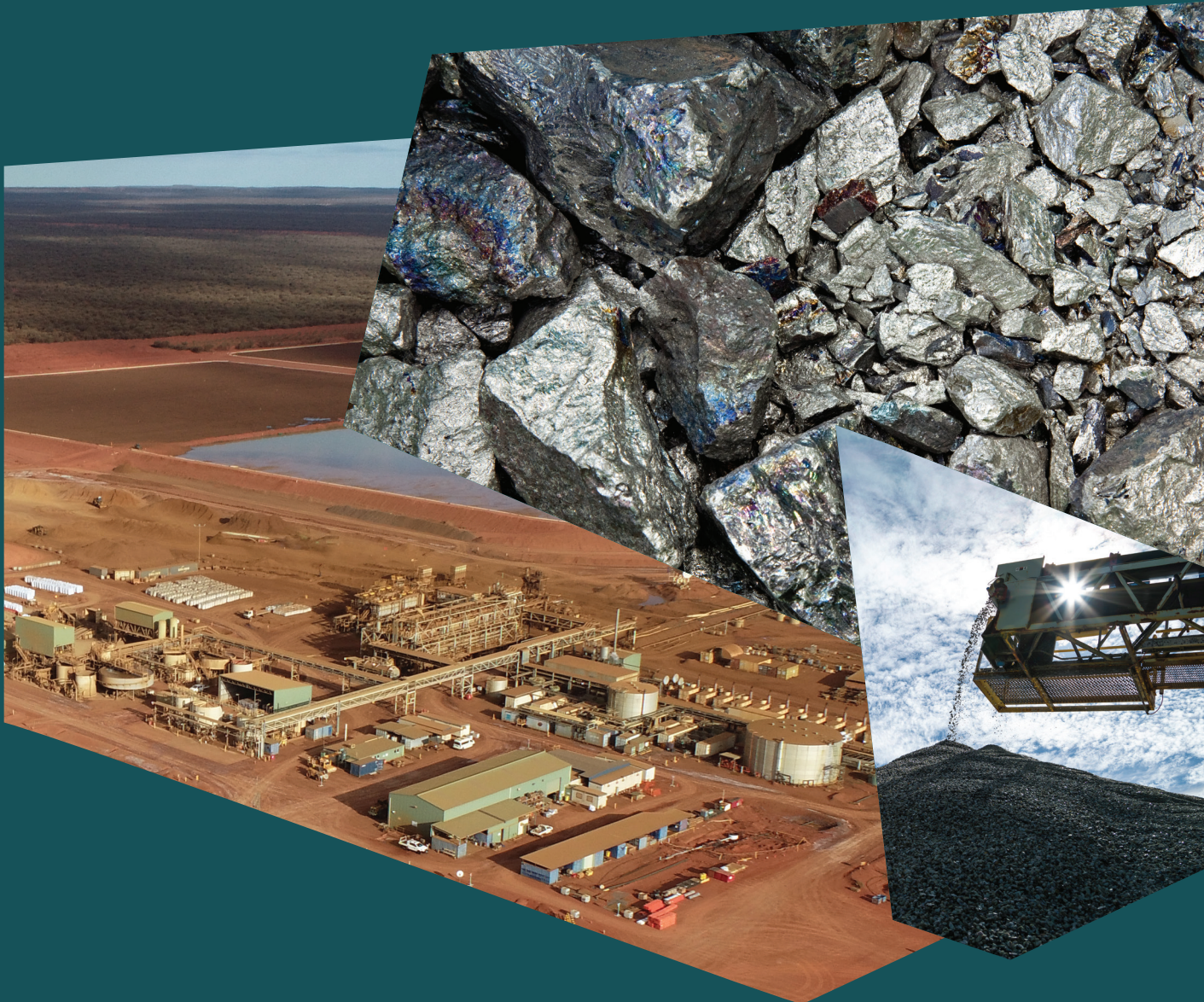




Australian Government

Critical Minerals Strategy 2023–2030

June 2023



| industry.gov.au/CriticalMineralsStrategy

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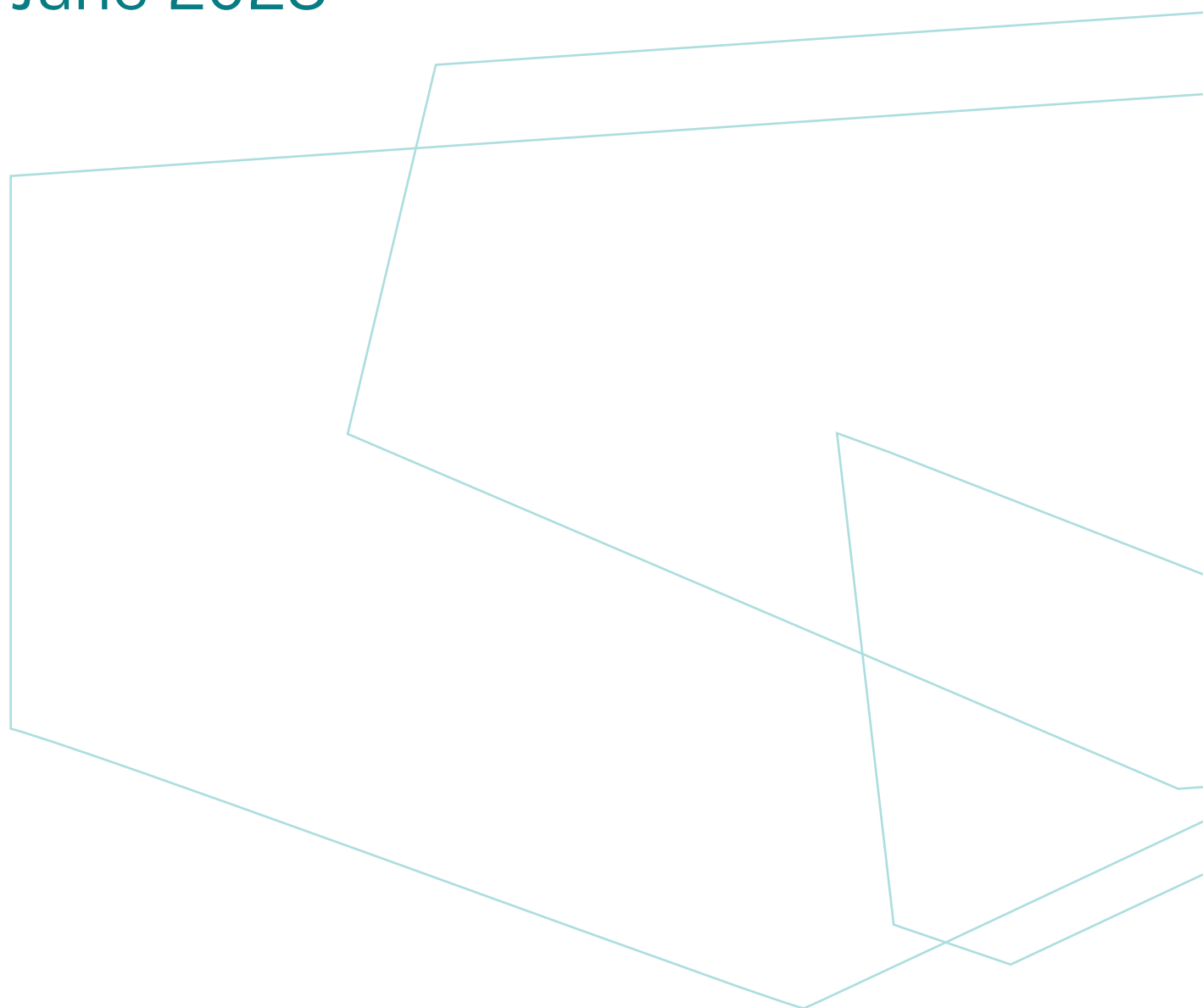
Top: Pure Ferro Niobium (Fe-Nb). Photo credit: 35007/Getty.

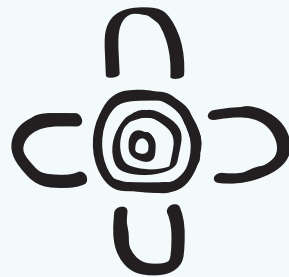
Middle: Mt Weld Expansion Bulk Earthworks progress. Photo credit: Lynas Rare Earths.

Bottom right: Spodumene concentrate containing Lithium at Allkem's Mt Cattlin operations.
Photo credit: Allkem Limited.

Critical Minerals Strategy 2023–2030

June 2023





Acknowledgement of Country

In delivering Australia's new Critical Minerals Strategy, we pay our respect to our First Nations peoples, their elders and their ancestors who have always cared and continue to care for our lands, waters and communities.

First Nations people are the custodians of the lands and waters on which critical minerals mining and processing takes place. Their voices and knowledge are critical to the success and sustainability of the critical minerals sector. In the spirit of reconciliation, we are committed to listening to the voices and experiences of First Nations people and improving how First Nations people can be heard and represented. We will work to ensure the benefits gained from the growth of the critical minerals sector are shared by all Australians.

We thank First Nations people for their continuing custodianship of the Country that we live and work on today.

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Strategy at a glance

The Critical Minerals Strategy 2023–2030 is a framework to grow Australia’s critical minerals sector.

Our critical minerals sector is well placed to seize the opportunities of the clean energy transition thanks to Australia’s:

- rich geological reserves
- expertise at extracting minerals
- track record as a reliable producer and exporter of energy and resources.

The Strategy’s vision is that by 2030 Australia:

- has grown the geostrategic and economic benefits of its critical minerals sector
- is a globally significant producer of raw and processed critical minerals
- supports diverse, resilient and sustainable supply chains.

The Strategy was shaped by extensive public consultation to understand the barriers and opportunities facing the Australian industry and community.

Its objectives are to:

- create diverse, resilient and sustainable supply chains through strong and secure international partnerships
- build sovereign capability in critical minerals processing
- use our critical minerals to help become a renewable energy superpower
- extract more value onshore from our resources, creating jobs and economic opportunity, including for regional and First Nations communities.

The strategy sets out priorities across 6 focus areas.

These outline how the government will seize our critical minerals opportunity by working with:



Communities



Industry



Investors



Research and
Innovation sector



States and
Territories



International
partners

Focus Areas	What does success look like?
 Developing strategically important projects	<p>Targeted, proportionate support from the Australian Government to de-risk strategically important critical minerals projects, attract private finance and ensure Australian processing and manufacturing projects can access Australian minerals. Alignment between States, Territories and Australian Government on developing strategically important projects.</p>
 Attracting investment and building international partnerships	<p>Increased investment from, and collaboration with, likeminded partners to grow Australia's downstream processing capability and build diverse, resilient and sustainable global supply chains.</p>
 First Nations engagement and benefit sharing	<p>Genuine engagement and collaboration with First Nations communities that promotes benefit sharing and respects the land and water rights and interests of First Nations people and communities.</p>
 Promoting Australia as a world leader in ESG performance	<p>Regulatory and policy frameworks that:</p> <ul style="list-style-type: none"> • enable fast, efficient and durable environmental approvals while upholding robust environmental protections • embed strong ESG practices that enable access to global markets • support the sector's enduring social license to operate • fairly share the benefits of critical minerals development with communities, including First Nations Australians.
 Unlocking investment in enabling infrastructure and services	<p>Working with states and territories, strategically planned enabling infrastructure and services help develop industrial hubs and link the critical minerals sector to global markets. This reduces costs, lowers project risk and attracts large-scale investment.</p>
 Growing a skilled workforce	<p>A skilled, diverse and growing workforce that enables the desired development of Australia's critical minerals sector, particularly as we move into downstream processing.</p>

Previous page (left to right): 1. Yued Traditional Owner representatives conducting cultural heritage monitoring at Chalice Mining's Julimar Project. Photo credit: Chalice Mining Limited. 2. Lithium processing infrastructure at Allkem's Mt Cattlin operations. Photo credit: Allkem Limited. 3. Lithium Ore. Photo credit: Carla Gottgens/Bloomberg. 4. Lava Blue research team at Queensland University of Technology. Photo credit: Lava Blue Limited. 5. Photo credit: Jason Jones Travel Photography/Getty. 6. Aerial view of Port Hedland in the Pilbara region of Western Australia. Photo credit: Simon Phelps Photography/Getty.

Message from the Minister

This Critical Minerals Strategy is the Australian Government's plan to grow our critical minerals industry. The Strategy is intended to be an enduring framework which will guide the Government's future policy decisions to maximise the national benefits of Australia's internationally significant critical minerals endowments.

