



Critical & Strategic Minerals Processing

[Australia's Economic Accelerator](#) (AEA) is a \$1.6 billion Australian Government investment aimed at transforming Australia's research translation and commercialisation landscape. AEA grants support the Australian Government identified priority areas for the economy (outlined in the [National Reconstruction Fund Corporation \(Priority Areas\) Declaration 2023](#)). Within these priorities, the first round of grants will prioritise projects that align with one or more of 6 focus areas, including advanced manufacturing, artificial intelligence, digital agriculture, quantum, sustainable fuels, and critical and strategic minerals processing.

Critical and strategic minerals processing are technologies enabling the transition from mineral to material, namely processing and early value chain manufacturing techniques using mineral inputs deemed critical or strategic to the national interest. This includes technologies to enable exploration, low environmental impact extraction and processing of minerals that are vital for the energy transition like copper; new and sustainable value-add opportunities in green metals; novel and high purity refining methods for minerals like lithium; and other technologies to improve mineral recovery and processing efficiency.



Value-add in resources

> National priority

Strong policy priority that aligns with our resource advantage and feeds into other priority sectors. Critical and strategic minerals processing aligns with the national priority areas through adding value to extracted goods and the building of onshore industrial capability.

- [Critical Minerals Strategy 2023-2030](#)
- [List of Critical Technologies in the National Interest](#)
- [Future Made in Australia agenda](#)

Advantage

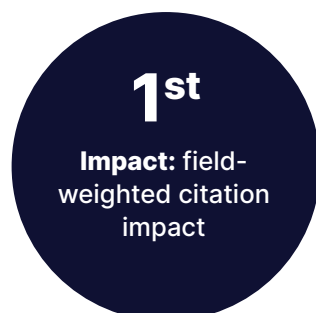
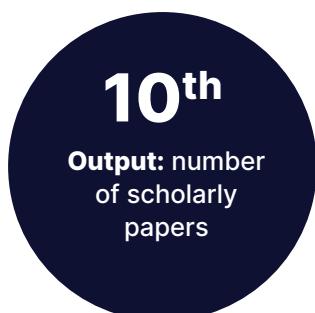
Australia possesses a diverse and rich mineral endowment and is a significant exporter of multiple critical and strategic mineral classes.

Opportunity

To utilise our mineral endowment and competitive energy factor costs to reduce sovereign risks and realise more value from growing global demand.

> Research strength

Australia's rank in the OECD calculated using 2018-2022 bibliometric data from Elsevier's SciVal. Critical & strategic minerals processing was defined using custom search terms.



> IP potential

Australia's share of publications cited in patent applications compared to the OECD average expressed as a percentage.

Refers to 2018-2022 patent and publication data in the Lens database.



91%

> Market opportunity assessment

- Australian market size of **AU\$56 billion** in 2023¹
- Projected compound annual market growth of **13.8%** from 2018-2023²
- Global market size of **AU\$465 billion** in 2022³

> Example industry problems

AEA aims to provide developmental support for promising research commercialisation projects at the proof-of-concept or proof-of-scale level (TRL stages 3-7). Successful projects will scale up to meet emerging industry needs.

Industry problem	Opportunity	Impact
Net zero minerals processing equipment and techniques remain relatively high cost.	Development of cost-competitive clean processing methods (e.g. using electric arc furnaces and hydrogen or retro-fitting existing facilities).	Supports the growth of a domestic processing industry which leverages Australia's renewable energy advantage.
Useful by-products in mineral processing streams are currently being under utilised, resulting in significant waste and environmental impact.	Developing methods for extracting additional mineral products from existing processing streams (e.g. gallium from bauxite) and minimising waste.	Increase the diversity of critical and strategic minerals which can be produced from existing processes whilst reducing environmental impact.
A large amount of exploration related data remains under utilised, including in the creation of exploration models to improve drilling productivity.	Developing a variety of means to interpret data (i.e. creation of models using AI) so new data is better interpreted and exploration/extraction methods improved.	Higher certainty based on better data interpretation could improve greenfield profitability.
More effective mine site automation is required to encompass more processes.	To extend automation to include ore extraction, transport, crushing, concentration, and in some cases purification.	Improved autonomous processes will not only improve productivity, reduce harm to operators and environment, but also help meet ESG targets more competitively.
Domestic production of solar cells and other energy transition products requires a cost-competitive and resilient supply chain for silicon.	Developing cost-competitive and clean methods for the smelting of silicon, alongside production of polysilicates and early-stage value-add products like wafers and ingots.	Facilitate the growth of a resilient domestic supply chain for input minerals into key energy transition products while meeting growing global demand.

> Other public investment options

- [ARENA and the Future Made in Australia Innovation Fund](#)
- [The National Reconstruction Fund](#)
- [Export Finance Australia & the Critical Minerals Facility](#)

1 [DISR 2023, Resources & Energy Quarterly: December](#)

2 [DISR 2023, Resources & Energy Quarterly: December](#)

3 [International Energy Agency 2023, Critical Minerals Market Review 2023](#)