26 July 2024

Submission in response to ‘‘A Future Made in Australia: Unlocking Australia’s green iron, steel, alumina and aluminium opportunity’

The Clean Energy Council (‘the CEC’) welcomes the opportunity to provide a submission on the Department of Industry, Science and Resources’ (‘DISR’) Green Metals consultation paper.

The CEC is the peak body for the renewable energy sector in Australia. We represent and work with around 1,000 businesses operating in Australia across solar, wind and hydro power, energy storage and renewable hydrogen. Our mission is to accelerate Australia’s clean energy transition.

Green metals – which we define as those finished metals where the role of fossil fuels in the production process is replaced by renewable electricity and renewable fuels to deliver a zero or low-carbon commodity – is one of Australia’s brightest prospects for economic expansion emerging from the global clean energy transition.

Metal production is one of the most energy and emissions intensive industrial processes on the planet, with the basic metal industry accounting for 12 per cent of global industrial sector energy use.

With pressure mounting to develop low and zero carbon supply chains, producers and customers are in the throes of developing their long-term decarbonisation and investment strategies.

In a net zero world, the best locations for processing and refining metals will be in geographies which can pair access to mineral resources with abundant, low-cost, renewable energy. Fortunately, Australia is not only the world’s largest producer of iron ore and the world’s second largest producer of both bauxite and alumina, but it also boasts world class resources of solar and wind.

As indicated by DISR’s Green Metals consultation paper, these factors – combined with our proximity to Asian markets (with more constrained access to renewable energy resources) and our skilled resources & energy workforces – makes Australia perfectly placed to pursue the opportunities of green iron, and green alumina and aluminium as strategic market expansion opportunities, and we support the Government identifying these sectors in its paper as priority markets. As Ross Garnaut highlighted in his 2022 book, The Superpower Transformation, *‘the largest single opportunity for reducing global emissions and raising Australian incomes, is shifting Australian iron exports from ore to metal. The second-largest immediate opportunity is the conversion of exports of bauxite to alumina and aluminium metal. Australia is overwhelmingly the economically rational location for [this] conversion…in the zero-emissions world.’*

It should be noted that steelmaking is more complex than ironmaking – with thousands of grades of steel and product specifications catering to a wide range of end uses from construction through to automotive production and appliance manufacturing – and as such steelmaking centres are likely to be best located closer to large customer markets. In this context, the CEC considers that Australia would be prudent to focus its efforts and resources on the simpler task of expanding domestic ironmaking capability, which is by far the most energy (and emissions) intensive step of the steelmaking process, and can make

Phone: +61 3 9929 4100
Fax: +61 3 9929 4101
info@cleanenergycouncil.org.au

Level 20, 180 Lonsdale Street, Melbourne, VIC 3000, Australia

cleanenergycouncil.org.au

ABN: 84 127 102 443

a very significant contribution to emissions reduction within steel supply chains within our region.

This submission sets out some of the factors that the Clean Energy Council considers critical to the retention and expansion of Australia's minerals processing and metal refining capacity over the coming decade, particularly in relation to the development of low-cost, renewable energy. However, we recognise that the factors influencing our 'right to play' are much wider than we will discuss here.

An overarching theme to highlight is that while Australia brings strong natural advantages to its strategic opportunities in green metals, it is by no means guaranteed that Australia will be a leading beneficiary of the trillions of dollars of international private capital currently being mobilised in support of net zero goals.

The race to net zero will, and has already begun to, disrupt established patterns of trade and investment. As international businesses in the mining, minerals processing and refining sectors assess their options for meeting decarbonisation targets, many will consider the overall industrial competitiveness of the prospective markets in which to invest. This includes not just access to low-cost, clean power, but also the presence of a stable policy environment and strong public institutions, workable foreign investment rules, investment incentives, taxation settings, the predictability and relative ease of navigating planning and environmental assessment processes, workforce availability, cost of labour, and access to supply chains, and the necessary infrastructure (eg. ports, roads, rail, transmission).

