

Darwin Dialogue 2026

From exposure to endurance: competitive architecture for high-ESG mineral-specific supply chains

REPORT

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Executive summary

Governments already understand that concentrated supply chains create strategic vulnerability. The harder challenge is whether allied economies can build trusted alternatives fast enough, at sufficient scale and with enough industrial coordination to reduce dependence before the next period of geopolitical or market disruption.

For the third time, ASPI convened the Darwin Dialogue 2026 as a Track 1.5 forum, bringing together government, industry, finance, defence and strategic policy leaders from the US, Canada, Japan, Taiwan, the Republic of Korea and India, as well as observers from across the Indo-Pacific and Europe.

Analysis of the Darwin Dialogue's sessions exposed a widening gap between political activity and industrial capability. Governments increasingly announce strategies, partnerships and financing packages. Those efforts aren't yet producing enough trusted industrial throughput to materially reduce strategic dependence.

The dialogue's central conclusion was direct: the era of generic critical-minerals policy is ending. The term 'critical minerals' still carries diplomatic value because it provides a shared language for cooperation and strategic signalling. However, it's become too broad as an operational framework. For example, rare earths, lithium, nickel, graphite, gallium, antimony and copper don't present the same vulnerabilities, infrastructure requirements, market structures or strategic risks. A single category can mobilise political attention. It can't design resilient supply chains.

Many participants at the Darwin Dialogue 2026 argued for a shift from broad strategic ambition towards mineral-specific industrial execution. The argument here was that strategic resilience will depend on whether governments can align demand, finance, infrastructure, processing capability, workforce development and allied coordination around specific industrial choke-points. This report describes this approach as 'competitive endurance architecture': the deliberate coordination of industrial systems to sustain trusted, commercially viable supply chains under prolonged geopolitical and market pressure.

Projects struggle to secure finance without credible long-term demand and bankable offtake. Governments continue measuring progress through announcements faster than industrial systems can deliver capability. Refining, processing and manufacturing remain heavily concentrated despite growing upstream investment elsewhere. Workforce pipelines remain too shallow to support simultaneous expansion across the critical-minerals, defence, energy and advanced manufacturing sectors. Northern Australia demonstrated these pressures clearly. Geography creates strategic opportunity, but only integrated systems, power, water, logistics, housing, ports, workforce and industrial demand convert geography into capability.

Participants also returned to a harder strategic tension: democratic economies still struggle to reconcile resilience with market efficiency. Trusted high-standard supply chains often cost more than concentrated alternatives. Resilient supply chains therefore survive only when governments, customers and procurement systems deliberately value trusted production, traceability and strategic reliability over lowest cost sourcing.

The dialogue revealed that competition for critical minerals increasingly operates through strategic market behaviour rather than solely through normal commodity dynamics. Export controls, state-backed overcapacity, industrial subsidies and pricing pressure now shape investment conditions alongside geology and commercial efficiency. Markets can no longer be understood purely through conventional commodity logic. Countries capable of shaping industrial standards, pricing conditions and downstream qualification pathways increasingly influence which supply chains survive.

This report argues that strategic exposure hardens gradually into dependence. Dependence emerges when governments fail to prioritise, coordinate and sustain industrial capability before pressure intensifies. Countries that can't align industrial demand, infrastructure, workforce capability and allied coordination early enough will eventually discover that rebuilding lost capability is slower, more expensive and strategically riskier than preserving viable systems before they fail.

The Darwin Dialogue 2026, therefore, points to a harder test for democratic economies. The challenge is no longer merely recognising vulnerability. The challenge is whether allied governments can sustain trusted industrial capability through prolonged competition against concentrated, subsidised and strategically coordinated supply chains. The countries that endure won't be those that speak most about resilience. They'll be the countries capable of sustaining trusted industrial throughput under pressure. That requires national policies willing to invest immediately for benefits to be realised in the decades to come. And it requires democratic nations to work together as security partners for long-term collective resilience even where traditionally they've acted as commercial competitors.

Recommendations

1. Australia should adopt *competitive endurance architecture*¹ as the organising framework for critical-minerals policy, aligning infrastructure, finance, demand, workforce capability and industrial coordination around mineral-specific choke-points rather than broad sector-wide ambition.
2. The Australian Government should translate generic critical-minerals policy into mineral-specific supply-chain plans built around minimum viable systems.² Each plan should identify the vulnerable stage of the supply chain, the strategic outcome requiring protection, the constraint most likely to prevent the system from functioning, and the intervention required before the commercial window closes.
3. Governments should treat midstream refining, processing and manufacturing capabilities as sovereign industrial infrastructure, in which concentrated dependence creates strategic vulnerability. Public finance should reduce risk only where projects connect to credible demand, infrastructure readiness, trusted standards and viable end-use markets.
4. Australia should use its Critical Minerals Strategic Reserve as an active market-shaping instrument rather than for passive stockpiling. The reserve should prioritise minerals that can strengthen allied resilience, stabilise trusted production pathways and reduce exposure to coercive market behaviour.
5. Australia and trusted partners should establish mineral-specific minilateral industrial partnerships focused on offtake coordination, financing, standards recognition, processing bottlenecks and downstream integration, rather than on broad diplomatic declarations alone.
6. Australia and its partners should build trusted high-standard supply chains around specific mineral vulnerabilities and processing stages. Strategic policy should focus on the choke-points that shape resilience, including rare-earth separation and magnet pathways, lithium chemical conversion, graphite anode processing, nickel market distortion, and gallium and antimony reserve design.
7. Governments should develop long-term mineral-processing workforce pipelines tied directly to industrial capability requirements, including metallurgy, chemical processing, engineering, technical trades and industrial assurance systems. Workforce strategy should begin well before project approval cycles and align directly with processing, infrastructure and defence-industrial expansion.
8. Allied governments should establish integrated strategic market-intelligence functions that combine economic, industrial and national-security analysis. Those functions should identify coercive pricing behaviour, market distortion and emerging choke-points early enough for governments to intervene before strategic capability exits the market.
9. Governments should prioritise industrial sequencing over policy volume. Attempting to develop every mineral pathway simultaneously risks spreading capital, infrastructure and workforce capability too thinly across competing priorities. Strategic resilience will depend on disciplined prioritisation of the supply chains most critical to allied industrial endurance.
10. Australia and its democratic partners should treat critical minerals as a collective-security challenge, not as a normal arena of commercial competition. They should strengthen their collective competitiveness against concentrated Chinese processing and supply-chain dominance, even where that requires reducing direct competition among themselves. The Five Eyes, AUKUS, the Quad, the Australia–EU and other democratic partnerships already accept that collective capability strengthens individual nations' national security in defence, intelligence and cybersecurity. Critical minerals should be treated as being in the same category. Australia and its partners should coordinate investment, offtake, standards, processing capacity, reserves and procurement to build trusted mineral-specific supply chains that reduce dependence on China's monopoly-like position in key processing and manufacturing choke-points. That will require heavy near-term public and private investment for returns that might be realised over decades, but the alternative is to allow strategic exposure to harden into enduring dependence.

1. Darwin Dialogue 2026: from exposure to endurance

Critical minerals have moved from the margins of economic policy into the centre of strategic competition. Governments increasingly accept that concentrated supply chains create economic, industrial and national-security vulnerabilities. Yet recognition alone no longer carries strategic value. The harder challenge is whether democratic economies can build resilient industrial systems capable of operating amid geopolitical pressure, market distortions and prolonged supply-chain disruptions.

The Darwin Dialogue 2026 was distinct from previous iterations as allied governments, investors and industry have increasingly accepted that dependence on concentrated processing and refining systems creates strategic risk. Australia, Japan, India, the Republic of Korea, the US and others are now pursuing new financing mechanisms, industrial partnerships, strategic reserves and supply-chain initiatives to reduce that exposure. However, the dialogue repeatedly exposed a growing tension between strategic ambition and industrial execution. Governments continue to produce strategies and announcements faster than industrial systems can deliver trusted processing capacity, infrastructure, workforce capability and commercially viable alternatives.