The imperatives for this Strategy are threefold:

- Australian critical minerals are fundamental to the global transition to Net Zero emissions
- The development of our critical minerals industry will create jobs and national wealth
- Australian critical minerals domestic supply chains are vital to our strategic interests.

With our rich geological endowment and track record as a reliable exporter of energy and resources, Australia can play a pivotal role in delivering the processed minerals the world needs for a clean energy future.

We are the world's largest producer of lithium, the third largest producer of cobalt and fourth largest producer of rare earths. Like the gold, iron ore and gas industries did before it, the critical minerals sector can deliver significant benefits to Australia. We also produce significant amounts of energy transition metals such as aluminium, nickel and copper – which in combination with our critical minerals are essential inputs into the technologies that will drive the energy transformation.

While our potential is great, so too are the challenges. And global competition is fierce.

The international investment landscape is shifting rapidly as governments around the world race to incentivise investment in diversifying and expanding critical minerals supply chains. Recent announcements from the US and EU aim to drive historic investments in clean energy supply chains, turbocharge its decarbonisation efforts and transform the environment for businesses globally.

Australia's geology alone demands that we play a key role in the energy transition. In response to policy commitments to meet net zero by 2050, private and public investment is beginning to flow on a massive scale. Bringing online sufficient new supply of minerals, in time to meet demand, is a significant challenge.

Our trade and investment partners are increasingly looking to Australia to provide critical minerals, including rare earth elements, that will feed diversified global supply chains in the energy transition. The Australian Government is working with industry and communities to enable this. We are also working with international partners to help projects link to emerging markets in countries like the United States, the United Kingdom, Japan, Korea, India, the UK, the European Union and its member states (see Appendix A).

And while our natural minerals endowment provides a foot in the door, there is more to do to capitalise on this unique opportunity. We must look to grow our downstream capabilities in areas of competitive advantage by enabling more processing and refining of minerals onshore in Australia, and realise the benefits derived from value-adding to our resources.

This Critical Minerals Strategy sets out a vision and a pathway for Australia. It highlights 6 focus areas to help deliver diverse, resilient and sustainable supply chains, meet our net zero ambitions, maximise the economic opportunity presented by our minerals endowment, and maintain and grow our sovereign capability.

If we get this right, this emerging industry can make positive contributions to the lives of communities across the country and boost economic development in our regions, particularly Northern Australia.

I would like to recognise the significant contribution from all that helped develop this Strategy. I particularly recognise the important contributions from our First Nations representatives who provided valuable views in the consultation process.

I look forward to continuing to work closely with industry and communities in realising our critical minerals ambitions.



The Hon Madeleine King MP

Minister for Resources

Minister for Northern Australia



Introduction

The Critical Minerals Strategy provides a national framework to grow Australia's critical minerals sector and achieve the Government's vision. The Strategy sets out priorities across 6 focus areas and sets out how the Australian Government will work with communities, industry, investors, the research and innovation sector, states and territories, and international partners to seize this strategic opportunity.

In developing this Strategy, the Government consulted stakeholders to understand the barriers and opportunities faced by industry and communities. This consultation was made up of 15 roundtables and multiple one-on-one meetings including participants from industry, academia, First Nations representatives, community groups and state and territory governments. Over 130 written submissions were received in response to consultation.

Above: Rare earth elements (or REEs), are important parts of a wind turbine's permanent magnets and help convert energy from wind into electricity. Photo credit: Vicki Smith/Getty.

Vision and objectives

Vision for 2030

Australia has grown the geostrategic and economic footprint of our critical minerals sector by becoming a globally significant producer of raw and processed critical minerals. These minerals underpin diverse, resilient and sustainable global supply chains, that support industries and technologies which are crucial for:

- the global transition to net zero emissions
- domestic and regional energy security
- our defence and economic security.

Objectives

Create diverse, resilient and sustainable supply chains through strong and secure international partnerships

We will supply processed critical minerals to diversify global markets and support Australia's access to priority technologies. This includes working with international partners to build secure, resilient and sustainable supply chains that reduce market concentration. We will enhance our high environmental, social, and governance (ESG) credentials and our status as a trusted and reliable trading partner.

Build sovereign capability in critical minerals processing

We will move up the critical minerals value chain and increase Australia's footprint in downstream processing. We will make high-value products that build new industries and strengthen our domestic resilience to supply chain shocks.

Use our critical minerals to help become a renewable energy superpower

We will unlock our vast potential as a major supplier of the critical minerals needed to decarbonise the global economy. Australia's critical minerals sector will help the world decarbonise, including enabling Australia to reach our own legislated targets of 43 per cent below 2005 levels by 2030 and net zero by 2050.

Extract more value onshore from our resources – creating jobs and economic opportunity, including for regional and First Nations communities

We will ensure Australian communities benefit from the sustainable growth of the critical minerals sector by:

- creating new industries, including mineral refining and processing, and the manufacture of clean energy technologies
- supporting secure, well-paying jobs with skills pathways for future generations
- establishing genuine partnerships and sharing benefits with regional and First Nations communities
- advancing gender equality.

Operating environment

What are critical minerals?

Critical minerals are metallic or non-metallic materials that are essential to our modern technologies, economies and national security, and whose supply chains are vulnerable to disruption. Risks of disruption to critical mineral supply chains are heightened when mineral production or processing is concentrated in particular locations, facilities or companies.

Why are critical minerals important?

Critical minerals, including rare earth elements, are used to manufacture key technologies. This includes the technologies that will help us transition to net zero emissions, such as:

- electric vehicles (EVs)
- batteries
- permanent magnets
- wind turbines
- solar photovoltaics (PV)
- hydrogen electrolyzers
- energy-efficient technologies like LEDs.

Critical minerals, and the technologies they enable, have important applications across a range of sectors such as:

- defence
- space
- energy
- transport
- agritech
- medicine
- computing
- telecommunications.

Global supply chains operate most efficiently when they are diverse and transparent. Supply chains that are highly concentrated are fragile, volatile and unreliable. In these cases, markets cannot adequately price and manage risks, meaning businesses cannot compete on a level playing field. As a result, there is a role for governments to work with the private sector to build diverse, resilient and sustainable critical minerals supply chains.



The global context

The world's total demand for minerals necessary for the development of clean energy technologies is forecast to double or even quadruple by 2040 (IEA 2021).

By 2030 EVs will represent more than 60 per cent of vehicles sold globally (IEA 2022b). Demand for battery minerals, such as lithium, is forecast to increase by 40 times 2020 levels by 2040, while demand for cobalt and graphite could rise by approximately 20 times. Demand for rare earth elements could increase by seven times in the same period (IEA 2021). More mining is required to meet this demand. Recent analysis by the IEA suggests the world will need around 50 new lithium mines, 60 new nickel mines and 17 new cobalt mines to meet carbon emissions goals by 2030 (IEA 2022a).

Bringing online sufficient new supply of the minerals needed to meet increasing demand in time is a significant challenge. New mining, processing and manufacturing projects can take more than 10 years to reach production, particularly when doing so in a sustainable way supported by local communities. Bringing these projects online requires expertise, capability and substantial investment to overcome technical and commercial challenges.

Despite these barriers, global investors are beginning to mobilise, particularly in response to national policy commitments to reach net zero by 2050. Internationally, governments are creating frameworks to encourage private sector innovation and capital into diversifying and expanding clean energy technology supply chains. This includes the United States' *Inflation Reduction Act*, the European Union's *Critical Raw Materials Act* and Japan's *Economic Security Act*. These frameworks seek to incentivise local or regional supply chains through tax credits, government investment, regulation, project facilitation and strategic reserves.

These frameworks will profoundly influence investment flows by spurring the deployment of technologies and driving the expansion and diversification of clean energy supply chains. Over the next 6 to 12 months industry will be locking in investment decisions that will set their direction for many years to come.

Above: Aerial view of Port Hedland in the Pilbara region of Western Australia.
Photo credit: Simon Phelps Photography/Getty.

Opportunities for Australia

Australia is well placed to support diverse, resilient and sustainable supply chains. But these will not come about unless governments, communities and industry work together.

Australia has the potential to build a new industry that will support future jobs and ensure all Australians can share in the returns of our critical minerals endowment. Australia has some of the world's largest recoverable resources of critical minerals, including cobalt, lithium, manganese, rare earth elements, tungsten and vanadium (Geoscience Australia 2022). Up to 80 per cent of the Australian continent remains underexplored, with significant potential to discover new deposits. We have world-leading scientific expertise, particularly in exploration technology and the generation of precompetitive data, and a track record as a reliable producer and exporter of energy and resources. Building on this expertise will be crucial to realising the benefits of our geological endowment and supporting a pipeline of new projects to market.

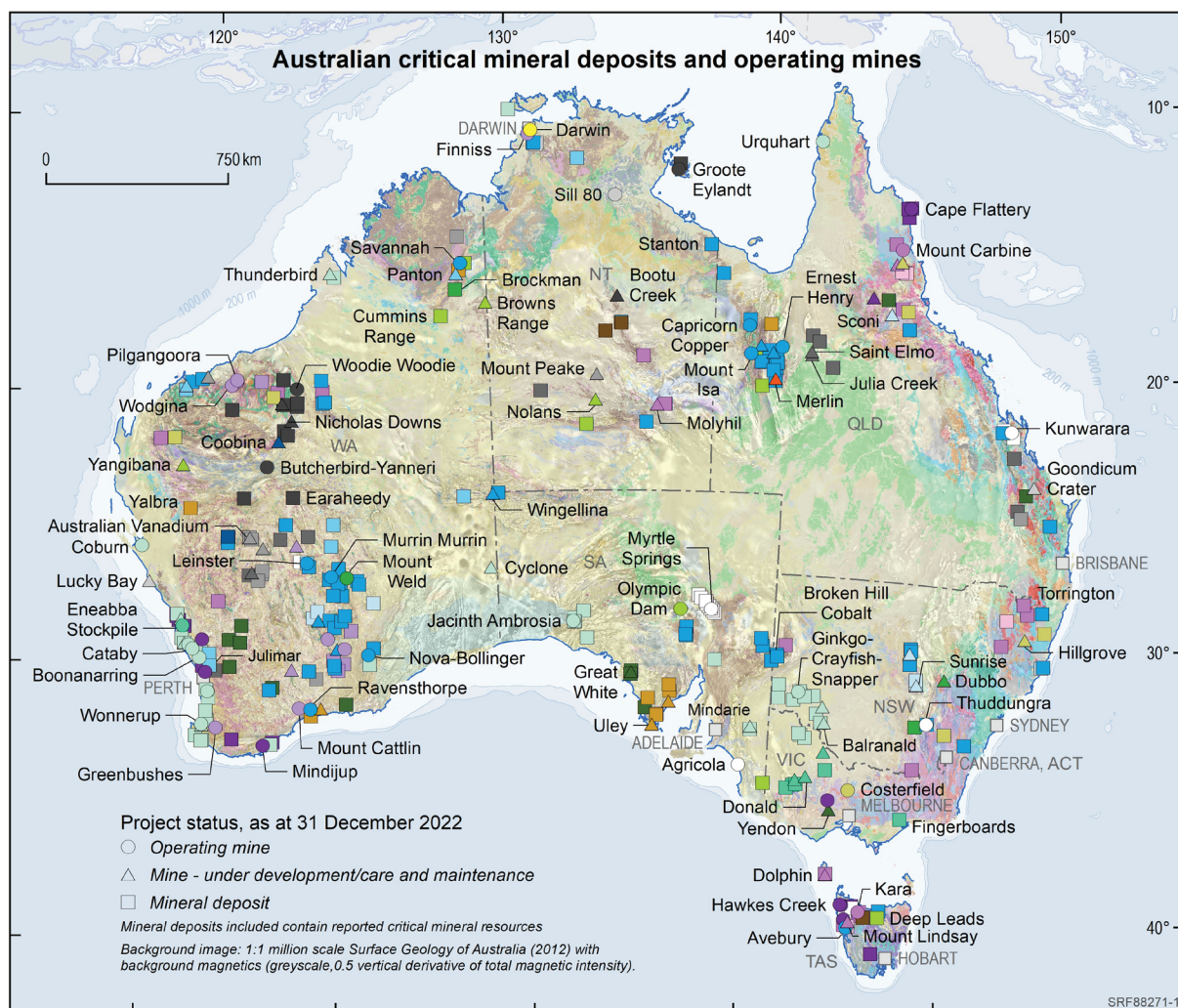
Ongoing investment by the resources sector in mineral exploration will unlock new opportunities and build the pipeline of critical minerals projects across the country. These efforts will continue to be supported by the globally recognised expertise within Geoscience Australia and state and territory geological surveys that improves our understanding of Australia's critical mineral resources potential, ensuring a strong pipeline of future projects.

