2032.

Each Renewable Energy Industrial Precinct will be shaped by its existing industry and workforce as well as local resources and community desires. For example:

- **Gladstone:** Existing major local industries have committed to net zero targets and are actively collaborating on how to meet their transmission, storage and renewable energy requirements. In addition, high quality renewables combined with a deep water port and an experienced gas export workforce make it ideally suited for renewable hydrogen.
- **Hunter:** Strong mining equipment, technology and services (METS) sector already working towards zero-emissions solutions. Aluminium and chemical manufacturing are also well suited for decarbonisation, while the ongoing legacy of steelmaking, port facilities, research capabilities and workforce make it ideal for green steel manufacturing.

Regional innovation

Other examples of Gladstone and the Hunter companies that are powering and repowering their operations with renewable energy and growing cleantech manufacturing capacity, thus growing and protecting manufacturing jobs, include:

- Molycop¹² and Martin Milltech Bright - transitioning from traditional steel manufacturing to Green Steel
- AGL - investigating options in the Hunter to capture renewable hydrogen opportunities
- Ampcontrol- providing renewable energy powered options to support zero-emissions mineral mining, such as the Solar Cube, Gilghi and batteries for electric mining vehicles
- Energy Renaissance - manufacturing niche lithium-ion batteries suitable for hot climates including for domestic use and export to South East Asia. This Hunter-based, advanced manufacturer is growing and onshoring its supply chain.
- Alpha HPA - manufacturing high purity aluminium products for use in low emissions products like electric vehicles and LEDs (as mentioned in TOR1).

BZE is also aware of other industry moves towards renewable energy indicative of strong national and international appetite for decarbonisation, including:

- CQ-H2 project from Stanwell, Iwatani and others, H2U's H2-Hub Gladstone - projects to capture renewable hydrogen opportunities

¹⁰ ACIL Allen, 'Regional Economic Impact Analysis of Renewable Energy Industrial Precincts Central Queensland REIP'.

¹¹ Acil Allen, 'Regional Economic Impact Analysis of Renewable Energy Industrial Precincts Hunter Valley REIP'.

¹² Molycop, 'Landmark Sustainable Power Purchase Agreement'.

- Orica - committing to net zero emissions by 2050
- Rio Tinto - publicising strategy to transition to renewable energy for their aluminium smelter and alumina refinery operations in Gladstone and Tomago.
- Fortescue Future Industries - investing in renewable energy generation and equipment (e.g. electrolyzers) to manufacture green hydrogen

Skills shortages/skills training

Deploying renewable energy generating technologies, upgrading the grid to work with 100% renewables by 2030 and growing manufacturing, will create a wide range of job opportunities for Australia. The necessary uplift in skills presents an opportunity to train Australian workers in the skills of the future.

Skilled personnel may be sought through the greater provision of training courses and targeted migration. Pathways to attract and integrate skilled migrants, including recognising international qualifications, will boost the skills base rapidly. At the same time, retraining courses can encourage trades and skills to transition to green manufacturing opportunities. Transitioning these workers into stable, secure and future proof-industries will also benefit the communities in which they live and work.

Transition for all

To be a just transition, with opportunities realised for all, local communities must be at the forefront. First Nations' participation regarding environmental, social and economic impacts needs to be integral to planning, execution and management. Other communities such as farmers and other landholders must also be consulted and financially compensated for use of land and any impacts minimised and preferably mitigated.

The Next Economy has worked with regional communities that are historically economically reliant on fossil fuels to better understand what regions need on a [path to Net Zero](#)¹³. They have undertaken extensive research in communities, a key takeaway is that the earlier this planning begins, the smoother and more likely the success of this transition. RE-Alliance is another organisation that places regional renewal at the centre of the clean power transformation. Its work with landholders recommends that consideration of the social and environmental impacts of new transmission infrastructure be included within the Regulatory Investment Test for Transmission (RIT-T) process.