While that tension shaped the dialogue's discussions, the impact was to bring the participants closer together through recognition

that each nation would be better off only through collaboration. Participants increasingly focused on the operational conditions required to sustain resilient supply chains under pressure, rather than on recognising vulnerability. Questions about financing, offtake, processing capability, permitting, energy reliability, infrastructure and industrial coordination dominated discussions across government, finance, defence and industry.

Critical-minerals security increasingly operates as an integrated industrial system linking finance, infrastructure, energy, workforce capability and allied coordination. Supply-chain resilience now depends on how effectively governments align industrial policy, energy systems, infrastructure, finance, workforce development and allied coordination around specific strategic vulnerabilities. The dialogue ensured that those pressures were merged into the same operational conversation.

This report argues that, in the main, Australia and like-minded nations have now established a consistent strategic lexicon on why critical minerals are so important to the prosperity, security and resilience of our societies. The next phase of critical-minerals policy needs allied economies to translate that agreed language into practical, trusted industrial systems under prolonged geopolitical and commercial pressure.

2. Policy progress since the Darwin Dialogue 2024

Since the Darwin Dialogue 2024, Australia and several partner countries have moved beyond strategic signalling to more interventionist industrial policies. The early phases of critical-minerals policy focused heavily on awareness, diplomatic alignment and market encouragement. Those were necessary first steps. The next, and harder, challenge now is whether governments can use policy tools to reduce strategic dependence, improve project viability and strengthen industrial resilience under sustained commercial and geopolitical pressure.

Australia's Critical Minerals Strategic Reserve represents one of the clearest signs of this shift from passive market support towards selective strategic intervention. The Australian Government states that the reserve will draw on \$1 billion from the expanded \$5 billion Critical Minerals Facility alongside additional funding for targeted stockpiling and implementation, with initial focus areas including antimony, gallium and rare earths.³ Those priorities reflect a more disciplined approach to strategic vulnerability. Gallium, antimony and rare earths each expose different choke-points across semiconductors, defence technologies, batteries and

magnet manufacturing, reinforcing the need for mineral-specific, rather than generic, critical-minerals policy.⁴

The National Reconstruction Fund Corporation's \$200 million investment commitment in Arafura Rare Earths' Nolans Project reflects a similar shift towards direct strategic intervention.⁵ The project links mining and processing capabilities in the Northern Territory to allied rare-earth diversification efforts. It also illustrates the limits of project-centric policy. Strategic capital can accelerate capability development, but commercial viability still depends on power costs, downstream demand, customer qualification, logistics and long-term pricing conditions. Projects can remain strategically important while struggling commercially in distorted global markets.

The October 2025 framework agreed by US President Trump and Australian Prime Minister Albanese marked another important development. While bilateral agreements had been made previously, this new framework involved a substantive financial commitment, committed both countries to accelerating the secure supply of raw materials and opened the door to collaborate with

other like-minded, such as Japan. It processed critical minerals and rare earths through industrial demand measures, stockpiling arrangements and integration with Australia's Critical Minerals Strategic Reserve.⁶ The April 2026 follow-up by senior officials established a Critical Minerals Supply Security Response Group alongside a work plan covering priority minerals, permitting, vulnerabilities and mineral recovery from waste streams.⁷

Those developments demonstrate movement towards operational coordination rather than purely diplomatic alignment. They also expose unresolved constraints:

- Can allied governments sustain industrial coordination through electoral cycles and fiscal pressure?
- Will the reform of permitting move at the pace that strategic competition requires?
- Can procurement systems consistently support trusted supply when lower cost alternatives remain available?

The significance of those frameworks will ultimately depend on whether they improve bankability, expand processing capacity and create durable industrial demand.

Australia's November 2025 Joint Declaration of Intent with Canada similarly deepened cooperation on critical-minerals development and standards-based markets.⁸ Canada's partnership with Australia is particularly noteworthy given the traditional competitiveness between the two nations in this field. It reflects recognition of a shared strategic problem: how democratic economies build trusted supply chains in markets shaped by concentrated processing, subsidy competition and politically influenced pricing. Canada's experience with production alliances and export-credit

coordination offers practical lessons for reducing project risk without fully centralising industrial policy. Bilateral cooperation delivers strategic value only when it changes financing conditions, procurement behaviour or industrial capability in measurable ways.

Australia's state and territory governments have also accelerated activity. Western Australia and the federal government funded a feasibility study for a common-user Critical Minerals Advanced Processing Facility.⁹ Queensland established the Resources Cabinet Committee to reduce approval friction and accelerate investment decisions.¹⁰ The Northern Territory continued to promote critical-minerals development through updated resource guidance and investment attraction, linked to its strategic geography and industrial potential.

Much of the practical contest over industrial capability occurs below the national level. Australia's federal structure creates both strategic flexibility and coordination risk. States and territories compete for projects, infrastructure investment and skilled labour while pursuing broadly aligned national objectives. Without stronger coordination mechanisms, Australia risks fragmentation: multiple jurisdictions will be competing for the same constrained workforce, infrastructure systems and pools of private capital.

Taken together, these developments show that Australia and its partners are moving towards more active industrial strategies. Yet the Darwin Dialogue reinforced a harder reality. Policy movement alone doesn't guarantee strategic success. The next phase will depend on whether governments can sustain prioritisation discipline, align procurement with strategic objectives and coordinate infrastructure, investment and industrial demand quickly enough to compete under prolonged geopolitical and market pressure.

3. What the dialogue discussed

The Darwin Dialogue 2026 proved most valuable by helping to shift discussion beyond strategic language and into observed behaviour. Participants repeatedly returned to a simple operational reality: policy doesn't build supply chains on its own. Projects move only when customers commit, financiers accept risk, infrastructure arrives, regulators coordinate and communities trust the process. Governments increasingly understand the vulnerability created by concentrated supply chains. The harder question is whether democratic economies can organise themselves quickly, coherently and for long enough to reduce that vulnerability under real commercial conditions.

One project leader provided a clear implementation lesson of the entire dialogue. The debate on whether to prioritise speed or trust and sustainability needed to land on the latter. Both are important but trust had to come first. Attempts to accelerate projects without trust eventually lead to delays, resistance and strategic failure. That observation shapes this report's treatment of northern Australia, environmental, social and governance (ESG)

and project delivery more broadly because it reframes a familiar national-security instinct. Governments often respond to strategic urgency by demanding faster approvals, compressed consultation and accelerated timelines. The transcript evidence pointed to a more disciplined conclusion: durable speed depends on legitimacy before momentum.

The project in question emerged from a distressed asset, a hostile campaign and deeply damaged local relationships. The first step didn't involve ministerial announcements, financing packages or strategic branding. It involved going into the country, listening to traditional owners, meeting land councils and understanding how profoundly trust had deteriorated. Social licence increasingly operates as part of industrial capability rather than as an external political constraint alongside it. Projects that lose community trust eventually lose execution tempo, legitimacy and strategic viability regardless of their technical or financial strength.

The same intervention directly linked local trust to alliance trust. The participant described building relationships with Japanese

partners based on consistency, predictability and conduct over time. Trust accelerated execution because each side believed commitments would hold. That observation carried a broader strategic lesson. Allied status alone doesn't guarantee industrial reliability. Commercial confidence emerges through repeated behaviour, stable institutions and demonstrated delivery. Several participants contrasted Japan's steadier industrial culture with more volatile policy swings elsewhere. The implication was clear: strategic partnerships become fragile when governments treat industrial policy as a short political cycle rather than a long-duration national capability effort.

Allied economies increasingly produce strategies, agreements, taskforces and strategic language, yet industrial systems still struggle to move sufficient material at sufficient scale under commercially viable conditions. That's not a communications problem. It's an industrial coordination problem. The dialogue repeatedly exposed how governments can achieve broad policy alignment while still failing to synchronise procurement, financing, permitting, infrastructure and demand into functioning supply chains.