Australia had 81 major critical minerals projects in the pipeline as of December 2022, with an estimated value of between \$30 billion and \$42 billion. This is up from 71 projects and \$22 billion to \$36 billion in 2021 (DISR 2022). The 2022 [Australian Critical Minerals Prospectus](#) showcased 55 advanced and investment ready critical minerals projects. Competition for capital is fierce, particularly for downstream processing projects. To ensure the industry's success, we must create and maintain an environment that attracts investment and encourages competitive projects.

Growing the sector and moving into downstream processing, where we can do so competitively, will capture more value, economic benefits and jobs in Australia while boosting our sovereign capability. Modelling commissioned externally by the Department of Industry, Science and Resources, indicates increasing exports to maintain our market position for critical and other energy transition minerals as global demand grows could add \$71.2 billion in GDP and increase the number of jobs in the economy by 115,100 from 2022 to 2040. However, building downstream refining and processing capability and securing a greater share of trade and investment could generate \$139.7 billion in GDP and increase the number of jobs by 262,600 from 2022 to 2040 (see Table 1 on page 10 of the [modelling report](#)).

Australia's location, free trade agreements and reputation as a trusted partner give us enviable access to the world's major economies. Australia can use these strengths to take advantage of the green trade opportunities this transition offers.

Our robust ESG credentials, underpinned by state and federal legislative frameworks, mean we offer more sustainable and ethical critical minerals than many of our competitors. The growth of the critical minerals sector also holds great promise to support economic development across Australia by ensuring our ESG credentials keep workers and communities protected from environmental and social harms.



Commodity type

- | | |
|---|--|
| ● Aluminium (HPA) | ● Manganese ore |
| ● Antimony | ● Heavy Mineral Sands (HMS) - Titanium, Zirconium |
| ● Bismuth, +/- Cobalt, +/- Indium | ● HMS - Titanium, Zirconium, REE |
| ● Chromium, +/- Cobalt, +/- PGE | ● Rare Earth Elements (REE) |
| ● Cobalt | ● REE, Zirconium, Niobium, +/- Hafnium, Lithium, Tantalum, Gallium |
| ● Platinum Group Elements (PGE), +/- Cobalt | ● Rhenium |
| ● Scandium, +/- Cobalt, +/- PGE | ● Silicon |
| ● Graphite | ● Tungsten |
| ● Helium | ● Titanium |
| ● Indium | ● Titanium, Vanadium |
| ● Lithium, +/- Tantalum, +/- Niobium | ● Vanadium |
| ○ Magnesium | |

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The Australian Government is already working towards making Australia a renewable energy superpower. This includes measures in the 2023–24 Budget that highlight Australia's commitment to transforming our economy to reach net zero, drawing on major international policy and economic developments. Our current world-class minerals inventory together with a strong pipeline of new discoveries will ensure our raw and processed critical minerals are a globally significant enabler of the world's actions to decarbonise. These and future measures will be underpinned by the following principles:

- strengthening Australia's domestic resilience
- delivering on emissions reduction commitments
- becoming a world leading exporter of clean energy and value-added, low-emissions products
- ensuring communities benefit from cheaper, cleaner energy and new industries
- remaining a trusted and credible partner in global action on climate change.

By growing the sector, we can:

- help deploy clean energy
- create well-paying jobs, including in our regions
- contribute to a strong future for our resources and manufacturing industries.



With large deposits of critical minerals and rare earth elements, established technical expertise in mineral development and integration with global supply chains, Australia is well-placed to meet increased demand throughout the energy transition.

– Peak body

Our approach

The Australian Government will take a concerted, targeted and proportionate approach to developing our critical minerals sector so it contributes to broader national security, economic security, emissions reduction, green trade, investment and industry growth outcomes. We will do this by working with partners to build diverse, resilient and sustainable global supply chains for priority technologies.

Concerted

We will work across Government and with state, territory, national and international partners to create an enabling environment for our critical minerals sector. Over time, the industry will become self-sustaining with a reduced role for government.

Targeted

We cannot spread our efforts too thin. We must focus policy support on the areas where it will have the greatest impact. To achieve this, we will identify minerals that are inputs to priority technologies that support Australia's national interest, including where Australia can use its strengths to capture a larger share of growing global markets.

Proportionate

We will prioritise our actions and consider available policy levers to improve productivity and economic sustainability, while ensuring Australia's critical minerals projects are attractive and competitive to investors.

We will do this in a way that:

- is proportionate to the size of our economy and global market demand
- considers our natural advantages and national interest
- is efficient, effective and fiscally responsible.

Prioritising policy support

Australia's Critical Minerals List currently consists of 26 minerals that can be used in a wide array of technologies. While all 26 minerals represent potential economic opportunities for Australia, only some of them are inputs into priority technologies that support Australia's national interest. This includes aligning with the Government's security, energy, industrial and employment priorities, as well as securing benefits for communities and consumers. Priority technologies for critical minerals are identified by their:

- overall contribution to emissions reduction, or our security, energy and industrial priorities
- technology readiness
- contribution to Australia's long-term comparative advantage and national interest
- capacity to underpin our strategic partnerships.

The initial priority technologies for critical minerals align with [Australia's Critical Technology Statement](#) and include but are not limited to:

- batteries and battery components
- rare earth permanent magnets
- catalysts for hydrogen production
- semiconductors for micro-chips and solar PV
- defence technologies
- high-performance alloys and metals (for example, of magnesium, silicon, tungsten and titanium).

These technologies cover a range of fields included in the *List of Critical Technologies in the National Interest*, including advanced manufacturing and materials, and clean energy generation and storage.

The Government will analyse the value chain for each priority technology to identify where Australia is best positioned to capture market share. This analysis will also identify the critical mineral products and types of projects needed for these technologies.

The Government will prioritise support for critical minerals projects that underpin priority technologies and clearly contribute to the vision and objectives of this Strategy.

To clearly signal policy priorities for the sector, Australia's Critical Minerals List will be published separately to the Critical Minerals Strategy. The Strategy sets out the Government's broad and enduring policy direction, while the List can be updated in response to global strategic, technological, economic and policy changes.

Key actions

- Establish a process to update Australia's Critical Minerals List.
- The Australian Government will analyse the value chain for each priority technology. This will identify where we can be most competitive and prioritise policy support.

Our focus areas

Extensive public consultation identified 6 areas to focus on to achieve the Australian Government's goals for the critical minerals sector.





1. Developing strategically important projects

- Provide targeted and proportionate support to de-risk projects, crowd in commercial finance and help overcome market distortions
- Enable a pipeline of new critical mineral discoveries and projects by supporting exploration
- Review R&D support, including licensing and commercialisation settings
- Attract international IP to grow domestic capability in refining and processing critical minerals
- Analyse domestic industries and develop options to ensure Australian industries can access the minerals they need.



2. Attracting investment and building international partnerships

- Optimise trade and investment settings for priority technologies
- Facilitate business-to-business engagement, including business missions, to secure offtake, equity and debt
- Attract international investment to support project development and downstream processing opportunities aligned with our national interest
- Step up our international engagement with bilateral partners and in multilateral forums to align policy frameworks.



3. First Nations engagement and benefit sharing

- Strengthen engagement and partnerships with First Nations people and communities, respecting their land and water rights and interests
- Support the critical minerals sector's immediate and long-term social licence to operate and its ongoing sustainability. This includes creating economic opportunities in regional and First Nations communities while protecting cultural heritage and sacred sites
- Work with First Nations communities and their representative organisations to build their capacity to engage with critical minerals proponents
- Work to improve equity and investment opportunities for First Nations interests.



4. Promoting Australia as a world leader in ESG performance

- Reinforce our high ESG credentials to maintain social license and improve market access
- Shape global ESG standards to ensure the clean energy transition is socially and environmentally responsible
- Work with all levels of government to streamline environmental approvals.



5. Unlocking investment in enabling infrastructure and services

- Work with jurisdictions and industry on ways to unlock investment in enabling infrastructure
- Ensure public and private infrastructure investment decisions appropriately consider critical minerals projects and related heavy industry precincts
- Consider how existing infrastructure projects can be augmented to help achieve the vision of this Strategy.



6. Growing a skilled workforce

- Build on our existing investment in skills and education to increase the number of highly skilled specialists available for critical minerals projects
- Consider how we can better target and apply our skilled migration settings to support industry needs
- Work with industry and state and territory governments to improve community sentiment and understanding of the mining sector's role in energy transition and lift its profile by highlighting the broad range of employment opportunities available, including the role of critical minerals and energy transition metals in net zero.



1. Developing strategically important projects

Targeted, proportionate support from the Australian Government to de-risk strategically important critical minerals projects, attract private finance, and ensure Australian processing and manufacturing projects can access Australian minerals.

Why action is needed

Australia's critical minerals sector can be more than just a trusted and reliable supplier of raw materials. We also want to capture a growing share of downstream processing and, where viable, manufacturing. This will enable us to realise the full value of our natural resources and maximise the benefits for the nation.

Our geological advantages and world-class resources sector give us a natural entry-point into these markets. But moving further into downstream processing is a significant undertaking that requires concerted action.

Critical minerals projects face complex challenges, including:

- technical risks due to complex mineralogy and the need for specialised processing
- project risks associated with operating in remote areas, significant capital and energy requirements, and the fact many proponents are junior miners
- market risks from concentrated supply chains, opaque markets and limited pricing data.

Together, these factors can pose challenges securing offtake, equity and debt finance for critical minerals projects. Some strategically significant critical minerals projects may require targeted support to overcome obstacles and become commercially viable and financially self-sustaining, from exploration, design and feasibility and offtake qualification, through to final investment decision and production.

Well-designed support can de-risk investment, crowd in private sector funding, attract foreign investment and mature the sector. In a competitive global market, it is important that Australia's efforts are targeted and proportionate for the greatest strategic and economic impact.

The Government will support the sector across the 6 focus areas, including with communication, coordination, regulation and financial support. Support will be prioritised for minerals that are used in priority technologies.



Government support is key to fast-track approvals that incorporate the world's best decarbonisation objectives, and to crowd in private capital by deploying patient, national-interest equity, infrastructure, debt, export credit and grant finance.

– Academic policy expert



Case study: Mineral processing in Australia

Australia has a long and successful history of processing critical materials. This industry has made significant contributions to Australia's prosperity and, by capitalising on the global clean energy transition and supply chain diversification ambitions, will continue to do so into the future.

Wesfarmers Chemicals, Energy and Fertilisers (WesCEF) is part of Wesfarmers Limited. As well as extracting and using raw minerals, the company adds value by converting them into higher value commodities that support Australian and global industries by manufacturing and distributing essential chemicals, energy and fertilisers. WesCEF also applies this value-add approach to its newest joint venture project that will see it use the critical lithium resource at Mt Holland in Western Australia as a feedstock to its integrated refinery at Kwinana. The project is expected to produce approximately 50,000 tonnes per year of battery-grade lithium hydroxide. The Australian Government is targeting support at critical minerals producers seeking to establish mineral and chemical processing operations onshore. Through the Critical Minerals Development Program the Government has awarded \$100m to projects including Australian Energy Storage Solution's battery precursor manufacturing operations, Queensland Pacific Metals' energy chemicals refinery, and AlphaHPA's precursor production facilities.

Above: Lithium Ore. Photo credit: Carla Gottgens/Bloomberg.

What we are already doing

The Government already supports strategically important projects at vulnerable points in their development.

Targeted support to accelerate development of critical minerals projects

In order to build clean energy technologies, we first need to know where to find the raw minerals. Geoscience Australia's \$225 million Exploring for the Future program provides world-leading, precompetitive geoscience data and information to encourage investment in new resource projects today and in the future. This information is essential to inform future investment in exploration and development for critical minerals. To date, the program has stimulated new investment in Australia, with the uptake of 419 new exploration tenements by 49 companies.

