BRIDGING TECHNICAL GAPS: ACCELERATING AUSTRALIA–JAPAN CRITICAL MINERAL PROJECTS FROM FEASIBILITY TO REALITY

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For more than a century Australia and Japan have built a foundational partnership in resources and trade, beginning with coal and wool exports in the late 1800s, expanding through post-war iron-ore and steel investments in the 1950s and ’60s and maturing into today’s multibillion-dollar Liquefied Natural Gas (LNG), critical minerals and agricultural supply chains. The Japan-Australia Economic Partnership Agreement (JAEPA) signed in 2014 supported growth in two-way investment and deepened cooperation, with joint research between Japan and Australian **surpassing 21,000 joint research outputs**. This long-standing collaboration not only fuels both nations’ economies but also paves the way for pioneering work in green hydrogen, battery materials and digital services.

This historical collaboration set the scene for the **Joint Critical Minerals Partnership of 2022**, a

momentous agreement that prioritises mutual investment, knowledge sharing and an alignment of Environmental, Social and Governance (ESG) standards. The partnership has since facilitated the expansion of strategic partnerships within the private sector.

The following table presents recent case examples of joint Australia-Japan investments in the critical minerals sector:

Year	Commo-dities	Project	Collaboration Structure	Comments
2025	HPA Alumina	**HPA First Project, QLD**	Offtake Agreement	Alpha HPA and a Japanese electronics giant. Offtake underpins total investment USD$553m with Australian Government funding of A$320m debt and A$80m overrun facility.
2025	Titanium, Zircon, MREC	**Copi Project, NSW**	Joint Venture Framework with JX Advanced Metals	A$20M investment, with option for additional A$5M and a further A$5M in convertible debt.

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2025	Fluorite	**Speewah Fluorite Project, WA**	Incorporated Joint Venture (IJV) with Japan Fluorite Corporation. Offtake by Sumitomo Corporation.	JFC (a subsidiary of Sumitomo Corporation and JOGMEC) may invest up to A$60.3m in three tranches for a 22.5% stake in the project. JFC will provide A$10.3million to DFS, with the remainder for project development.
2024	Graphite	**Esmeralda Graphite Project, QLD**	Strategic Investment - Idemitsu	Direct equity investment for exploration and DFS. Additional support from QCMBTF[1] and IPCM[2] Program.
2024	Nickel	**Kalgoorlie Nickel Project (KNP)** **Goongarrie Hub.**	Binding Cooperation Agreement to form 50:50 IJV	Mitsubishi Development (the Consortium) fully funds the DFS costs of A$98.5M and assist KNP in structuring debt financing to secure a 50% stake, with Ardea Resources retaining the remaining 50%.
2023	Vanadium, HPA and molyb-denum	**Julia Creek, QLD**	Equity Investment - Idemitsu	Idemitsu Australia increased its stake in Vecco Group to 50.1% from 14.7%. via A$75M. Vecco also supported by QCMBTF[1].

[1] QCMBTF: Queensland Critical Minerals and Battery Technology Fund
[2] IPCM: International Partnerships in Critical Minerals

CHALLENGES

Australia and Japan share a strategic interest in securing long term sustainable critical minerals supply chains.

However, national and transnational challenges hinder the successful progression from feasibility study to execution within Australia. As recently reported, in Australia approximately **5% of projects at the feasibility stage progress to a Final Investment Decision (FID)**, 20% are progressed to completion, leaving up to 80% to be abandoned before completion. Project development, for the purposes of this article, can be described in terms of three key risk phases; Geological / discovery risk, Economic / market risk, and Delivery risk.

Based on research by Wave and recent market reporting, it can be observed that the equity

markets are prepared to take on discovery / geological risk (i.e. fund exploration and discovery) and metallurgical risk to a concentrate state, but reluctant to invest against product (i.e. sales and marketing) risk. This challenge particularly relates to the junior mining sector where funding is typically sourced from the Australian Securities Exchange (ASX). Investors in the junior space range from retail investors, private equity funds, brokers, joint venture partners and in some instances potential offtaker partners (although this often happens post-declaration of a reserve). Whilst junior companies can generally raise money via the ASX for exploration activities, many projects stall where funding is required for piloting, feasibility and product sample preparation for non-bulk - commodities (where product qualification risk exists, as is the case for most critical minerals).