The financing discussions reinforced that point through concrete examples. One participant recalled reviewing loan documents in Beijing nearly 25 years earlier for a state-backed critical-minerals project. The documents looked nothing like conventional Western project finance. Covenants were minimal. Conditionality was limited. The default architecture barely existed. Strategic competitors didn't simply wait for investable conditions to emerge. They helped create them through long-term horizons, coordinated finance and system-building behaviour. That contrast is sharpest in the Northern Territory, where the gap between discovery and production is evident. Evidence presented at the dialogue revealed that 10 of 19 mining projects currently in the territory's development pipeline have been in feasibility or approvals processes for more than 20 years. This problem, described as a 'valley of death', creates an extended period of limited news flow to sustain capital market interest and no revenue to fund ongoing work, which leaves junior companies trapped in a cycle of repeated capital raising that erodes momentum and deters investors, stalling important projects before commercial funding can engage.

The implication for democratic economies was uncomfortable but unavoidable. Many critical-minerals projects require exactly the conditions that most commercial capital avoids: high up-front costs, uncertain qualification periods, long revenue horizons, technical complexity and exposure to politically distorted markets. Western financial systems generally favour shorter investment cycles, predictable returns and manageable risk. The resulting mismatch sits near the centre of the allied implementation problem. Democratic governments increasingly ask private capital to compete against patient strategic systems while still expecting short-horizon commercial discipline.

Several financing discussions highlighted the distinction between risk-sharing and risk-shifting. Governments ask industry to build

strategically important capability in markets shaped by uncertain demand, infrastructure constraints and prolonged price pressure. Industry asks governments to absorb more commercial risk. Financiers ask both sides for credible revenue certainty. End users continue demanding globally competitive pricing. The result is a circular dependency in which each actor waits for another to move first.

The Darwin Dialogue's 'Young Guns' session brought emerging practitioners, technical specialists and early-career leaders into the centre of the dialogue to challenge established assumptions, expose implementation friction and test whether current critical-minerals policy reflects operational realities rather than strategic rhetoric. This session introduced some of the dialogue's sharpest points of contention. One intervention challenged the assumption that all critical minerals are equally critical. That statement is one of this report's central analytical pivots because it explains why broad critical-minerals frameworks increasingly struggle to guide serious prioritisation. Fiscal capacity, regulatory attention, industrial capability and political focus all remain finite. When governments classify too many materials as equally strategic, they dilute effort rather than concentrating it where disruption would yield the greatest strategic consequences. A second intervention pointed to the foundation beneath it all: the people required to deliver. Geoscience graduate numbers have fallen 40% over 15 years, four university faculties have closed, and current graduation rates will supply roughly one-third of the 100,000 new entrants whom the sector needs within a decade. Governments can announce projects within months, but the workforce those projects require takes decades to build.

Demand discussions exposed another uncomfortable contradiction running through allied critical-minerals policy. Governments increasingly warn of strategic dependence, while procurement systems and corporate purchasing behaviour continue to reward the lowest available price. Trusted, high-standard supply chains often entail higher labour, environmental, financing and resilience costs. They remain structurally disadvantaged unless governments and major manufacturers deliberately create demand for them through procurement behaviour and long-term contracts. Competitive endurance, therefore, requires more than production capability. It requires procurement systems capable of valuing resilience, traceability and strategic reliability alongside price efficiency.

Several participants openly questioned whether democratic economies are politically prepared to bear the costs of resilient supply chains. That tension sat beneath much of the dialogue. Resilience often requires redundancy. Redundancy frequently increases cost. Strategic diversification might therefore conflict directly with decades of procurement systems built around efficiency, lowest cost sourcing and lean supply assumptions. Democratic economies might ultimately need to choose between the efficiency assumptions of globalised markets and the industrial redundancy required for strategic resilience.

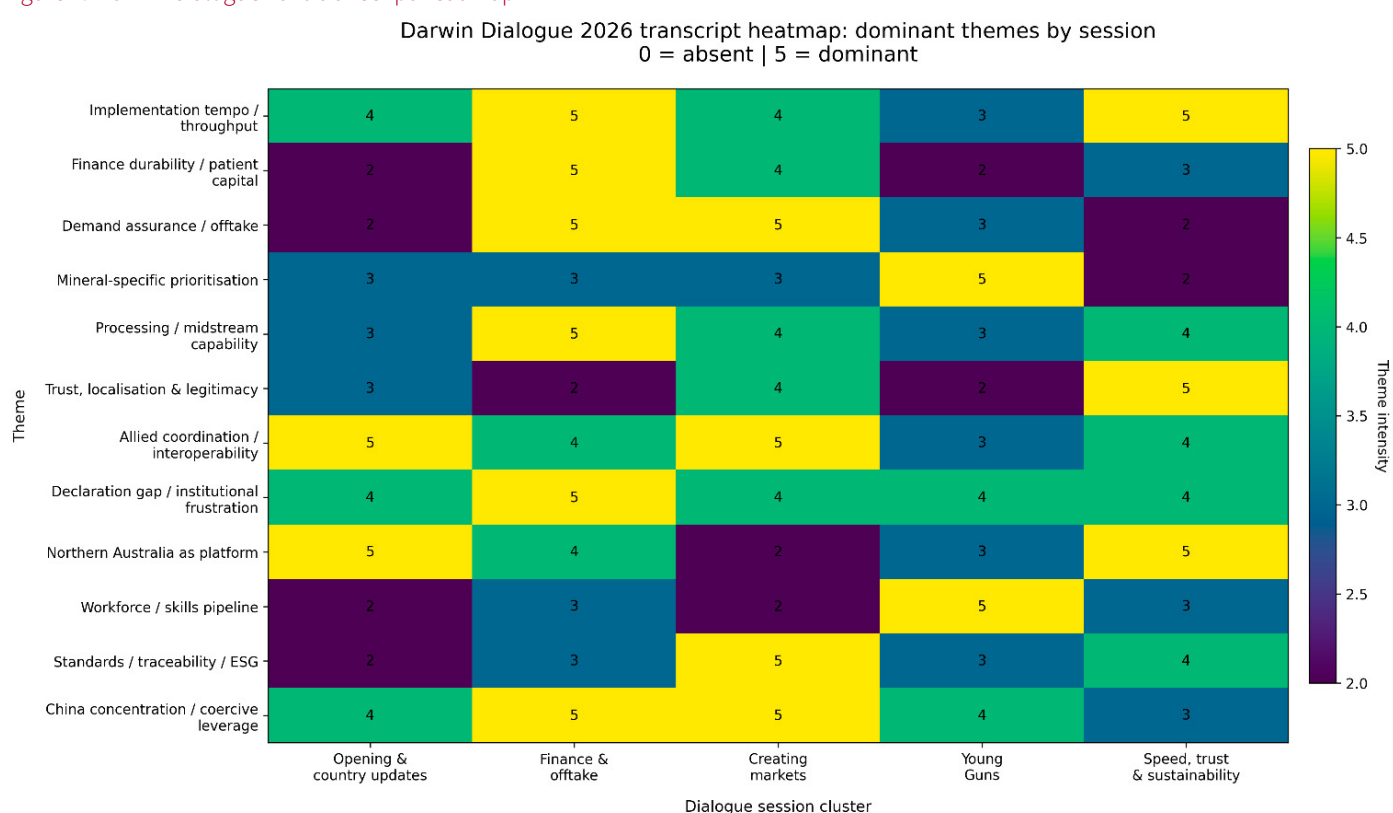
Northern Australia featured prominently throughout the dialogue as a strategic enabler rather than simply as a geographical location. Participants repeatedly linked Darwin's position to logistics, defence posture, energy development and Indo-Pacific industrial integration. Yet the discussions consistently rejected simplistic geographical determinism. Geography matters only when supporting systems function. Minerals move because power arrives, roads hold, ports operate, water remains available, technicians show up, customers qualify product and financiers accept risk. Darwin's strategic relevance, therefore, depends less on maps than on whether northern Australia can sustain industrial throughput under pressure.