The \$100 million Critical Minerals Development Program has provided 19 grants to help early and mid-stage critical minerals projects to overcome technical and market barriers to production. These projects will produce minerals such as lithium, cobalt, graphite, high-purity alumina (HPA), tungsten, tantalum, battery precursor chemicals and vanadium. They will embed Australia in supply chains for crucial technologies like:

- lithium-ion and vanadium flow batteries
- defence industry technologies
- advanced medical equipment
- LED lighting
- optics technologies.

The Government supports advanced critical minerals projects by providing loans, guarantees and equity investments through:

- Export Finance Australia
- the Northern Australia Infrastructure Facility
- the Clean Energy Finance Corporation.

To date, these financing agencies have approved 9 loans totalling A\$2.3 billion to critical minerals projects. These projects are currently working towards production.

The Government's flagship National Reconstruction Fund will also be able to support critical minerals projects, particularly through \$1 billion earmarked for 'Value-add in resources', and \$3 billion earmarked for 'Renewables and low emission technologies' priority areas.

Alongside commercial support, Export Finance Australia administers the \$2 billion Critical Minerals Facility (CMF). The CMF supports projects of national strategic significance that align with the objectives of the Critical Minerals Strategy where private sector finance is unavailable or inadequate.

Since the CMF's establishment in September 2021, A\$1.5 billion in financing has been committed to three strategically significant projects.

- Iluka Resources, which received a A\$1.25 billion loan to develop its Eneabba Rare Earths Refinery. The refinery will produce separated rare earth oxide products including praseodymium, dysprosium, neodymium and terbium. These are used in permanent magnets for sectors such as electric vehicles, clean energy and defence
- Renascor Resources, which received a A\$185 million loan for its Siviour Graphite Project. The project will establish a vertically integrated graphite mine and manufacturing operation to produce high-purity graphite for lithium-ion batteries
- EcoGraf, which received a US\$40 million loan for its Battery Anode Material Facility to produce high-purity graphite products.

Research and commercialisation

Australia's world class research and development (R&D) institutions are well placed to address technical challenges for critical minerals project development.

The Cooperative Research Centre (CRC) Program funds industry-led collaboration between industry, academia and end users. This includes the Future Battery Industries CRC which enables value adding to Australian resources, supports domestic refining and manufacturing of materials, components, cells and packs. It also aims to help address the challenges associated with the energy transition.

The Government is investing up to \$50.5 million to establish the Australian Critical Minerals Research and Development Hub. It is addressing strategic technical challenges and will support international R&D collaboration by bringing together the world-leading R&D expertise within Geoscience Australia, Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Australia's Nuclear Science and Technology Organisation (ANSTO).

The \$50 million Resources Technology for Critical Minerals Trailblazer will build research capabilities, increase commercialisation and invest in industry engagement. The initiative is hosted by Curtin University in partnership with The University of Queensland, James Cook University and over 30 company partners across Australia.

A key challenge for Australia is ensuring that our intellectual property (IP) and technologies are deployed to grow the Australian sector. The Government is reviewing licensing and commercialisation settings for federal science agencies and R&D initiatives to ensure they encourage benefits flowing to the domestic sector. Australia's globally renowned expertise in mining equipment, technology and services (METS) encourages strong international partnerships that should continue to be fostered. Existing research hubs create long-term partnerships that collaboratively develop research and technologies domestically and internationally. Australia's intellectual property system plays an important role in attracting new technologies from overseas, by facilitating the transfer of IP through licensing, trade and investment. It will be crucial to build partnerships with and attract investment from, international companies that have developed and deployed relevant IP overseas. This will enable Australia to benefit from technologies that have been proven and accelerate how quickly we can scale up the sector.

What we will do

The Northern Australia Infrastructure Facility (NAIF) will play an important role in supporting the growth of the critical minerals sector. To support the growth of the critical minerals sector, particularly downstream processing, the Government will ask NAIF to earmark \$500 million to support projects that align with this Strategy.

Australia is the world's biggest producer of raw battery minerals, but we currently have a modest share of the global markets for processed minerals and high purity battery precursors. Our Australian Made Battery Plan will use our significant endowment of critical minerals to build Australia's domestic battery manufacturing capability.

The global race to secure supplies of critical minerals is rapidly accelerating. Foreign companies are securing ownership and offtake arrangements for a large share of Australian minerals, particularly lithium and rare earth elements. In this context, Australian processors and manufacturers may struggle to access supplies of Australian minerals in future. This would affect our strategic and energy security.

Increasing Australia's sovereign capability in mineral processing will involve moving beyond exporting ores and undertaking more concentration, separation, refining and smelting onshore. We can use these high-purity, value-added chemicals and metals to realise economic benefits for Australia. For example, at present Australia's lithium and cobalt resources are largely exported as concentrates. By chemically refining these minerals to produce lithium hydroxide and precursor active materials, Australia has an opportunity to add significant value to our exports.

The Government is analysing the type and volumes of minerals our emerging downstream processing and manufacturing sectors will need and when they will need them and where the best economic gains are in the chain of production of batteries. This includes considering policy options that enable domestic supply of Australian critical minerals for Australian projects. The form and remit of any future approach must be tailored to the specific needs of the Australian economy within the global context.

Australia can scale up downstream processing and manufacturing by encouraging collaboration with, and attracting investment from, global firms that have developed and proven their IP overseas. This is becoming a growing focus for companies that are increasingly pursuing strategic commercial partnerships, which also enable access to IP and knowledge sharing from demonstrated experience of international partners. There is potential for these partnerships to be leveraged to ensure Australia continues to attract international IP and grow domestic capability. Further, Australia's intellectual property system plays an important role in attracting new technologies from overseas, by facilitating the transfer of IP through licensing, trade and investment

Key actions

- The Northern Australia Infrastructure Facility (NAIF) will play an important role in supporting the growth of the critical minerals sector. To support the growth of the critical minerals sector, particularly downstream processing, the Government will ask NAIF to earmark \$500 million to support projects that align with this Strategy.
- Establish the National Reconstruction Fund, which includes \$1 billion for value-add in resources and \$3 billion for renewables and low emissions technologies.
- Continue to evaluate the appropriateness of policy settings in the context of critical minerals' linkages to critical technologies, national priorities and Australia's competitive strengths, including how investment settings complement Government initiatives.
- Support a strong pipeline of new critical mineral discoveries and projects through government geoscience programs and strategic leadership.
- Review licensing and commercialisation settings for federally funded research relevant to the critical minerals sector to ensure it provides domestic benefit aligned with the Strategy's vision.
- Leverage Government research and development programs, capabilities and leadership to support the sector's development.
- Analyse the type, volume and timing of mineral requirements for Australia's processing and manufacturing sector.
- Wherever appropriate, industry policies should complement broader policy goals such as:
 - genuine engagement, agreement making and benefit sharing of business and employment outcomes with First Nations communities
 - gender equality
 - regional development
 - environmental sustainability and emissions reductions
 - alignment with state and territory plans for developing critical minerals.

Lithium processing infrastructure
at Allkem's Mt Cattlin operations.
Photo credit: Allkem Limited.





2. Attracting investment and building international partnerships

Increased investment from and collaboration with likeminded partners to grow Australia's downstream processing capability and build diverse, resilient and sustainable global supply chains.

Why action is needed

Australia cannot achieve its critical minerals objectives alone. Foreign investment has always been critical to Australia's prosperity. It helps drive economic growth, creates skilled jobs, improves access to overseas markets and enhances productivity.

We have established bilateral partnerships with likeminded partners to work together to build diverse, resilient and sustainable global supply chains. Australia also plays a leadership role in multilateral forums where critical minerals supply chains, standards and strategic issues are discussed. Our international engagement focuses on facilitating investment, R&D collaboration and ESG standards. We also engage actively with partners to ensure our regulatory frameworks, standards and trade and investment rules are consistent and mutually beneficial.

The long-term sustainable development of the Australian critical minerals sector is dependent on Australian projects securing offtake and equity agreements with original equipment manufacturers (OEMs) and industry end users. Government-to-government agreements can build investor confidence and help private sector partnerships develop and scale up quickly.

To take advantage of our globally significant endowments of critical minerals, Australia must leverage international partnerships and foreign investment to attract capital, IP and proven technologies, encourage collaboration and knowledge sharing between industry, and grow a resilient, sustainable and globally competitive Australian critical minerals sector. Foreign investment ensures Australian companies are competitive in the global market and strong governance standards ensure Australia continues to be regarded as a preferred, reliable and trusted partner.

Concentrated critical minerals markets lead to volatile and fragile supply chains, which work against the public interest and hamper growth of the global industry. The Government will use policy tools to help diversify global supply chains, particularly where this will link Australian projects into the markets of our allies and partners.

Current bilateral agreements and multilateral partnerships are outlined in Appendix A.



Australian Government leadership in international trade coupled with supply chain coordination will build resilient and diverse supply chains while accelerating the development of Australian critical mineral companies through identification and engagement of international partners.

– Academic policy expert



Building reliable, competitive and diverse supply chains and strategic partnerships to attract investment cannot be viewed in isolation from our climate commitments, the global net zero transition and the role Australia can play in helping international partners achieve their emissions reduction targets.

– Environment organisation

What we are already doing

Through the Critical Minerals Office, DFAT, Austrade, and Export Finance Australia, the Government has established commercial and strategic partnerships with likeminded governments and businesses. This includes through:

- working actively with Australian projects proponents to identify targeted sources of commercial investment to develop their projects
- leading business missions for Australian projects to target markets to connect them with international sources of offtake and equity
- establishing bilateral strategic cooperation mechanisms to align policies, deepen technical collaboration and improve access to finance
- taking leadership roles in multilateral forums and initiatives to shape emerging market rules and norms for critical minerals
- supporting export credit agencies to explore joint financing for Australian projects
- publishing guides to inform and attract investment.

Australia has a number of trade agreements with a range of international partners to provide Australian exporters, producers and investors with excellent access to international markets, and ensure we can contribute to building diversified supply chains.

For example, Australia is uniquely positioned to capitalise on the economic opportunities from the US *Inflation Reduction Act* through our FTA partner status and natural endowments of critical minerals. Not only will this enhance Australia's reputation as a preferred, reliable and trusted partner, it will also allow us to build diversified and resilient global clean energy supply chains.

Furthermore, in May 2023, the Australian and US governments committed to establish climate, critical minerals and clean energy as a central pillar of the Australia-United States Alliance through the Australia-US Climate, Critical Minerals, and Clean Energy Transformation Compact. Underscoring the central role of critical minerals in the clean energy transformation, the Compact establishes a ministerial-level Taskforce on Critical Minerals between Australia and the US, spearheaded by the Commonwealth Minister for Resources and the US National Security Council. The Minister for Resources will work with industry leaders and counterparts in the US to develop and expand reliable, responsible, and secure global access to critical minerals.

The Taskforce will engage key stakeholders across industry and relevant government agencies and financing bodies, to develop reliable, responsible and secure access to critical minerals. The Taskforce will also support industry to create reliable end-to-end supply chains that address to the growing demand of US manufacturers (including automakers), including under the *Inflation Reduction Act*.

Australia is also progressing negotiations with the EU to establish a free trade agreement, and with India on a Comprehensive Economic Cooperation Agreement, both of which will consider critical minerals. Negotiations on the Indo-Pacific Economic Framework also includes supply chain resilience, clean energy and decarbonisation.

Critical Minerals International Partnerships program

The Government is investing \$57.1 million to secure strategic and commercial partnerships to develop new, diverse and resilient supply chains underpinned by critical minerals processed in Australia.

Under this initiative, \$40 million in grants is available to support:

- co-investment between Australia and like-minded international partners
- critical minerals projects that can help develop end-to-end critical minerals supply chains between Australia and partner countries.

In addition to the grants program, the Government is investing:

- \$6.65 million to increase global critical minerals engagement, which includes detailed analysis for strategic projects to help link our supply chains
- \$6.7 million to help Austrade boost international engagement on critical minerals.

The 2023–24 Budget also includes \$2.2 million over four years for the Treasury to develop more sophisticated ways to track foreign investment patterns in Australia’s critical minerals sector. This will ensure foreign investment does not conflict with our national interest or national security. It will inform decision making under the foreign investment framework.

Increasing our understanding of investment patterns will also inform strategies to diversify supply chains and attract investment in downstream processing and manufacturing industries.

Austrade publishes the Australian Critical Minerals Prospectus with the help of Australia’s geoscience agencies. The prospectus supports the significant efforts already underway to attract investment in Australia’s critical minerals projects. The [fourth edition](#) of the prospectus, published in December 2022, highlights 55 advanced projects seeking investment or offtake agreements.