A further funding challenge arises at the time of raising project finance for execution; this is typically a combination of debt and equity. Pricing risk and security of offtake volumes are key criteria in securing debt finance, which can prove challenging in the face of customers seeking supply security, but wishing to retain flexibility in commitments and pricing. Thirdly, our research / experiences indicates that certain operating cost aspects for high-purity processing in Australia can be higher than in other jurisdictions. During government consultations with sixteen stakeholders on the effectiveness of the Australian Critical Minerals Production Tax Incentive (CMPTI), concerns were expressed against defining CMPTI-eligible outputs by fixed purity levels, as evolving customer specifications and lengthy build times could displace current plants. Moreover, midstream processing offered the most immediate opportunity while

downstream capabilities are developed incrementally.

This same challenge can be attributed to a substantially different approach to risk management and market investment strategies by some nations' private sectors. Where Japan has a low-risk appetite, favouring long-term, stable contracts, Australia has pursued a more opportunistic sales strategy to capitalise on high global prices by seeking new markets rather than long-term agreements.

There are also differences in private sector-government relations. The Japanese government prioritises early private sector engagement and increasing public understanding, which encourages strong Public-Private Partnerships (PPP). On the other hand, it is common for the

Australian government and industry to experience friction, for example with some industry participants viewing economic security as a matter of government policy, rather than an operational risk to be mitigated by industry.

OPPORTUNITIES

In considering the challenges above that hinder the execution of feasibility studies and construction with the Australian critical minerals industry, opportunities to accelerate supply chain development via collaboration do exist.

In consideration of the risk surrounding sales and marketing of non-bulk-commodities, an opportunity exists for collaboration with Japanese customers / downstream producers and Australian midstream producers. Funding support for pilot programs, generation of bulk samples and subsequent feasibility studies from a purchaser perspective would close a funding gap that is currently observed on the ASX. This could occur via direct investment or debt and could include technical knowledge-sharing. Such an investment regime could also be supported by

Australian Government grant initiatives. This approach would balance development risk with the equity markets funding geology /discovery risk, and Japanese customer markets funding market/product quality risk.

To strengthen the Australian government-private sector relationship, and by extension encourage Japanese investment, the Australian government is considering a floor price as part of a Critical Minerals Strategic Reserve Scheme. This initiative is considering government-backed minimum prices via offtake agreements and strategic stockpiling.

The aim is for Australian producers of critical minerals and Japanese processing partners having predictable, stable pricing, softening the impacts of market volatility. It follows that participation in such a regime, via debt guarantees or other commercial instruments,

could provide the additional support required for Australian and Japanese industries to advance projects from the feasibility to execution phase.

Lastly, in consideration of the CMPTI, optimisation of supply chains and intermediary products (including purity specifications) could present as another opportunity. By balancing the relative competitive advantages of Japan and Australia between upstream and downstream (including technology advantages), the CMPTI could be maximised further, to enhance the investment attractiveness of projects.

Together, these initiatives could bridge investment risk milestones across discovery, product / markets and project finance with risk being shared between the equity markets, debt markets and customers seeking to secure critical minerals chains.

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Ryan is CEO of Wave International, an Advisory, Engineering and Project Delivery firm operating across Australia, Canada and Europe. Ryan has over 25 years of participation in the Lithium industry, and over the past decade has become heavily involved in the supply chains for graphite, vanadium, and other boutique commodities related to energy transition technology. Aside from executive duties within Wave, Ryan advises developers, producers, equity houses, traders and lenders in relation to investment and funding for the development of critical minerals projects. His client list includes a number of global tier-1 OEMs, and leading Japanese OEMs / conglomerates.

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