THE FUTURE FIRST NATIONS WORKFORCE

A development plan

RACE for 2030

UTS

POWERING AUSTRALIA

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RESEARCH TEAM

ISF
- Elianor Gerrard
- Josie Toakley
- Chris Briggs

IEA
- Cat Holland
- Vonda Malone
- Tyrone Glenbar
- Michael Frangos
- Tommy Hicks

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ACKNOWLEDGMENT OF COUNTRY

Powering Australia wishes to acknowledge the First Nations of Australia and recognise their enduring connection to Country through culture, people, place and story. We honour the knowledge systems that have sustained these lands and waters for thousands of generations and recognise the vital role of First Nations leadership and self-determination in shaping a just and sustainable future. As Australia undergoes a significant clean energy and industrial transition, we acknowledge the importance of respectful partnership, cultural integrity, and shared purpose to realise the full opportunity of the Clean Energy Transition.

PROJECT CONTEXT

Australia is well placed to take advantage of many clean-tech opportunities by leveraging its global leadership in critical minerals and renewable energy resources. There are also challenges including a sparse industrial ecosystem, a relatively small workforce, sectoral fragmentation and international competition.

The project aims to contribute to the development of Australia's clean-tech manufacturing sector by:

- Growing Australian manufacturing capability in a way that drives exports and ensures domestic energy security.
- Identifying potential skill shortages and priority actions to provide a suitably skilled workforce for clean-tech manufacturing.
- Growing jobs and providing pathways to secure employment for those in priority cohorts or who are transitioning from carbon-intensive industries.
- Accelerating the commercialisation of Australian technologies related to clean-tech manufacturing.
- Accelerating the path to a decarbonised future.
- Delivering better economic outcomes for First Nations communities.

SECTOR COMPETITIVENESS PLANS (SCPS) – CYAN VENTURES AND DELOITTE

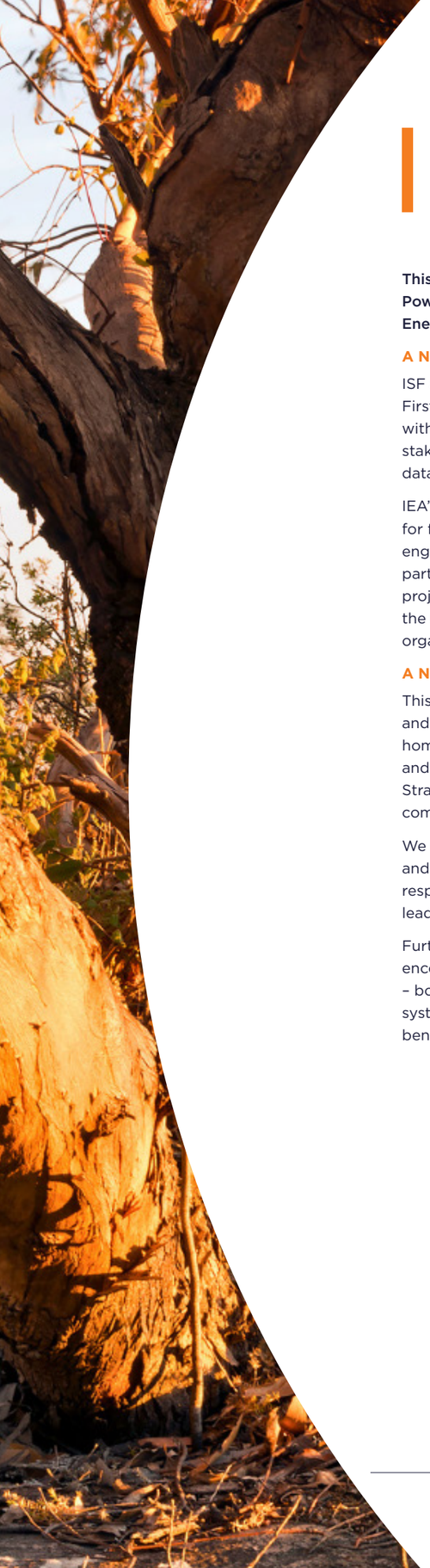
Powering Australia has developed sector competitiveness plans (SCPs) to identify opportunities where Australia has a unique advantage to foster clean-tech manufacturing across six areas:

1. Renewable Energy Generation
2. Industrial Decarbonisation
3. Transport
4. Electricity Transmission and Distribution
5. Carbon
6. And the cross-cutting study of opportunities for First Nations businesses.

Each SCP identifies anchor opportunities based on national need and likelihood of success, outlines workforce requirements, and recommends targeted actions to leverage Australia's strengths and build resilient supply chains.

WORKFORCE DEVELOPMENT PLANS (WDPS) – INSTITUTE FOR SUSTAINABLE FUTURES, UNIVERSITY OF TECHNOLOGY SYDNEY

One of the key challenges to building clean-tech manufacturing in Australia is developing the workforce amidst skill shortages. Responding to this challenge, Powering Australia has partnered with the RACE for 2030 Cooperative Research Centre and commissioned the Institute for Sustainable Futures at the University of Technology Sydney to develop Workforce Development Plans (WDPs). The WDPs aim to profile the workforce requirements for fostering a thriving green industrial base, identify possible workforce challenges and solutions, and set the foundations for innovation and collaboration between industry, government, education, and training providers to develop a robust workforce. They are focused on the anchor opportunities and begin with the workforce requirements identified in the relevant SCP.



Report notes

This Leadership and Workforce Development Plan (LWDP) was commissioned by Powering Australia and RACE for 2030 and conducted as a partnership Indigenous Energy Agency (IEA) and the UTS Institute for Sustainable Futures (ISF).

A NOTE ON PARTNERSHIP

ISF and IEA partnered to deliver this project, bringing together IEA's deep expertise in First Nations community engagement, relationship-building and cultural knowledge, with ISF's expertise in research, analysis and workforce planning. IEA led the stakeholder mapping and engagement process, while ISF led the desktop research, data analysis and synthesis of findings.

IEA's engagement approach followed a methodology that was iterative, held space for forming strong relationships and was responsive to how individuals wished to engage. Consistent with IEA's practice, this process prioritised trust and meaningful participation over rigid and rushed consultation. ISF led the desktop elements of the project, including literature review, data analysis, report development. Findings from the research and engagement activities were regularly shared between both organisations, ensuring the plan was informed by both types of evidence.

A NOTE ON LANGUAGE

This report prioritises the term First Nations peoples to collectively refer to Aboriginal and Torres Strait Islander peoples. We recognise that First Nations people are not a homogenous group and comprise diverse nations, communities, cultures, languages and lived experience across so-called Australia. We also use Aboriginal and Torres Strait Islander peoples in contexts where relevant. Additionally, consistent with common practice, the word Country is capitalised throughout the report.

We recognise that language and terminology continue to evolve and hold significance and meaning which may vary between individuals and communities. We aim to use respectful and strengths-based language that reflects the diversity, knowledge and leadership of First Nations peoples.

Furthermore, this report adopts the understanding that leadership is broad and encompasses cultural, family, organisational and professional forms of leadership – both formal and informal roles. Workforce development refers to the activities, systems and supporting structures that enable First Nations people to not only benefit from but lead in the growth of the clean-tech manufacturing industry.

Executive summary

Australia's clean technology manufacturing sector is central to achieving national net zero targets, strengthening economic resilience, and delivering on the ambitions of the Future Made in Australia agenda. First Nations peoples are critical partners in this transformation. With the First Nations Estate encompassing approximately 70% of Australia's land mass and many renewable energy, critical minerals and industrial decarbonisation projects requiring access to Country, meaningful First Nations participation is both a practical necessity and an opportunity to create long-term economic, social and cultural benefits.

Beyond land, water and resource access, First Nations ingenuity, entrepreneurship and leadership are already shaping the clean economy transformation, with First Nations businesses driving innovation across clean energy, carbon removals, transport and extended supply chain activities. First Nations businesses are entering the economy at four times the rate of non-Indigenous businesses; 29,200 First Nations people were recorded as owner-managers in 2021, equivalent to an increase of 51% over five years since the 2016 census[1]. This Leadership and Workforce Development Plan (LWDP) examines how Australia can harness and build on existing First Nations leadership, entrepreneurship and workforce participation across the emerging clean-tech manufacturing ecosystem, to drive greater self-determination and a cleaner, more prosperous and equitable future for all.

THE SECTOR COMPETITIVENESS PLANS (SCP) AND THE CROSS-CUTTING FIRST NATIONS SCP

Powering Australia commissioned six SCPs, which identified sectors where Australia has a competitive advantage, offers market differentiation, or where local resilience needs to be built due to supply chain risks. The six sectors are:

1. Renewable energy generation
2. Industrial decarbonisation
3. Networks (transmission and distribution)
4. Transport
5. Carbon
6. Cross-cutting First Nations

The First Nations Sector Competitive Plan lays out how First Nations leadership, partnership, and participation can strengthen Australia's clean technology manufacturing sector while enhancing Closing the Gap (CTG) targets, supporting thriving communities and self-determination and ensure a just transition to net zero.

The First Nations SCP identifies three anchor opportunities within the clean tech manufacturing landscape, where First Nations communities and businesses have the greatest opportunity for success.

1. **Opportunities linked to land and sea:** such as green iron, green ammonia, biogenic LCLFs, eFuels, critical mineral refining, balance of plant.
2. **Broader clean technology opportunities:** including manufacturing and assembly of specialised heavy duty BEVs, wind tower manufacturing, renewables recycling, pre-fabrication anchor cages.
3. **Clean technology supporting services:** such as project development finance, community engagement and heritage services, engineer procurement and construction contracts.

This leadership and workforce development plan highlights the areas for workforce development across the clean-tech manufacturing eco-system, alongside harnessing the leadership of First Nations businesses already active in the sector. This includes understanding the requisite skills, capability, resourcing, attraction and retention activities to create meaningful opportunities for First Nations workers, while creating the structures and systems that allow First Nations leadership to develop and grow. In turn, enabling a successful transformation to a clean economy.

Notes/Sources: [1]ANZ and Deloitte (2025). Australia's $50 billion opportunity: Fuelling the growth engine of the First Nations economy. https://www.anz.com.au/content/dam/anzcomau/mediacentre/images/mediareleases/2025/ANZ_Unlocking%20opportunity%20report%202025_web.pdf

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1. Introduction

The Clean Tech Manufacturing Workforce Development Plans (WDPs) aim to profile the workforce requirements for fostering a thriving clean tech manufacturing sector. They aim to identify possible workforce challenges and solutions, and set the foundations for innovative collaboration between industry, government, education, and training providers to develop a robust workforce that is skilled and ready to rise to the growth of the sector.

The WDPs support the ambitions of the Future Made in Australia comprehensive $22.7 billion investment plan, spanning the coming decade and aimed at transforming Australia into a clean energy superpower and strengthening its economic resilience.[13] The First Nations Leadership and Workforce Development Plan (LWDP) is cross-cutting, assessing the strategic opportunities for leveraging Aboriginal and Torres Strait Islanders' (AB&TSI) leadership, innovation, business and workforce participation across the suite of WDP studies.

Establishing and growing clean tech manufacturing capability in Australia is a part of the wider shift towards a clean economy. It requires people and business participation across all stages of the value chain. It also requires meaningful and equitable partnerships with First Nations communities and businesses, as recognised in the First Nations Clean Energy Strategy[14] (FNCES) and other various state-based policies. Importantly, it also involves recognising, valuing and growing the leadership of First Nations people and businesses already active in this generational transformation.

Beyond land, water and resource access, First Nations ingenuity, entrepreneurship and leadership are already shaping the clean economy transformation, with First Nations businesses driving innovation across clean energy, carbon removals, transport and extended supply chain activities. First Nations businesses are entering the economy four times the rate of non-Indigenous businesses, and 29,200 First Nations people were recorded as owner-managers in 2021, which is equivalent of an increase of 51% over five years (compared to 2016 census data)[15]. In this report we analyse how Australia can harness and build on this existing First Nations leadership, entrepreneurship and workforce participation across the emerging clean-tech manufacturing ecosystem, to drive greater self-determination and a cleaner, more prosperous and equitable future for all.

Notes/Sources: [13]Australian Government (2024). Future Made in Australia. https://treasury.gov.au/policy-topics/future-made-australia. [14]Australian Government (2024). First Nations Clean Energy Strategy. https://www.energy.gov.au/sites/default/files/2024-12/First%20Nations%20Clean%20Energy%20Strategy.pdf. [15]ANZ and Deloitte (2025). Australia's $50 billion opportunity: Fuelling the growth engine of the First Nations economy. https://www.anz.com.au/content/dam/anzcomau/mediacentre/images/mediareleases/2025/ANZ_Unlocking%20opportunity%20report%202025_web.pdf

1.1 – First Nations as Critical Partners

First Nations consent and partnership are critical enablers to the clean technology transformation underway. The First Nations Estate – that is land that is either directly owned, managed, co-managed or subject to special rights – makes up 70 per cent of Australia's land mass[16]. Net Zero modelling, undertaken by the Net Zero Australia study, identifies that to reach net zero targets, 43 per cent of projects will need to be built on the First Nations Estate[17].

Projects that demonstrate robust engagement, meaningful negotiation and genuine partnerships with AB&TSI stakeholders are more likely to achieve sustainable long-term success and deliver generational outcomes. By respecting rights, meeting social licence expectations and aligning with the principles of Free, Prior and Informed Consent (FPIC), projects can build trust, reduce risk and create shared value. This approach supports smoother project approvals, stronger access to land, regional workforce participation, and enduring economic, social and cultural benefits for communities and future generations.