Analysis of the dialogue transcripts (Figure 1) also revealed productive disagreement rather than manufactured consensus. Some participants prioritised speed, including by increasing tolerance for managing risk, making mistakes and pivoting where

necessary. Others argued that trust and inclusion created the conditions for speed. The outcome was that both were needed. The issue of markets was a topical agenda item. Some defended market discipline. Others argued that markets alone won't sustain strategic supply against state-backed competition. Some viewed the US as the indispensable industrial partner. Others pointed to Japan's steady industrial approach and warned that alliance status can't compensate for policy volatility. Those respectful debates and disagreements strengthened the dialogue by exposing where allied industrial strategies are most likely to fracture under pressure.

The dialogue's greatest value lay precisely in exposing that friction. It revealed the distance between policy aspiration and operational reality through the experiences of people attempting to finance, obtain permits, build, regulate and acquire industrial capability under contested conditions.

Figure 1: Darwin dialogue 2026 transcript heat map



Analytical read: DD26 was not mainly a resilience conversation. It was an implementation conversation: throughput, demand, finance, trust, midstream capability and institutional tempo.

Source: ASPI

4. Analysis

The diminishing utility of ‘critical minerals’ as an analytical category

The term ‘critical minerals’ has become politically useful and analytically blunt. It helps governments build coalitions, signal strategic alignment and justify policy attention across a widening range of industries and technologies. That flexibility explains why the category will remain embedded in diplomatic and policy language. Yet the same flexibility increasingly weakens its usefulness as a framework for industrial prioritisation, investment discipline and operational decision-making. The category now risks obscuring the very differences that policymakers and investors most need to understand.

The problem begins with how governments define criticality itself. Australia’s Critical Minerals List contains 31 minerals alongside a separate Strategic Materials List.¹¹ The US’s 2025 List of Critical Minerals contains 60 minerals.¹² Other partners maintain their own methodologies, thresholds and classifications. Those differences aren’t bureaucratic inconsistencies. They reflect a deeper reality: criticality is relational rather than absolute. A mineral becomes strategically important through the interaction of end use, processing dependence, supply concentration, substitution risk and industrial vulnerability. That relationship changes across countries, sectors and time horizons.

A mineral central to semiconductor manufacturing might matter less to a resource-exporting economy. A mineral that’s critical during geopolitical disruption might appear commercially marginal under stable market conditions. Geological abundance also says little about strategic resilience if refining, processing or downstream manufacturing remain highly concentrated elsewhere. Criticality, therefore, doesn’t sit inside the mineral itself. It emerges through the structure of the surrounding industrial system.

The problem deepens further because mineral systems differ fundamentally in structure, economics and vulnerability. Treating them as a single strategic category risks producing generic policy responses for highly specific industrial problems.

Generic policy tools increasingly struggle against mineral-specific realities. Strategic reserves might help manage exposure to shortages of gallium, antimony or selected rare earths, while doing little to address lithium oversupply or weak downstream demand. Production incentives might improve processing economics yet leave qualification risk and customer uncertainty unresolved. Defence procurement can support specialised mineral pathways but can’t absorb the scale of copper required for electrification and industrial expansion. ESG certification might differentiate trusted supply chains, but only when governments and customers accept the commercial cost of resilience and traceability.

That debate exposed one of the dialogue’s most contested questions. Many allied policies still assume that markets will eventually reward trusted and resilient supply chains through price premiums or preferential procurement. Participants expressed greater scepticism. Competitors willing to tolerate lower returns, subsidise production or externalise environmental costs continue to shape global pricing power. Democratic economies might therefore face a structural choice between accepting higher industrial costs or remaining exposed to concentrated supply-chain dependence.

That tension extends beyond critical minerals alone. For decades, many advanced economies have optimised industrial systems around efficiency, lean inventories and lowest cost sourcing. Strategic endurance often requires the opposite: redundancy, diversification, inventory buffers and patient capital. Those conditions impose costs that democratic governments, investors and consumers haven’t consistently shown willingness to sustain over long periods of geopolitical competition.

The central policy implication isn’t that governments should abandon critical-minerals diplomacy. The category still carries strategic value because it enables coordination across allied and partner economies. The problem arises when the category substitutes for prioritisation rather than enabling it. The term ‘critical minerals’ should open the conversation, not close it.

Serious policy design should therefore move immediately to a more precise set of operational questions: which mineral, which processing stage, which end-use, which vulnerability and which intervention? That sequence forces policymakers to identify where strategic exposure actually lies, rather than treating all minerals and supply chains as interchangeable policy problems. Mineral-specific vulnerabilities increasingly require different financing structures, intervention tools and industrial coordination models rather than a generic critical-minerals policy.

Governments, investors and industry already recognise that concentrated supply chains create vulnerability. The greater risk is misallocating capital, policy attention and industrial effort under a category now too broad to guide disciplined execution. Without a mineral-specific strategy, critical-minerals policy risks drifting towards a familiar pattern: expansive rhetoric, widening subsidy agendas and fragmented intervention without sufficient industrial depth to reduce dependence where it matters most. The result wouldn’t be strategic resilience. It would be strategic diffusion disguised as strategy.

Mineral-specific pathways: from category management to industrial design

The Darwin Dialogue 2026 pointed towards a more disciplined approach to critical minerals: mineral-specific industrial playbooks focused on a limited number of strategically significant supply chains. The objective isn't to cover every mineral on every government list. It's to identify where Australia and its partners have meaningful leverage in geological, processing, technological, financial or alliance areas, and where concentrated dependence creates unacceptable strategic exposure. Each playbook should identify the industrial end use, current vulnerability, realistic alternative pathway, binding constraint, demand signal, infrastructure requirement, workforce pressure and decision window shaping strategic viability.

Australia can mine rare earths at scale, but mining alone doesn't deliver strategic resilience. The critical vulnerabilities sit downstream: separation capability, heavy-rare-earth processing, metal-making, alloying and magnet manufacturing. Traceability and customer qualification also matter because defence and advanced manufacturing supply chains increasingly require trusted provenance. Opaque supply chains often reduce costs by externalising environmental damage, governance failure and strategic risk. Global Witness's reporting on Myanmar's heavy-rare-earth sector and China-linked processing networks clearly exposed that dynamic during the dialogue's discussions on trusted supply chains.¹³ A serious rare-earth strategy, therefore, requires far more than extraction finance. It requires processing capability, trusted feedstock pathways, customer qualification and long-duration industrial demand linked to allied manufacturing systems.

Lithium presents a fundamentally different challenge. Australia already holds significant upstream strength, yet strategic leverage weakens when chemical conversion, battery qualification and downstream manufacturing remain concentrated elsewhere. The dialogue participants regularly returned to lithium's price volatility and oversupply cycles as evidence that mining scale alone doesn't create a durable strategic advantage. Governments, therefore, face a more difficult task than simply expanding production. They must determine which conversion, recycling and battery-system capabilities warrant support because they strengthen allied industrial resilience over time. Lithium also exposed the danger of designing policy around peak-cycle assumptions. A strategic reserve designed for niche defence inputs might have little relevance in a market shaped by large-scale industrial demand, volatile pricing and global battery competition.

Nickel exposed a different form of strategic pressure. Indonesian production expansion, heavily supported by Chinese capital and processing capacity, has transformed global markets and placed sustained pressure on higher cost Australian producers. The core policy question is therefore not simply about how Australia produces more nickel. It's whether trusted and lower carbon supply

chains can attract a durable commercial premium in markets still heavily influenced by price competition. Participants repeatedly acknowledged that ESG premiums remain uneven and uncertain across many commodity markets. In several sectors, customers continue to prioritise the lowest cost supply over resilience, traceability or labour standards. Without stronger demand-side recognition, high-ESG nickel risks remaining a strategic principle rather than a commercially durable market segment.

