Submission to the Joint Standing Committee on Northern Australia

Inquiry into Preparing for Emerging Industries Across Northern Australia

Submitted by the Northern Australia Universities Alliance (NAUA)

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Executive Summary

The Northern Australia Universities Alliance (NAUA) welcomes the opportunity to contribute to this important inquiry into preparing for emerging industries across Northern Australia. NAUA is a strategic partnership between CQUniversity (CQU), Charles Darwin University (CDU), and James Cook University (JCU), collectively supporting over 79,000 students across 29 campuses, including 21 regional and remote locations. United by a shared commitment to the sustainable development of the North, NAUA leverages its collective strengths to deliver education, research, and workforce solutions tailored to the region's unique challenges and opportunities, as detailed in the NAUA Capabilities table.

As foundation institutions supporting the emergence of new industries in the north, the NAUA and its member universities strongly support the Terms of Reference for this inquiry, and we welcome the Committee's focus on enabling these emerging industries.

As the primary higher education and research providers in the North, NAUA has a direct interest in two critical enablers of regional transformation:

- Workforce Development: NAUA is committed to building place-based education and training pathways that respond to industry needs, support equity groups, and retain talent in the North. This includes targeted initiatives in clean energy, critical minerals, digital inclusion, and the empowerment of First Nations.
- Research and Development Growth: It is necessary to coordinate long-term research investment and knowledge translation in Northern Australia as outlined in the Action Plan for Northern Australia 2024–29 and recommended in the 2025 Independent NAIF Review and the Joint Select Committee on Northern Australia.

NAUA stands ready to partner with government, industry, and communities to deliver the education, research and development, and workforce solutions needed to support emerging industries and ensure Northern Australia's prosperity.

In this submission, we highlight key requirements to support emerging industries and outline proposals to address these requirements.

The Global Transition to Net Zero and Furthering Renewable Energy, Decarbonisation and Carbon Abatement

Northern Australia is central to Australia's clean energy future and the associated regional and community-scale transitions required. Its abundant solar and wind resources, proximity to export markets, and strategic infrastructure corridors position the region as a key contributor to national decarbonisation efforts.

NAUA supports this transition agenda through:

- Workforce transformation**:** Developing skills for renewable energy and climate adaptation.
- Applied research**:** Supporting regional energy systems, carbon abatement technologies, and infrastructure resilience.

- Place-based partnerships for transition**:** Collaborating with industry and communities to deliver locally relevant training and innovation.

NAUA's existing, specialised capabilities in this area include the Hydrogen and Renewable Energy Research Centre (HRERC) and the Energy and Resources Institute (ERI), as detailed in the NAUA Capabilities table.

Rec 1. Fund NAUA-Led Clean Energy Education and Research Programs

Provide dedicated funding, in collaboration with State and Territory governments, for NAUA-led education, training, and research initiatives that accelerate clean energy transitions, build regional workforce capability, and ensure Northern Australia remains competitive in the national decarbonisation agenda.

Developing the Critical Minerals Industry

Northern Australia holds significant reserves of critical minerals essential to advanced manufacturing, defence, and clean energy technologies. The development of this sector presents distinct challenges and opportunities compared to the broader Net Zero agenda.

NAUA is uniquely positioned to support the critical minerals industry through specialised, northern-based expertise. Our combined capability includes:

- Workforce planning and skills development: Tailored training in exploration, processing, environmental management, and mine rehabilitation.
- Applied research: Supporting sustainable extraction methods, regional supply chain innovation, and environmental impact mitigation. This is underpinned by institutional expertise in Economic Geology Research, mineral characterisation and geoscience outlined in the NAUA Capabilities Table.
- Industry partnerships: Co-designed initiatives with mining and processing firms to build local capability and support sovereign supply chain resilience.

Building on the Net Zero transition, which is broadly cross-sectoral, the critical minerals industry requires even more specialised technical expertise, regulatory knowledge, and region-specific workforce strategies. Furthermore, targeted investment to build education and research capability is needed to support this high-value emerging sector, especially given the need for sustainable practices in ecologically sensitive regions.

To fulfil the national imperative of supply chain security, the region must move beyond basic extraction to develop specialised research and development capabilities in downstream activities, such as advanced processing, mine rehabilitation, and sustainable extraction methods tailored to remote, northern environments.

Rec 2. Establish Critical Minerals Research and Development Capability

Build joint NAUA, jurisdictional and industry initiatives to build skills and research capacity for supporting the growth of critical minerals in the north.

