

Australian Government  
Department of Climate Change, Energy, the Environment and Water

Submission via the Department's Consultation Hub

26 April 2024

## **RE: Consultation on the Electricity and Energy sectoral decarbonisation plan discussion paper**

Rio Tinto welcomes the opportunity to make a submission to the Department of Climate Change, Energy, the Environment and Water (the **Department**) on the development of a decarbonisation plan for the Australian electricity and energy sector.

Rio Tinto requests that the Department's Electricity and Energy sectoral decarbonisation plan drives an orderly transition of Australia's energy system that includes timely and sufficient supply of competitively priced, reliable, low carbon energy to underpin investment in the decarbonisation of our Australian operations. The decarbonisation of the grid and energy system is the enabler for Australia and Rio Tinto achieving shared goals of decarbonisation and reaching net zero emissions by 2050.

Balancing shared climate ambition with competitive business conditions will support Australia's ability to benefit from the energy transition, support industrial activity, and maintain regional prosperity and jobs.

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 and making significant investments by 2030 towards delivery of our decarbonisation strategy. While business has a vital role in managing the risks and uncertainties of climate change, government measures to decarbonise and to mobilise investment in the electricity and energy sector are a critical enabler for the decarbonisation of the rest of the Australian economy. Governments can also support the challenge by providing enabling frameworks, including policy and regulation, which increase momentum towards shared net zero goals.

In 2023, Rio Tinto's scope 1 and 2 emissions were 32.6 million tonnes CO<sub>2</sub>e of which around 60% were generated by our Australian assets. The successful reduction of emissions from our Australian operations relies heavily on the availability of competitively priced renewable energy and alternative low carbon fuels.

### **The role of the energy sector in Australia's net zero transformation**

The transformation of the energy system needs to meet Australia's current energy needs as well as the increase in demand driven by the electrification of consumer/households and manufacturing and ensure stable supply for the long term. Note that for some hard-to-abate processes and large-scale fleet, electrification is expected to take place after 2030.

The pace of renewables deployment is critical and significant investment from governments and industry is required to structurally transform Australia's energy markets. Australian governments should directly provision large-scale transmission to support rapid electrification while preserving competitiveness. Upfront development and construction of major transmission infrastructure is vital to enable investment decisions required to decarbonise operations and therefore underpins Australia's pathway to net zero. Requiring industry

to commit to electrification investment decisions prior to the commitment to construct additional transmission capacity is a particularly onerous barrier imposed by the transmission network service providers and government action and support are required to enable investment in additional transmission capacity ahead of financial commitments by energy users.

Our Australian Aluminium assets account for approximately 50% of our global scope 1 and 2 emissions. A key requirement for the decarbonisation of our Aluminium operations is the availability of large-scale, competitive, firm, renewable energy. Without access to firm renewable power, it is challenging to justify significant long-term capital investments in energy-intensive Australian facilities.

As Australia's largest energy user, long term certainty of competitive energy is key and is currently met with long term energy supply contracts expiring in 2028 and 2029. Executing transactions that replace these with at least similarly-priced renewable electricity alternatives within this decade is critical to the long-term viability of these assets.

Although the levelized cost of solar and wind generation continues to decrease, the high cost of firming is greatly impacting the overall economics of renewable energy for many users. Significant investment is needed to substantially increase the availability (and decrease the cost to customers) of low carbon firming sources in the Australian energy market. Our outlook on the market suggests that the cost of firming is the largest differentiator of Australia's competitiveness for electricity-intensive industries such as manufacturing globally. Access to globally competitive firming will be the fundamental underpinning of long-term capital investment in electricity-intensive manufacturing facilities in Australia.

As well as increasing direct investment in transmission and firming, we encourage the Government to support innovation and investment in new low carbon firming technologies. This is particularly important for longer duration forms of energy storage, where mature technologies today (e.g. pumped hydro) are risky, prone to cost overruns and have long lead times.

### **Mobilising investment to transform energy**

#### ***Question from the Department - What actions are needed to attract large scale investment in energy transformation with or without government intervention?***

The Department's discussion paper recognises that decarbonising the Australian economy requires substantial capital investment. To meet this challenge, investment will need to flow from governments and businesses focussed on decarbonising their operations, but also from investors and research partners.