Graphite revealed another distinct vulnerability. The strategic bottleneck sits less in resource availability than in anode-grade processing, purification and customer qualification. Battery manufacturers require consistency, quality assurance and confidence that alternative suppliers can meet demanding qualification timelines. Australia and partner countries, therefore, face a more difficult challenge than opening new mines. They must determine whether trusted graphite pathways can realistically emerge in markets in which processing concentration, technical barriers and established customer relationships create powerful incumbency advantages.

Gallium and antimony highlighted the difference between geological presence and strategic availability. Those minerals operate through relatively small markets yet carry disproportionate importance for semiconductors, defence technologies, electronics and specialised industrial systems. Their production often depends on by-product recovery, host-commodity economics and highly concentrated processing pathways. Those characteristics make them more suitable for strategic reserve approaches than bulk commodities. Yet Darwin Dialogue discussions repeatedly stressed that stockpiling alone can't create resilience. Reserves require production pathways, recycling systems, allied sharing arrangements and clear release mechanisms connected to industrial demand. A reserve without industrial logic risks becoming a warehouse rather than a resilience tool.

Copper challenged the critical-minerals category from the opposite direction. Copper doesn't fit neatly into narrow definitions of scarcity or exotic strategic inputs. Yet electrification, defence infrastructure, grid expansion and industrial growth increasingly make it central to strategic resilience. Copper's vulnerability lies less in specialised chemistry than in scale: permitting speed, infrastructure intensity, smelting concentration, energy demand and logistics capacity. The strategic lesson is important because it demonstrates how conventional industrial systems can generate vulnerabilities as serious as those associated with niche minerals. Copper shows that strategic competition increasingly depends on whether countries can build large, enabling systems rather than relying on specialised inputs.

The practical implication is that governments should stop asking whether they possess a critical-minerals strategy and start asking whether they possess mineral-specific resilience pathways for the commodities that matter most. A generic strategy can describe vulnerability. It can't resolve it. Different minerals require different combinations of finance, standards, procurement, stockpiling, infrastructure, technology development and allied

market integration. Some require public demand guarantees. Some require permitting reform. Some require standards-based premiums. Some require defence procurement integration. Others require patient capital, energy infrastructure and long-duration industrial coordination more than strategic declarations.

This reframing also makes the policy debate more contestable and ultimately more credible. Not every mineral justifies identical intervention. Not every supply chain can be duplicated domestically at a reasonable cost. Not every project should survive on strategic language alone. Democratic economies therefore face the harder task of prioritising ruthlessly: identifying where Australia must build sovereign capability, where it should co-invest with trusted partners, where allied redundancy provides sufficient resilience and where spreading capital across politically attractive but commercially fragile projects weakens strategic effect.

The dialogue ultimately pointed to a broader conclusion: strategic competition over critical minerals is no longer primarily geological. It's increasingly industrial, financial, logistical and institutional. The countries that succeed won't necessarily control the largest resource base. They'll control processing capability, financing systems, trusted demand, industrial tempo and resilient high-standard supply chains capable of surviving commercial volatility and geopolitical pressure simultaneously.

The midstream gap

The Darwin Dialogue 2026 repeatedly identified midstream capability as the decisive strategic vulnerability. Australia and its partners possess significant upstream resources. They don't yet possess enough processing, refining and advanced manufacturing capacity to reduce dependence on concentrated supply chains at the pace that strategic competition increasingly demands. The International Energy Agency's 2025 analysis states that China remains the leading refiner for 19 of 20 major strategic minerals, with an average market share of roughly 70%.¹⁴ That concentration means that allied economies can diversify mining investment while remaining structurally dependent on the same processing system.

The strategic contest, therefore, sits less in extraction than in throughput. Mining creates feedstock. Processing converts feedstock into usable industrial inputs. Manufacturing transforms those inputs into strategic capability. Whoever controls the midstream shapes the options available downstream: pricing power, qualification pathways, industrial tempo, standards influence and customer dependency. That's why Darwin Dialogue discussions repeatedly returned to refining, separation and processing capability rather than extraction volumes alone.

Australia has begun building elements of that capability. Lynas's Kalgoorlie Rare Earths Processing Facility became Australia's first rare-earths processing plant and now processes Mt Weld ore into mixed rare-earth carbonate.¹⁵ Iluka's Eneabba refinery is another major step towards an integrated rare-earth refinery capable of processing both Iluka's and third parties' concentrates.¹⁶ Projects such as Lynas and Eneabba represent a shift away from exporting

raw material to externally controlled processing systems, while exposing the scale of capital, infrastructure, workforce and energy coordination needed to build viable alternatives.

Midstream concentration becomes increasingly difficult to reverse once processing capability, customer relationships, technical expertise and market influence consolidate inside a single industrial system. China's advantage doesn't stem solely from refining scale. It combines processing capacity, downstream manufacturing integration, infrastructure depth, pricing influence, customer relationships and the ability to shape markets over long periods. Allied projects often face the opposite conditions simultaneously: high capital costs, uncertain demand, volatile pricing, infrastructure constraints and long qualification timelines before revenue stabilises.

The dialogue also exposed a harder political and commercial tension underneath the allied midstream strategy. Governments increasingly recognise the strategic necessity of processing capability. Yet, many still assume markets will ultimately sustain that capability independently once initial support is provided. Participants repeatedly questioned that assumption. Midstream facilities often require large up-front capital, long development timelines, stable energy systems, technical labour, chemical supply chains and customers willing to absorb higher costs for trusted production. Democratic economies, therefore, face an uncomfortable possibility: resilient allied midstream systems might remain structurally more expensive than concentrated alternatives for extended periods.

That reality doesn't justify indiscriminate subsidies. Darwin Dialogue discussions stressed the importance of disciplined intervention tied to specific strategic outcomes. Governments must identify which processing stages matter most, which customers require trusted output, what infrastructure enables viability and where public support genuinely reduces strategic vulnerability rather than simply prolonging commercially fragile projects. Without that discipline, governments risk funding stranded capability, distorting investment signals and fragmenting industrial effort across politically attractive but strategically marginal projects.

The midstream gap is an architecture problem rather than a narrow processing problem. Refining capability depends simultaneously on energy reliability, chemical inputs, waste-management systems, transport infrastructure, industrial land, skilled labour, community trust and downstream demand. If one component fails, the system's throughput degrades.

The strategic consequence is becoming increasingly clear. Allied economies can diversify extraction without meaningfully reducing dependence if midstream capability remains concentrated elsewhere. The countries that control processing systems, industrial integration and qualification pathways will continue to shape the strategic choices available to everyone downstream, regardless of where the ore originates.

Demand signals, offtake and market creation

The most persistent commercial problem identified at the Darwin Dialogue 2026 was weak demand certainty. Governments are increasingly willing to support supply through financing mechanisms, production incentives and strategic reserves. They remain far less effective at creating the long-duration demand conditions needed to make high-standard alternatives commercially bankable.

The dialogue exposed the same circular dependency across multiple supply chains. Projects require offtake agreements to secure finance. Buyers want proven production capability before committing to long-term contracts. Investors want predictable pricing before accepting exposure. Governments recognise strategic vulnerability but often hesitate to intervene directly in procurement markets. The result is industrial paralysis: each actor waits for the other to absorb the risk first, while strategic dependence deepens despite growing political urgency.

Australia's policy architecture has expanded substantially in recent years. It now includes the Critical Minerals Facility, the Critical Minerals Production Tax Incentive and the Critical Minerals Strategic Reserve. The Australian Taxation Office describes the production incentive as a 10% refundable tax offset for eligible critical-minerals processing expenditure.¹⁷ These mechanisms might improve project economics, narrow financing gaps and accelerate investment decisions. They can't sustain supply chains without durable demand. Governments can support upstream production, but resilient industrial systems still fail when customers refuse to commit over the long term.