We also note that [First Nations Clean Energy Network guidelines](#) have recently been launched, these were designed by Australian National University with community¹⁴. BZE is a proponent of using this strong framework to guide meaningful, considered engagement with First Nations communities. New guidelines relating to Aboriginal and Torres Strait Islander

¹³ Dr Amanda Cahill and The Next Economy, 'What Regions Need on the Path to Net Zero Emissions'.

¹⁴ O'Neill et al., 'Clean Energy Agreement Making on First Nations Land'.

Best Practice Principles for Clean Energy Projects and a Clean Energy Negotiations Guide for First Nations will soon be [released](#).

In conclusion

Australia has a wealth of export opportunities and coordination is essential to maximise cooperation and unlock the scale of the opportunity. BZE recommends that the government develop a unified Renewable Export Strategy for Australia to ensure that we become a prosperous zero-emissions economy, building on existing relationships in international markets. This strategy should be created in association with a range of key stakeholders and include both ambitious growth targets and strong policies. It should also traverse governments, industry, unions, First Nations people, research and development, and the education sector.

Table 1: Renewable exports, local manufacturing and job opportunities for Australia

Publication, Organisation	Export Opportunity	Forecast Year
Future Charge , Accenture	Diversified battery industries could contribute \$7.4 billion annually to Australia's economy and 34,700 jobs ¹⁵	2030
Sunshot , Australian Conservation Foundation, WWF-Australia, Business Council of Australia, Australian Council of Trade Unions	Australia's clean export opportunities are enormous. By conservative estimates, they have the potential to generate \$89 billion of gross value added (\$148 billion in revenue) and 395,000 jobs for Australia , this is larger than our fossil fuel industry today and with many more jobs. ¹⁶	2040
Export Powerhouse , Beyond Zero Emissions	Australia has the potential to grow a new green export mix worth \$333 billion per annum , almost triple the value of existing fossil fuel exports ¹⁷	2050
Australian and Global Hydrogen Demand Growth Scenario Analysis , Deloitte	The hydrogen sector could produce an increase to Australian Gross Domestic Product (GDP) of up to \$26 billion on a Net Present Value basis and 16,900 jobs . ¹⁸	2050
Start with Steel , Grattan Institute	Australia has a historic opportunity to create a multi-billion-dollar, export-focused	2050

¹⁵ Accenture, 'Future Charge: Building Australia's Battery Industries'.

¹⁶ Accenture, 'Sunshot: Australia's Opportunity to Create 395,000 Clean Export Jobs'.

¹⁷ Beyond Zero Emissions, 'Export Powerhouse: Australia's \$333 Billion Opportunity'.

¹⁸ Deloitte, 'Australian and Global Hydrogen Demand Growth Scenario'.

manufacturing sector. This includes **\$65 billion in annual export revenue** and **25,000 manufacturing jobs** from green steel.¹⁹

TOR3: The role of key commonwealth agencies in identifying new trade and inward investment opportunities, and assisting Australian companies to access these opportunities, including through whole of government coordination of investment

Beyond Zero Emissions recommends supporting the development of the domestic hydrogen market. This will provide a zero-carbon fuel source to support domestic manufacturing decarbonise operations where operations are hard to electrify. This has two main benefits.

1. Decarbonising Australian manufacturing enables businesses to increase their competitive advantage with exports of zero-emissions products. This advantage will only increase with more and more major trading markets demanding zero-carbon products²⁰
2. Supporting a domestic market enables the viability of hydrogen export market development.

In line with the green hydrogen opportunities, there is also a key role for government departments such as the Department of Foreign Affairs and Trade (DFAT) to help secure offtake agreements with countries such as Japan, South Korea, Taiwan, Europe and UK are existing trade partners, are renewable poor and have strong decarbonisation targets. There is also the opportunity to secure Australia's place in key renewable supply chains (e.g.. critical minerals, lithium-ion batteries, aluminium). Locking in strong trade partnerships builds investor confidence and can be further supported by agencies such as Export Finance Australia and the Clean Energy Finance Corporation. Government support on key infrastructure, skills training and guidance around social licence will promote smooth project delivery. Through supporting these initiatives, the government can also leverage onshore opportunities such as value adding and the buildout of local manufacturing capabilities.