All this means that incumbency will not be enough to retain industries, and nor will natural advantages be sufficient to attract new ones. We will need deep strategic planning, and a comprehensive suite of competitive policies and incentives across a wide range of public policy spheres at the Federal and state/territory levels in order to realise our aspiration to be a globally significant green metals producer.

Priority actions

1) Accelerate the deployment of low-cost renewable electricity

Low-cost, renewable energy is the foundation for our aspirations as a clean energy superpower, and the decarbonisation of Australia's electricity system is a pre-condition for the wider economic transformation.

We are not a low-cost power producer today, relative to many other aspiring clean energy leaders (e.g. some regions of Latin America, the Gulf states). While our natural advantages indicate that Australia can be the locus of low-cost energy in the long-term, this will not occur until renewables dominate the grid, the role of higher-cost fossil fuel-based generation in the electricity market is pushed into the margins, and the substantial capital investments in new generation and storage required to replace coal-fired power generation have been substantially paid down.

The electricity sector has made substantial progress towards decarbonisation over the last decade. Electricity sector emissions have steadily declined since 2016[1], with renewables now generating 40 per cent of total consumption. Our member companies are now working hard in partnership with all levels of government and key stakeholders to achieve the Government's 82 per cent renewable energy target by 2030.

The CEC considers that the decarbonisation of the Australian electricity sector is feasible by 2035, and that the Australian Government should set itself the goal of achieving this, noting that a net zero emissions electricity sector will deliver lower electricity prices to consumers and prove a drawcard for energy-hungry industries over the decades and indeed, century, ahead.

As outlined in the Australian Energy Market Operator's ('AEMO') Integrated System Plan ('the ISP'), the lowest cost way of replacing retiring coal-fired power generation is through the deployment of solar and wind, backed by energy storage (including batteries and pumped hydro), a minor back-up role for gas-fired power generation, and the augmentation of our transmission network. It is vital that the generation, storage and transmission capacity is deployed ahead of coal generation retirements, in order to support a smooth transition and avoid electricity market volatility and price spikes.

Small scale solar continues to outperform expectations and other forms of renewable electricity generation development, with Australians investing over $20 billion in consumer energy resources to date. In 2023, 11.2 per cent of Australia's total electricity generation was produced by rooftop solar[2] for the first time, and this segment now represents the second largest category of generation within Australia's renewable electricity share. AEMO predicts continued growth in consumer energy resources and forecasts that the capacity of rooftop solar will quadruple by 2050.

While we need to see an acceleration in large-scale generation deployment (addressed later in this submission), we have seen stellar investment levels for large-scale storage over the past two years. 2023 concluded as the most successful year on record for large-scale energy storage projects, with a total of 3,949 MW / 9,095 MWh, and $4.9 billion worth of investment commitments[3].

We commend the Australian Government's commitment to supporting accelerated deployment of large-scale generation and storage deployment both through its Rewiring the Nation program, which is investing in transmission augmentation, and via its Capacity Investment Scheme, which is bringing forward 23 GW of generation projects and 9 GW of dispatchable/energy storage projects.

We note that the scheme – with its forward auction schedule between 2024 and 2027 for 15-year underwriting contracts – is designed to ensure the achievement of the target of 82 per cent renewable electricity generation by 2030. While this addresses the near-term target, it stops short of providing a comprehensive policy framework for the full decarbonisation of the electricity sector. This will need to be delivered via the Electricity & Energy Sector Plan.

---

[1] Australia's emissions projections 2023 | DCCEEW
[2] Clean Energy Australia 2024 | Clean Energy Council
[3] Renewable Projects Quarterly Report Q4 2023 | Clean Energy Council

The investor appetite for investing in renewable energy projects depends not just on financial incentives, but on an enabling environment, including:

- the ability to reliably connect to the transmission network and to access revenue streams for connected assets
- the capacity to move through the planning and environmental assessment processes in a methodical, efficient and generally predictable manner
- access to a skilled workforce and supply chain capacity, and
- the ability to secure and maintain community support for the transition and build.

We explored these areas, and other enabling factors, in detail in the Power Playbook released by the CEC in October 2023.