The problem becomes most acute when a trusted, high-standard supply competes directly with lower cost or heavily subsidised alternatives. Producers operating under stronger labour, environmental and governance standards incur real commercial costs. If buyers don't recognise those standards through pricing, contract duration or procurement preference, high-standard supply chains remain structurally disadvantaged. Darwin Dialogue discussions exposed a hard commercial reality: trusted supply requires trusted demand.

That conclusion pushes the debate into more politically difficult territory. Many allied governments continue speaking about resilience while procurement systems still prioritise the lowest cost sourcing. Yet resilient supply chains often require redundancy, traceability, inventory buffers and higher operating costs. Democratic economies, therefore, face a strategic trade-off they haven't fully resolved. If governments and manufacturers refuse to absorb resilience premiums before disruption occurs, dependence on concentrated supply chains might persist by choice rather than necessity.

Defence procurement offers one pathway for altering those incentives. Military systems increasingly depend on rare-earth magnets, gallium-based semiconductors, antimony applications,

advanced alloys and high-performance battery systems. Procurement requirements specifying trusted, traceable and resilient inputs could therefore create targeted demand signals capable of supporting strategically significant supply chains. Defence demand alone won't transform bulk commodity markets such as copper or lithium. It can, however, anchor selected midstream and niche mineral pathways where national-security exposure is acute and commercial demand remains uncertain.

Strategic reserves offer another mechanism, but only when designed as active market instruments rather than passive stockpiles. A reserve shouldn't simply accumulate material against a hypothetical future disruption. It should secure production rights, stabilise selected demand pathways, support allied customers and reduce exposure to market manipulation. Australia's current model, including securing rights to domestically produced minerals and on-selling those rights to meet demand, represents a more interventionist approach than traditional stockpiling.¹⁸ Its effectiveness will depend on whether reserves connect to clearly defined industrial pathways, allied procurement systems and realistic customer demand rather than functioning as symbolic strategic inventory.

The strategic consequence is increasingly difficult to avoid. If allied economies can't create durable demand for trusted supply chains, then financing gaps, midstream weakness and processing dependence will persist regardless of how many mining projects receive approval. The countries that shape long-term industrial demand will ultimately determine which supply chains survive.

Political price risk and strategic market distortion

Commodity markets have always been characterised by volatility, cyclical pricing and supply shocks. Critical-minerals markets increasingly operate under different conditions. Export controls, industrial subsidies, state-backed overcapacity and strategic signalling now shape pricing behaviour alongside normal commercial dynamics. Investors can model geology, construction risk and operating costs. They struggle to model coercive market behaviour.

China's export controls on rare earths and related technologies have demonstrated how concentrated supply chains create operational leverage long before physical supply is cut off. The International Energy Agency's October 2025 commentary warned that new export controls had transformed supply-concentration concerns into active strategic vulnerability across energy, aerospace, defence and advanced manufacturing systems.¹⁹ Strategic leverage increasingly operates before coercion fully materialises. The possibility of export restrictions alone can reshape investment behaviour, procurement decisions, inventory management and diplomatic calculations. Companies accelerate stockpiling. Governments reassess vulnerability. Investors defer exposure. Customers seek alternative suppliers regardless of

cost. Dependence, therefore, becomes a strategic liability long before supply stops.

Political price risk also operates through oversupply and sustained price suppression rather than restriction alone. The nickel market has provided the clearest example. Indonesian production expansion, heavily supported through China-linked capital and processing systems, has reshaped global pricing conditions and placed sustained pressure on higher cost producers operating under stronger environmental and labour standards. The strategic challenge for Australia isn't insulating every producer from commercial competition. It's identifying when politically enabled price collapses threaten strategically important industrial capability and determining when governments should intervene to preserve resilient supply pathways before capability exits the market permanently.

Critical-minerals markets increasingly operate outside conventional commodity assumptions. Standard market logic assumes that prices primarily reflect supply, demand, productivity and efficiency. Strategic minerals markets now also reflect industrial policy, geopolitical leverage and coercive intent. Governments that continue treating politically distorted markets as ordinary commodity systems will repeatedly misread both risk and competitor behaviour.

Governments need capabilities that combine economics, industrial analysis and national-security assessments rather than treating those functions separately. They need to identify when low prices reflect normal cyclical conditions and when they reflect deliberate market shaping that can destroy strategically valuable capability. They also require intervention mechanisms capable of acting before investment collapses, customers disappear, and industrial capacity exits the market. Once capability disappears, rebuilding often becomes substantially more expensive, slower, and strategically riskier than preserving viable pathways at the outset. Countries capable of influencing those conditions will shape which supply chains endure and which gradually disappear under sustained strategic pressure.

Trusted high-ESG supply chains as a strategic advantage

The dialogue exposed how many existing supply chains appear cheaper only because high costs remain externalised. Global Witness has documented severe environmental destruction, governance failures and coercive conditions linked to Myanmar's heavy-rare-earth sector feeding into China-linked processing systems.²⁰ Supply chains that appear commercially efficient at the point of purchase might therefore carry hidden strategic liabilities: environmental damage, corruption exposure, human-rights risks and concentrated geopolitical leverage. Low cost doesn't necessarily reflect genuine efficiency. In some cases, it reflects regulatory asymmetry and the ability to externalise social, environmental and governance burdens elsewhere in the system.

Trusted supply chains increasingly operate at a commercial disadvantage inside politically distorted markets. Producers operating under stronger labour, environmental and governance standards incur costs that less regulated systems often avoid or externalise entirely. If governments and customers continue benchmarking against opaque or heavily subsidised supply chains, resilient producers will remain commercially disadvantaged despite offering lower strategic risk. Trusted supply chains therefore survive only when procurement systems, markets or governments deliberately pay for resilience rather than merely calling for it.

The dialogue's participants stressed that traceability differs fundamentally across minerals and processing pathways. Rare earths undergo multiple chemical transformations, complicating chain-of-custody verification. Downstream manufacturers must qualify battery minerals before entering commercial supply systems. Copper and nickel increasingly require carbon-intensity and labour-standard verification. Gallium and germanium depend on visibility into by-product recovery and semiconductor-grade processing. The practical implication is important: a single ESG label can't resolve fundamentally different industrial and technical verification problems.

The discussions also pushed the standards debate into more strategic territory. Standards don't operate merely as technical compliance mechanisms. They increasingly function as instruments of industrial power. If Chinese industrial standards become dominant across refining, battery systems, magnets, semiconductor processing or downstream manufacturing, alternative suppliers might face qualification barriers even when they can produce technically viable material. Standards therefore shape market access, interoperability, certification pathways and long-term industrial lock-in.

That competition carries major strategic consequences. Countries that shape standards are increasingly shaping the supply-chain architecture itself. They influence who qualifies as trusted, which processing systems are integrated into downstream manufacturing, and which producers gain durable market access. Allied governments, therefore, can't treat standards development as a secondary technical issue sitting outside industrial policy. Standards-setting, certification systems and traceability frameworks increasingly form part of strategic competition over industrial influence and market control.

The dialogue repeatedly reinforced that trusted supply chains require commercial embedding rather than voluntary aspiration. Disclosure regimes and corporate reporting alone won't create resilient industrial systems. Procurement frameworks, finance conditions, defence specifications, offtake agreements and trade arrangements must actively reward trusted supply. Otherwise, higher standards impose additional cost without generating a competitive advantage. The market will continue to favour lower cost production pathways, even when those pathways deepen strategic dependence.

Australia enters this competition with important structural advantages. Its governance system, environmental regulation,

alliance relationships and Indigenous engagement obligations provide a stronger foundation for trusted supply-chain positioning than many competing jurisdictions. However, that trust is not self-executing. It must be measured, audited, certified and integrated into procurement behaviour and industrial decision-making. Responsible production becomes a strategic advantage only when governments require it, customers reward it and industrial systems embed it commercially over long periods of competition.