BZE notes that it is important to be cognisant of the scope of the role of green hydrogen in national and global decarbonisation. While electrification with storage such as batteries is typically preferred as a pathway to decarbonise industrial operations, green hydrogen is likely to have an important role to play. It should be prioritised in industrial processes, long term energy storage, and very long distance fuel sources; BZE sees no role for green hydrogen in light road vehicles such as passenger cars nor in buildings.

¹⁹ Wood, Dundas, and Ha, 'Start with Steel: A Practical Plan to Support Carbon Workers and Cut Emissions'.

²⁰ The Australian Industry Group, 'Swings and Roundabouts'.

TOR4: Areas of growth, and how can these be accelerated and/or assisted, and how Australia can capitalise on existing and future trade agreements and economic frameworks with countries or regions around the world

Areas of growth

In our Export Powerhouse report BZE identified a high-grade portfolio of zero-emissions product categories that harness Australia's natural advantages, meet global demand and provide scale in terms of revenue and job creation opportunities. These are the building blocks for a net zero global economy:

- **Critical minerals:** we can export the minerals needed for the zero-carbon economy, such as lithium, nickel and rare earths, extracted using zero-emissions methods and value added through onshore processing. These minerals have substantial reserves and will prove vital for the new generation of clean-tech products such as batteries, electric motors and other key supply chains.
- **Renewable (green) hydrogen and ammonia:** we can export zero-emissions hydrogen produced from sustainably sourced water and electricity (electrolysis) powered by renewable energy. Renewable hydrogen may also be converted and exported as green ammonia for zero-emission energy exports to countries lacking their own capacity to generate substantial amounts of renewable energy. Renewable hydrogen is also vital for green steel, green chemicals and heavy transportation like shipping
- **Green steel:** we can export zero-emissions iron and steel produced with renewable energy and hydrogen. This capitalises on our iron ore deposits, industrial capabilities and abundant renewables.
- **Green aluminium:** we can export the entire green aluminium supply chain, starting with renewably mined bauxite and value adding up the chain to zero-emissions alumina and aluminium. This family of green aluminium exports builds on existing industry and demand.

Again to accelerate this we recommend the government:

- set a national clean commodity export target of \$100 billion (including renewable hydrogen, green steel, green aluminium, and critical minerals) by 2035
- set green export investment as a priority for the Department of Foreign Affairs and Trade (DFAT), Trade and Investment Growth

Beyond Zero Emissions also identifies electric vehicles as an area of growth. The electric car industry is reviving auto-manufacturing in Australia and recent work at BZE suggests it offers strong growth opportunities for Australia²¹. Companies such as SEA electric and Tritium charging have already established operations overseas as they expand and innovate across their product range, and improve efficiencies to stay competitive in the international market.

²¹ Beyond Zero Emissions, 'Deploy'.

Trade agreements

Growing green trade agreements internationally will ensure Australia grows its green export opportunities and revenues. In addition, maintaining a current understanding of changes to the landscape of trading partners is essential - for example passing of the United States Inflation Reduction Act (IRAct) opens up significant clean export opportunities for Australia, which has already increased investment into Australian critical mineral mining²². The IRAct includes:

- a \$7500 tax concession per EV (this is existing but was capped for each company). This tax concession now has a ratcheting requirement that the critical minerals used in the battery be made in the US or from US free trade partners (such as Australia)
- The bill says not less than two-fifths of the critical minerals used in electric vehicle batteries should be extracted and processed locally in the US or with a free trade agreement partner, or recycled in North America, “It includes provisions to ramp up this requirement to 80% in 2028.”

Clean Tech Investment

Investment in clean technologies manufacturing, including supporting target setting is mobilising economies towards rapid emission reductions. The IRAct is an example and clear signal that other countries are investing in manufacturing clean technologies. Whilst this clean tech manufacturing is beneficial for countries like the USA it carries a risk that companies and resources will flow towards those markets and away from those without sufficient investment and targets. It is therefore critical that Australia supports its advanced clean technology manufacturing sector to ensure knowledge and jobs grow here.

²² ‘How the Inflation Reduction Act Will Drive Global Climate Action’.