First Nations' people and organisations are leading the development of clean energy projects on their land and innovating with developers to deliver joint ventures and other forms of revenue sharing, ownership and equity. In recognition of this leadership, and through community advocacy, the Commonwealth has a portion of allocated projects set aside for "First Nations Equity and Revenue Sharing" in the most recent round (round nine) of the Capacity Investment Scheme (CIS). To qualify for this round, projects must partner with First Nations stakeholder groups and demonstrate a minimum of:

- 5% equity stakes, or
- Revenue sharing equivalent to 5% equity
- A combination arrangement that reaches the equivalent of 5% equity[18]

Project development can also include community and social development initiatives, such as improving roads, housing and health facilities.

Government procurement is increasingly shifting industry towards partnerships with First Nations communities. Seizing this moment and ensuring targets translate into long-term economic empowerment, and self-determination requires a range of capabilities, skills and resources across the net zero transformation eco-system. It also requires policy coherence to avoid duplication of effort, the effective mobilisation of resources and reduced consultation burdens. There are multiple critical policy, legislation and investment programs[19] that this report aligns and contributes to. Specifically, it contributes to the national conversation by outlining the strategies required to build the skills-base for the clean economy transformation – for industry, First Nations workers and communities. It supports the FNCES's goal to "Achieve Economic Benefits with First Nations Peoples" and enabling objectives, which are to:

- Grow the First Nations clean energy workforce
- Coordinate First Nations clean energy workforce development
- Improve First Nations workforce readiness[20]

Clean tech manufacturing includes but also goes beyond the opportunities presented by renewable energy projects. As this report sets out there are a range of opportunities for a First Nations workforce across the clean tech value chain. The Sector Competitive Plan (SCP) developed by Powering Australia clustered the breadth of opportunities available for First Nations business to lead or support into three categories:

1. Opportunities linked to land and sea
2. Broader clean technology opportunities
3. Clean technology supporting services[21]

Where the SCP identified opportunities, enablers and barriers for First Nations businesses, this LWDP highlights the areas for leveraging existing leadership and workforce development across the clean-tech manufacturing eco-system. This includes understanding the requisite skills, capability, resourcing, attraction and retention activities to create meaningful opportunities for First Nations workers, and in turn enabling a successful transformation to a clean economy.

Notes/Sources: 16: Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) (2024). Australia's Indigenous land and forest estate. https://digital.atlas.gov.au/datasets/digitalatlas::australias-indigenous-land-and-forest-estate-2024-land-and-forest-in-the-total-indigenous-estate/about. 17: Davis, D et al. (2023). 'Modelling Summary Report', Net Zero Australia. https://www.netzeroaustralia.net.au/wp-content/uploads/2023/04/Net-Zero-Australia-Modelling-Summary-Report.pdf. 18: Australian Government (2026). First Nations Equity and Revenue Sharing Set Aside: https://www.dcceew.gov.au/energy/renewable/capacity-investment-scheme/first-nations-equity-revenue-sharing-set-aside. 19: Specifically, it draws from and builds on the First Nations Clean Energy Strategy (FNCES); Australia's Net Zero Plan; Future Made in Australia Act; Powering Australia Plan; Closing the Gap Implementation Plan 2026; National Agreement on Closing the Gap — Priority Reform Areas; Powering the Regions Fund; National Skills Agreement; Indigenous Procurement Policy and the Remote Jobs Economic Development Program. 20: Australian Government 2024, First Nations Clean Energy Strategy, Canberra. https://www.energy.gov.au/sites/default/files/2024-12/First%20Nations%20Clean%20Energy%20Strategy.pdf. 21: Powering Australia, Cyan Ventures, Deloitte (2026). First Nations as Critical Partners (Sector Competitive Plan). https://poweringaustralia.com.au/wp-content/uploads/2025/12/Horizon-2035-First-Nations-as-critical-partners.pdf

1.2 – Understanding the First Nations workforce

According to 2021 ABS Census data, the total First Nations working age population in Australia was 500,000[22]. This encompasses a rich and diverse workforce, with more than half living outside of cities and around ten per cent living in remote or very remote areas. This is key information to consider when thinking about workforce needs, opportunities and development. Workforce opportunities created in locations that require travel, but with no transport infrastructure would not enable positive outcomes. On the other hand, projects and industries in regional and remote areas can leverage regionally located talent, reducing the demand for fly in or drive in workforces.

Literature on First Nations workforce development makes clear that job creation alone will not result in community empowerment, leadership or participation. Parallel investment in enabling support services and infrastructure is essential, including healthcare, childcare, education and transport[23]. These supports are critical for addressing structural sources of disadvantage that have historically limited access and positive outcomes for First Nations people. This is particularly important for individuals balancing caring and cultural responsibilities, or those living in remote areas.

The literature also consistently highlights the importance of culturally competent and safe workplaces for both attracting and retaining First Nations workers[24]. This involves inclusive organisational structures, such as cultural leave provisions and capacity-building within organisations so that staff and leadership are equipped to engage appropriately.

In addition, First Nations people often bring significant distinct and practical skillsets or experience yet may not hold formal qualifications recognised by employers[25]. This creates both a leverage point, presenting an opportunity to improve recognition of prior learning pathways, and a barrier, where formal credentials remain a requirement for entry or career progression.

There is also a unique opportunity associated with communities in remote areas. Social and logistical factors in these contexts shape both the access to workforce participation and the capacity to take on leadership roles. As such, workforce development approaches need to be responsive to the specific conditions, such as distance to services and worksites, and awareness of cultural practices, rather than using a one-size-fits-all model.

Notes/Sources: 22: Note: this number was potentially undercounted according to the Census Statistical Independent Assurance Panel findings. 23: Briggs et al. (2024). Powering First Nations Jobs in Clean Energy. https://www.firstnationscleanenergy.org.au/powering_first_nations_jobs_in_clean_energy. 24: Inside Policy/NIAA. (2021). The Indigenous Skills & Employment Program: Consultation Outcomes Report. https://www.niaa.gov.au/sites/default/files/documents/publications/isep-consultations-report-26-october-2021.pdf. 25: Briggs et al. (2024). Powering First Nations Jobs in Clean Energy. https://www.firstnationscleanenergy.org.au/powering_first_nations_jobs_in_clean_energy.

1.3 – First Nations talent in the net zero and clean tech manufacturing transformation

There is a growing recognition of the role that First Nations talent will play in the clean tech transition. In Renewable Energy Zones (REZs) the First Nations population is much higher than the national average, averaging at 6% across the REZs[26]. In some REZs, such as the New England and Central-West Orana REZs in NSW figures rise to 9.4% and 12.7% respectively[27]. These REZ communities are also typically younger, with just over half aged 19 years or under compared to the remaining non-First Nations population under 19 sitting at approximately one-quarter[28].

In the context of tight regional labour markets and skills shortages, engaging First Nations communities through the creation of meaningful employment opportunities is a practical step for industry. For many First Nations people, clean tech manufacturing and net zero jobs can present as an opportunity to work in sectors aligned to cultural principles of Caring for Country and can often allow people to stay on Country and connected to community. Sectors such as carbon farming, where First Nations-led organisations are already leading much of this work, are abating more than 1.2 million tonnes of emissions per year and employing hundreds of First Nations workers in some of Australia's most remote places.

Ultimately, workforce development in emerging net zero and clean tech manufacturing sectors must account for the diversity of First Nations communities across Australia, including remote, regional and urban settings and be grounded in culturally safe, community-led approaches.

Notes/Sources: [26]Ibid. [27]Ibid. [28]Ibid.

1.4 – The education, skills and training system

Increasing First Nations participation in the clean tech manufacturing workforce, enabling leadership and supporting self-determination, requires ensuring Australia's tertiary and Vocational Education and Training (VET) sector is prepared and poised to nurture, develop and skill First Nations learners. First Nations people make up 5.6% of all domestic VET qualification enrolments[29], yet in 2021, First Nations representation in the VET sector workforce was only 2%, well below the 3.8% population share[30]. This underrepresented workforce is more acute in regional and remote areas, with nearly half of the First Nations VET workforce located in cities and an additional 27% in inner regional areas[31].

Evidence shows that First Nations learners demonstrate greater achievements and outcomes when taught by First Nations educators, indicating that investing in the uplift of First Nations trainers in the VET system could yield significant benefits for First Nations students, increasing the skills supply[32].

In 2024, First Nations students made up just 2.2% (a total of 22,659) of higher education enrolments (tertiary study)[33]. Of the total enrolments, nearly twice as many females were enrolled as males[34]. First Nations students are typically enrolled in either society and culture (31%), health (26%) and education (14%)[35] degrees, with STEM degrees facing much lower First Nations participation. Only 0.5% of the First Nations population hold engineering degrees – a critical skillset and qualification in the clean tech manufacturing sector – compared with 5.2% of the non-First Nations population[36].

Attracting First Nations students to study the requisite qualifications needed to deliver Australia's clean economy ambitions is only one piece of the puzzle. Appointing more First Nations educators and trainers is another. Creating culturally safe spaces – whether workplaces and/or learning environments – where First Nations learners can bring their whole selves to the learning experiences is also essential. Culturally safe environments deliver the following benefits:

- Greater engagement and productivity
- Higher completion rates for study/training, with lower attrition
- Enhanced recruitment and retention of diverse talent
- Improved class/team cohesion and innovation[37]

Research from the NCVER outlines how place-based and culturally responsive training, that is linked to local opportunities delivers the best learning outcomes for First Nations communities[38].

Focus: First Nations-led RTOs

First Nations-led RTOs play a critical role in skilling First Nations learners and workers. They can be Aboriginal owned, meaning they are owned by a First Nation's entity, or they can be community-controlled, meaning that the local First Nations community lead decision-making, governance and set priorities.

First Nations led RTOs, like Tranby College, a community-controlled RTO that has been delivering eduction for First Nations community since 1957, endure that all RTO functions, from organisational governance through to course design is shaped by First Nations voices and aspirations. Tranby delivers nationally recognised qualifications, adapted to First Nations' learners needs.

Notes/Sources: [29]Jobs and Skills Australia – First Nations VET Workforce Research Paper (2024). https://www.jobsandskills.gov.au/publications/first-nations-vet-workforce-research-paper. [30]Ibid drawing on 2021 ABS census data. [31]Ibid drawing on 2021 ABS census data. [32]Ibid, drawing on studies by Griffin and Andrahannadi 2023; Guenther 2017b; Windley 2017; Cleverly and Mooney 2010). [33]Australian Government, Aboriginal and Torres Strait Islander Health Performance Framework (n.d.). 2.06 Educational participation and attainment of adults. https://www.indigenoushpf.gov.au/measures/2-06-educational-participation. [34]Ibid. [35]Ibid. [36]Australia's Chief Scientist (2020). Australia's STEM Workforce Report. https://www.chiefscientist.gov.au/news-and-media/2020-australias-stem-workforce-report. [37]NintiOne (2025). RTO Guide Engaging First Nations communities, staff and students. https://cdn.prod.website-files.com/69113aa80659cf1cfebc7cff/69dc612e74cfdf17282fae2f_NintiOne_NetZero_RTOGuide_DigitalAW-accessible.pdf. [38]Guenther, Ober, R. Osborne, S. and Diplock, A. (2026). Place-based and culturally responsive VET for Aboriginal and Torres Strait Islander learners. https://www.ncver.edu.au/research-and-statistics/publications/all-publications/place-based-and-culturally-responsive-vet-for-aboriginal-and-torres-strait-islander-learners

Attracting First Nations people to study the VET and higher education qualifications needed to deliver Australia's clean tech economy ambitions is only one piece of the puzzle. While strengthening post-school training pathways remains essential, one of the most critical interventions sits much earlier in the skills pipeline: supporting interest, confidence and capability development in the STEM field during the school years.

This is particularly important given the relatively young demographic profile of many communities experiencing clean energy development, which represents a significant opportunity to cultivate the next generation of First Nations leaders, workers and entrepreneurs in the clean tech sector. Engaging school-aged children is not only desirable, but essential to long-term success.

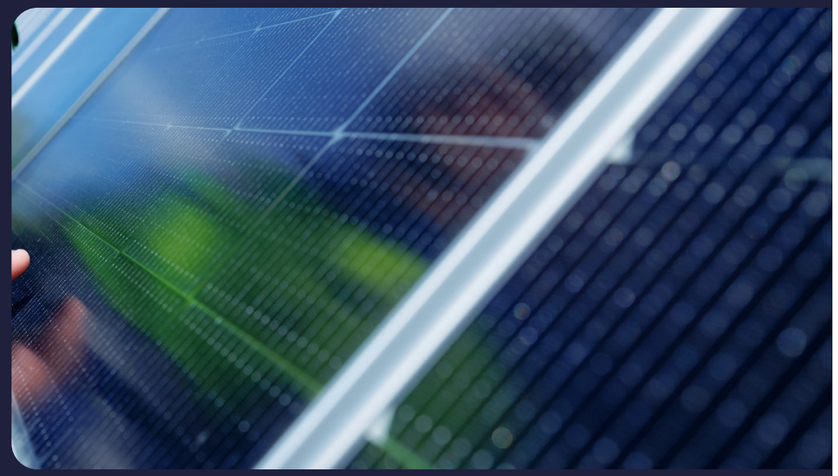
Attitudes towards STEM, career aspirations and self-belief as a learner begin developing well before young people make decisions about tertiary study or employment[39]. Positive, culturally relevant early STEM experiences can therefore play an important role in shaping later educational engagement, achievement, and career choices.

Research has showed that embedding Indigenous knowledge, local contexts and hands-on learning approaches into STEM education can help make learning more relevant and engaging, while also strengthening cultural identity and belonging. Exposure to First Nations role models working in science, engineering, technology and clean energy careers can further support students to envision themselves in these fields[40].

The success of targeted Indigenous STEM programs provides evidence of the benefits of investing early. CSIRO's Indigenous STEM Education Project, an initiative implemented between 2014 and 2021, reached almost 24,000 Aboriginal and Torres Strait Islander students across Australia. Evaluation of the program found positive outcomes including increased student engagement, attendance, aspirations, confidence, sense of belonging and identity[41]. Similarly, the National Indigenous Science Education Program (NISEP) has measured strong impact over more than two decades, particularly in empowerment and confidence in leadership skills[42].