Allied coordination

Darwin Dialogue participants tested alliance coordination against a practical question: can democratic partners move from strategic alignment to sustained industrial execution? Participants came to the conclusion that trust needs to precede speed. Projects that outrun local legitimacy, environmental credibility or partner confidence often lose time later through legal disputes, financing hesitancy, community resistance and customer uncertainty.

The discussions also exposed the difference between genuine execution tempo and what several participants described as ‘false speed’: political urgency measured through announcements, agreements and funding headlines rather than operational progress. Governments often measure tempo through statements released or funds announced. Industry measures tempo differently: whether approvals clear, power can be contracted, debt syndicated, skilled workers secured, offtake banked and product qualified with customers. Competitive endurance requires those two clocks to converge.

Japan’s role in Australian resources development provided a practical contrast to announcement-driven industrial policy. Long-term industrial partnerships depend on credibility, patience and reciprocal obligation sustained across market cycles rather than short periods of geopolitical urgency. Participants pointed to the use by the Japan Organization for Metals and Energy Security (JOGMEC) of equity, loans, debt guarantees and support for processing capability, alongside long-running JOGMEC and Sojitz Corporation backing for Lynas through the Japan Australia Rare Earths Fund, as evidence that sustained financing and demand coordination can help to establish viable non-Chinese rare-earth pathways over time.²¹ The lesson wasn’t that Australia should mechanically replicate Japan, but that industrial coherence matters more than policy volume.

Participants broadly agreed that allied coordination has improved substantially in recent years. Governments increasingly recognise these vulnerabilities and now use similar language about resilience, diversification and trusted supply. Yet diplomatic alignment still struggles to produce enough industrial effect.

That frustration became most visible in discussions about mineral-specific cooperation. Participants increasingly questioned whether broad critical-minerals frameworks were too generic to organise real industrial coordination. A more effective model would organise cooperation into mineral-specific industrial clubs

based on comparative advantage. Rare-earth partnerships, for example, could align Australian feedstock and processing capabilities with Japanese financing and industrial demand, US defence procurement and Canadian standards development.

The dialogue ultimately pointed to a broader strategic conclusion: trusted interdependence is more realistic than self-sufficiency and more resilient than concentrated dependence on adversarial supply chains. Allied coordination will remain difficult. Governments operate through electoral cycles, fragmented portfolios, competing industrial interests and uneven state capacity. Competitive endurance will therefore depend less on diplomatic density and more on whether allied governments can coordinate finance, demand, infrastructure, standards and industrial sequencing for specific supply chains under long-term geopolitical and commercial pressure.

Northern Australia as a strategic industrial platform

The Darwin Dialogue 2026 reinforced a simple proposition: geography creates opportunity, but throughput creates capability. Darwin becomes strategically important only when fuel, power, water, ports, roads, industrial land, labour, housing, defence demand and private investment operate as an integrated system. Northern Australia can’t meet national strategic expectations without the coordinated industrial systems that support them.

Participants argued that northern Australia needs a sharper compact between local development and national strategy. Communities won’t support projects simply because Canberra labels them ‘strategic’, and investors won’t finance projects purely because the north carries geopolitical significance. Industrial capability emerges only when local legitimacy, commercial viability and national-security requirements reinforce one another. Northern Australia should therefore be treated not simply as a quarry for strategic minerals but as an industrial operating system linking extraction, processing, logistics, defence sustainment and Indo-Pacific trade.

The dialogue also challenged assumptions that geography alone creates resilience. Processing still requires reliable energy, water, transport systems, chemical inputs, waste management, skilled labour and community trust. Defence sustainment still depends on logistics depth, maintenance capability and workforce continuity. Strategic value will ultimately be measured by the reliability, scale, and trustworthiness of what the north can process, sustain and move through Indo-Pacific industrial systems under prolonged strategic pressure.

Workforce, institutions and the ‘young guns’ challenge

Future supply chains require people long before they require policy slogans. Geologists, metallurgists, chemical engineers, electricians, environmental scientists and processing specialists

develop through education systems, apprenticeships, field experience and companies willing to absorb the long-term training risk. Governments can announce projects within months. Skilled workforces often take years or decades to build. Workforce constraints, therefore, operate as a strategic variable rather than as a secondary labour-market issue.

The session also challenged a deeper institutional assumption: that greater political attention automatically produces strategic progress. Emerging practitioners repeatedly pointed to implementation failures that senior systems often identify too late, procurement bottlenecks, qualification delays, infrastructure gaps and workforce shortages hidden beneath strategic rhetoric. The broader lesson extended beyond workforce planning alone. Strategic resilience depends on institutions capable of detecting weak signals, challenging assumptions and adapting before vulnerabilities harden into structural dependence.

The Darwin Dialogue 2026 identified several recurring failure pathways that gradually transform exposure into dependence:

- *Strategic dilution*: Governments expand critical-minerals lists while weakening the discipline required to prioritise scarce capital, expertise and regulatory attention.
- *Announcement substitution*: Governments mistake strategies, agreements and funding packages for industrial capability, while processing, approvals, workforce and customer demand lag behind.
- *Subsidy without demand*: Public finance reduces risk. Still, it can't sustain supply chains without durable customers, long-term offtake and downstream demand.
- *Midstream neglect*: Countries expand mining production while refining, processing and manufacturing remain concentrated elsewhere.
- *Systems mismatch*: Processing projects require energy, water, logistics, housing, waste-management and workforce systems to develop together rather than sequentially.
- *Workforce lag*: Governments accelerate policy faster than they can develop metallurgists, engineers, technicians and processing specialists.
- *Allied fragmentation*: Partners share strategic intent while maintaining incompatible procurement systems, financing structures, standards frameworks and industrial timelines.

Taken together, those pathways explain how dependence develops gradually rather than through a single crisis. Countries that fail to align demand, infrastructure, workforce capability, standards and industrial coordination early enough eventually discover that rebuilding lost capability is slower, more expensive and strategically riskier than preserving viable systems before they fail.

The decision architecture Australia needs

The next phase of critical-minerals policy requires decision architecture rather than additional descriptive strategy. Governments already understand many of the vulnerabilities. The harder challenge is operational: who decides, what triggers intervention, which tools become available and how trade-offs are resolved when industrial timelines move faster than government systems. Strategic policy increasingly fails not because risks remain invisible, but because institutions lack clear pathways for coordinated action once pressure intensifies.

The Darwin Dialogue 2026 highlighted the need for minimum viable supply-chain systems built around specific strategic outcomes rather than broad sectoral ambitions. A minimum viable system identifies the irreducible combination of feedstock, processing, infrastructure, workforce, logistics, standards and customers needed to preserve strategic choice under pressure. The objective isn't autarky. It's preventing dependence from becoming irreversible once markets distort, supply chains tighten or geopolitical pressure escalates.

The dialogue also reinforced the need for governments to identify the binding constraint shaping each supply chain. In one market, the constraint might be finance. In another, it might be customer qualification, processing technology, energy reliability, permitting speed, workforce depth or long-term demand. Broad, sector-wide interventions often generate activity without materially improving resilience.

Decision windows are equally important. Some interventions lose strategic value once investment decisions fail, workforce shortages harden, infrastructure corridors stall or customers lock into alternative suppliers. A financing package, reserve mechanism or production incentive provides little strategic benefit after capability has already exited the market.

The dialogue ultimately pointed to a more disciplined intervention sequence:

- What mineral matters?
- Which stage of the supply chain is vulnerable?
- What strategic outcome must be preserved?
- What constraint threatens that outcome?
- Which intervention can shift the constraint?
- By when must action occur before options narrow?

That sequence shifts policy from broad strategic ambition towards operational prioritisation. It also provides a more disciplined foundation for allied coordination, infrastructure sequencing, industrial finance and demand creation by forcing governments to focus on the constraints most likely to determine whether strategic capability survives.