What we will do

The fastest and most efficient way to build our downstream capability and get Australian projects into international supply chains is through investment from like-minded countries and global companies. Attracting international investment and offtake arrangements will help Australian projects access key markets and make the sector commercially viable.

Key actions

- Work with likeminded partners to attract and leverage foreign investment and diversify supply chains. This includes co-investing through our financing agencies and establishing joint projects under the new Critical Minerals International Partnerships program.
- Take leadership roles in key multilateral forums to shape emerging market rules and norms, including embedding high ESG standards in the global market.
- Track and monitor foreign investment in Australian critical minerals projects to ensure it is not counter to Australia’s national interest.



3. First Nations engagement and benefit sharing

Genuine engagement and collaboration with First Nations communities that promotes benefit sharing and respects the land and water rights and interests of First Nations people and communities.

Why action is needed

The Australian Government acknowledges and respects the unique relationship First Nations peoples and communities have with the environment including land, sea, waterways, flora and fauna.

Valuing First Nations land and water rights, cultural heritage and genuine engagement with First Nations communities is essential to Australia's social and economic success. The benefits to be gained from the growth of Australia's critical minerals sector, now and into the future, must be shared with and driven by the strengths and aspirations of the First Nations communities in which projects take place. Governments and industry are responsible for progressing meaningful engagement, agreement making and benefit sharing with First Nations communities.

More than 60 per cent of Australian resources projects, including exploration and extraction, operate on land covered by a Native Title claim or determination (Productivity Commission 2020). Proponents are required to negotiate land use and access. In the Northern Territory, approximately 50 per cent of the landmass is freehold Aboriginal land where Traditional Owners have the right to refuse consent or 'veto' any land access use proposals. First Nations landholders and communities are key stakeholders for the resources sector and essential to its future sustainability.

Engaging with First Nations communities risks being seen as simply a step in a checklist for approval, particularly where there are multiple complex approval processes. But effective engagement and consultation with First Nations communities can support meaningful negotiations for access to land and land use proposals under existing land rights legislation or the *Native Title Act 1993*, and provide local employment opportunities, skills development and investment in the community. This will improve outcomes for First Nations communities and support targets and outcomes under the [National Agreement on Closing the Gap](#).



Enabling and empowering First Nations to play a key and central role in Australia's renewable energy transition, a transition which necessarily encompasses critical minerals, goes beyond just social licence issues – it presents a unique opportunity for Australia to design an economic system around energy and renewable energy infrastructure developments (and upstream and downstream value chains, including employment outcomes) that is fair and just and which can also positively impact and result in a range of other social and economic benefits for First Nations.

– First Nations-led Peak Body

What we are already doing

The Australian Government is committed to engaging closely with First Nations people to implement the Uluru Statement from the Heart in full.

All levels of governments are working with First Nations Peoples, communities, organisations and businesses to implement the 2020 National Agreement on Closing the Gap at the national, state and territory, and local levels. This approach acknowledges that First Nations Peoples should determine, drive and own the desired outcomes, alongside government.

Cultural heritage and environmental protection reforms

The Government recognises First Nations peoples and communities have cultural responsibilities to care for Country, and that they play an important role in the conservation and sustainable use of Australia's environment and heritage. We expect proponents to engage meaningfully with, and consider opportunities to partner with, First Nations peoples and businesses.

Broadly, respectful and effective engagement includes, but is not limited to:

- ensuring cultural capability
- building and maintaining trust and respect
- engaging early and often
- negotiating suitable timeframes
- building productive partnerships.

The Australian Government is pursuing an ambitious reform agenda to strengthen its cultural heritage and environmental protection legislation. As part of reforms to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the Government is developing a National Environmental Standard for First Nations Engagement and Participation in Decision-Making. The standard is being developed through a co-design process with First Nations peoples.

The Government has released [interim advice](#) for proponents which outlines the statutory obligations for proponents and the Government's expectations of proponents regarding respectful and effective engagement with First Nations people and communities under the EPBC Act.

In 2022, the Government committed to working in full and genuine partnership with First Nations peoples, state and territory governments and stakeholders to reform cultural heritage protections in response to the Joint Select Committee on Northern Australia's final report into the destruction of Juukan Gorge. This includes developing new national First Nations heritage protection legislation. The Government is also partnering with the First Nations Heritage Protection Alliance on options to better protect Australia's First Nations cultural heritage.

Benefit sharing

The sector can share economic benefits with First Nations communities, which are often in regional and remote locations across Australia. This includes through the provision of jobs with local training and internships, local business and procurement opportunities, community shares and equity stakes in projects, and community grants funded through a Social Contribution Action Plan.

Strengthened engagement practices and collaborative partnerships between the sector and First Nations communities and their representative organisations will help empower Traditional Owners and their communities to capture the benefits of resource projects that operate on their land. This will provide flow on effects in terms of employment, income and wealth, asset building, and improved community cohesion and outcomes.

Developing the [First Nations Clean Energy Strategy](#) will ensure First Nations people have a say in energy policies and programs as we transition to net zero. This strategy will be co-designed with First Nations communities and organisations to ensure they share in the benefits of the transition to net zero.

The resources sector is already partnering with First Nations communities through initiatives to create opportunities and support an inclusive workforce.

Stronger engagement practices and partnerships with First Nations peoples will benefit the critical minerals sector's immediate and long-term social licence to operate, its ongoing sustainability, and Australia's ability to leverage its ESG credentials world-wide.

Case study: Northern Territory Indigenous Business Network (NTIBN)

The NTIBN Indigenous Business and Employment Hub officially opened in Darwin in April 2023. The NT Hub was co-designed with local First Nations business leaders, the Northern Territory Government and other key Northern Territory stakeholders to provide the right solutions for the local market. The hub has 2 satellite locations, in Katherine and Alice Springs. There are plans to open a fourth location in Tennant Creek in July 2023. The NTIBN hubs follow the successful NIAA-funded First Nations business and employment hubs in Western Sydney, Perth and Adelaide.

Each NTIBN Hub location provides in-person services and support alongside online programs to help people in remote and rural locations access new markets and job opportunities. It offers mentorship, business advice, training, seminars, networking events, a place to work and access to financial services. The hub supports Indigenous entrepreneurs and businesses to become long-term and sustainable enterprises. It has specific targets to support the business aspirations of First Nations women and youth.

What we will do

The sector has the potential to create intergenerational social and economic benefits for First Nations people by building the prosperity of their communities, businesses and individuals – an outcome in the interests of all Australians. Nationally the mining industry is an important employer of First Nations Australians, particularly in regional and remote communities. The growth of the critical minerals sector will provide opportunities for First Nations communities now and into the future.

Key actions

- Consider how the Government can help identify and encourage best-practice engagement between resources companies and First Nations communities. This involves engaging early on free, prior and informed consent, including under regulatory frameworks such as the *Native Title Act and Aboriginal Land Right (Northern Territory) Act 1976*.
- The Minister for Resources, in consultation with the Minister for Indigenous Australians, will hold roundtable forums to initiate conversations on best-practice engagement opportunities and challenges in relation to the resources sector.
- Work with representative and community sector organisations to consider ways to build the capacity of First Nations communities to engage effectively with critical minerals proponents.
- The Minister for Indigenous Australians will work with native title holders, their Prescribed Bodies Corporate (PBCs), state and territory governments and other key stakeholders to strengthen PBC capacity, which can support improved engagement with the resources sector.

Yued Traditional Owner representatives conducting cultural heritage monitoring at Chalice Mining's Julimar Project. Photo credit: Chalice Mining Limited.





4. Promoting Australia as a world leader in ESG performance

Regulatory and policy frameworks set by the Commonwealth Government are fit for purpose and will:

- enable fast, efficient and durable environmental approvals while upholding robust environmental protections
- embed strong ESG practices that enable access to global markets
- support the sector's enduring social license to operate
- fairly share the benefits of critical minerals development with communities, including First Nations Australians.

Why action is needed

Australia is a world-leader in developing responsible projects with high ESG credentials. However, we cannot take this for granted. Growing international competition means ongoing and enhanced efforts are required to ensure our critical minerals sector remains a world leader in ESG, and that these credentials are a major point of difference in the global market. Supply chain due diligence and traceability of our critical minerals will be increasingly important in enabling access of Australian critical minerals into global markets. We must also balance the impacts of current energy-intensive extraction, concentration and processing critical minerals projects with our commitment to net zero emissions by 2050. We must do this in a way that supports a sustainable and competitive industry without imposing undue costs or inefficient processes.

Critical minerals projects can benefit communities through:

- closer partnerships and benefit-sharing with First Nations and regional communities
- greater representation, equal pay and safer working conditions for women
- showcasing the world's best practice for sustainable development and performance. This includes decarbonising operations, effective environmental protection, safe practices and responsible rehabilitation.



Australia's international trade and investment infrastructure provides an opportunity for government to promote Australian miners' ESG credentials to advanced economy customers, through scoreboards, international comparisons and by educating customers on the long-term importance of ESG to the global environment.

– Australian environmental services company

What we are already doing

ESG credentials

Australia has some of the world's strongest ESG performance across indicators including political stability and absence of violence and terrorism, government effectiveness, regulatory quality, voice and accountability, rule of law and control of corruption (World Bank 2022).

This is in part due to our robust legislative frameworks for anti-discrimination, human rights, workplace health and safety, anti-bribery and anti-corruption. Australia's robust corporate governance and financial disclosure frameworks also support ethical business practices and provide avenues to report unethical practices. Together, these frameworks help demonstrate Australia's excellent reputation as a stable, trusted and ethical trading partner and improve investment opportunities.

Australia will apply the highest ESG standards and practices relevant to critical minerals to guide investment decisions.

For example, Export Finance Australia applies two globally recognised approaches in environmental and social risk assessment of projects and project related transactions: *the OECD Recommendation of the Council on Common Approaches for Officially Supported Export Credits and Environmental and Social Due Diligence* and *the Equator Principles*. All transactions, including those for critical minerals projects, are subject to screening, classification and risk assessment for potential environmental and social impacts. This helps to ensure that projects are developed in a manner that is socially responsible and reflects sound environmental management practices.

Global markets are increasingly placing an emphasis on minerals provenance. Consumers and financiers want to understand the origin of the minerals in their supply chains and to have confidence they have come from high ESG environments. Companies may need to increasingly engage with minerals provenance issues as policy settings evolve in key markets. Focus on traceability and provenance will increase market transparency, which will encourage investment in high ESG markets like Australia, across the whole supply chain. Within Australia, work is underway on a [Certification and Life Cycle Analysis for Australian Battery Materials](#) and a Battery Material Provenance Authentication pilot through the Future Battery Industries CRC. Streamlined traceability and certification will improve the marketability of Australian products and reduce compliance costs.

The Department of Industry, Science and Resources is ramping up activities to improve, showcase and draw on the ESG credentials of Australia's critical minerals sector. We are starting a 4-year pilot program to develop tools and guidance to improve Australia's critical minerals sector ESG performance.

This work will showcase Australia's improved credentials to international markets and explore equivalency arrangements that reduce trade barriers with international partners.

International standards development

Australia is working closely with the international standards community and counterpart organisations on critical minerals standards, as well as to help shape critical and emerging technologies more broadly. Australia is engaging with international standards organisations to ensure fairness and transparency in critical minerals supply chains, including through the International Standards Organisation.

Australia's participation on technical standard-setting committees and advocacy for internationally aligned critical minerals standards is seeking to enable greater interoperability, increase transparency for investors and support the continued growth of Australia's critical minerals sector.

The Government is also working closely with our partners through the Quad to establish principles for clean energy supply chains in the Indo-Pacific. At the Quad Leaders' Summit on 20 May 2023, Quad leaders announced their commitment to a number of principles, including:

- diversifying clean energy supply chains in the Indo-Pacific
- supporting future clean energy workforce needs
- exploring inter-operability in our technical standards, policies and measures
- promoting enhanced cooperation to drive towards ESG practices for clean energy supply chains
- encouraging greater public and private investment and collaboration in clean energy R&D and innovation
- encouraging and incentivising companies to proliferate decarbonisation solutions.

Case study: Towards Zero Lithium Tailings

Albemarle's lithium hydroxide refinery at Kemerton in Western Australia uses ore from the nearby world-class Greenbushes spodumene deposit. The tailings from processing hard rock lithium are rich in aluminosilicates but are normally disposed of in tailings storage facilities.

With the support of a grant from the Australian Government, Albemarle is investigating ways to apply a circular economy approach to convert the tailings into new products for use in the transport and construction sectors.