Further, programs like SolarBuddy's Illuminating Communities Australia show how targeted early engagement can build interest in STEM and clean energy. The program combines hands-on solar energy learning with the assembly of solar lights that are distributed to communities experiencing energy poverty, helping students develop knowledge while connecting renewable energy concepts to real-world social and environmental outcomes[43].

Without early investment, higher education, apprenticeships, pre-employment and workforce participation initiatives will continue to draw from a limited pool of potential learners[44]. So, investment in school-aged skills and interest development, as early in the education journey as possible, is required to give First Nations leadership and positive workforce outcomes in the clean tech economy their best chance at success.



Notes/Sources: [39]https://www.education.gov.au/australian-curriculum/national-stem-education-resources-toolkit/i-want-know-about-stem-education/which-school-students-need-stem-education/primary-years. [40]https://www.tandfonline.com/doi/full/10.1080/02635143.2024.2413675. [41]https://www.csiro.au/en/education/programs/indigenous-stem-education-project. [42]https://nisep.org.au/. [43]https://www.solarbuddy.org/our-programs/illuminating-communities-australia/. [44]https://www.uts.edu.au/globalassets/sites/default/files/2024-06/LIT0065_FNCE_Report_DIGITAL_FA-compressed.pdf

1.5 – Industry capability

There are numerous guides that articulate pathways to meaningful First Nations engagement in project development. Industry capability is growing in this space, but there is still a way to go before equal partnerships are everyday practice. It requires both an organisational culture shift, alongside internal systems and process changes. Industry may employ specialists First Nations engagement consultants or liaison officers to ensure that engagement is culturally grounded and appropriately delivered. Making sure industry representatives understand, uphold and enable Free Prior and Informed Consent is foundational to engagement.

> *Free, Prior and Informed Consent (FPIC), as outlined in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), means that First Nations peoples have the time, information, and authority to decide how and if work proceed in ways that uphold their rights, responsibilities, and connection to Country[45].*

When it comes to industry's ability to provide culturally safe and inclusive workplaces, where First Nations workers feel supported and able to thrive, sectors related to clean tech manufacturing are behind (i.e. the clean energy workforce is only 2% First Nations[46]). Research indicates that many First Nations workers persistently experience workplaces that are culturally unsafe (only 40% feel their workplaces are culturally safe) and 60% experience racism[47]. Creating culturally safe workplaces takes a multifaceted approach across all organisational activities. These steps include:

- Understanding First Nations ways of knowing, being and doing
- Creating a culturally safe workplace
- Embedding cultural safety into organisational leadership and governance
- Building cultural capability for all staff
- Inclusive recruitment and outreach
- Culturally safe onboarding
- Supporting and retaining First Nations staff
- Committing to cultural safety and long-term accountability
- Partnerships with First Nations peoples and businesses
- Safe and meaningful community engagement[48]

Despite industry often being well-intentioned in wanting to recruit First Nations people, the resources and tools needed to support culturally appropriate, lasting employment pathways are not always available, particularly for businesses operating in regional and remote areas.

The National Indigenous Australians Agency's Remote Jobs and Economic Development (RJED)[49] program provides a mechanism to help address this gap by funding eligible employers in Remote Australia Employment Service (RAES)[50] regions to create jobs that have the right infrastructure, equipment, uniforms, on-the-job training, sufficient leave, operational or administrative support needed for First Nations people to succeed in those roles. The Australian Government is expanding RJED aiming to create 6,000 jobs by 2030[51].

Given that many clean technology activities are occurring in regional and remote locations, RJED presents a practical point of leverage that the clean tech industry can use in their favour to build workforce capability. The program is community-led, enabling individuals and communities themselves to have agency in identifying local priorities and employment opportunities, ensuring that jobs are aligned with community aspirations and local economic development goals[52]. This supports both industry readiness to employ First Nations people and greater First Nations empowerment and control over their careers.

Notes/Sources: [45]NintiOne (2026). Employer Guide: Creating Inclusive Workplaces. https://www.nintione.com.au/projects/first-nations-engagement-in-the-transition-to-net-zero. [46]NintiOne (2026). Returning to a Sustainable Australia. https://www.nintione.com.au/projects/first-nations-engagement-in-the-transition-to-net-zero. [47]Diversity Council Australia/Jumbunna Institute (Brown, C., D'Almada-Remedios, R., Gilbert, J. O'Leary, J. and Young, N.) Gari Yala (Speak the Truth): Centreing the Work Experiences of Aboriginal and/or Torres Strait Islander Australians, Sydney, Diversity Council Australia/Jumbunna Institute, 2020. https://www.uts.edu.au/about/faculties/business/research/centre-for-indigenous-people-and-work-cipw/gari-yala-speak-the-truth. [48]NintiOne (2026). Employer Guide: Creating inclusive workplaces. https://www.nintione.com.au/projects/first-nations-engagement-in-the-transition-to-net-zero. [49]https://www.niaa.gov.au/our-work/employment-and-economic-development/remote-jobs. [50]https://www.niaa.gov.au/our-work/employment-and-economic-development/remote-jobs/employment-services. [51]https://ministers.pmc.gov.au/mccarthy/delivering-more-jobs-remote-communities. [52]https://www.niaa.gov.au/sites/default/files/documents/2026-01/RJED-What-is-the-RJED-program-FactSheet.pdf

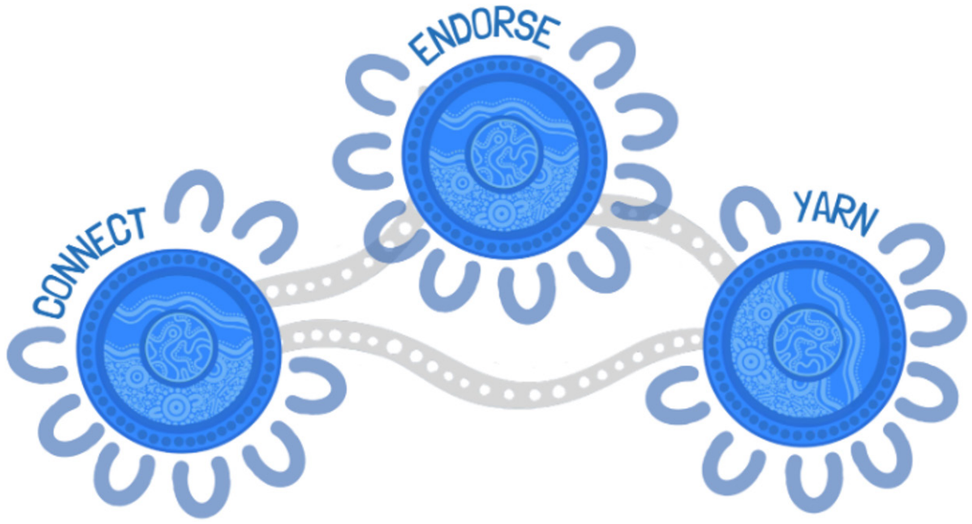
1.6 – Methodology

This workforce development plan draws from desktop analysis of data such as ABS, Jobs and Skills Australia data, stakeholder engagement and literature to illustrate the breadth of workforce opportunities presented by clean tech manufacturing, alongside analysing the system level shifts that need to occur to ensure opportunity translates into self-determined employment outcomes for First Nations communities. It uses the SCP and the opportunities outlined for First Nations businesses and venture participation and expands to explore what types of roles and employment opportunities are available across the value chain, and how First Nations employment participation in these sectors could be increased.

1.7 – The Stakeholder engagement approach

Research partner, Indigenous Energy Australia led the engagement process, following a methodology that is an iterative cycle which makes room for strong relationships, builds in learning at each stage and adapts to how communities want to engage. At its heart is a commitment to move at the pace of trust, rather than rushing the process.

Figure 1: Engagement process



For the First Nations LWDP, engagement has broadly followed the three-stage approach in the above Connect, Yarn and Endorse, supported by Community Steer activities, interviews and small group discussions, Industry Reference Group input, and ongoing relationship-based contact by phone and email. In practice this has meant a mix of early outreach and relationship-building, one-on-one interviews and yarning conversations, Community Steer survey responses to test and refine sector priorities, and ongoing stakeholder tracking to identify new voices and keep open the door for follow-up.

2. Sector competitiveness plans: anchor opportunities across the economy

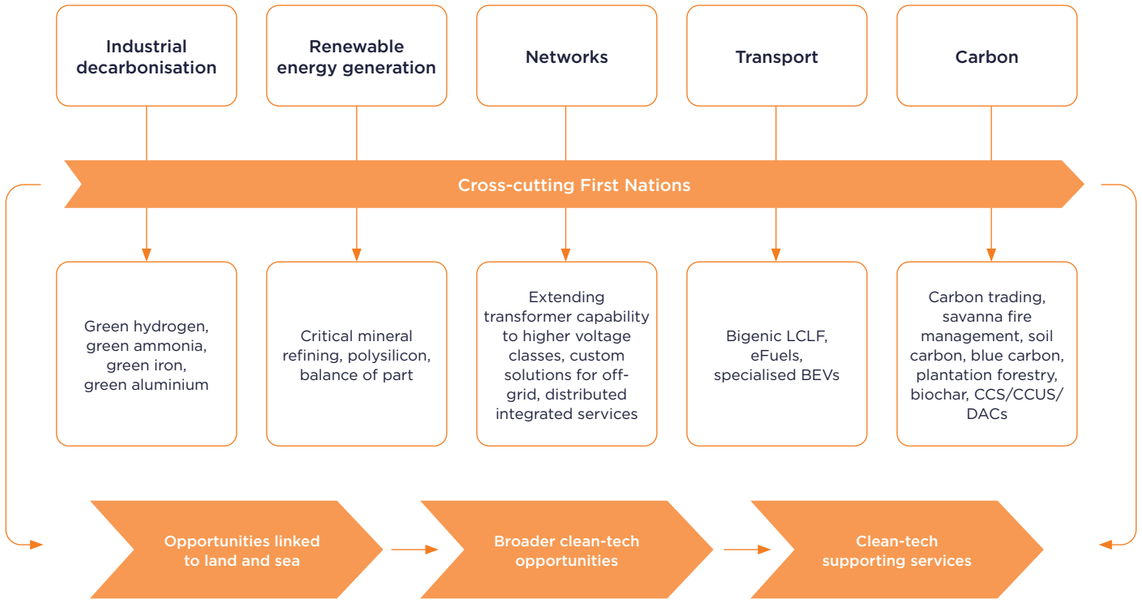
This Workforce Development Plan and the five others in the suite, build on the Sector Competitiveness Plans (SCPs) commissioned by Powering Australia. These SCPs identified sectors where Australia has a competitive advantage, offers market differentiation, or where local resilience needs to be built due to supply chain risks. The six sectors are:

1. Renewable energy generation
2. Industrial decarbonisation
3. Networks (transmission and distribution)
4. Transport
5. Carbon
6. Cross-cutting First Nations

Within each of these sectors, a range of 'anchor opportunities' were selected in-line with analysis which indicates that they are competitive, offer long-term growth and/or ancillary resilience benefits.

Anchor opportunities for five of the six SCP sectors and the proxy industries used for analysing the existing workforce are illustrated in Figure 2.

Figure 2: Overview of sectors and anchor opportunities across all SCPs



Across the other five WDPs a range of proxy sectors (in Table 1) were identified as the best probable workforce base to extrapolate to the relevant "anchor opportunity", creating a foundation to determine any workforce development challenges (i.e. an aging workforce). As Table 1 illustrates, First Nations workers are underrepresented in most sectors compared to the overall workforce and relative to the population total, with the exception of Copper, Silver, Lead and Zinc Smelting and Refining and Forestry & Logging (3.8 and 3.6 percent of the workforce is First Nations, respectively). While this is parity with the overall Australian First Nations population (3.8 per cent[53]), this sector represents a wider amalgamation of sectors potentially not all aligned to the future skills required for critical mineral refining, such as lithium (Li) and nickel (Ni).

Table 1: Percentage of First Nations workforce within key proxy sectors for anchor opportunities

Proxy ANZSCO sectors	SCP sectors and anchor opportunites	Total workforce[54]	% First Nations workers
Basic Chemical Manufacturing	• Industrial Decarbonisation (Green ammonia & hydrogen) • Transport (LCLF & eFuels)	4,000	1.6
Basic Ferrous Metal Manufacturing	• Industrial Decarbonisation (Green iron)	23,800	1.9
Basic Non-Ferrous Metal Manufacturing	• Industrial Decarbonisation (Green aluminium)	21,600	2.4
Electrical Equipment Manufacturing	• Networks (Extending transformer capability)	10,500	0.9
Copper, Silver, Lead and Zinc Smelting and Refining[55]	• Renewable Energy Generation (Critical mineral refining & Polysilicon)	1,700	3.8
Motor Vehicle and Motor Vehicle Part Manufacturing	• Transport (Specialised heavy-duty BEVs)	31,200	1.4
Forestry and Logging	• Carbon Markets	6,651	3.6
Professional, Scientific and Technical Services	• Carbon Markets	717,935	1.0
Overall workforce		**25,422,791**	**3.3**

Notes/Sources: [53]Australian Government, Institute of Health and Welfare (2025), drawing on ABS 2021 data. Profile of First Nations People. https://www.aihw.gov.au/reports/australias-welfare/profile-of-indigenous-australians. [54]ABS Table Builder. (2021). Census – employment, income and education. https://tablebuilder.abs.gov.au/. [55]Note: this proxy sector is 4-digit compared with the others being 3-digit; meaning the scale is different.

2.1 – The First Nations sector competitiveness plan

The First Nations Sector Competitive Plan lays out how First Nations leadership, partnership, and participation can strengthen Australia's clean technology manufacturing sector while enhancing Closing the Gap (CTG) targets, thriving communities and self-determination and ensure a just transition to net zero.