Supporting infrastructure

Improved physical and digital connectivity is critical to Northern Australia's liveability, workforce attraction, and economic participation. Without it, the region cannot recruit or retain the skills needed for emerging industries.

Upgraded transport and energy infrastructure reduces isolation, strengthens supply chains, and supports sustainable population growth. Consistent with the intent of the Northern Australian Action Plan, there has been much early discussion about the need for a major enabling infrastructure package to boost east–west connectivity; connecting the Qld, NT and northern WA economies and better connecting these economies to the Indo Pacific region. Such a visionary and long-term package is essential to unlock economic corridors required by emerging industries, enhance resilience, and link resource regions with population centres.

Digital connectivity is an even more urgent part of this connectivity package. Advanced technologies such as AI, data centres, automation, and remote operations depend on fast, reliable networks, yet many northern regions remain digitally underpowered. Without decisive action, these communities risk exclusion from future economic opportunities.

Connectivity must be paired with capability. Targeted education and training, especially for equity groups and First Nations communities, are vital to bridge the digital divide. NAUA institutions can lead these programs, leveraging expertise in digital innovation and inclusion to ensure access to emerging technologies.

Infrastructure planning must be integrated with workforce development strategies. Aligning connectivity investment with education and skills priorities ensures the adoption of advanced technologies and real productivity gains across northern industries.

Rec 3. Upgrade Infrastructure to Improve Liveability and Workforce Attraction

Prioritise infrastructure upgrades that improve transport, energy and digital access to support workforce attraction, regional liveability, and economic participation.

Rec 4. Progress an Enabling Infrastructure Package for East–West Connectivity

Progress a major east–west enabling infrastructure package through a longer-term Federation Funding mechanism with the jurisdictions.

Rec 5. Bridge the Digital Divide Through Education and Training

Fund targeted digital literacy and skills programs for equity groups, including First Nations communities, to ensure inclusive access to emerging technologies and productivity gains.

Rec 6. Align Connectivity Investment with Workforce Development Priorities

Ensure infrastructure planning is integrated with regional education and workforce strategies to enable the adoption of AI, automation, and other advanced technologies in northern industries.

Empowering and Upskilling Local First Nations People

Sustained investment in Indigenous education and training programs, delivered in partnership with First Nations communities, is essential to ensure inclusive participation in northern Australia's economic future. NAUA institutions, including the Indigenous Education and Research Centre (JCU), the Northern Institute (CDU), and the Jawun Research Institute (CQU), as detailed in the NAUA capabilities table, possess established expertise and Indigenous-led research frameworks necessary to deliver culturally responsive and equitable education and workforce outcomes.

The Northern Indigenous Futures initiative is the Indigenous-led platform within Phase 1 of the larger Northern Equity and Workforce Development initiative. It will establish a values-based national development strategy rooted in Indigenous knowledge, regional capability, and long-term workforce planning, delivering practical education, training, and workforce infrastructure aligned with community aspirations and national policy priorities.

The initiative requires targeted funding to operationalise its six strategic functions, which are designed to directly deliver the necessary skills, leadership, and pathways to ensure First Nations communities are central to the North's future workforce and industry growth.

Six Strategic Functions:

1. Place-Based Workforce Development – Providing on-country, flexible pathways aligned with regional labour needs.
2. Enterprise and Investment Capability – Strengthening commercial and negotiation skills.
3. Leadership for Local Economic Strategy – Supporting Indigenous leaders to shape regional development.
4. Regional Policy Engagement and Governance – Embedding Indigenous governance in planning and research.
5. Innovation and Future Capability – Investing in digital models and future-focused training.
6. Cross-Sector Capability for Engagement – Building respectful and effective partnerships with Indigenous communities.

This aligns with Recommendation 3 from the *Research Synthesis Report: Strengthening Place-Based Development in Northern Australia* (Dale et al., 2024, p. 4), which highlights the importance of scaling proven models to achieve equitable outcomes across the region. By funding this initiative, the Commonwealth ensures that targeted, evidence-based programs delivered by NAUA in partnership with First Nations leaders are mobilised to build Indigenous-led workforce and enterprise capability across northern Australia.

Rec 7. Fund the Northern Indigenous Futures Initiative

Fund the Northern Indigenous Futures component of the NAUA Northern Equity and Workforce Development initiative to build Indigenous-led workforce and enterprise capability across northern Australia.

Rec 8. Support Place-Based and On-Country Workforce Pathways

Enable flexible, locally designed education and training programs that respond to regional labour needs and empower Indigenous learners.