Photo credit: Albemarle Corporation.

Environmental technologies and progress towards a circular economy

Australia is a leader in developing and implementing more efficient, safer and environmentally friendly technologies and processes. In partnership with industry, our national R&D institutions are developing and commercialising novel ways to reduce the sector's environmental footprint, reduce energy requirements, and progress the critical minerals sector towards a circular economy.

Geoscience Australia has published an [Atlas of Mine Waste](#), highlighting opportunities to reprocess previously mined material to extract critical minerals and other resources. The Atlas has identified 1,050 sites across Australia so far which are possible sources of critical minerals.

The circular economy presents an opportunity for Australia to harness the full potential life cycle value of its critical minerals. In 2022, Australia's environment ministers agreed to work with the private sector to design out waste and pollution and keep materials in use and foster markets to achieve a circular economy by 2030. In support of this, a national Circular Economy Advisory Group has been established and will provide guidance to Government on challenges and opportunities for Australia's circularity transition.

The group is considering the impact of key international policies on the demand for Australia's critical minerals. It is also looking at opportunities for Australia to leverage a circular economy approach to maximise the value and trade opportunities of critical minerals, including through recovery, reprocessing and recycling in Australia. This work is being led by Australia's Chief Scientist through the National Science and Technology Council.

Case study: Chalice Mining – Gonneville Nickel-Copper-PGE Project

Chalice Mining's discovery of the Gonneville Nickel-Copper-PGE deposit in Western Australia is one of the world's largest recent nickel discoveries and the largest discovery of platinum group elements in Australian history.

The Gonneville discovery was assisted by pre-competitive datasets available from both the Geological Survey of Western Australia and Geoscience Australia (GA), including a continental-scale analysis of potential for intrusion-hosted Ni-Cu-PGE sulphide deposits in Australia (Geoscience Australia Record 2016/01).

Chalice is progressing the new discovery on farmland and in parallel is exploring the surrounding region, which includes areas of the Julimar State Forest. Recognising the environmental sensitivities of this region, Chalice is using a staged exploration approach as well as innovative low-impact methods.

Chalice has pioneered the use of small, track-mounted diamond drill rigs with telescopic masts and above ground drilling fluids systems in all vegetated areas, which avoids trees and removes the need for any mechanised clearing of vegetation.

Comprehensive baseline flora and fauna surveys, conducted by teams of specialist botanists and zoologists, also ensure impacts from exploration are minimised.

Chalice has engaged Yued and Whadjuk Traditional Owners to conduct cultural heritage surveys to better understand the cultural values of the area. Drilling activities in the state forest are monitored by Traditional Owner representatives, with over 60 Yued and Whadjuk members participating in this work since 2022.

EPBC Act reforms

The Government is already well advanced in reforming national environmental protection laws, including in response to Professor Samuel's review of the EPBC Act.

The Government is considering how to identify and prioritise strategically significant mineral projects through this process to ensure faster approvals and strong environmental protections. The federal Minister for the Environment and Water and Minister for Resources will meet regularly with state and territory counterparts to ensure these actions align with state and territory efforts to streamline approvals processes.

Emissions reduction

Critical minerals are vital to global efforts to achieve net zero. However, critical minerals mining and processing requires significant amounts of energy, particularly gas (ARENA 2019).

The Australian resources industry is pioneering and adopting energy-efficient and lower carbon practices. The Government supports these efforts through policy frameworks including the Powering Australia Plan and the Safeguard Mechanism reforms.

The Government is boosting renewable electricity generation in the critical mineral sector through the Powering Australia Plan. This will help drive down project costs and reduce emissions from energy intensive operations. Reforms to the Safeguard Mechanism will give the resources sector the certainty it needs to invest in technologies to decarbonise operations.

A small number of critical minerals mining and processing facilities will be eligible for government support through the Powering the Regions Fund. The fund's \$600 million Safeguard Transformation Stream supports decarbonisation by providing competitive grants to trade-exposed facilities covered by the Safeguard Mechanism.

The Government is also working to improve regulations for carbon capture and storage technologies. This will bring massive-scale hydrogen projects online and develop high-quality carbon offsets.

What we will do

Australia's ESG credentials are an advantage for our industry, but maintaining them takes time, effort and resources for businesses.

The industry considers reducing the duplication, risk and uncertainty of environmental and planning approvals to be one of the highest priorities for all levels of government. It is important to consider this in the context of international best practice with respect to emissions intensity and environmental impact. Australia's critical minerals extraction and processing needs to operate consistently with the Government's broader objectives to decarbonise industry.

Key actions

- Through the EPBC Act reforms, ensure fast, efficient and certain federal environmental approval processes for strategically significant critical minerals projects and work with states and territories to align reform efforts, while ensuring rigorous environmental standards are upheld.
- Use national science agencies and R&D initiatives to further reduce the sector's environmental footprint by adopting renewable fuel, reducing energy requirements, and progressing the critical minerals sector towards a circular economy, for example through recycling and reprocessing materials.
- Give industry a clear pathway and support to reach net zero by 2050. We will do this through the Powering Australia Plan, Powering the Regions Fund, Safeguard Mechanism and Rewiring the Nation initiative.
- Develop tools to build industry capability and strengthen existing ESG credentials while pursuing better market access with international partners.



5. Unlocking investment in enabling infrastructure and services

Strategically planned enabling infrastructure and services help develop industrial hubs and link the critical minerals sector to domestic and global markets. This reduces costs, lowers project risk and attracts large-scale investment.

Why action is needed

Critical minerals deposits are dispersed across the country. This provides an opportunity to:

- distribute economic benefits across regional Australia
- support regional development
- link regional communities to growing domestic and global markets.

However, developing complex projects in remote locations increases costs and risk for project proponents.

Bringing online local infrastructure such as roads, rail, ports and industrial hubs, as well as lowering the costs of power, water, and chemical inputs are effective ways to support large scale development. These improvements to enabling infrastructure help create clusters of heavy industry where critical minerals producers, users and exporters are co-located. These hubs can:

- reduce barriers to entry
- lower operating costs
- build economies of scale in the sector
- support regional development.

For example, processing plants located within industrial clusters benefit from:

- being close to major road, rail and port facilities
- easy access to chemicals, including reagents
- being able to reuse or on-sell processing by-products to improve their margins.



The cost of transporting raw materials from the mine to processing centres and the cost of shipping value-added products to offshore customers is an important factor in determining whether Australia can be globally competitive or not.

– Organisation – Equity investor

Case Study: Kwinana-Rockingham Strategic Industrial Area

The Kwinana-Rockingham Strategic Industrial Area (SIA) ensures strategically important industry has access to services and well-buffered, appropriately zoned land in close proximity to key infrastructure such as Fremantle port and road and rail networks. The Kwinana SIA is a specialist centre for chemical and resource based processing industries that leverages the benefits of industrial-scale clustering.

The Kwinana-Rockingham SIA has enabled investment to establish globally significant critical minerals processing facilities and support growing renewable energy industries.

What we are already doing

The Government has an ambitious infrastructure agenda. The 10-year \$120 billion Infrastructure Investment Program provides transformational, nationally significant land infrastructure projects.

The Government recognises that critical minerals will be a key part of Northern Australia's new economy. The Northern Australia Infrastructure Facility (NAIF) ensures the Government can continue investing in projects that benefit Northern Australia and the nation while boosting employment opportunities. The Northern Australia Indigenous Reference Group plays a key advisory role and has identified priorities to help First Nations businesses and communities prosper in Northern Australia.

The Net Zero Authority will be responsible for promoting the orderly and positive economic transformation associated with achieving net zero emissions. The authority will work with state, territory and local governments, existing regional bodies, unions, the industry, investors and First Nations groups. It will help key regions, industries, employers and others proactively manage the transformation to a clean energy economy.

National Cabinet affirmed through its *National Transformation Principles* that capturing the benefits of the energy transition, with a focus on supporting regional pathways, is a shared responsibility. It committed to work in genuine partnerships with industry and other stakeholders and maximise opportunities to encourage innovation and support emerging industry needs.

The Government has also committed to working with regional communities in a joined-up and collaborative way. The Regional Investment Framework outlines our approach to ensuring investments across our regions respond to local priorities, build on regions' strengths and are targeted to where they are needed most. As part of implementing the Regional Investment Framework, the Government is working with local, state and territory governments to better coordinate and target our efforts to deliver better outcomes for regions.

What we will do

Infrastructure investment in the critical minerals sector requires planning to avoid crowding out private investment. During consultation, industry advised they want to work with the Government to identify and support enabling infrastructure that will develop or expand industrial hubs and unlock investment at scale.

The Government will consider its role in stimulating the private sector to deliver infrastructure, compared with direct infrastructure funding, ownership and provision. The Government will review the Infrastructure Investment Program to ensure the infrastructure investment pipeline is properly functioning and we will continue exploring these options to ensure important project ideas are identified and explored. This includes working with financing agencies, state and territory governments and other Australian Government agencies.

Key actions

- Work with the industry, the community and state and territory governments to identify and consider infrastructure projects that could unlock large-scale investment and growth for the sector.
- Encourage industrial clusters or hubs where reusing the inputs and outputs of industrial processes could lower costs and make projects globally competitive.
- Facilitate appropriate consideration of critical minerals enabling infrastructure proposals through Government investment frameworks and advisory bodies, including:
 - implementation of the Regional Investment Framework
 - National Cabinet's [National Transformation Principles](#)
 - Infrastructure Australia's [Infrastructure Priority List](#) and broader reform agenda
 - the Government's Infrastructure Policy Statement.



6. Growing a skilled workforce

A skilled, diverse and growing workforce that enables the desired development of Australia's critical minerals sector, particularly as we move into downstream processing.



No advanced industrial capabilities can be made sustainable without commensurate investment in Australian workers' skills, knowledge and qualifications.

– **Union**



Diversity is good business. Companies in the sector that recognise this will enjoy a long-run competitive advantage.

– **Critical minerals refiner and producer**

Why action is needed

During the public consultation process, stakeholders told us that a lack of skilled workers is a significant risk facing the sector. According to Jobs and Skills Australia, the country has a national shortage of key professions such as:

- mining engineers
- geological, geotechnical and processing engineers
- geologists
- hydrogeologists
- metallurgists.

Australia is competing in an increasingly challenging and competitive labour market, with the OECD reporting labour markets globally have tightened across countries and sectors (OECD 2022). In early 2022, Europe reported 1.2 million open job roles across all sectors. According to one estimate, the US *Inflation Reduction Act* will create demand for 5.9 million new jobs in US clean energy and manufacturing over the next decade (Pollin et al 2022). In Australia, there are nearly 440,000 vacant positions, including more than 10,000 in the mining sector and more than 25,000 in the manufacturing sector (ABS 2023).

Skills shortages coupled with a reluctance of young people and recent graduates to join the mining sector present a real risk for the sector more broadly but also for the critical minerals industry. Only 15 per cent of respondents to a global survey said they would be interested in working in mining and only 54 per cent believed that the mining sector is an essential part of the global climate solution (BDO 2022). There is a role for governments and industry to continue to communicate the actions it is taking to generate positive environmental and social impact, including its vital role in enabling a future green economy.

Australia's resources sector employs more than 290,000 people (ABS 2023) and accounts for 14 per cent of our GDP (Office of the Chief Economist 2022). Women make up less than 15 per cent of the large-scale mining workforce around the world, and 18 per cent in Australia (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development 2022). The mining sector has the second-lowest proportion of women employees. Low participation rates can be due to remote locations, cultures that are not inclusive, job security, and a lack of flexible working options such as part-time and job-sharing arrangements.



Lynas Rare Earths samples. Photo credit: Lynas Rare Earths.

Reaching net zero by 2050 will require the expertise of the resources sector. The critical minerals industry will need many more workers for existing mines and projects coming through the development pipeline. Critical minerals mining and processing are complex operations in remote locations that need highly skilled workers and technicians in a range of fields. We need highly skilled metallurgists, mining engineers, industrial chemists, earth scientists and many more if we are to fully capture the opportunity at hand. This is a valuable opportunity for people at all stages of their career to consider the diverse career options available in the critical minerals sector to drive the net zero transition.

The sector can also create economic opportunities in regional communities, including those in economic transition. It will do this by providing training and jobs for local people and opportunities for local businesses.