It has a specific focus on First Nations business participation and opportunity across all of the five other SCP sector areas, and provides analysis of the policy, business models and program levers required to enable a shift from compliance-based engagement to meaningful partnerships with First Nations stakeholders. It emphasises best practice, initiated through Free, Prior and Informed Consent (FPIC) principles, and using voluntary processes, such as Indigenous Land Use Agreements, to obtain and maintain consent.

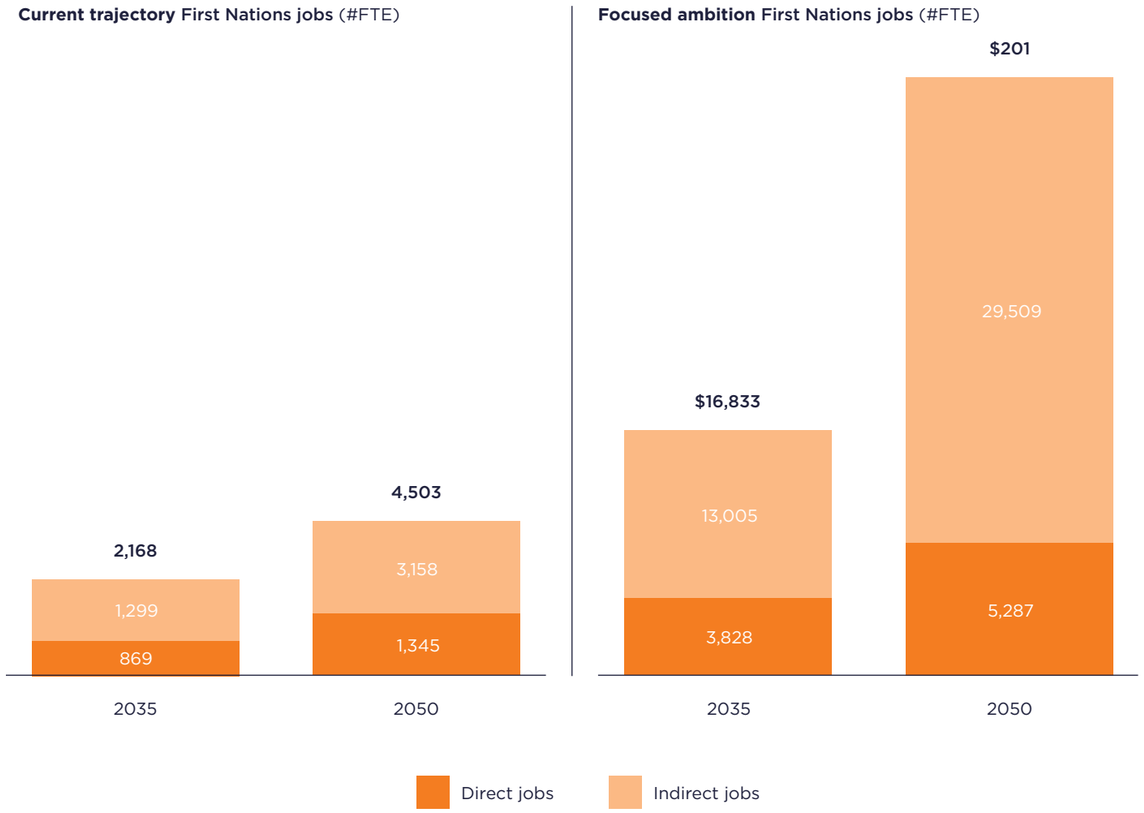
In line with the First Nations Clean Energy Strategy, the SCP is orientated towards opportunities that align with the Strategy's intent of 'achieving economic benefits and equitable partnerships' with First Nations people. Many of the anchor opportunities identified in the other SCPs, such as critical mineral refining, green ammonia, green iron, custom off-grid solutions, low-cost renewable energy deployment, and carbon opportunities, hinge on access to land and Australia's natural resource repositories.

The SCP identifies how First Nations communities and businesses could play a strategic role as partners in Australia's clean-technology manufacturing sector, by potentially capturing or enabling 30–70% of the sector's Gross Value Added (GVA)[56]. Based on projections from sector plans, this equates to around $12–29 billion in GVA by 2035, growing to approximately $86–201 billion by 2050 under a "focused ambition" scenario[57].

This growth would contribute to the broader Australian economy, with an estimated ~$3 billion in GVA flowing to or generated by First Nations communities by 2035, increasing to around $20 billion by 2050. Associated employment could include 17,000 First Nations jobs by 2035, rising to 35,000 by 2050, driven by key anchor opportunities[58]. As the following Figure 3 shows, First Nations employment outcomes could be a significant outcome and benefit if leveraged in a Focused Ambition scenario.

Notes/Sources: [56]Cyan Ventures and Deloitte (2026). First Nations as Critical Partners: Sector Competitive Plan. [57]Cyan Ventures and Deloitte (2026). First Nations as Critical Partners: Sector Competitive Plan. [58]Ibid.

Figure 3: First Nations direct and indirect jobs in anchor opportunities and broader ecosystem (# of FTE).
Source: *Powering Australia, Cyan Ventures, Deloitte, 2025. Horizon 2035: First Nations as critical partners.*



Where the other SCPs located specific anchor opportunities related to sectors existing or nascent in the market, the First Nations SCP highlights a range of leverage points and business opportunities across the clean tech manufacturing eco-system and clusters them into three main categories.

The SCP identified three anchor opportunities within the clean tech manufacturing landscape, where First Nations communities and businesses have the greatest opportunity for success.

1. Opportunities linked to land and sea, e.g. green iron, green ammonia, biogenic LCLFs, eFuels, critical mineral refining, balance of plant
2. Broader clean technology opportunities, e.g. manufacturing and assembly of specialised heavy duty BEVs, wind tower manufacturing, renewables recycling, pre-fabrication anchor cages
3. Clean technology supporting services, e.g. project development finance, community engagement and heritage services, engineer procurement and construction contracts

These are listed in Table 2.

Table 2: Three types of opportunities for First Nations businesses

Criteria	1. Opportunities linked to land and sea	2. Broader clean-technology opportunities	3. Clean-technology supporting services
Description	Opportunities that link closely to land or sea access, where First Nations communities and businesses could engage through land use agreements, partnerships, and/or ownership	Opportunities not directly linked to land and sea, where First Nations businesses can lead and own or partner	Opportunities to provide services and inputs that enable clean-technology manufacturing, where First Nations businesses can lead and own or partner
Key sector opportunities	• Green iron • Green ammonia • Biogenic low carbon liquid fuels • eFuels • Critical mineral refining • Generation deployment/Balance of Plant (BOP) • High yield oilseed crop feedstocks • Renewable energy and raw material inputs • Custom off-grid and remote deployment • Carbon methods (plantation forestry, geological storage, savanna burning)	• Manufacturing and assembly of specialised heavy duty BEVs • Wind tower manufacturing • Renewables recycling • Pre-fab anchor cages and other supply chain inputs • Innovative solar cells • Manufacturing of EV aftermarket parts and vehicle accessories • Green steel • Steel/aluminium recycling • Innovative electrolysers • Innovative industrial heat equipment • Flow batteries • Mid-high voltage transformers • Modular substations/skids manufacturing • Modular tower manufacturing	**Project related services:** • Project development and finance • Community engagement and heritage services • Construction / EPC • Operations, including transportation, repairs/maintenance, workforce management, improvement services **Decommissioning, environment services:** • Equipment manufacturing related services • R&D in new technologies/ design and engineering • Fabrication and assembly/ deployment • Materials recycling/waste management

As the First Nations SCP is focused on system-wide changes to drive 'economic benefits and equitable partnerships' for First Nations businesses and communities through land-based and business mechanisms, the pathway for a sector-wide workforce development plan, as with the other SCPs, is less clear cut. As such, this workforce development plan looks holistically at the skills, capabilities and resources required to enable the scale of transformation required of Australia and laid out in the FNCES.

Focus: Construction – building the manufacturing facilities

The construction workforce is crucial to the clean economy transformation, building out facilities for manufacturing of equipment to renewable energy infrastructure to power clean industrial processes. Infrastructure Australia modelling shows a shortfall in workforce suppy of 200,000 workers across public infrastructure development, with critical and persistent shortages in critical skills. Whilst construction of the fourth largest employer of working age First Nations Australians (NIAA, 2026) and has historically been on of the more accessible industries for Aboriginal and Torres Strait Islander workers, increasing First Nations participation could ease shortages particularly in rural or remote contexts.

The sector offers strong entry points into trade-based, relatively well-paid employment, which can support economic mobility and skills development. However, First Nations Australians still face structural barriers including limited access to training, lower apprenticeship completion rates, and geographic disadvantage. Governments and industry have introduced targeted initiatives, such as Indigenous procurement policies, participation targets in infrastructure projects, and culturally tailored training programs to increase participation and retention. Strengthening First Nations workforce outcomes in constuction therefore requires not just entry pathways, but sustained investment in wraparound support, career progression, and culturally safe workplaces to ensure long-term employment and industry leadership.

3. Land and sea-based opportunities

3.1 – Understanding the context: The Indigenous Estate

The Indigenous Estate now covers more than half of the Australian continent, including over 450 Native Title determinations and 1,230 registered Indigenous Land Use Agreements (ILUAs)[59]. This means these areas are subject to First Nations people's rights and interests in land held in accordance with their traditional laws and customs. First Nations people are both right's holders and enduring custodians of this vast island state. The clean energy boom is impacting the Indigenous Estate as much as mining did several decades ago, with even larger renewable energy projects being developed[60].

ILUAs aim to provide important pathways for First Nations peoples to maintain connections to, and care for, Country. However, the effectiveness of these mechanisms is often constrained by structural and systemic barriers, including complex, multi-layered legal and jurisdictional frameworks that create inequitable access and make it difficult to navigate processes or exercise rights.

Challenges are further compounded by limited transparency in negotiations and the dominance of Western business models that do not align with First Nations priorities for self-determination, leading to practices such as asset stripping, corporate assimilation, and environmental degradation across the First Nations Estate[61].

Increasingly, in the clean energy space, partnerships that demonstrate genuine First Nations benefits and ownership experience commercial confidence uplift, have reduced risks, move faster through planning approvals and can align reporting (and reputation) to ESG favourable outcomes[62].

3.2 – Land and sea opportunities

Opportunities linked to land and sea rely on access to either of these landscapes. This includes green ammonia, green iron, critical mineral refining, balance of plant, biogenic LCLFs, remote deployment, carbon sequestration methods and value chain inputs or materials. These opportunities provide potential for First Nations organisations and/or communities to enter into land use agreements (ILUAs), equitable partnerships, or co-ownership models.

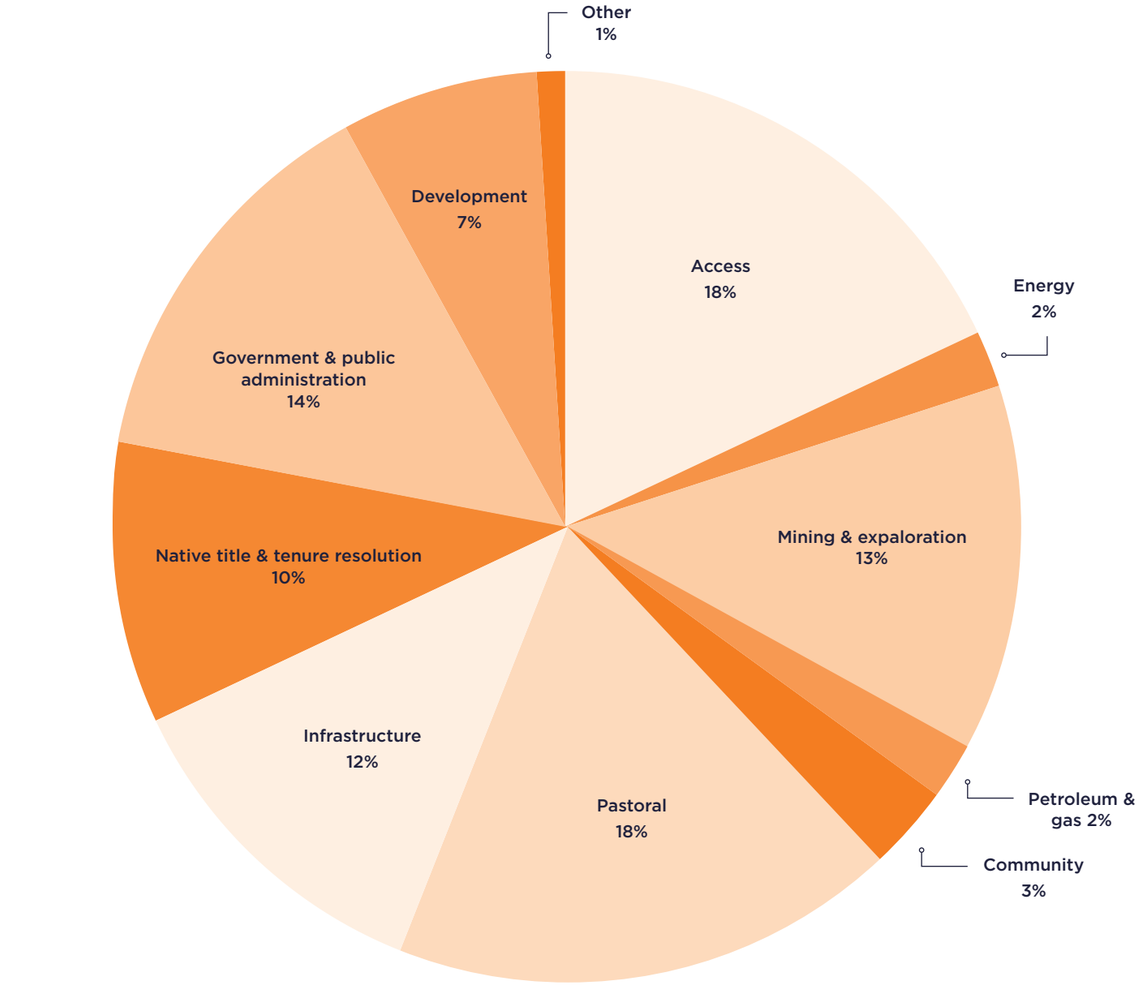
Importantly, partnerships and land and sea access arrangements can involve all kinds of negotiated benefits, include employment outcomes for local First Nations community, and goods and services procurement for First Nations suppliers. Land and sea opportunities should be viewed as vehicles for economic development

These partnership models vary in robustness, fairness and success – partly due to the relatively limited pool of implementation examples. There are considerable constraints when it comes to achieving mutual benefit, because of capability and resource gaps between First Nations groups and large companies which seek to enter the ILUA. For example, upfront capital, governance and capacity (i.e. not having governance systems, protocols and processes in place) constraints, and asymmetric access to technical, legal and financial advice.