Rec 9. Strengthen Indigenous Leadership and Economic Participation

Build capacity for Indigenous-led regional economic planning, enterprise development, and cross-sector engagement to ensure First Nations communities are central to northern Australia's future workforce and industry growth.

Training, attracting and retaining a skilled workforce

Northern Australia faces persistent economic, social, and educational disadvantage. NAUA prioritises education equity, workforce development, and First Nations-led futures, recognising that investment in education equity delivers strong economic and social returns. Productivity and equity are deeply connected in the North.

Fragmentation caused by distance, multiple jurisdictions, and disconnected initiatives undermines progress toward educational equity and workforce development. A coordinated approach is essential, as recommended in Recommendation 4 of *Strengthening Place-Based Development in Northern Australia* (Dale et al., 2024), which calls for a strategic and collaborative model for workforce planning and delivery.

NAUA recommends that, following the 2025 release of Jobs and Skills Australia's Regional Jobs and Skills Roadmap, the Committee consider a Northern Australia Jobs and Skills Roadmap. This roadmap should be co-designed with First Nations communities and regional stakeholders to reflect distinct labour market conditions, infrastructure needs, and industry composition. It should foster collaboration between universities, VET providers, and industry to streamline education-to-employment pathways and strengthen foundational skills.

Beyond strategy, and in preparation for the growth of emerging industries, practical action is needed. NAUA seeks investment for Phase 1 of the Northern Equity and Workforce Initiative, a ten-year plan aimed at expanding educational access, building workforce capability, and driving sustainable regional development. Phase 1 will:

- Support northern students to realise University Accord reforms.
- Develop industry skills partnerships for key sectors.
- Establish Northern Indigenous Futures, an Indigenous-led platform for workforce capability and enterprise support.
- Enhance newcomer student pathways and real-time workforce data.

This aligns with the University Accord, the Northern Australia Action Plan, and Recommendation 2 of the *Northern Australia Workforce Development Final Report* (Joint Select Committee, 2024) on improving workforce data.

Finally, careers education in schools is critical for preparing the future workforce, yet research in this area, especially for rural and remote contexts, is underfunded. NAUA urges increased investment in longitudinal and community-led research to ensure career pathways are evidence-based and locally relevant.

Rec 10. Develop a JSA: Northern Australia Jobs and Skills Roadmap

Co-design a region-specific roadmap with First Nations communities and northern stakeholders to address distinct labour market and infrastructure needs.

Rec 11. Fund Phase 1 of the NAUA Northern Equity and Workforce Initiative

Invest in targeted education access, industry partnerships, Indigenous workforce capability, and regional data systems to drive inclusive growth.

Rec 12: Strengthen Careers Education Research in the North

Support longitudinal and community-led research to improve career guidance and transitions aligned with local economic opportunities.

Research and Development

National Research Priorities need to include northern Australia. Despite its strategic importance spanning agriculture, resources, tropical health, Indigenous knowledge, and proximity to the Indo-Pacific, the North is largely absent from many major national research agendas. Current, but thin investment through the existing CRCNA is also about to expire. Ensuring that northern Australia's strategic importance is reflected in national research agendas, and ensuring there is no loss of existing momentum, is the necessary first step to directing sustained, long-term investment into these critical sectors.

Without sustained research funding and the required local infrastructure, the North risks losing momentum and attracting the highly skilled research base essential for unlocking long-term economic and sovereign capability. To address this human capital requirement, targeted mechanisms must be established to grow and retain a critical mass of northern-based researchers, ensuring they can lead the innovation and applied research aligned with emerging industries and regional development priorities that are necessary to maintain momentum.

The Centre for Northern Australia (CNA) concept is the proposed backbone institution that would become the CRCNA successor model. It is supported by NAUA and other key northern Australia stakeholders as the crucial step to maintain continuity in targeted research funding and capacity building aligned with the northern development agenda and emerging place-based transition proposals. Investing in the CNA and these initiatives ensures the continuity of targeted research funding required for securing the continuous applied research needed to support regional and community-scale transitions in priority areas, accelerating Northern Australia's role in the global Net Zero agenda. This will not be achieved through short-term, disconnected funding cycles.

The 2025 Independent NAIF Review, underscored the need to continue research and development efforts, noting in Observation 9 that: "A permanent research and development entity should be established to support a coordinated and long-term approach to northern development research and knowledge translation".