These benefits increase as Australian projects move further down the value chain. Increasing value-added processing onshore in Australia could attract further investment, create more jobs and deepen the economic opportunity for communities. For example, by developing diversified battery industries, including downstream activities, Australia's battery industry and mineral value chains could support 61,400 direct jobs by 2030 (Accenture 2023).

What we are already doing

Skills

The Government has several major initiatives to address workforce challenges and skills gaps, including the \$3.1 billion Australian Apprenticeships Incentive System and \$504 million for [Jobs and Skills Councils](#).

The \$105.1 million New Energy Apprenticeship and New Energy Skills Programs will see 10,000 eligible apprentices receive up to \$10,000 to help with the cost of living during their apprenticeship, and industry-based mentoring, peer support and networking opportunities to assist in developing the next generation of skilled clean energy workers.

The \$1 billion 12-Month Skills Agreement is making available 180,000 Fee-Free TAFE places across Australia in 2023. Fee-Free TAFE offers vocational and education training in priority areas of the economy including construction, manufacturing, sovereign capability and the technology and digital sectors. The Government has committed over \$400 million to extend access to Fee-Free TAFE from 2024 for another 300,000 places to be delivered through the National Skills Agreement.

Jobs and Skills Australia (JSA) was established as a priority by the Government as a body to provide independent advice, working in partnership with tripartite partners and stakeholders to provide advice to address skills and labour market issues, to build the skilled workforce Australia needs for the future.

Inclusive workplaces

Enabling inclusive, safe work conditions and cultures increases diversity and the participation and retention of workers.

The Government has formalised its commitment to gender equality in the clean energy transition by signing up to the equal pay, equal leadership and equal opportunity objectives of the global Equal by 30 campaign. Our Pathway to Diversity in STEM Review will examine how changes to STEM programs and other measures can better address gender inequities to improve pathways into the opportunities and rewards of mining careers.

Every worker has the right to be safe and treated with respect at work. The Enough is Enough report and the Australian Human Rights Commission's Respect@Work Report shone a spotlight on unacceptable behaviour in the workplace and the need for more inclusive workplaces for women. The Government supports the recommendations of these reports. We will work with state and territory governments to ensure our mining and resources industries are safe and supportive workplaces for all workers.

The National Strategy to Achieve Gender Equality highlights the Government's commitment to advancing gender equality in Australia. In the critical minerals policy space, gender equality and First Nations engagement strategies will inform part of the assessment criteria for grant programs like the Critical Minerals Development Program. This provides a clear signal to the sector that gender equality and First Nations engagement are key priorities for the Government and will allow the Government to collect data and track progress in the sector.

Lava Blue research team at Queensland University of Technology.
Photo credit: Lava Blue Limited.



What we will do

The future of Australia's critical minerals sector relies on creating well-paying, inclusive jobs that attract and retain a diverse and skilled workforce. Key to attracting a skilled workforce, including young people, is to communicate the opportunities available across the sector as well as highlight the innovative ways that the sector is addressing social and environmental issues. This includes the role of the sector in supplying the raw materials needed for the batteries, electric vehicles, wind turbines and solar panels that will power the renewable energy transition. A larger pool of workers will help the industry scale up to meet supply chain demand and benefit from the increased innovation and productivity that diversity can bring.

To deliver on these commitments and build inclusive environments, all levels of government and industry need to work together to ensure that the mining industry is a safe and inclusive workplace that welcomes and encourages all Australians.

Workplaces need to address systemic barriers to workplace inclusivity, particularly occupational and industrial gender segregation. Employers need to demonstrate greater accountability in actively ensuring workplaces are safe, inclusive and fair to genuinely be committed to increasing workforce diversity.

JSA's workforce and skills analysis function will analyse industries which are facing skills shortages. This will include providing data and analysis to support the skills and training system to respond to current and future workforce needs. JSA will assess workforce requirements, taking a whole of economy outlook, with cross-industry analysis. This will include analysis in regional, rural and remote Australia.

JSA will identify where skills shortages exist, and project where they are likely in the future, using a national supply and demand model to improve the identification of skills and labour imbalances and issues across the economy. This will include consideration of the VET, higher education, apprenticeships, and migration systems, given all are required to respond to labour shortages now and in the future.

The data, analysis, and industry-specific advice from JSA will help governments and stakeholders to make policy, program, and funding decisions regarding skills shortages and how to best address these critical issues. Jobs and Skills Councils will collaborate with JSA to align workforce planning activities for their industry sectors, creating a uniform understanding of the skills landscape and how to address skills gaps and occupations in demand.

Key actions

- Through the Jobs and Skills Councils, develop options to address skills shortages including in the mining, automotive and manufacturing sectors over the short-, medium- and long-term.
- Prioritise implementation of options to reduce skills shortages by addressing workplace safety, culture and flexibility barriers to attraction and retention of women, First Nations people and other culturally diverse people.
- Through the Employment White Paper and the Migration Strategy, explore ways to address skills shortages with skilled migration at a whole-of-economy level, including a formal role for JSA in providing the evidence base needed to target skills in demand.
- Work with industry and governments at all levels to ensure safe and inclusive workplaces that support the growth of a diverse workforce.
- Work with industry and state and territory governments to improve community sentiment and understanding of the mining sector's role in energy transition and lift its profile by highlighting the broad range of employment opportunities available, including the role of critical minerals and energy transition metals in net zero.

Delivering the Strategy through coordinated action

The strategy will be delivered through coordinated and complementary action across all levels of government and with industry to effectively address cross-cutting issues.



Coordination is key. The most likely obstacles to delivering the opportunity are inadequate cooperation between government and industry, and lack of coordination between a critical minerals strategy and other, related policies...

– Think tank

The Australian Government will drive coordinated work to deliver the Strategy. This will grow the critical minerals sector sustainably, and in line with our national interest. The Strategy supports the Government's security, energy and industrial priorities. The Critical Minerals Strategy will dovetail with other Government agendas like the:

- [National Reconstruction Fund](#)
- [Australian Made Battery Plan](#)
- [National Electric Vehicle Strategy](#)
- [National Hydrogen Strategy](#)
- [Powering Australia Plan](#)
- [First Nations Clean Energy Strategy](#)

Delivering the Strategy will involve increased collaboration with state and territory governments to coordinate regulatory processes. Following the meeting of Australia's resources ministers in March 2023, the first since 2020, the Minister for Resources will establish regular standing meetings with state and territory resources and mining counterparts. These meetings will align work in key areas such as infrastructure investment, investment attraction and regulatory frameworks.

Critical minerals supply chains are fundamentally built through commercial partnerships. The Government will work closely with critical minerals project proponents, peak bodies, financiers, equipment manufacturers and service providers to design, implement and monitor the effectiveness of policy interventions. A key example of this approach in practice is how the Government is working with industry to develop 'co-investment plans' to outline potential investment opportunities in the National Reconstruction Fund priority areas and to identify actions for government and industry to build Australia's industrial capabilities.

The Critical Minerals Office (CMO) in the Department of Industry, Science and Resources provides national policy and strategic advice, and facilitation services to develop the sector. In the 2023–24 Budget, the Government committed a further \$21.3 million to expand and extend the office’s work. The CMO is the Government’s policy coordination point for the sector. The CMO:

- develops policy and supports regulatory settings that enable investment and unlock downstream opportunities
- promotes investment and identifies opportunities to build diversified and secure global supply chains, in partnership with Austrade and the Department of Foreign Affairs and Trade (DFAT)
- supports research and development.

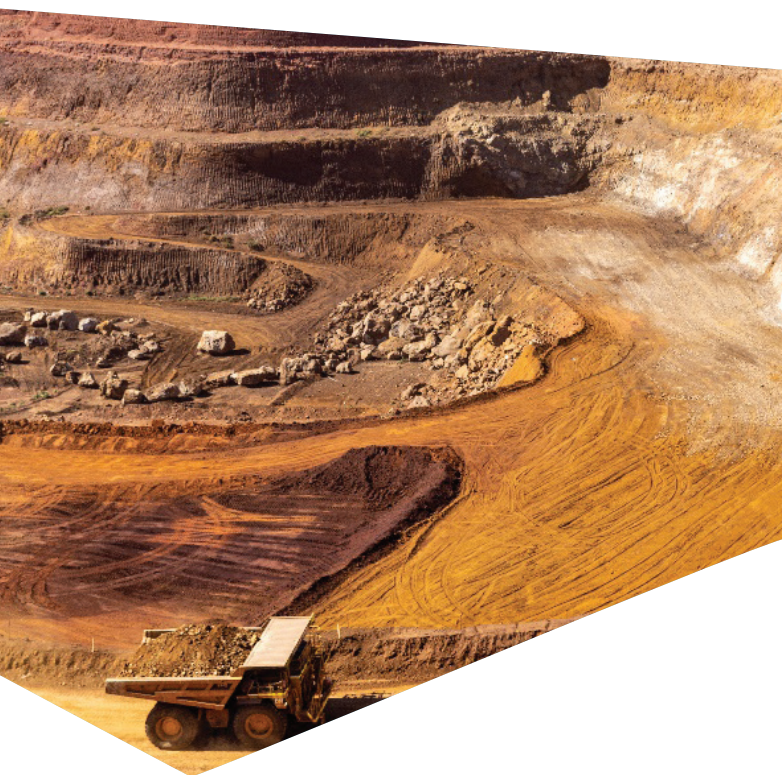
Austrade is the Government’s lead trade and investment facilitation agency. Austrade’s main role in delivering Australia’s Critical Minerals Strategy is facilitating commercial connections between Australian critical minerals companies and international investors. Austrade’s 3 focus areas for critical minerals are:

- offtake agreements for, and investment equity in, Australian critical minerals projects to accelerate their development
- foreign investment in downstream processing and value-chain creation
- foreign investment in greenfield critical minerals opportunities.

DFAT drives Australia’s growing international engagement on critical minerals. DFAT navigates the geostrategic aspect of critical minerals to establish and maintain international partnerships and negotiates international policy settings that are conducive to Australia’s interests, including through its global network. DFAT advocates for Australia internationally, including on international economic, investment and trade finance issues associated with critical minerals.

We will report our progress towards the objectives of the Strategy in the Department of Industry, Science and Resources annual report. We will measure success using key indicators, including the year-on-year increase in the number, progress and total capital expenditure of critical minerals projects.

We will comprehensively review the Critical Minerals Strategy in 2026.



Mt Weld mine, Western Australia.
Photo credit: Lynas Rare Earths.

Conclusion

Accelerating global demand for critical minerals is an unmissable opportunity for Australia.

The Strategy will drive Australia's critical minerals sector to become a globally significant producer of raw and processed critical minerals. This will:

- underpin diverse, resilient and sustainable global supply chains
- build sovereign capability in critical minerals processing and manufacturing for key technologies
- use our critical minerals to help become a renewable energy superpower, and
- extract more value onshore from our resources – creating jobs and economic opportunity, including for regional and First Nations communities.

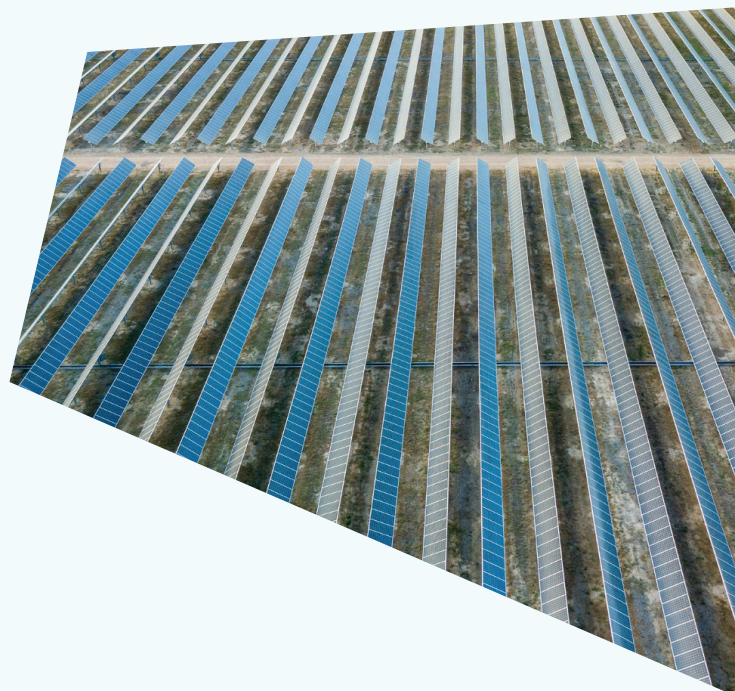
This Strategy provides the framework to grow the geostrategic and economic footprint of our globally renowned, technologically advanced, worlds-best-practice critical minerals sector and use our vast critical minerals endowments for national benefit.