As Figure 4 represents, of the roughly 1,500 ILUAs that exist in Australia, only about 40 are energy projects. There are three types of ILUAs: area agreements, body corporate agreements, and alternative procedure agreements[63]. The conditions of these vary depending on if there is a registered Native Title body.

Notes/Sources: [59]Resilient Landscapes (2021). Indigenous knowledge and managing the Indigenous estate. https://nesplandscapes.edu.au/projects/nesp-rlh/indigenous-knowledge/ [60]O'Neill, L., & Thorburn, K. (2025). First Nations at the forefront: The changing landscape of clean energy agreements in Australia. Energy Research & Social Science, 127, 104183. [61]Williams, R., Leroy-Dyer, S., Cooms, S. (2025). The Indigenous Estate in Australia: Scoping the Context and Setting a Research Agenda. https://doi.org/10.1007/978-3-031-92703-4_10. [62]Berka, Lane, Hodge, and Hicks (2025). Power in Partnerships: A guide to developing a community stake in renewable energy. https://cpagency.org.au/resources/power-in-partnership-a-guide-to-developing-a-community-stake-in-renewable-energy/ [63]National Native Title Tribunal. Indigenous Land Use Agreements. https://www.nntt.gov.au/Information%20Publications/ILUA%20factsheet-2024.pdf. [64]National Native Title Tribunal. Register of ILUAs. https://www.nntt.gov.au/searchRegApps/NativeTitleRegisters/Pages/Search-Register-of-Indigenous-Land-Use-Agreements.aspx

Figure 4: ILUAs in Australia, categorised by primary subject matter[64]



A key challenge for the successful negotiation and implementation of ILUAs is the availability of skills and capacity within Indigenous organisations, governments, and involved parties. While ILUAs provide a flexible mechanism for managing land use, access, and co-management, it takes a lot to pull together as they are often complex and require expertise across multiple disciplines.

3.3 – Skills and roles needed for improved outcomes from land and sea access partnerships

Some skills that are needed for a successful arrangement include:

Skill area	Potential occupation group	Shortage status[65,66]
Legal and Native Title	Solicitors	Shortage
	Conveyancers and Legal Executives	State/territory shortage (VIC, SA, WA, TAS, NT)
Negotiation and mediation	Judicial and Other Legal Professionals	No shortage
Community engagement/ community liaison	Welfare Support Workers	State/territory shortage (WA, NT)
	Liaison Officer	No shortage
TRADITIONAL OWNER REPRESENTATION		
Administration	Other Miscellaneous Clerical and Administrative Workers	No shortage
	Contract, Program and Project Administrators	State/territory shortage (WA, NT)
Whole of government and public relations	Public Relations Professionals	No shortage
	Policy and Planning Managers	No shortage
Knowledge brokering and communications	Communications Officers (Public Relations)	No shortage
Finance and economics	Land Economist	No shortage
	Finance Managers	No shortage
Project management	Corporate Services Managers	No shortage
	Research and Development Managers	State/territory shortage (NT)
Environmental management	Environmental Research Scientists	Shortage
	Environmental Consultants	State/territory shortage (SA, NT)
Cultural heritage	Heritage Consultant	No shortage
Capacity building and training	Training and Development Professionals	No shortage
Monitoring and compliance	Inspectors and regulatory compliance officers	No shortage

Notes/Sources: [65]Jobs and Skills Australia. 2022. Occupation Shortage List.https://www.jobsandskills.gov.au/data/occupation-shortage/occupation-shortage-list. [66]The shortage status reflects the whole population; data is not specific to First Nations workforce

Not many of these fields are in shortage in metropolitan areas, but there is often less availability when it comes to regional and remote areas, which is where a lot of this work is needed. Additionally, there are capability gaps due to access to formal literacy and education[67]. Many First Nations communities and organisations bring deep cultural knowledge, strong governance practices, and place-based expertise to ILUA processes, however, enabling these strengths to be fully exercised in formal negotiations often requires adapted support, resourcing, and culturally appropriate communication approaches to bridge this gap. Strengthening access to specialist advice, plain language materials, and locally embedded capacity-building initiatives can help ensure Traditional Owners are able to engage on their own terms and participate equitably and confidently in ILUA development and implementation[68]. Stakeholder engagement supports this notion, calling for opportunities to develop project literacy and fluency, which ensures negotiations are not imposed upon First Nations people, but presented as optional arrangements. This is all part of the enabling environment that fosters positive outcomes for individuals, communities and businesses.

Another factor to consider is the nature of informal pathways into roles such as community liaison officers. Positions that rely heavily on social or interpersonal skills are often not appropriately addressed by formal training options. Stakeholders agree that these roles often are allocated based on an individual holding community trust, for example, but can lack structured support balancing commercial and organisational pressures with social dynamics.

3.4 – Towards First Nations ownership and equity

Despite these potential skills challenges in managing ILUAs, there are many First Nations energy projects across the country. As reported by FNCEN, there are currently 30 renewable energy projects[69] either in development or underway, which maintain First Nations involvement, ownership and equity through formal agreements. Table 3 shows that they are in varied stages of development, with varied models of co-equity arrangements, and geographically dispersed. Notably though, Western Australia accounts for almost half of the recorded projects, which comes as no surprise due to the fact the state is set to host some of the largest renewable energy projects in the world[70].

Notes/Sources: [67]https://www.indigenoushpf.gov.au/measures/2-04-literacy-and-numeracy. [68]https://nativetitle.org.au/learn/pbcs-making-it-work/best-practice-agreement-making. [69]Note: Government-owned projects, or projects built by a government party for a community, do not qualify in the tracker. [70]https://iceds.anu.edu.au/news-events/news/beyond-juukan-gorge-how-first-nations-people-are-taking-charge-clean-energy

Table 3: First Nations Clean Energy Projects[71]

Project name	State/ territory	Land tenure type	First Nation equity participation	Energy type
ANNOUNCED				
Banjima Solar Farm	WA			Solar, Battery storage
Larrakia Energy Solar Farm	NT			Solar, Transmission
Ltyentye Apurte Microgrid	NT			Microgrid, Solar, Battery storage
Ngarluma Green Energy Park	WA			Battery storage, Solar
Northern Battery	SA	Native title	100%	Battery storage
PRE-DEVELOPMENT				
Aalga Goorlil 'Sun Turtle' Djarindjin Community Power Project	WA	Leasehold	100%	Solar, Battery storage
Australia-Asia Power Link	NT			Solar, Battery storage
Catalpa Offshore Wind Farm	WA			Offshore wind
Chichester Range Transmission Corridor	WA			Transmission
H2-Hub™ Gladstone	QLD			Green hydrogen, Green ammonia
Moah Creek Wind Farm	QLD			Wind
Western Green Energy Hub	WA	Native Title	10% free carry	Green hydrogen, Solar, Wind
Wilan Wind Farm	NSW		5-10%	Wind
Yoorndoo Ilga Solar	SA			Solar, Battery storage
FEASIBILITY				
Baru-Marnda Renewable Energy Project	WA	Native Title	25% - 50%	Solar, Wind
Daintree Renewable Microgrid	QLD			Solar, Battery storage
Djandori gung-i Superhybrid	QLD		20%	Hydro, Green hydrogen, Wind
East Kimberley Clean Energy Project	WA		75%	Solar, Green hydrogen
Gingerah Energy Hub	WA		33.30%	Solar, Geothermal, Wind, Green hydrogen
Junja Solar Farm	WA	Leasehold	5% free carry	Solar
Ngardara Solar Microgrid	NT		100%	Microgrid, Solar
Ngarluma Solar Farm	WA			Solar
Parron Maam Marang Farm	WA			Wind
Yurringa Energy	VIC			Biogas

Table 3: Continued

Project name	State/ territory	Land tenure type	First Nation equity participation	Energy type
UNDER CONSTRUCTION				
Bulabul Battery	NSW		5% free carry	Battery storage
Jinbi Solar Project	WA	Exclusive possession	25% - 50%	Solar
Wujal Wujal Microgrid	QLD	Aboriginal freehold	100%	Battery storage, Hydro, Microgrid, Solar
OPERATION				
Barngarla-ElectraNet Project	SA	Native Title		Transmission
Marlinja Microgrid	NT		100%	Solar, Microgrid
Tjiwarl Katu Power & Kathleen Valley Hybrid Power Station	WA	Native Title	80%	Solar, Wind, Battery storage

Notes/Sources: [71]https://www.firstnationscleanenergy.org.au/energy-projects#map-column

Focus: Carbon farming

Another opportunity for First Nations workforce development is in the carbon farming sector, which focusses on reducing atmospheric carbon whilst enhancing biodiversity. Projects involve activities such as vegetation management, cultural burning, soil stewardship, and reducing livestock emissions.

First Nations-led organisations are already leading much of this work, abating more than 1.2 million tonnes of emissions per year and employing hundreds of First Nations workers in some of Australia's most remote places.

These land-intensive activities present an opportunity to leverage the Australian Carbon Credit Unit (ACCU) Scheme to support First Nations people and businesses in delivering positive outcomes for Country and community, through Native Title Determinations and ILUAs.

Research by NintiOne highlights the carbon sector as one well-aligned with First Nations priorities, enabling people to work on Country, draw on traditional knowledge, and pursue culturally meaningful careers. Roles include land and sea rangers or managers, soil carbon analysts, ecologists, and GIS/remote sensing specialists. Notably, around one third of the park ranger workforce is Aboriginal or Torres Strait Islander, reflecting the fact it aligns strongly with wanting to care for Country and work outdoors.

3.5 – Growing capability and skills within the sector

PowerMakers case study:
PowerMakers is an initiative delivered by the First Nations Clean Energy Network (FNCEN), established in 2023 and run annually since its inception. The program has supported approximately 100 First Nations participants to develop the skills, knowledge and networks required to pioneer clean energy projects. Its focus is on building practical capability to enable participants to deliver projects that generate benefits for their communities and contribute to Australia's broader energy transition[72].

The program demonstrates the value of immersive, practical learning approaches. Participants are supported to build technical understanding, project development skills, and confidence to engage with industry, government and other stakeholders. This includes strengthening participants' capacity to assess opportunities, navigate project processes, and participate in negotiations related to land use, benefit sharing and project governance.

It illustrates how targeted investment in skills and capability development can support more informed, effective and fair participation in clean energy development. More programs such as this could contribute to more equitable and transparent partnerships, such as the development and negotiation of ILUAs, co-ownership, equity and revenue sharing arrangements.

Notes/Sources: [72]First Nations Clean Energy Network. PowerMakers. https://www.firstnationscleanenergy.org.au/powermakers

4. Broader Clean-technology opportunities

4.1 – Broader clean-tech opportunities

Broader clean-technology opportunities refer to the entry points for First Nations businesses and entrepreneurs across a range of sub-industries and sectors drawn from across the other SCPs. Potential opportunities outlined in the SCP include (noting that this is not exhaustive):

- Wind tower manufacturing
- Prefab anchor cages and other supply chain inputs
- Renewables recycling
- Manufacturing and assembly of specialised heavy duty BEVs
- Manufacturing of aftermarket parts and vehicle accessories
- Innovative solar cells / modules
- Modular substation manufacturing
- Transformer manufacturing expansion

The SCP analyses these opportunities in terms of their potential for First Nations economic benefits and partnership outcomes, while acknowledging the capital and technological intensity (at times working as a barrier to entry), and identifying the strengths that First Nations involvement, entrepreneurship and business leadership can bring to the sector.

The clean technology opportunities available to First Nations businesses also span different stages of commercial readiness. The SCP identifies some that are readily available as they relate to already deployed large projects (such as fabricating wind turbine foundation components), those that require more lead time and regional planning (such as the manufacture of specialised heavy-duty BEVs and modular off-grid substations), through to others that depend on further technological progress before becoming commercially viable (such as next-generation solar cells).

4.2 – What are the jobs, skills and pathways available in broader clean-tech

First Nations Australians represent a significant and underutilised workforce asset in Australia's clean economy transition, with existing strengths in mining, energy, construction, transport, and remote operations providing strong foundations for participation in clean technology manufacturing. The First Nations make up of mining workers sits at 4.6%, which is higher than the rest of the workforce average, however industries such as automotive, manufacturing and professional, scientific and technical services – which are key for the clean tech transition – are all well below the national average[73].

Table 4 outlines the opportunities presented in the SCP and highlights the related key occu4ations and training pathways.