Capital follows the strongest investment signals and Australia's energy and industry policy signals are not currently attracting the levels of investment required to transform energy systems and underpin large scale industrial abatement. Government measures to attract rapid investment in energy transformation, including providing long-term investment underwriting, are greatly welcome and play a key role in delivering on our collective vision for the Australian economy. The expanded Capacity Investment Scheme is an important step.

Policies and frameworks that consistently advance Australia's climate ambition and provide certainty around the pathways to achieving Paris-aligned targets, and that reflect an orderly energy system transition and business competitiveness, will be key to increasing long-term investor confidence. Australia's renewable energy target of 82% by 2030 provides certainty that Australia is committed to a decarbonisation pathway underpinned by the development of renewable energy at scale. Future government investment and policy should consistently support rapid progress towards this target.

The role of government investment to complement private sector investment in transforming the grid is vital. The private sector can and should commit to significant investments in generation, storage and loads in electricity system, which comprise the bulk of investment required (with transmission only accounting for 7% of the combined generation, storage and transmission investment required under the 2022 ISP). Governments could accelerate significant private investment in renewable generation, low-carbon industries and industrial decarbonisation projects by committing to upfront funding of transmission upgrades in the state and/or national interest, noting also the social and environmental imperative to decarbonise. This funding could be recovered, if needed, from users once operating.

Each party within the market has a specific and complementary role that needs to be played to achieve energy system transformation. Governments are uniquely placed to lead investment given ultra long investment horizons, supportive balance sheets and the ability to effect the required permitting and land access required in large-scale, long-life projects such as transmission infrastructure and low carbon 'system reserve' firming. Private investors can and should contribute to the development of market participating energy infrastructure such as renewable power, energy storage and load projects.

Increased transparency and internationally aligned reporting frameworks and requirements will also contribute to investor confidence. Australia's mandatory climate-related financial disclosures and planned sustainable finance strategy further enhance the competitiveness of Australian businesses in the global market, help to attract international investment and accelerate the Australian economy's transition.

### **Enabling electrification for a smooth transition**

#### ***Question from the Department – What actions are required to ensure Australia's energy systems can enable increased electrification, while maintaining equity, reliability and security?***

As previously outlined, Government investment in transmission and firming 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. Governments also have a critical enabling role in addressing constraints to execution including planning regulation, land access, and construction costs that are putting the industrial transition at risk due to tensions with competitiveness and scheduling. Planning systems, regulations and workforce development must also align with delivering projects required for shared net zero ambitions.

Ensuring energy market demand reflects future renewable energy needs of industry driven by increased electrification and providing certainty around access to competitively priced, firming renewable energy to underpin investment in R&D associated with electrification is key to continued investments into increased electrification, particularly for hard-to-abate sectors.

Options for firming energy systems are often unattractive to private investors, given that dispatchable power such as peaking plants tend to function as reserve fuel to be used only when low-cost renewable energy supply is insufficient. Government investment in (or ownership of) peaking plants would improve energy security, decrease the levelized cost of firming renewables, and provide investor confidence to pursue decarbonisation projects in Australia.

A range of other measures is necessary to support early movers to innovate and deploy low carbon technology in hard-to-abate sectors. Incentives, as well as investment from and partnerships with government and research institutions, are key to supporting industrial transitions and maintaining business competitiveness. Transformative, leading-edge research and development is complex, and trials of low emissions technology are expensive. Government policies, including 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. Government systems and regulations, including application approval periods, need to be streamlined and efficient, nimble enough to support the quantum of investment in R&D commensurate with the challenge and pace at which solutions are required to support the energy transition.

Industrial processes such as aluminium smelting are technically limited in their capacity to contribute to demand flexibility, however economic incentives could help to overcome the operating and cost impact of reducing load for certain periods.

#### *The role of gas to 2050*

An orderly transition for gas use and its application in hard-to-abate sectors is critical to ensure the grid is competitive during the transition and while structural abatement solutions are developed. We support positions taken in the Department's discussion paper regarding the need for reduction in the use and production of gas and liquid fuels in order to reach net zero emissions and the need to balance this with an orderly transition.

Rio Tinto is a significant consumer of natural gas and expects to be for at least the medium term given the lack of energy alternatives to provide the level of process heat required in certain parts of our business. Our modelling of energy sources and systems indicates that the long-term solution to structurally decarbonising our operations is electrification but note that in some harder-to-abate parts of our businesses, electrification currently will not provide the required energy or process heat. The role of gas as an interim firming solution supporting large scale renewable energy alternatives is acknowledged and we support the need for the Department to produce a plan which supports an orderly transition from the current coal fired generation.