2) Accelerate the scaling-up of green hydrogen & pave the way for 'green industrial zones'

Renewable hydrogen represents an important ingredient in the decarbonisation pathways for iron, steel and alumina production, and access to globally competitive green hydrogen is therefore of great strategic importance to our aspirations for a Future Made in Australia.

Producing hydrogen in Australia – rather than importing it – provides us with an opportunity to access this input more cheaply (due to the ability to avoid the costs and energy losses associated with conversion to other derivatives/compression/transportation), and given this, the CEC warmly welcomes the recent announcement of a new Hydrogen Production Tax Incentive, designed to stimulate the scaling up of a domestic green hydrogen sector.

As a broad-based tax incentive, the HPTI provides a simple, transparent and efficient mechanism for supporting projects, and goes a significant way to levelling the playing field with other countries vying to become major hubs for renewable hydrogen production. It should be noted that we do expect that some proponents may need to secure additional sources of funding support in order to make large-scale projects viable (eg. from contracts for difference schemes in Japan, Europe etc…).

The Government is currently considering the final design of the HPTI scheme, and the CEC recently provided a submission to Treasury outlining its advice for maximising the effectiveness of the scheme in attracting investment. The submission is available on our web site.

Regional planning for 'green industrial zones'

The advantages of 'using green hydrogen where you make it' underscores the need for the Australian Government to take a joined-up approach in the strategic planning of 'green industrial zones/hubs', which should particularly consider the opportunities to couple renewable electricity production with renewable hydrogen, green metals, and other leading applications of hydrogen use such as ammonia/fertiliser and methanol production.

We acknowledge the Australian Government's Regional Hydrogen Hubs program, which has committed over half a billion dollars to develop hubs at key locations including in the Pilbara and at Kwinana in Western Australia, Gladstone and Townsville in Queensland, Bell Bay in Tasmania, Port Bonython in South Australia, and the Hunter in New South Wales (many of which are well located to support Australia's green metals' vision).

However, while the hub model holds promise, we are yet to see these announcements firm into the necessary detailed strategic infrastructure, social and environmental planning for co-ordinated green industrial zones as intended. This planning will need to consider electricity generation and water requirements; land use; environmental and social impacts; enabling infrastructure including transmission, pipelines and ports; community and social licence, workforce readiness and public safety. This strategic planning effort will require close co-operation between the Federal and state governments, and greater clarity of roles and responsibilities.

We would particularly like to highlight the importance of Government investment in right-sizing electricity transmission networks to support these energy intensive green industrial zones, which will need to be closer in scale to AEMO's Green Energy Exports scenario, than the default Step Change scenario.

The CEC has been calling for the Australian Government to undertake this detailed regional planning in co-operation with the states and territories as part of a 'Superpower Masterplan'. (See Appendix 1 of our Power Playbook for an outline of this plan.) This remains a priority action as the scope of the Government's Future Made in Australia agenda becomes clearer.

3) Provide incentives for new capital investment in net zero-aligned plant upgrades, expansions, and greenfields investments

Expanding green metals production capacity in Australia will require capital intensive private investment in major upgrades of existing plants (where economic and feasible), and investment commitments to new long-lived assets.

As noted earlier in this submission, the decision to invest or reinvest in Australia, will depend on more than Australia's natural advantages. We will also need to offer internationally competitive investment conditions across a range of factors. This includes investment incentives. We note that since the passing of the Inflation Reduction Act, a number of countries, including Canada and Japan, have put in place investment incentives – namely tax credits – in order to attract a scaling up of minerals processing capacity. Australia must be regarded as competitive with these other markets in order to secure investment here, and the CEC considers that the Australian Government should consider two forms of support.

Firstly, the CEC recommends that the Australian Government co-fund major plant upgrades or new builds aligned with the goal of establishing expanded green metals production capacity by 2040. There are a range of co-investment models that the Government could consider for allocating such support, however in the interests of administrative efficiency and predictability, the CEC suggests that the simplest approach would be to utilise the corporate tax code, as has been adopted for the Hydrogen Production Tax Incentive and Critical Minerals Production Incentive, in order to provide a new Green Metals Investment Tax Incentive. This would be a refundable tax credit for a portion of the capital expenditure in new or significantly upgraded facilities (the quantum of this support should be the subject of careful assessment by DISR/Treasury and calibrated to what will be required for Australia to be competitive overall with other investment destinations).