Rec 13. Include northern Australia as a focus within our National Research Priorities

Ensure northern Australia's strategic importance is reflected in national research agendas, particularly in areas such as agriculture, resources, tropical health, Indigenous knowledge, and regional development.

Rec 14. Invest in northern Australia-based Academic Expertise

Focus on strategies to grow and retain a critical mass of northern-based researchers capable of leading innovation and applied research aligned with emerging industries and regional development priorities.

Rec 15. Fund the Centre for Northern Australia (CNA) Proposal

Support the establishment the CNA institution and research investment proposal, with a strong focus on creating a pipeline for investment in emerging industries in the north.

NAUA Capabilities Table

To ensure the delivery of the specialised workforce, education, and research outcomes outlined in the recommendations, NAUA leverages its collective institutional strengths.

The following table details the specific research centres, institutes, and academic expertise currently operating within the NAUA institutions that are directly aligned with the priority sectors identified by this Inquiry:

	JCU		CQU		CDU	
The Global Transition to Net Zero and Furthering Renewable Energy, Decarbonisation and Carbon Abatement	Centre for Tropical Environmental and Sustainability Science (TESS)	Expertise in climate resilience, carbon sequestration, and sustainable land use.	Hydrogen and Renewable Energy Research Centre (HRERC)	Advancing hydrogen production, storage and distribution, alongside workforce training for emerging energy industries.	Energy and Resources Institute (ERI)	Focus renewable energy systems, carbon abatement technologies, and decentralised microgrid solutions tailored for remote and Indigenous communities
	The Cairns Institute	Research on the social dimensions of climate change and regional engagement	The Clean Energy Research Group	Renewable energy integration and grid innovation, particularly in regional contexts.	The Northern Institute	Place-based policy research focused on climate adaptation and regional development.
Developing the Critical Minerals Industry	Economic Geology Research Centre (EGRC)	Advanced capability in mineral exploration, geoscience, and sustainable extraction methods	School of Engineering and Technology, Mining and Metallurgy Research	Workforce training and applied research in mine rehabilitation, processing technologies, and operational safety.	Energy and Resources Institute (ERI)	Contributes expertise in sustainable mining practices and environmental management, particularly in remote and ecologically sensitive regions
	Advanced Analytical Centre (AAC)	Supports mineral characterisation and environment				

		al impact analysis through state-of-the-art instrumentation and applied research.				
Supporting Infrastructure	Centre for AI and Data Science	Expertise in digital infrastructure, data systems, and the application of artificial intelligence in regional industries, supporting productivity and innovation.	Digital Innovation and Smart Communities Research Group	Smart infrastructure planning, regional connectivity, and digital literacy, particularly in underserved areas.	Northern Institute	Focused on digital inclusion and workforce development, with a focus on enabling equitable access to emerging technologies in remote and Indigenous communities.
Empowering and Upskilling Local First Nations People	Indigenous Education and Research Centre (IERC)	Leadership in First Nations education, cultural knowledge systems, and equity in higher education, with a strong focus on embedding Indigenous perspectives across disciplines.	Jawun Research Institute	Research aimed at improving health and well-being outcomes for Aboriginal and Torres Strait Islander peoples, with a commitment to equity and innovation.	Northern Institute	Indigenous-led research and education initiatives that support community empowerment and culturally responsive learning pathways.
	The Cairns Institute	Partners with First Nations organisations to strengthen Indigenous governance and self-determination, supporting capacity building, strategic planning, and land and sea management aligned with			Molly Wardaguga Institute for First Nations Birth Rights	Strengthening the evidence base for First Nations maternal and early childhood health. In partnership with Aboriginal community-controlled health services, the Institute operates within governance frameworks that embed First Nations leadership in data sovereignty and research methodologies

		Aboriginal and Torres Strait Islander priorities.				

Conclusion

Northern Australia is strategically significant to the nation's future. Its role in national security, Indigenous advancement, global trade, and economic diversification demands a vibrant and resilient regional development agenda. However, the North's remoteness, tropical climate, and dispersed population centres require specialised policy settings and targeted investment to unlock its full potential.

Northern Australia's universities play a critical role in enabling the region's transition into emerging industries. The NAUA offer a coordinated platform for delivering education, research, and workforce solutions tailored to the north's unique conditions. With targeted investment and policy alignment, NAUA can help build sovereign capability, strengthen regional economies, and ensure inclusive participation, particularly for First Nations communities in the industries shaping Australia's future. We urge the Committee to recognise and invest in the critical role of universities in shaping northern Australia's future.

References

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