Notes/Sources: [73]AUSMASA. (2025). Workforce Plan: Today's intelligence for tomorrow's automotive and mining workforce. https://ausmasa.org.au/news-and-events/ausmasas-2025-workforce-plan-today-s-intelligence-for-tomorrow-s-automotive-and-mining-workforce/

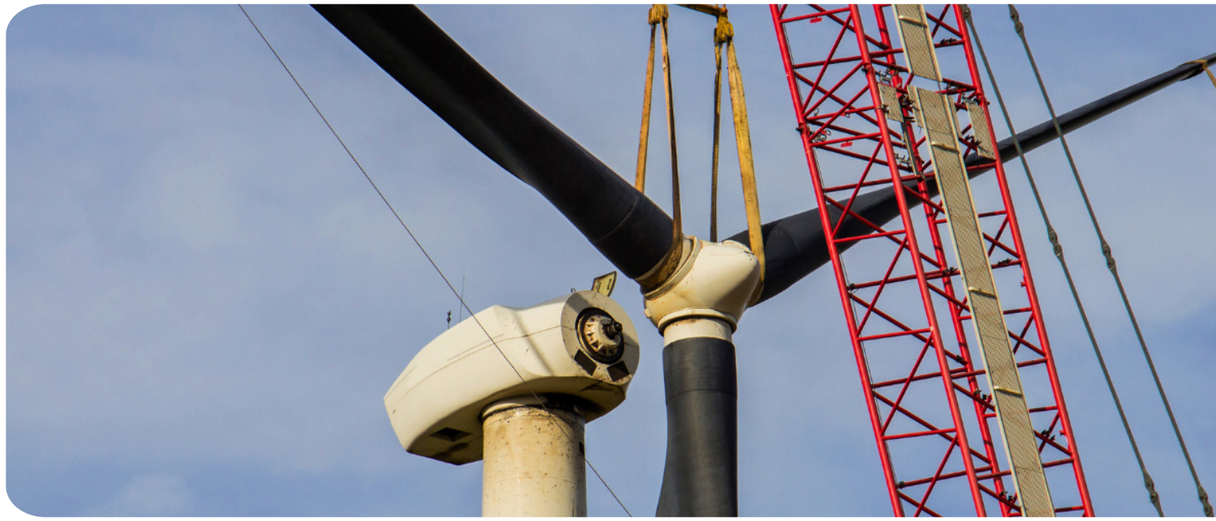


Table 4: Key occupations across broader clean tech manufacturing

SCP Opportunity	Sector	Key occupations and training pathways	Supply pipeline of First Nations VET students (2019-2024 average completions)
Wind tower manufacturing	Structural metal product manufacturing	**Product Assemblers:** No formal qualifications required. Many workers learn on the job or acquire a Cert I or II in a related manufacturing field, e.g. Traineeships in Electronic Assembly, Process Manufacturing, Engineering - Production Technology or Repair are common pathways[74]. **Structural Steel and Welding Trades Workers:** MEM31925 – Cert III in Engineering – Fabrication Trade/welding trade specialisations[75], e.g. Post-trade Certificate IV in Engineering is a welding specialisation pathway[76]. AWCR certification may be useful[77]. **Production Managers:** No formal qualifications required. A Cert III in process plant operations or a diploma in process plant technology may be useful. Cert II in Manufacturing Technology is also related[78]. **Crane, Hoist and Lift Operator[79]:** No formal qualifications required, however, a Cert III or IV in construction or mobile crane operations may be useful[80]. You will also need a relevant crane licence, and a High-Risk Work licence.	Certificate (I–IV) in Process Manufacturing: **115**
Prefab anchor cages and other supply chain inputs	Structural Metal Product Manufacturing	Assumes similar profile as above.	

Notes/Sources: [74]https://www.yourcareer.gov.au/occupations/832211/product-assembler?tab=how-to-become. [75]https://www.yourcareer.gov.au/occupations/322313/welder-first-class?tab=how-to-become. [76]https://training.gov.au/training/details/MEM40119/qualdetails. [77]https://awcr.org.au/about/how-it-works/ [78]https://www.yourcareer.gov.au/occupations/133512/manufacturing-production-manager?tab=how-to-become. [79]DEECA (2025). Building an offshore wind workforce and industry. https://www.energy.vic.gov.au/renewable-energy/offshore-wind-energy/building-an-offshore-wind-workforce. [80]https://www.yourcareer.gov.au/occupations/712111/crane-hoist-and-lift-operator?tab=how-to-become

Table 4: Continued

SCP Opportunity	Sector	Key occupations and training pathways	Supply pipeline of First Nations VET students (2019-2024 average completions)
Renewables recycling	Copper, Silver, Lead and Zinc Smelting and Refining	**Chemical and Materials Engineers:** Bachelor's degree in chemical, biochemical or process engineering. It is also common to complete postgraduate studies. Registration may be required in some jurisdictions. Membership with Engineers Australia highly regarded[81]. **Composite Blade Technicians (no specific OSCA code):** Usually require a mechanical trade, e.g. Cert III in Engineering – Composites Trade. You will also need a high-risk work license and specialist on-the-job training[82]. **Metallurgist:** Bachelor's degree in metallurgical or chemical engineering, or a science degree majoring in metallurgy. Postgraduate studies also common[83]. **Battery Systems Technicians (no specific OSCA code):** no specific pathway defined; but a Cert II in Engineering or Process Manufacturing, or Cert III in Electrotechnology would be starting points. **Electrical or Mechanical Engineering Technicians:** You usually need a Cert III or IV in a relevant field, e.g. mechanical engineering or electrical and electronic engineering and technology. Some workers have university qualifications[84]. **Stationary Plant Operators:** There are multiple pathways, but it is common to complete a Certificate III in Process Plant Operations[85]. **Environmental Health Officer:** You usually need a bachelor's degree in environmental health or science, public health or another related field. Some workers have a VET qualification[86].	Certificate (II-IV) in Process Plant Operations and Diploma of Process Plant Technology: **93** Certificate II in Electrotechnology (Career Start): **280** Certificate III in Electrotechnology Electrician: **230**
Manufacturing and assembly of specialised heavy duty BEVs	Motor Vehicle and Part Manufacturing and Other Transport Equipment Manufacturing	**Structural Steel and Welding Trades Workers:** Certificate III in Engineering - Fabrication Trade. **Product Assemblers:** No formal qualifications required. Many workers learn on the job or acquire a Cert I or II in a related manufacturing field, e.g. Traineeships in Electronic Assembly, Process Manufacturing, Engineering - Production Technology or Repair are common pathways[87]. **Vehicle Body Builders and Trimmers:** Vehicle Body Builders: Certificate III in Automotive Body Repair Technology, or Certificate III in Automotive Manufacturing Technical Operations - Bus, Truck and Trailer. Vehicle Trimmers: Certificate III in Automotive and Marine Trimming Technology. **Industrial, Mechanical and Production Engineers:** Bachelor's degree in engineering, usually mechanical or industrial. Postgraduate options such as a Graduate Diploma of Engineering (Mechanical) can support specialisation or career progression. **Metal Fitters and Machinists:** Certificate III in Engineering - Mechanical Trade, fitting, machining, or related engineering. **Production Managers:** No formal qualifications required. A Cert III in process plant operations or a diploma in process plant technology may be useful. Cert II in Manufacturing Technology is also related[88].	Certificate II in Engineering - Production Technology: **42** Certificate II or III in Automotive Body Repair Technology: **45** Certificate II in Automotive Servicing Technology: **110** Certificate III in Engineering - Mechanical Trade: **151**

Notes/Sources: [81]https://www.yourcareer.gov.au/occupations/233112/materials-engineer?tab=how-to-become. [82]https://careersfornetzero.org.au/careers/blade-technician/. [83]https://www.yourcareer.gov.au/occupations/234912/metallurgist?tab=how-to-become. [84]https://www.yourcareer.gov.au/occupations/312312/electrical-engineering-technician?tab=how-to-become. [85]https://www.yourcareer.gov.au/occupations/712999/stationary-plant-operator-not-covered-elsewhere?tab=how-to-become. [86]https://www.yourcareer.gov.au/occupations/251311/environmental-health-officer?tab=how-to-become. [87]https://www.yourcareer.gov.au/occupations/832211/product-assembler?tab=how-to-become. [88]https://www.yourcareer.gov.au/occupations/133512/manufacturing-production-manager?tab=how-to-become.

Table 4: Continued

SCP Opportunity	Sector	Key occupations and training pathways	Supply pipeline of First Nations VET students (2019-2024 average completions)
Manufacturing of aftermarket parts and vehicle accessories	Motor Vehicle and Part Manufacturing and Other Transport Equipment Manufacturing	Assume same profile as above.	
Innovative solar cells / modules		**Photovoltaic Engineers (falls under Electrical Engineer):** Bachelor's degree in engineering with a major in electrical engineering, or more specifically renewable energy. Postgraduate studies are common. Membership with Electrical Energy Society of Australia (EESA) is recommended. Automation & Robotics Technicians (suggested: Mechatronics Engineer) **Quality Assurance Manager:** Often a formal qualification in business management, science, or another relevant field, via either university or VET pathways. **Materials Engineer:** A bachelor's degree in chemical, biochemical or process engineering. It is also common to complete postgraduate studies.	
Modular substation manufacturing	Electrical Equipment Manufacturing	**Electrical Engineers:** Bachelor's degree in engineering with a major in electrical engineering. Postgraduate studies are common. Membership with Electrical Energy Society of Australia (EESA) is recommended. **Electrical Fitter:** Cert III in Electrical Fitting, combining on-the-job training and classroom learning over four years. An Electrical Fitters Licence specific to their state or territory. **Quality Assurance Manager:** Often a formal qualification in business management, science, or another relevant field, via either university or VET pathways. **Structural Steel and Welding Trades Workers:** MEM31925 – Cert III in Engineering – Fabrication Trade / welding trade specialisations/ extensive experience[89]. AWCR certification may be useful[90]. **Mechanical Engineer:** Bachelor's degree of Mechanical Engineering or closely related engineering is required. Postgraduate studies are common. Registration as an engineer may be compulsory in some jurisdictions. Membership with Engineers Australia is highly regarded. **Product Assembler:** No formal qualifications required, but a Cert I or II in a related manufacturing field may be helpful. Likely to involve on-the-job training.	Certificate III in Electrical Fitting: **5** Certificate III in Engineering - Fabrication Trade: **173**
Transformer manufacturing expansion	Electrical Equipment Manufacturing	Assumes same profile as above.	

Notes/Sources: [89]https://www.yourcareer.gov.au/occupations/322313/welder-first-class?tab=how-to-become. 90: https://awcr.org.au/about/how-it-works/

The Manufacturing Industry Skills Alliance (MISA) identified in their workforce development plan that more than half of First Nations workers in the automotive sector are engaged in repair and maintenance roles[91]. This lends itself to the broader opportunity of manufacturing and assembly of specialised heavy duty BEVs, and of aftermarket parts and vehicle accessories. Stakeholders echo this sentiment, by highlighting the potential for these broader opportunities to be strong entry points into clean tech, rather than capital intensive endeavours.

4.3 – Growing a skilled First Nations workforce in broader clean tech

Powering Skills Organisation estimates that First Nations participation in the energy workforce has tripled over the past 15 years, however, this growth is unevenly distributed across occupations, with most workers are employed in trades and technician roles, with around half working as electricians[92]. While this represents a positive trend, there is further opportunity to expand participation into a broader range of roles, in particular enabling First Nations people to lead and shape the transition to cleantech manufacturing, supporting the clean energy transition.

Notes/Sources: [91]MISA. (2026). *Workforce Insights Report.* https://ausmasa.org.au/media/ncyhh5ic/workforce-insights-report-2026.pdf. [92]Powering Skills Organisation (2025). *High Load, Short Supply*. https://poweringskills.com.au/workforce-plan-2025/

5. Clean-tech supporting services

5.1 – Clean-tech supporting services

Clean tech supporting services refers to the wide range of services that surround and support the clean-tech manufacturing value chain. First Nations businesses are already active in many of these fields, showing a strong history of entrepreneurship, leadership and responsiveness to the market context. This is particularly evident in the strong presence of First Nations businesses and high rates of employment in mining, construction and infrastructure development driven by procurement practices and policies and Indigenous Participation Plans in these sectors[93].

This trend, however, of growth in employment and procurement driven by mining and construction is changing. As recent research illustrates, the clean energy economy is changing the composition of the First Nations business sector (and relatedly, workforce opportunities) through the simultaneous creation of numerous opportunities for communities with land assets, businesses working in land activation, Caring for Country and project supporting services, alongside the decline of opportunities in resource-reliant industries[94].

The SCP defines supporting services clustered under two distinct areas, ‘project related services’ and ‘decommissioning and environmental services’ each with related opportunities for businesses and First Nations workers.

Project related services include:

- Project development and finance
- Community engagement and heritage services
- Construction / Engineering Procurement Construction (EPC)
- Operations, including transportation, repairs/maintenance, workforce management, improvement services
- Equipment manufacturing and related services
- Research and Development (R&D) in new technologies/design and engineering

Decommissioning and environment services:

- Equipment manufacturing and related services
- R&D in new technologies/design and engineering
- Fabrication and assembly/deployment
- Materials recycling/waste management

Notes/Sources: [93]Supply Nation (2020). State of Indigenous Business Report. https://supplynation.org.au/wp-content/uploads/2020/09/Supply-Nation-Driving-Growth-in-Indigenous-Business-DEC-2020.pdf. [94]ANZ and Deloitte (2025).

5.2 – What are the jobs, skills and pathways available into supporting services

Table 5 draws on the opportunities laid out in the SCP to identify some of the key roles and pathways for First Nations workers. This list is indicative and not exhaustive; it should be read as a guide.