The Critical Minerals Strategy highlights that the move towards a global net-zero economy is generating a significant increase in demand for critical minerals around the world, creating a generational opportunity for Australian workers and Australian businesses.

– Critical minerals explorer

Silicon is the primary mineral that solar panels use to generate electricity. Photo credit: Phil Copp/Getty.



Summary of key actions

Prioritising policy support

- Establish a process to update Australia's Critical Minerals List.
- The Australian Government will analyse the value chain for each priority technology. This will identify where we can be most competitive and prioritise policy support.

Developing strategically important projects

- The Northern Australia Infrastructure Facility (NAIF) will play an important role in supporting the growth of the critical minerals sector. To support the growth of the critical minerals sector, particularly downstream processing, the Government will ask NAIF to earmark \$500 million to support projects that align with this Strategy.
- Establish the National Reconstruction Fund, which includes \$1 billion for value-add in resources and \$3 billion for renewables and low emissions technologies.
- Continue to evaluate the appropriateness of policy settings in the context of critical minerals' linkages to critical technologies, national priorities and Australia's competitive strengths, including how investment settings complement Government initiatives.
- Support a strong pipeline of new critical mineral discoveries and projects through government geoscience programs and strategic leadership.
- Review licensing and commercialisation settings for federally funded research relevant to the critical minerals sector to ensure it provides domestic benefit aligned with the Strategy's vision.
- Leverage government research and development programs, capabilities and leadership to support the sector's development.
- Analyse the type, volume and timing of mineral requirements for Australia's processing and manufacturing sector.
- Wherever appropriate, industry policies should complement broader policy goals such as:
 - genuine engagement, agreement making and benefit sharing of business and employment outcomes with First Nations communities
 - gender equality
 - regional development
 - environmental sustainability and emissions reductions
 - alignment with state and territory plans for developing critical minerals.

Attracting investment and building international partnerships

- Work with likeminded partners to attract and leverage foreign investment and diversify supply chains. This includes co-investing through our financing agencies and establishing joint projects under the new Critical Minerals International Partnerships program.
- Take leadership roles in key multilateral forums to shape emerging market rules and norms, including embedding high ESG standards in the global market.
- Track and monitor foreign investment in Australian critical minerals projects to ensure it is not counter to Australia's national interest.

First Nations engagement and benefit sharing

- Consider how the Government can help identify and encourage best-practice engagement between resources companies and First Nations communities. This involves engaging early on free, prior and informed consent, including under regulatory frameworks such as the *Native Title Act and Aboriginal Land Right (Northern Territory) Act 1976*.
- The Minister for Resources, in consultation with the Minister for Indigenous Australians, will hold roundtable forums to initiate conversations on best-practice engagement opportunities and challenges in relation to the resources sector.
- Work with representative and community sector organisations to consider ways to build the capacity of First Nations communities to engage effectively with critical minerals proponents.
- The Minister for Indigenous Australians will work with native title holders, their Prescribed Bodies Corporate (PBCs), state and territory governments and other key stakeholders to strengthen PBC capacity, which can support improved engagement with the resources sector.

Promoting Australia as a world leader in ESG performance

- Through the EPBC Act reforms, ensure fast, efficient and certain federal environmental approval processes for strategically significant critical minerals projects and work with states and territories to align reform efforts, while ensuring rigorous environmental standards are upheld.
- Use national science agencies and R&D initiatives to further reduce the sector's environmental footprint by adopting renewable fuel, reducing energy requirements, and progressing the critical minerals sector towards a circular economy, for example through recycling and reprocessing materials.
- Give industry a clear pathway and support to reach net zero by 2050. We will do this through the Powering Australia Plan, Powering the Regions Fund, Safeguard Mechanism and Rewiring the Nation initiative.
- Develop tools to build industry capability and strengthen existing ESG credentials while pursuing better market access with international partners.

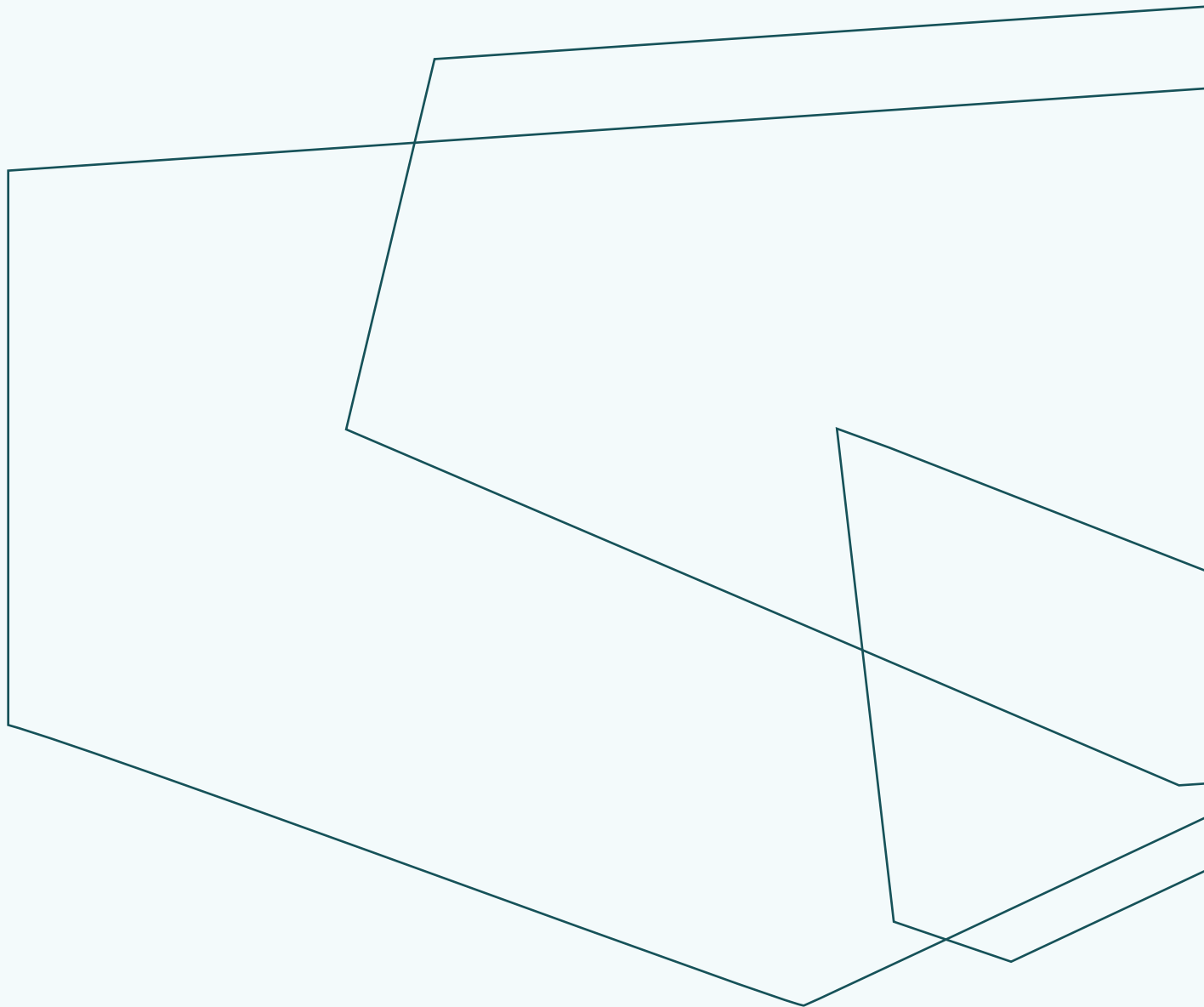
Unlocking investment in enabling infrastructure and services

- Work with the industry, the community and state and territory governments to identify and consider infrastructure projects that could unlock large-scale investment and growth for the sector.
- Encourage industrial clusters or hubs where reusing the inputs and outputs of industrial processes could help lower costs and make projects globally competitive.
- Facilitate appropriate consideration of critical minerals enabling infrastructure proposals through Government investment frameworks and advisory bodies, including:
 - implementation of the Regional Investment Framework
 - National Cabinet’s [National Transformation Principles](#)
 - Infrastructure Australia’s [Infrastructure Priority List](#) and broader reform agenda
 - the Government’s Infrastructure Policy Statement.

Growing a skilled workforce

- Through the Jobs and Skills Councils, develop options to address skills shortages including in the mining, automotive and manufacturing sectors over the short-, medium- and long-term.
- Prioritise implementation of options to reduce skills shortages by addressing workplace safety, culture and flexibility barriers to attraction and retention of women, First Nations people and other culturally diverse people.
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Appendix A: International Partnerships

International engagement to support Australia's critical minerals objectives

Bilateral engagement

Existing bilateral collaborations include, but are not limited to:

- Australia-United States Climate, Critical Minerals And Clean Energy Transformation Statement of Intent and the underlying Australia-US Climate, Critical Minerals, and the Clean Energy Transformation Compact
- Australia-US Joint Net Zero Technology Acceleration Partnership
- The Australia-US Strategic Commercial Dialogue
- The Australia-US Energy Security Dialogue
- Australia-UK Joint Working Group on Critical Minerals
- India-Australia Critical Minerals Investment Partnership
- Australia-Republic of Korea Memorandum of Understanding on Cooperation in Critical Mineral Supply Chains and corresponding Critical Minerals Working Group
- Australia-Japan Critical Minerals Partnership and corresponding Critical Minerals Working Group
- Australia-France Critical Minerals Dialogue.

Australia-Germany Working Group on Raw Materials Australia is also continuing to work closely with the EU to establish a bilateral Strategic Critical Minerals Partnership.

Multilateral engagement

Australia is also active in important multilateral forums and initiatives, including but not limited to:

- serving as the inaugural chair of the IEA Critical Minerals Working Party (since 2022) to improve the IEA's work on critical minerals, including embedding strong ESG considerations in data collection and reporting and supply security mechanisms.
- chairing the Conference on Critical Materials and Minerals in 2023 to exchange information on policies governing critical materials, technical R&D collaboration and related efforts.
- being a founding member of the Minerals Security Partnership, which bolsters critical mineral supply chains essential to the energy transition by identifying strategic projects, attracting private sector finance and upholding strong ESG credentials.
- being a founding member of the Sustainable Critical Minerals Alliance, which promotes sustainable, environmentally and socially responsible mining practices for the critical minerals sector
- chairing the Strategic Advisory Group in the International Organization for Standardization (ISO) to develop and disseminate technical standards for critical minerals and materials, including ESG considerations.
- working with the OECD on responsible critical mineral supply chains and due diligence.

- supporting the Energy Resource Governance Initiative (ERGI) to provide tools and technical assistance that help countries with developing mineral resources establish best practice governance in mining.
- scientific partnerships such as the Critical Minerals Mapping Initiative between Geoscience Australia, the US Geological Survey and the Geological Survey of Canada.
- supporting the Indo-Pacific Economic Framework, which includes work to establish criteria for critical sectors and goods through the Supply Chains pillar.
- The Quad considers critical minerals through its work on developing and diversifying clean energy supply chains.

Austrade facilitates investment

Austrade plays a vital role in promoting investment opportunities and facilitating commercial partnerships with trade partners in target markets. Austrade uses its global network to support companies looking for offtake and investment in Australian critical minerals projects, downstream processing and value chain creation.

Austrade is working directly with 73 Australian project proponents and providing assistance to three international investors (May 2023). On the offtake and investment side, Austrade is engaged with global investors (EV manufacturers, OEMs and direct investors) across all target markets seeking connections to Australian project proponents. Austrade has so far assisted with 13 offtake agreements, 8 joint offtake and equity agreements, 1 direct investment, 2 local content related ECA debt commitments, and 3 EPC deals.

Austrade's business missions (8 to date) connect Australian critical minerals companies with end-users, investors, traders and midstream processors producing battery, magnet and high-performance alloys in the automotive, battery, offshore wind, technology metals and defence sectors.

Austrade publishes the Australian Critical Minerals Prospectus with the help of Australia's geoscience agencies. The prospectus supports the significant efforts already underway to attract investment in Australia's critical minerals projects. The [fourth edition](#) of the prospectus, published in December 2022, highlights 55 advanced projects seeking investment or offtake agreements.

