

Australian Government  
Department of Industry, Science and Resources

Submission via email to [greenmetals@industry.gov.au](mailto:greenmetals@industry.gov.au)

22 July 2024

## **RE: Consultation on Australia's Green Iron, Steel, Alumina and Aluminium opportunity**

Rio Tinto welcomes the opportunity to make a public submission to the Department of Industry, Science and Resources (the **Department**) in response to its consultation paper on the green iron, steel, alumina and aluminium (**green metals**) opportunity for Australia.

Rio Tinto acknowledges that we have an important role to play in driving forward the energy transition. We have committed to decarbonising our assets by reducing our scope 1 and 2 emissions to net zero by 2050, making significant investments by 2030 towards delivery of our decarbonisation strategy, and helping our customers find better ways to reach net zero by 2050.

In 2023, Rio Tinto's scope 1 and 2 emissions were 32.6 million tonnes CO<sub>2</sub>e, including around 15.9 million tonnes from extracting and processing Australian bauxite into alumina and then processing alumina into aluminium at our Australian facilities. Around 80% of Rio Tinto's emissions are generated through carbon-intensive processing activities.

Rio Tinto and Australia can support the energy transition by providing the materials and metals needed, including metals such as aluminium, copper and battery metals and the materials that support production of steel. Finding pathways to decarbonise production of these metals is vital, but the transition is complex, capital and resource intensive and relies heavily on both technology breakthroughs and access to competitively priced renewable energy. Energy pricing is the primary source of relative advantage in the global metals industry and has historically been the basis for Australian competitiveness, notwithstanding higher labour and regulatory costs in Australia compared to global competitors.

While business has a vital role in managing the risks and uncertainties of investment in the face of a changing global economy, government policy settings are required to ensure investment in the decarbonisation of metals manufacturing is internationally competitive and generates sustainable returns for businesses.

A combination of policies and commitments are required to support the green transition of carbon intensive industries, particularly during a period where capital investment requirements are significant, technological challenges are complex and the cost of carbon is not uniform globally. These policies and commitments should create the foundations on which to expand green industries, support transition of communities and create opportunities for Australia to benefit from emerging competitive advantages.

## **The opportunity for a green metals sector in Australia**

An internationally competitive green metals sector building on Australia's long-term advantage in renewable energy and bauxite resources is key to underpin Australia's sovereign manufacturing capability and support regional supply security of key strategic metals. This will support regional hubs through the energy transition and create opportunities to develop or expand regional industrial activity and investment as global carbon pricing converges in the long term.

Rio Tinto is a global leader in aluminium with a large-scale, mine to metal value chain, incorporating the three stages of aluminium production, from bauxite in Queensland and the Northern Territory through to alumina and aluminium largely in Gladstone and New South Wales. The Gladstone operations comprise two Alumina refineries (Queensland Alumina and Yarwun) and an Aluminium smelter (Boyne smelter) which contribute significantly to regional economic activities, supporting more than 3,500 direct jobs and contributing approximately A\$475 million in annual local spend.<sup>1</sup> Rio Tinto's Tomago smelter joint venture in New South Wales supports over 1,000 direct jobs.

The integrated Australian aluminium industry developed during the 1960s and 1970s and was underpinned by access to low-cost fossil fuels, primarily coal and gas. The impact of Australia's coal and gas markets being linked to global markets and the structural underinvestment in the National Electricity Market has led to an erosion of the competitiveness of Australia's energy costs from this historic base.

A suite of policies is now required to support these carbon intensive businesses as they transition through to renewable energy sources, decarbonise their industrial processes and accelerate Australia's capacity to produce green metals by 2030. If successful, these policies will contribute to transforming the competitiveness of Australian energy intensive metals production for the long term.

It is also important to note that beyond domestic economic impacts, Australian aluminium represents ~20%<sup>2</sup> of Western production and is critical to the energy transition not only here in Australia, but also in supporting our key regional partners. Currently, Australian aluminium exports represent 15-20%<sup>3</sup> of Japan, South Korea and Taiwan's primary aluminium imports, underpinning trade, and manufacturing, and access to this strategic material amongst Australia's allies in the region.

### **Australia's transition to green metals production requires a mix of policy supports targeting operating costs and capital competitiveness**

The successful establishment of a new green metals industry in Australia is reliant on the transition of existing carbon intensive industries to renewable energy to recreate a basis for long term competitive advantage. To encourage private investment and growth, the government must incentivise industry to absorb the capital charge required to establish Australia's new energy system. Government can do this by bridging the competitiveness gap that emerges between Australian production reliant on a new low carbon energy system and the subsidised fossil fuel inputs, general operating subsidies and lower overall business operating costs in global competitors.