Table 5: Clean-tech supporting services opportunities

Area	Opportunities	Types of roles	Pathways (tertiary)	Pathways (VET)
Project related service	Project development and finance	Development Manager Project Finance Analyst / Manager Commercial Manager Environmental Manager	Engineering/planning degree Finance/Commerce degree Law/Commerce degree Environmental Science degree	Diploma of Project Management
	Community and stakeholder engagement and heritage services	Community and Stakeholder Engagement Lead/Officer First Nations Engagement Specialist Heritage Consultant / Archaeologist Social Impact Assessor	Communications/Social Science degree Anthropology/ Indigenous Studies degree Archaeology/Heritage studies degree Humanities degree/Grad Cert Social Impact	Cert Engagement (Engagement Institute) Certificate IV in Community Development (Tranby College RTO) Certificate IV in Aboriginal Cultural Heritage Management
	Construction / EPC	Project Manager (EPC) Site / Construction Manager Procurement Manager Design Engineer HSE Manager Quality Manager Commissioning Engineer	Commerce degree Construction project Management degree Business degree Industrial engineer	Diploma of Building and Construction (Management) Cert IV in Work Health and Safety Cert III in Engineering – Fabrication Trade
	Operations, including transportation, repairs/maintenance, workforce management, improvement services	Operations Manager Asset / Maintenance Manager Reliability Engineer Workforce / Rostering Manager SCADA / Control Systems Operator Asset / Maintenance Manager Transport / Logistics Coordinator Continuous Improvement / Lean Specialist Trades (Electrical, Mechanical, Instrumentation) Traffic control Logistics	Engineering degree (reliability engineer, maintenance manager)	Cert III / IV in Electrotechnology — Electrician Cert IV in Supply Chain Operations Traffic Controller licence (VOC) - state-based e.g. SafeWork NSW, WorkSafe VIC)

Table 5: Continued

Area	Opportunities	Types of roles	Pathways (tertiary)	Pathways (VET)
Decommissioning and environment services	Equipment manufacturing and related services	Civil engineer Production manager Quality assurance manager		Cert III in Engineering — Production Technology Cert IV in Supply Chain Operations
	R&D in new technologies/ design and engineering	R&D engineer Data scientist Systems designer		Diploma of Engineering - Advanced Trade Cert IV in Information Technology
	Fabrication and assembly/ deployment	Structural steel and welding trades worker Boilermaker/welder Rigger/crane operator		Cert III in Engineering — Fabrication Trade Rigging/Dogging licence & High-Risk Work Licence
	Materials recycling/waste management	Waste Management Coordinator Sustainability officer Hazardous waste specialist Battery technician	Environmental science degree Chemical engineering degree	Cert III in Waste Management Cert IV in Work Health and Safety

5.3 – Growing a skilled First Nations workforce in clean-tech supporting services

As Table 5 highlights, there are a range of occupations and pathways for First Nations people seeking to enter into the adjacent supporting services. Best practice points to workforce enablement that is co-designed with First Nations' communities early on in project or industry development.

Case study: Aboriginal Clean Energy Partnership
The East Kimberley Clean Energy Project Workforce and Capacity Building Report[95] outlines an early-stage plan to ensure Traditional Owner communities' benefit from employment, skills, and business opportunities arising from a large-scale combined solar, hydrogen, and ammonia project. A defining feature is the Aboriginal Clean Energy Partnership model[96], where Traditional Owners are majority shareholders and decision-makers, embedding self-determination, cultural governance, and economic participation into workforce planning. This particular model is the first of its kind and sets a precedent for others wanting to follow. The partnership is made up of Balanggarra Ventures[97], MG Corporation[98], Kimberley Land Council, and Pollination[99].

Renewable electricity generated from the large-scale solar farm located on MG Corporation freehold land near Kununnura, alongside existing hydropower from Lake Argyle, will be used to produce green hydrogen, which will then be converted into green ammonia on Balanggarra Country near Wyndham. The project is designed to create a renewable supply chain from energy generation through to processing and export.

The green ammonia is expected to be sold locally for agricultural application as well as wider export markets.

The planning phase was undertaken in collaboration with all proponents, ensuring employment and business opportunities for First Nations people were carefully considered from the outset. Existing training and workforce programs were reviewed, to identify learnings and inform the ideal path forward. Successful programs were found to leverage local training, mentoring and support networks.

Importantly, the model was designed to ensure that training and employment for Kimberley Aboriginal people is a priority. Workforce mapping mapped predicted roles across project phases and qualification requirements, as well as quantitatively projecting demand throughout the project's lifetime.

Notes/Sources: [95]Aboriginal Clean Energy Partnership, prepared for ARENA (2024). Workforce and Capability Building Report. https://arena.gov.au/knowledge-bank/aboriginal-clean-energy-partnership-workforce-and-capacity-building-report/ [96]https://aboriginalcleanenergy.com/ [97]Balanggarra Ventures Limited is a subsidiary of Balanggarra Aboriginal Corporation - the registered native title body corporate that receives and manages entitlements of the Balanggarra People, who are the native title holders of their Country around Wydnham. [98]MG Corporation is the Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation; receiving and managing entitlements and benefits of the Miriuwung and Gajerrong Peoples, who are the native title holders of their Country in the north-east part of the East Kimberley region. [99]Pollination is a specialist climate change investment, project development and advisory firm.

Focus: Community Engagement

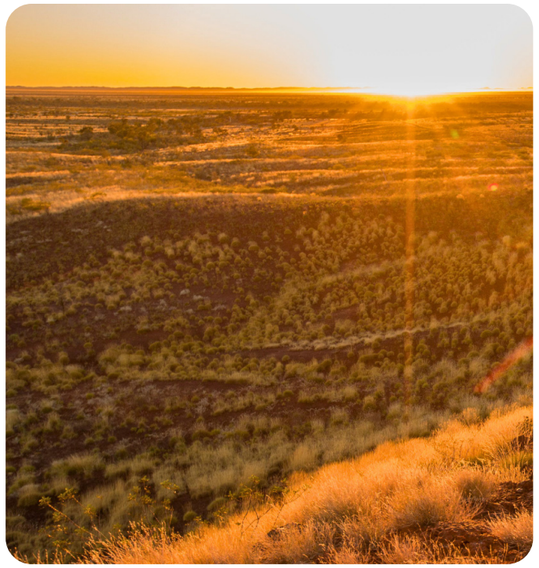
Necessary and important policy and regulatory changes are increasing the demand for meaningful engagement with First Nations communities as rightsholders and stakeholders. In the built environment sector, New South Wales's Connecting with Country guidelines, require government agencies, planners, architects, and infrastructure proponents to embed Aboriginal cultural knowledge and community consultation into the design and delivery of projects. This shift is reshaping how projects are planned from the outset, moving engagement from a token, late-stage checkbox exercise to an ongoing, relationship-based process that values Aboriginal input on Country, heritage, and design outcomes. For First Nations people and businesses, this growing demand represents a significant employment and economic opportunity, creating pathways into roles such as cultural heritage advisors, community liaison officers, Indigenous design consultants, and project engagement leads. A similar story is playing out in the clean energy space, with projects requiring demonstration of meaningful engagement and partnerships with First Nations stakeholders for planning approvals and when bidding for Commonwealth and state-based tenders.

This upsurge in engagement presents as an employment opportunity for interested First Nations workers, yet there is currently no formal training pathway. A lot of the most effective engagement practitioners build credibility through Land Councils or community work rather than formal qualifications. Formal RPL (recognition of prior learning) pathways that convert this experience into portable qualifications would open career mobility across sectors (e.g. from health to energy to planning) without forcing people back through entry-level study.

Concurrently, an enormous burden to participate in consultations is also being placed on Native Title holders, Prescribed Body Corporations (PBCs), and community. Community panels are without the resources, training, experience, or capacity required to negotiate with proponents to achieve identified community outcomes, which means engagement roles are being created faster than the support structures to sustain the people in them.

There is significant scope and opportunity to grow a pipeline of skilled First Nations community engagement specialists by both resourcing PBCs and Land Councils to grow internal capability, then acknowledging these skills through RPL.

Engagement specialist pathways are also an opportunity for First Nations-led RTOs to design a culturally informed formal qualification.



6. What we heard

Harnessing the existing leadership of First Nations people and businesses and making accessible the breadth of employment opportunities available to First Nations people in the clean tech manufacturing sector requires a collaborative effort. It requires industry and institutions to be committed to enabling economic empowerment for true self-determination, removing structural barriers; recognising that through this, First Nations leadership and workforce participation will grow and thrive.

6.1 – Findings

Finding one: 'Clean tech manufacturing' is not yet clearly understood as a sector and concept – but there is potential for creating businesses and work well-aligned with the values of First Nations communities

'Clean tech manufacturing' as a sector is not yet familiar among stakeholders. Conceptually, ideas such as net zero and the energy transition are more established and stakeholders struggled to differentiate between these concepts and clean tech manufacturing. Many people we spoke to asked for clarity and an explanation of what the term means. Awareness, therefore, of the opportunities for First Nations people in 'clean tech manufacturing' is limited.

The value proposition of clean tech manufacturing, the SCP opportunities and First Nations people's role across these sectors varies widely. Conversations covered opportunities for Traditional Owner groups and Aboriginal and Torres Strait Islander Corporations to enter into project partnerships, land use agreements, joint ventures and other negotiated financial arrangements, through to pathways for First Nations workers into technical trades. Clean tech manufacturing is more readily recognised as some of the specific sectors (such as transport) or as discreet projects interfacing with First Nations rights holders.

Clean tech sectors create an opportunity, however, for work that aligns to First Nations values. Stakeholders shared that the value proposition for work needs to resonate and too often felt jobs are often pitched in the wrong way. Pay matters, but people are more likely to step into and stay in roles that:

- Protect Country
- Give them a voice (not tokenistic)
- Deliver real community benefit
- Allow them to act with integrity within cultural governance practices

This is especially true for community engagement, heritage, land management and other place based services, where purpose, identity and cultural safety drive retention as much as recruitment. Clean tech jobs, if developed correctly, can offer meaningful careers that provide opportunities for First Nations stakeholders to build on their strengths, and remain connected to Country and Community. This creates a mutually enriching cycle of benefit where clean tech manufacturing industries are improved through First Nations expertise, and First Nations people can find roles that align to their values. Discussion on how these careers might be shaped is expanded on in subsequent findings.

Understanding of clean tech manufacturing and the opportunities it entails requires a two-way contextual dialogue between the sector and First Nations communities. As one stakeholder points out, "effective communication includes speaking the 'same language' i.e. what does clean-tech mean to mob?" This requires listening to First Nations peoples' ideas, aspirations and interpretations as the starting point, then developing a clear consistent message of clean tech manufacturing as a sector and opportunities for First Nations people within it i.e. what does clean tech manufacturing mean for Traditional Owners and representative bodies, what does it mean for businesses and what does it mean for a worker.

Recommendation: Powering Australia to develop an awareness campaign on the opportunities in clean tech manufacturing with First Nations stakeholders, including the co-development of information materials and engagement activities with First Nations Organisations.

Finding two: Connection to Country holds immense value for clean tech industry but this requires a shift in mindsets

Many of the opportunities traced out in this report are deployed on or near Country in regional and remote locations and require regional workforces or contractors with local knowledge and a long-term presence. First Nations communities bring this expertise, networks and connections, adding immense value to the development of clean tech manufacturing industries. For example, carbon management and land stewardship need deep cultural knowledge and expertise; critical mineral refining draws on the resource assets of Traditional Owners and Aboriginal corporations, the established expertise of First Nations mining supply chain operations, locally embedded knowledge and networks; and community engagement and cultural heritage services are clearly sectors where First Nations skills, cultural knowledge and expertise are essential. First Nations' connection to Country and community are an invaluable asset, and a common thread across the breadth of opportunities captured in all of the five SCPs. As one stakeholder points out:

> *Proponents don't see [name of corporation] as an investment partner but rather a compliance hurdle for approval.*
> *- CEO, Aboriginal Corporation*

Reframing this mindset of consultation as a compliance hurdle, rather than seeing the strategic benefits of First Nations ways of working, knowing and being requires urgent action.

Recommendations:
- Skills councils to work with industry to map and identify where First Nations strengths can bring value to clean tech business operations.
- Build industry awareness of First Nations' strengths and how these can add value across the breadth of clean tech manufacturing opportunities.
- Build industry capability through initiatives such as the development of units of competency (e.g. UEERE500X Apply cultural protocols and engagement practices with First Nations communities[100]) into micro-credentials accessible in online forms for industry.

Finding three: First Nations business leadership in clean tech manufacturing is emerging, but better data and programs are required to broaden and deepen opportunities

Across the five SCP sectors, there are promising 'green shoots' with an array of cases where First Nations' businesses, individuals and organisations are emerging as leading, bringing innovative clean tech solutions across the value chain. First Nations businesses are emerging across clean energy, carbon removals, transport and supply chains. As one First Nations business leader in clean transport manufacturing points out:

> *So, First Nations, it's not a case of are they participating? They are actually leading the way. It's a completely different frame of mind to what has traditionally been seen with industry and with any other major transitions that the country's undertaken. So, First Nations aren't just, "hey, what can we do?", First Nations [people] are actually making it happen.*
>
> *- Clayton Franklin, Chief Engineer, Electric Power Conversions Australia*

As the First Nations business sector grows – outpacing non-Indigenous businesses[101] – harnessing this growth and leadership has great potential for achieving social and sustainability outcomes. Unlike other major industrial and economic transitions Australia has undertaken, clean tech is emerging in new geographies and contexts built on decentralised technologies, which often are better aligned with First Nations communities. Sectors such as carbon management, including savanna burning and geological storage directly align with Indigenous land management models, these businesses and organisations provide employment that draws on "cultural knowledge, seasonal work patterns and stewardship of Country" (Clayton Franklin, 2026).

First Nations parties are also starting to take leadership positions in the clean energy space. Traditional Owners and PBCs are leveraging land, sea and resource assets, regional workforce availability and cultural knowledge, to secure agreements that deliver First Nations businesses procurement spend, training and innovative housing outcomes[102,103]. While much more needs to be done to level the playing field and realise these opportunities, there are promising moves towards long-term economic empowerment and self-determination.