Secondly, given that only select customer markets are willing to pay a price premium for green metal production, the CEC considers that an additional production credit per unit of green metal produced over a specified period of time will be required in order to rebalance price disparities between fossil-intensive and renewable energy based metals production (which is important in the absence of effective price signals for negative externalities from carbon-intensive products).

The timelines which dictate financial investment commitments to plant upgrades or new builds are likely to be driven by long-term asset management and investment strategies, including maintenance schedules for critical plant infrastructure (eg. blast furnace relining) and energy contract renewal timeframes. Any new investment planning begins many years in advance. This means that if Australia is to attract new green metals production facilities in the next 10-15 years, it must set out its comprehensive policy and incentives framework as a matter of urgency. We would urge the Government to prioritise this in its Mid-year Economic and Fiscal Outlook.

4) Investment in research, development and commercialisation to accelerate adoption of cleantech pathways

Strong Government support for research and development is playing a critical role in accelerating our understanding of the viable pathways for green metals production in the Australian context, and this investment must be sustained.

We would like to highlight the critical role that the Australian Renewable Energy Agency (ARENA) is playing in supporting research, development and early commercialisation activities for green iron, steel and alumina, which could be instrumental to Australia extending its role in minerals processing supply chains.

The world-first demonstration of renewable hydrogen calcination at Rio Tinto's Yarwun Alumina Refinery in Queensland is a leading example of the potential impact of R&D investment. If this $111 million project (of which ARENA has invested $32 million) is successful, it could result in a 5 per cent cut in Rio Tinto's global emissions, and pave the way to the approach being adopted in other refineries around the world.

We also commend the investments being made by both ARENA and the Heavy Industries Low-Carbon Transition Co-operative Research Centre (HILT-CRC) in R&D&C for low emissions iron and steelmaking. A critical area of focus of these research and demonstration efforts is in upgrading Australia's plentiful haematite resources – the iron ore found in the Pilbara region – into products with higher iron concentrations which are suitable for green iron production. Cracking effective solutions to this challenge in a timely manner is of tremendous economic value to Australia over the long term, and accelerating the commercialisation of the solutions is worthy of substantial co-investment with industry by the Australian Government through its agencies and programs.

5) Enabling and supporting product differentiation for green metals

The emergence of zero or low-emissions metals production will require a mechanism for product differentiation with the dominant fossil-based commodities available today.

The Clean Energy Council strongly supports the development and introduction of the Government's proposed Guarantee of Origin framework, which will provide a framework for green commodities, including electricity, renewable fuels and metals, to demonstrate their environmental credentials for both domestic and international markets.

The Guarantee of Origin (GO) scheme would require reporting across a range of core product characteristics (e.g. production method; emissions intensity per unit of production), while allowing flexibility for projects to report on other criteria (e.g. additionality of generation; time-matching) as may be required by their customer markets. For now, we believe it prudent for the setting and adoption of standards to be kept separate from the GO scheme itself, but that the GO scheme should be equipped to allow proponents to report against the standards relevant to their product.

Conclusion

Australia has a historic and globally consequential opportunity to greatly expand its role in metals processing and refining.

We urge the Government to move quickly – by year's end – to confirm the strategic national priorities of green iron, alumina and aluminium under the Future Made in Australia agenda, and clarify the investment incentives that it will offer to attract new green manufacturing capability. This should be a holistic response aimed at positioning Australia as an internationally competitive investment destination over the long term.

These incentives will also need to be matched by strategic, long-term, national and regional infrastructure planning, to enable the co-ordinated development of the green industrial zones that are required to support our vision for a Future Made in Australia.

The Clean Energy Council and our members look forward to working with the Australian Government through DISR and other agencies, as it works to convert this major opportunity for Australia into a reality.

Yours sincerely,

Anna Freeman
Policy Director – Decarbonisation