Decarbonisation of both the Australian alumina refineries and aluminium smelters relies on access to and availability of large-scale, competitively priced, firm renewable energy. An energy solution needs to be combined with technology breakthroughs to support electrification or alternative fuel sources which generate the zero-emissions process heat required to replace fossil fuels. Australia's alumina refineries are impacted by the substantial capital investment required for research, development, and deployment of decarbonisation technology which costs between two and four times that of many international competitors.

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<sup>1</sup> 2022 local spend, Gladstone region. Direct jobs includes full-time equivalent employees and contractors.

<sup>2</sup> [International Aluminium](#). Western production includes Western & Central Europe, North America, Australia & New Zealand

<sup>3</sup> [International Trade Administration \(US\), Global Aluminium Monitor](#)

## **Large scale and capital-intensive transformation of electricity generation and transmission is required**

The cost of energy is a key differentiator of competitiveness of aluminium smelters, and alumina refineries to a lesser degree, accounting for around 30-40% of their cost bases.<sup>4</sup> The repowering of our Australian assets with competitively priced, firm renewables is vital to decarbonising our aluminium smelters. Recent power purchase agreements that supply our Boyne smelter in Gladstone with 2.2 gigawatts of renewable wind and solar energy alternative demonstrate Rio Tinto's commitment to transitioning this asset and to meeting our climate ambitions. These agreements have the potential to lower carbon emissions by ~5 million tonnes per year and generate the equivalent of 10% of Queensland's current power demand. However, this important step is just the first step required to repower Rio Tinto's Gladstone operations and further partnership and co-investment with governments at both state and federal levels is needed, including on securing the firming and transmission required, to fully transition this asset to competitive renewable energy.

Public investment in transmission, not industry or consumer cost allocation or sharing, is needed at scale to provide certainty to the private sector around the timing of future renewable electricity supply, and to speed up associated investment in renewable energy projects and electrification initiatives. The wider economic benefits of more liquid and competitive electricity markets associated with transmission investment should be considered to justify the public investment in transmission infrastructure.

All tiers of government also have a critical enabling role in addressing constraints to execution of renewable energy projects including planning regulations, permitting processes, land access and environmental approvals. Planning systems, regulations and workforce development should be aligned with delivering the projects Australia requires at a pace which is aligned with our collective decarbonisation ambitions. Material delays in approvals and permitting for renewable energy projects and upgrading of transmission could challenge Rio Tinto and Australia's emissions reduction targets.

In the European Union, greater focus on environmental and planning permitting has delivered timely approvals for renewable energy projects. Consideration of applications that support overriding public good and global transition benefits have set the conditions required to attract significant public and private investment. For example, since the revisions to the planning and environmental approvals requirements under the European Renewable Energy Directive II in 2023, wind farm construction has increased by 43% in Germany. Replicating such environmental approval reforms for solar, wind, battery and transmission projects are critical to unlock a similar investment uplift in Australia.

Government measures to promote rapid investment in the delivery of renewable energy are welcome and signal the required commitment to decarbonise Australia's industrial sector and support future growth. The Capacity Investment Scheme, Hydrogen Headstart and support for Rewiring the Nation are positive steps. However, they represent only a portion of the investment needed to create the renewable energy market scale required to deliver globally competitive and long term advantaged renewable energy costs. It is important that the significant interventions by Government to accelerate the energy transition are not offset in their efficacy by the regulatory approval challenges or overly complex scheme design elements, application processes or compliance requirements. Replicating proven state level policies aimed at incentivising renewable energy investment may be a more fruitful avenue for policy evolution.

The long-term demand outlook for Alumina and Aluminium is strong given the metal requirements for energy transition. While Australia is expected to have sustainable competitive advantage in the long-term costs of energy once the capital investment required in the current energy system is depreciated, these low-margin assets alone cannot bear the costs of building a new energy system. In the absence of a global carbon price and green premiums, Government has a role to play supporting the economic viability of these assets as they transition to green production.

Measures such as production credits and/or other similarly designed incentives that support production of green metal should be scaled at the level that addresses the fundamental energy cost competitiveness gap

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<sup>4</sup> [Australian Aluminium Council](#)

through the transition to a renewable energy system. Any production credit or incentive should be of a magnitude able to make the increased interim cost of new firm renewable energy competitive with global aluminium industry producers and restore Australian aluminium producers to the sustainable part of the global cost curve. Given the varying complexity and site-specific operating and commercial characteristics, this policy suite should be broad enough to support those assets which can transition economically, noting that this may not be the case industry wide.