Focussing on developing alternatives for gas use or limiting gas to hard-to-abate sectors is likely to have a more meaningful impact to achieving net zero emissions than decarbonising the gas sector. We have considered different technologies to capture low concentration CO<sub>2</sub> and while the most promising technologies are direct capture to point source capture, the technical readiness level is low.

### **Growing alternative low carbon fuels**

Rio Tinto's decarbonisation pathways include a range of potential applications for alternative low carbon fuels to reduce direct and indirect emissions in our value chains, either as a permanent solution, or an interim measure while we progress long-term plans for electrification. We are investing in projects ranging from early-stage R&D to pilot plants and commercial trials, and studying fuels such as renewable diesel, renewable hydrogen, biocarbon, bio granules, and low-emissions ammonia and methanol. The current feasibility, emissions reduction potential, and timelines for these low carbon fuel applications vary, with barriers to deployment including technology readiness, commercial viability, operating impacts, plant retrofit requirements, regulatory environment, and supply constraints.

### ***Question from the Department – What actions are required to establish low carbon fuel industries in Australia, including enabling supply and demand and what are the most prospective production pathways?***

We strongly encourage the Department to act to establish a policy environment which supports investment in the development of a strong domestic market for low carbon fuels. Alternative low carbon fuels offer significant emissions reduction opportunities across the resources, industrial, transport and agricultural sectors, as well as a range of potential economic, social, health and environmental co-benefits.

Barriers to the development of a domestic market include lack of incentives for consumers and producers, regulatory uncertainty discouraging investment in domestic production, unattractive business cases for sustainable biogenic feedstock projects, and limitations in the ability to account for emissions reductions from switching to low carbon fuels.

To remove uncertainty for investors and other stakeholders, promote best practice, and maximise emissions reduction, we encourage the Government to develop clear guidelines to define the sustainability of low carbon fuels in Australia. Lifecycle emissions and other sustainability-related impacts vary significantly depending on feedstock type and land use considerations, processing-related emissions and waste, transportation, and co-benefit opportunities.

In other jurisdictions in which we operate, incentives have been successfully used to stimulate demand and provide regulatory certainty for parties throughout low carbon liquid fuel value chains. We encourage the Government to consider a certificate scheme for low carbon fuels similar to renewable energy certificates under the Renewable Energy Target (RET). Rio Tinto is supportive of Australia implementing a Guarantee of Origin Scheme with transparent and consistent emissions accounting for low carbon or green products such as low carbon liquid fuels and hydrogen and addresses the current gap in recognising renewable energy not covered by the RET.

Other incentives could include financial support for R&D, pilot programs, and education and training to landowners to sustainably develop advanced biogenic feedstocks in suitable areas (potentially via the Australian Carbon Credit Units (ACCU) Scheme).

Regulatory and reporting requirements should be transparent and closely aligned with established international frameworks. Market-based accounting principles should be prioritised, to enable purchasers of low carbon fuels to recognise the emissions reduction benefit.

### *Renewable Diesel*

The majority of Rio Tinto's emissions from global surface mining operations are generated by the consumption of fossil diesel in heavy mining equipment, locomotives and associated industrial engines. Rio Tinto consumed 1.6 billion litres of diesel at our major managed operations in 2023, accounting for 12% of our scope 1 and 2 emissions.

The transition from fossil diesel to renewable diesel represents an opportunity for Rio Tinto to significantly reduce emissions in the short to medium term. Our modelling of energy sources and systems indicate that the most efficient and cost-effective long term-solution to reduce fossil diesel use in mining fleet and equipment is electrification, however we are not expecting mass deployment of battery electric haul trucks throughout our operations to be technically or commercially feasible before 2030. The challenges and timeframes involved with full deployment of electrification means that we are developing complementary pathways to more immediately reduce diesel-sourced emissions, including the use of low carbon liquid fuels, while we continue to invest in R&D projects to support electrification.

Given the potential timeframes and challenges associated with large scale development and deployment of battery vehicles in some industries, government policies are needed to support market development and competitiveness of low carbon liquid fuels such as renewable diesel.