5. Competitive endurance architecture

Competitive endurance architecture (Figure 2) should operate as a decision framework rather than as a strategic slogan. The starting point is the strategic function requiring protection: defence capability, semiconductor manufacturing, energy resilience or

advanced industrial capacity. From there, policymakers must identify where dependency sits within the supply chain, determine the constraint preventing resilience and assign responsibility for resolving it within a defined time frame.

Figure 2: Competitive endurance architecture



Source: ASPI.

That sequence changes how governments assess projects. It stops treating every proposal as if it were using the language of critical minerals—as if it were strategically equal. Instead, it prioritises projects that connect mineral output to credible industrial demand, viable processing pathways, access to infrastructure and trusted customer networks. It also exposes projects relying primarily on national-security rhetoric without materially reducing strategic dependence. Public money shouldn't reward narrative strength alone. It should reduce clearly identified strategic vulnerabilities.

The same discipline should shape international cooperation. Effective cooperation must identify specific minerals, processing stages, financing responsibilities, procurement pathways and customer demand signals. Weak agreements generate diplomatic reassurance. Strong agreements change project viability, reduce investment uncertainty and create durable industrial pathways.

Democratic systems often excel at consultation, legitimacy and coalition-building while struggling to sustain integrated execution across fragmented portfolios. Critical-minerals policy intersects with industry, trade, infrastructure, finance, defence and regulation. Without a framework that assigns responsibility, sequences decisions and resolves trade-offs quickly, governments can achieve broad strategic alignment while still failing operationally.

Analysis of the Darwin Dialogue identified several recurring constraints shaping project viability across allied economies:

- **Prioritisation:** Governments must identify which minerals and processing stages create genuinely unacceptable strategic exposure, rather than treating every supply chain as equally urgent.
- **Demand certainty:** Projects require credible long-duration demand through customers and procurement systems willing to reward trusted supply rather than simply the lowest available cost.
- **Financing alignment:** Public capital should absorb strategic risk only where projects connect to commercially realistic demand, viable infrastructure access and operationally credible business models.
- **Infrastructure sequencing:** Processing capability depends on energy reliability, transport access, industrial land, housing and permitting systems that often move more slowly than political ambition.
- **Standards integration:** Traceability, environmental performance and trusted production create strategic advantage only when procurement systems and customers recognise and pay for them.
- **Workforce capability:** Advanced processing requires technical expertise that can't be improvised during a crisis or generated through short political cycles.
- **Allied integration:** No democratic economy can realistically build every supply chain independently. Trusted interdependence must therefore operate through real industrial coordination rather than mere diplomatic language.

The dialogue also exposed a growing distinction between policy activity and industrial progress. Policy activity produces strategies, communiqués, agreements and announcements. Industrial progress produces processing capacity, qualified products, reliable logistics, skilled workforces, bankable projects and long-term customer commitments. Allied economies have generated substantial policy activity in recent years. They haven't yet generated sufficient industrial progress to match the scale of strategic ambition.

China's advantage increasingly derives from industrial coherence rather than resource scale alone. Its system links finance, infrastructure, processing, manufacturing, logistics and market-shaping with a level of coordination that most democratic economies still struggle to replicate. That system remains imperfect, however. Regional competition, overcapacity, inefficient capital allocation and policy inconsistency continue to shape Chinese industrial development. Even so, China still operates with greater strategic-industrial alignment than most fragmented democratic market economies.

Democrats face a strategic reality that can't be ignored: fragmented policy systems competing with integrated industrial ecosystems will struggle to sustain long-term competitiveness. If allied economies continue to respond through disconnected subsidy programs, overlapping announcements and poorly sequenced infrastructure decisions, they'll underperform even as they increase expenditure.

Competitive endurance architecture, therefore, asks democratic governments to solve a different problem. The challenge isn't how to centralise economic control. The challenge is how to build coordination without centralisation, industrial discipline without authoritarianism and resilience without autarky. Australia enters that competition with significant advantages: resource endowment, trusted governance, alliance networks and high operational standards. Those advantages will matter only if they translate into industrial systems capable of sustaining throughput, attracting capital and maintaining strategic reliability under prolonged pressure.

6. Final judgement

The Darwin Dialogue 2026 confirmed that the critical-minerals debate has entered a new phase. The first phase built awareness; the second built diplomatic alignment. The next phase will be judged by whether Australia and its partners can build mineral-specific industrial systems capable of enduring long-term geopolitical pressure, market distortions and strategic coercion.

This report's central conclusion is deliberately sharper than the current policy consensus: the utility of treating critical minerals as a single strategic category is diminishing. The term still carries diplomatic and political value, but it increasingly obscures the operational reality that rare earths, lithium, nickel, graphite, gallium, antimony and copper each generate different vulnerabilities, commercial structures and industrial requirements. Strategic endurance won't emerge from generic ambition. It will emerge from mineral-specific execution.

The objective isn't simply to mine more material. It's to build alternative, resilient and trusted high-ESG supply chains capable of sustaining allied industrial capability under stress. That requires competitive endurance architecture: aligning finance, infrastructure, energy, workforce capability, processing, standards, logistics and demand around the minimum viable systems needed to preserve strategic choice before dependence hardens further.

To be successful in the long term, the Darwin Dialogue group of like-minded nations will need to be willing to put aside traditional economic competitiveness with each other. Instead, they need to identify how their respective strengths can build the necessary collective power to regain comparative advantage over countries such as China, which have monopolistic concentrations in fields assessed as critical to our societies' way of life.

Australia possesses the resources, partnerships and institutional credibility to contribute meaningfully to that effort. The harder challenge is discipline. Governments will need to prioritise more selectively, coordinate more coherently and sustain industrial policy through commercial downturns, political cycles and prolonged strategic competition. The countries that endure won't be those that speak most about resilience. They'll be those that are capable of building trusted industrial systems before vulnerability becomes dependence.

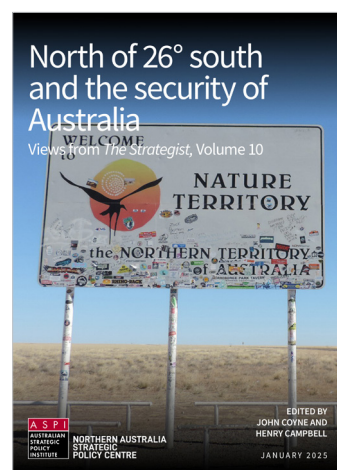
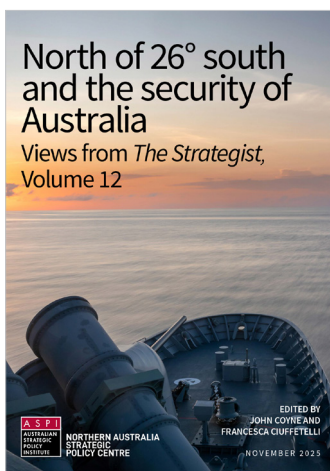
Notes

- 1 Competitive endurance architecture is a strategic framework for identifying and sustaining the minimum viable industrial systems needed to preserve national resilience under prolonged geopolitical, economic and supply-chain pressure. Rather than treating critical minerals as a single policy category, it aligns finance, infrastructure, energy, workforce capability, processing, logistics, standards and demand around mineral-specific industrial outcomes and binding constraints. The framework shifts policy away from broad strategic ambition towardS operational prioritisation by asking which capabilities must endure, what threatens them most and which interventions can preserve trusted industrial throughput before dependence hardens into irreversible vulnerability.
- 2 A minimum viable system is the irreducible combination of industrial capabilities, infrastructure, workforce, logistics, processing, standards and demand needed to preserve strategic function under pressure. It identifies the specific components that must continue operating for a supply chain, industry or national capability to remain viable during disruptions, market distortions or geopolitical coercion. The concept shifts policy away from maximising scale everywhere and towards protecting the critical nodes, relationships and enabling systems that prevent exposure from hardening into dependence.
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Acronyms and abbreviations

ESG	environmental, social and governance
EU	European Union
JOGMEC	Japan Organization for Metals and Energy Security

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