**Support is required to incentivise investment and develop and deploy solutions to decarbonise Australian carbon intensive industries and create opportunities in new green metals industries**

Decarbonising alumina production requires new, large-scale renewable energy to generate the process heat and electrification required in the refinery process. It requires solutions which are technically challenging and, in some cases, do not yet exist at the required scale. The substantial, technically complex capital investment in novel technology and the delivery risks in development and deployment of such production routes is challenging in what are relatively low-margin assets.

A range of policy measures are necessary to support early movers to innovate and deploy low-carbon technology and require partnership and investment from both industry and government to support shared decarbonisation ambitions and enable green metal production. Government policies, including investment tax credits and incentives, can increasingly support development of new electric solutions and research to determine applicability of existing technologies in novel ways to meet this challenge.

Here in Australia as well as overseas, Rio Tinto and governments are partnering and proving that shared investments and commitments can support development of breakthrough industrial processes and support development of critical and green metals supply chains.

- To decarbonise the Alumina calcination process with green hydrogen, Rio Tinto is building a hydrogen pilot plant to trial low-carbon refining with Sumitomo Corporation and funding from ARENA.
- Funding from Powering the Regions fund is also supporting demonstration of the double digestion process which will reduce coal and gas use in our refining operations at Queensland Alumina Limited.
- In Canada, investment from the federal government's Strategic Innovation fund has committed funding of C\$222 million of the C\$737m being spent to decarbonise the Rio Tinto Iron and Titanium business and support Rio Tinto and Canada in supplying the critical minerals, including Scandium, essential to the energy transition in the North American market.
- Carbon free Aluminium smelting cells are being installed at Rio Tinto's Arvida smelter in Quebec. The joint-venture and co-investment with the Government of Quebec, is critical to full industrialisation of this world-first technology and to supporting Canada's ambition to be a global green supplier of choice.
- In Quebec, we are investing in expansion of the state-of-the-art AP60 aluminium smelter. This C\$1.4 billion expansion includes up to C\$150 million in financial support from the Quebec Government along with access to competitively priced renewable hydroelectricity.

However, there is still significant cost and technical uncertainty. Moving from pilot and demonstration scale to industrial scale implementation in existing or new facilities is a critical focus over the next decade.

Investment tax credits which support the capital investment to transition Australia's alumina and aluminium industries can support the acceleration of these efforts.

**Policies to support expanding industries and harnessing Australia's long term competitive advantage to deliver new opportunities for increased participation in the energy transition**

Delivering the required policy options which transition existing facilities to green metals production should also lay the foundations for longer term competitive production of a broader range of green metals and support Australia's continued role in the global energy transition.

Greenfield investment in Green Iron, Steel, or new Aluminium has a significant gap in technology, demand and cost certainty. To enable greenfield investment, a high degree of production and investment incentives are required, in addition to incentives for inputs such as hydrogen and low carbon liquid fuels. Incentives will also likely be required to support the production of relevant high quality raw material inputs. The policy framework in respect of developing new green metals products and industries, including green iron making

and steel, need to reflect the early stage nature of these domestic industries and the significant capital intensity gaps between domestic production and established offshore processing. Policies for these new green metals industries should focus in the short term on creating the conditions required to encourage the research and development activity that not only builds skills and knowledge in Australia but may contribute to reducing this gap.

Policies should underpin and support research and development of new and novel processing technologies which decarbonise the steel value chain from iron ore to steel making ensuring a prosperous future for Australian resources both here in Australia and as inputs/exports to the global steel industry.

Rio Tinto is investing in research and development which supports greater understanding and enhances the suitability of Australian ores in the global future low carbon steel industry.

- In Western Australia, Rio Tinto is investing US\$143 million to develop a research and pilot plant facility to develop Biolron, to further assess the effectiveness of this process in supporting decarbonising the global steel value chain.
- Rio Tinto has partnered with BHP and BlueScope to develop an electric smelting furnace pilot plant to demonstrate renewable-powered production of iron.

We thank the Department for the opportunity to engage on the future of green metals production in Australia and encourage development of a set of policies and business conditions which work together to enable industrial transformation and support growth through the energy transition.

We note that we will also submit a more detailed private response to the Department's green metals consultation paper, containing commercially sensitive information.

We would welcome the opportunity to discuss this submission with you further. In the interim, if you have any questions, please contact Rachel Storrs ([Rachel.storrs@riotinto.com](mailto:Rachel.storrs@riotinto.com)).

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Jonathon McCarthy', with a long horizontal stroke extending to the right.

Jonathon McCarthy  
Chief Decarbonisation Officer