Renewable diesel is a technically feasible drop-in replacement for diesel in our fleet, however sustainable supply is a critical constraint to accelerated industry-wide use and is reflected in the high price of renewable diesel in Australia. In North America, and other regions where subsidies and other forms of government support contribute to economically viable low carbon fuels, we can source from the market economically. As a result, in the United States we have been able to commit to replacing 11% of our global fossil diesel consumption with renewable diesel. We have successfully switched to renewable diesel at our Boron operations in California, reducing annual emissions by about 45kt CO<sub>2</sub>e, and secured supply to transition our Kennecott Copper operations in Utah in 2024, expected to reduce annual scope 1 emissions by a further 495kt. In Australia, supply is currently limited to imports at a significant cost premium to fossil diesel, and renewable diesel is therefore economically unviable for many fossil diesel users. Support is required to encourage the production and use of renewable diesel at volume and to grow this industry in Australia.

The reporting methodologies under the National Greenhouse and Energy Reporting (Measurement) Determination are not flexible enough for large businesses who centrally source and distribute diesel to multiple facilities to clearly assign renewable diesel or blended fuels to specific facilities. We request that the reporting guidelines are reviewed and updated to allow flexibility where financial purchase and allocation of bio-based fuels is clear but direct delivery is not possible due to the limitations of the distribution system, and consideration of other market-based mechanisms for low emission fuel reporting.

There are broader benefits to Australian society and the economy from supporting the development of a local low carbon liquid fuels industry in addition to the important role these play in the energy transition. Establishing a low carbon liquid fuels ecosystem, including establishing farms and plantations, sourcing second-generation feedstocks, and processing and refining, could generate opportunities for creation of economic value and new partnerships, as well as supporting communities and industry in regional areas, and improving regional energy security.

Government measures to increase the supply of sustainable biogenic feedstocks and provide policy certainty around use of and recognition of low carbon fuels are instrumental in supporting the investment decisions required along the value chain and developing a liquid renewable diesel market.

The commercial viability of developing renewable diesel feedstock could be accelerated by creating pathways for these to be recognised under the ACCU Scheme and incentivising large-scale development, while promoting lower emissions agriculture and carbon sequestration through the planting of advanced biogenic feedstocks. This could serve the dual purpose of supporting development of Australia's biofuels industry, while

expanding ACCU supply to help meet expected demand from facilities under the Safeguard Mechanism framework as structural decarbonisation solutions are developed and implemented.

### *Renewable hydrogen*

In July 2023, in partnership with the Australian Renewable Energy Agency (ARENA), Rio Tinto and Sumitomo agreed to build a hydrogen plant and retrofit process equipment at our Yarwun alumina refinery in Gladstone to demonstrate the viability of using hydrogen in the calcination process phase of Alumina production, replacing natural gas. If hydrogen calcination technology is successful, then Rio Tinto's Gladstone alumina refineries have the potential to be large-scale domestic customers supporting development of a green hydrogen industry.

To decarbonise the calcination process stage in the refineries with green hydrogen, we rely on continued support from the Federal Government to develop external infrastructure and markets near domestic industrial users. It will be important to continue to prioritise the Gladstone region as a hydrogen hub and provide associated Federal Government funding to develop green hydrogen projects here to ensure cost-competitive green energy for our alumina refineries and the broader industry. It is likely that separate funding for common user infrastructure (i.e. hydrogen storage and transmission pipelines) will be necessary for industry to take up the opportunity of decarbonising industrial processes with hydrogen.

Planning around access to, and pricing of, hydrogen should recognise the economic opportunities associated with decarbonising domestic industry and promoting value-add processing onshore. While the focus on positioning Australia as a hydrogen exporter is understood, it is important to recognise hydrogen is most effectively used in the location in which it is produced and that green electrons from hydrogen are expected to be scarce over the medium term.

We encourage the Department to consider opportunities to accelerate the development of green hydrogen projects (including both hydrogen supply and development of technologies for hydrogen to displace fossil fuels) and to provide regulatory certainty to inform long-term planning and decision-making by industry. This would support industry to minimise potential barriers to the initial uptake of hydrogen, including the timelines and cost associated with technology development and deployment, modifying or replacing plant and machinery, and coordinating significant change across complex value chains.

We thank the Department for the opportunity to engage on the development of a decarbonisation plan for Australia's electricity and energy sector. We look forward to continuing to engage with you on Australia's emissions reduction policy and may provide additional feedback as it progresses.

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,



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