Notes/Sources: [100]UEERE500X is currently in draft form for wider VET system adoption but could play a critical role in building industry competency. https://poweringskills.com.au/wp-content/uploads/2026/04/Appendix-5_PSO_ANN_2425_005_FNBQ-Renewable-energy-proponent-skill-set_v.1.pdf [101]ANZ and Deloitte (2025). Australia's $50 billion opportunity Fuelling the growth engine of the First Nations economy. https://www.anz.com.au/content/dam/anzcomau/mediacentre/images/mediareleases/2025/ANZ_Unlocking%20opportunity%20report%202025_web.pdf [102]See table (X) which lists the First Nations-led energy projects drawing on the First Nations Clean Energy Network's project tracker. [103]https://reneweconomy.com.au/wind-project-to-hand-over-worker-village-to-first-nations-community-and-create-new-home-for-black-cockatoos/ For example, the Parron Maam Marang wind project: https://reneweconomy.com.au/wind-project-to-hand-over-worker-village-to-first-nations-community-and-create-new-home-for-black-cockatoos/

These ‘green shoots’ of First Nations businesses and leadership, however, are not broadly available to First Nations people. Firstly, there is unequal access to land, sea and resource assets which has, for example, placed Traditional Owners in some locations (e.g. Pilbara) in positions to leverage assets that are not available in many other locations. Secondly, whilst there are some businesses emerging in capital-intensive sectors (e.g. transport), most businesses are currently concentrated in supporting services. Barriers such as access to capital curtail more traditional manufacturing business development. Supporting these emerging First Nations businesses and broadening opportunities through investment in business incubation and scale-up need to be prioritised and resourced in policy and programs.

However, current data sets on First Nations businesses categories also do not cover the diversity of clean tech manufacturing enterprises[104]. Supply Nation, Indigenous Business Australia and other agencies track their own data, but it is a fragmented landscape. This means that a fulsome picture of First Nations’ business leadership in clean tech manufacturing is not yet clear and insights are qualitative, rather than quantitative. Without clear data, it is difficult to determine where programs, policy and resources should be directed to nurture and grow First Nations’ clean tech manufacturing leadership and entrepreneurship.

Recommendations:

- Improve data on First Nations business participation in clean tech manufacturing through partnerships with key entities (e.g. Supply Nation, First Nations Chambers of Business and Commerce) to increase visibility of First Nations business success stories and understanding of how to support business growth.
- Establish a First Nations business incubator for clean tech manufacturing start-ups and businesses offering innovative solutions in more capital-intensive sectors to broaden business participation beyond services.
- Federal government to investigate measures to grow First Nations businesses through Future Made in Australia (FMIA) grants, such as setting a percentage of FMIA grants to be for First Nations businesses, merit criterion that demonstrates First Nations partnership or participation.

Finding four: Building commercial and negotiation capability is a critical enabler for leveraging the First Nations estate for business and workforce development

The transformation to a clean economy is bringing with it intensified pressure for Traditional Owner groups and Aboriginal and Torres Strait Islander Corporations (ATICs) to engage in negotiations related to land and sea access with limited historic precedent. Policy shifts, such as the latest Capacity Investment Scheme (CIS) round, are driving these negotiations, and while there is heightened interest in establishing new business models and partnerships, the same attention has not been paid to resourcing and skilling First Nations stakeholders to be able to negotiate. As one stakeholder pointed out:

> *You look at the [...] points of economic conflict in terms of land use and certainly the pastoral industry hasn’t been one that’s engaged with First Nations in any way. Mining it belatedly and reluctantly has. It wasn’t really until the 1990s that there was forced interaction and then recognition of some of the benefits. In neither of them do you have any discussion at all in a meaningful way around First Nations equity and revenue sharing [...] So, there’s not a lot of case studies and knowledge to build on amongst Traditional Owners to kind of understand what best practice is and why you might do things. So, I think it’s really important that people are provided with knowledge and information about what’s possible and that the boundaries continue to be pushed.*
>
> *- Policy, legal advisor*

Project literacy and commercial fluency, across energy and project concepts, financial models and term sheets, negotiation and deal structures, are all key skills and capabilities that require investment. As another stakeholder highlights:

> *There needs to be a lot more work done and – just using the Connection with Country example – to help communities better coordinate and support themselves and set up the right, not physical infrastructure, but the right governance infrastructure. So that they are able to better control how community, how they are... how they engage with projects like this, so that they can be supported to help streamline that engagement.*
>
> *- First Nations Business Owner*

Notes/Sources: [104]For example, ABS derives First Nations business data by identifying where First Nations people have recorded being an owner-manager of a business and using the industry category the individual named. 2021 ABS data reports that the top three industries are: Construction (4,622 people); Other services (1,671 people) and Health care and social assistance (1,588 people)[104]).

Creating policy that drives exponential engagement pressure and demand for already resource constrained ATICs and organisations, without resourcing and supporting First Nations participants to engage meaningfully creates the conditions for suboptimal outcomes.

Recommendations:

- Develop a resource hub and training for First Nations leaders and staff to upskill in commercial and negotiations.
- Facilitate knowledge exchange between specialist professionals (finance, legal etc.) from countries with strong precedents of First Nations co-ownership, revenue sharing and other financial arrangements, such as Canada.

Finding five: Procurement targets and commitments have worked effectively to grow Indigenous Businesses – an effective model is required as a precondition for growing First Nations employment

One of the major lessons from past experience is that there needs to be an effective alignment of ‘demand’ and ‘supply’ to grow Indigenous Businesses and employment. There is a long history of training programs which have not worked because whilst they were increasing the supply of First Nations people with the skills there was insufficient industry demand. ‘Training for the sake of training’ is a criticism that has emerged in past studies and also in stakeholder engagement for this LWDP:

> *I’m quite averse to training for the sake of training. I think Aboriginal people are the most overtrained and underemployed sector (sic) in Australia. I really am pushing back quite hard on these kinds of initiatives that are coming up just to offer training for the sake of training. It’s just really counterproductive. Any training that we initiate or what I’m pushing is training that has to be directly related to employment. And so, it’s employment first and then training later.*
>
> *- First Nations Partnerships Consultant*

Past studies have found workforce development should begin with credible place-based employment demand, such as apprenticeships, cadetships, maintenance roles, retrofit programs, and supply-chain jobs linked to large projects[105]. Training for training’s sake creates an over-skilled and under-employed cohort. Training needs to be directly connected to available workforce opportunities, ideally connected to local industry, offering the chance to stay on Country and connected to community.

However, whereas procurement targets and commitments for Indigenous Business have been demonstrated to work effectively to create demand to grow the sector, no equivalent mechanisms have yet emerged for First Nations employment. First Nations businesses are significant employers of First Nations people[106] – with one in three employees identifying as AB&TSI – so this is an important pathway, but broadening opportunities to non-First Nations businesses is needed. Available evidence suggests there is low First Nations employment in clean tech and that criteria in renewable energy auctions and procurement are not producing significant results.

Targets for employment are challenging and contentious. First Nations stakeholders have consistently advocated for the use of targets as a catalyst for employment, but setting uniform targets can create problems and unintended consequences. Talent pools vary between locations for example and if there is not the supply of workers then employers will use workarounds (e.g. relocating workers between projects to meet targets). A solution to develop an effective model for procurement targets and commitments is needed to create the demand catalyst for broader opportunities.

Different approaches need to be trialled and piloted. Training programs or workforce targets will not translate into jobs unless workplaces are ready to recruit, retain, and advance First Nations workers. As one experienced stakeholder that has worked with and for industry points out, industry often currently lacks the capacity to recruit effectively:

> *You’ve got all these targets and it’s quite interesting, because I’m just going through this process with [name of company]. They make these big commitments to win the contracts or win the funding or support without really understanding just what that entails. I had an interesting meeting yesterday with one of the contractors and they’re still in the mindset of “best endeavours”. You know, give it our “best endeavours to employ Aboriginal apprentices” and that type of stuff and you kind of have to say, “No, that model is no longer the same”. You can’t just use best endeavours. You actually have to do it. [...] These targets are set, yet the contractors have no capacity or skill or expertise in this area. And that’s definitely not a criticism of them. It’s just not their core business. They’re not set up to do that. And then they get told, oh, we’ve got these targets you have to meet.*
>
> *- First Nations Partnerships Consultant*

Notes/Sources: [105]Briggs, C. et al. (2024). First Nations Clean Energy Jobs Strategy. [106]Polidano, C., Evans, M., Dahmann, S. C., Manganda, A., Kalera, Y., Moschion, J., Ruiz, M., Murray-Noble, B. (2025). Indigenous Business and Corporation Snapshot Study 4.0. The University of Melbourne. https://dilinduwa.com.au/snapshot-studies

The NSW Infrastructure Skills Legacy program offers an example of an innovative alternative that has paved the way for use of procurement targets. Voluntary targets were trialled for construction infrastructure supported by the deployment of support officers to help industry achieve targets. The success of the program has led to the use of targets for under-represented groups including First Nations becoming standard practice and lifting employment rates.

Recommendation:
- Trial the use of voluntary employment targets linked to place-based employment and training initiatives for clean tech manufacturing through procurement and grant programs.

Finding six: Build entry pathways to long-term career jobs for key clean tech employment opportunities

People are more likely to move into sectors they can see and understand, and this is equally true for First Nations people across the clean tech value chain. Visibility of roles and role models in the community is an important first start, and in this way, lower barrier entry points such as fencing and traffic management were highlighted by stakeholders because they:

- Require shorter training
- Are visible in community
- Avoid literacy related shame

However, emphasis should always be on opportunities that enable long-term career development and growth, not just low-skilled short-term opportunities. Pathways should then allow workers to build into more specialised trade, technical, supervisory, governance and enterprise roles as capability develops. First Nations specific training packages, such as the "Certificate II entry pathway focused on clean energy foundations, safety and decision making, supporting energy literacy" under exploration by Powering Skills Organisation[107], can be a supportive factor, helping First Nations workers, up-skill incrementally.

Qualification structures that allow First Nations workers to enter at accessible entry points and progressively build credentials toward trade, technical, supervisory and enterprise roles without having to restart from scratch are important features in the multifaceted approach required for long-term career development.

> *There's always gaps between projects and there's uncertainty, and that's one of the challenges that I'm trying to come up with a solution to address. Because I think that's a gap in the model in renewables, at least, just in terms of that ongoing employment.*
>
> *- First Nations Partnerships Consultant*

There is an obvious tension with the nature of certain industries, such as renewable energy and construction, which are often short-term entry level jobs, and the need for secure, long-term employment that supports professional development. A suite of workforce development programs and initiatives are needed that work across entry level, through to ongoing development and leadership.

Recommendations:
- Build visible career pathways into clean tech manufacturing: skills councils to map and communicate clear progression routes from entry-level roles (e.g. fencing, traffic management, land management) through to trades, technical, supervisory and leadership and governance positions.
- Where appropriate, industry to partner with First Nations labour hire organisations that provide ongoing employment, career progression, and pastoral care for First Nations workers, rather than short-term project hires.

Notes/Sources: [107]Powering Skills Organisation (2026). First Nations Bespoke Qualification. https://poweringskills.com.au/project/first-nations-bespoke-qualification/#finalisation

Finding seven: Build structured pathways for community engagement and cultural heritage roles

One of the first areas where this could be trialled is for community engagement and cultural heritage roles which were seen as high opportunity but high pressure areas. People are often asked into these roles because they already hold community trust, but may need more support with:

- Industry expectations
- Structured engagement processes
- Running defensible co design

As one participant highlighted:

> *Yeah, there absolutely is a lack of, whether you want to call it a formal pathway or not, but there's a lack of a pathway for young mob to be able to shape and turn community engagement skill sets into something that's actually a viable business and something that's a recognised independent skill set. I think it's always been seen as a by-product of other work.*
>
> *- First Nations Consultancy and Business Owner*

Several participants noted that many First Nations staff already know how to engage with community; the bigger gaps can be on the organisational side, including, reporting, internal translation, conflict navigation, process management and reporting. Pathways need to combine lived credibility with process skills, backed by clearer roles and stronger support to reduce burnout. Community engagement and heritages services underpin multiple projects and industries in the clean tech manufacturing sector, as one stakeholder identifies, these are fundamentally aligned with First Nations expertise:

> *Community engagement, heritage services and environmental management are critical enablers of clean technology deployment and align strongly with Indigenous governance, land stewardship and cultural authority. When embedded early, these services improve project outcomes and support genuine partnership rather than transactional engagement.*
>
> *- Clayton Franklin, Chief Engineer, Electrical Power Conversions Australia*

Recommendation:
- Build structured pathways for community engagement and heritage roles: Indigenous Centre of Vocational Excellence (ICOVE) to work with Skills Councils to develop training and professional development that integrates lived community experience with the process skills needed in community engagement and cultural heritage roles (e.g. reporting, conflict navigation, co-design practices).

Finding eight: Wraparound support needs to be funded as core workforce and training infrastructure, and it needs to be community-led and or/co-designed

Stakeholders made explicit the key role wraparound support plays in delivering successful workforce outcomes for First Nations communities and employers. Wraparound support and services can include pre-employment training, financial and emergency relief, mentoring, practical support like transport and uniforms, practical retention supports, and funded buddy roles. One stakeholder emphasised the difference between support "inside the gate" (the job itself) and "outside the gate" (routine, wellbeing, transport, mentoring and trusted advice). And highlighted that the strongest returns were seen when "outside the gate" supports are in place, because without them participation is unlikely to last.

These "outside the gate" supports deliver greater outcomes in terms of worker retention, and in training contexts, successful completions and post-study employment outcomes. Programs such as the Barranggirra (Skilling for Employment Initiative)[108] funded by the Department of Education NSW and delivered by community partners provide culturally appropriate mentoring to First Nations learners, delivering increased retention and completion rates, and post study employment outcomes. Wraparound support and services are seen as core elements to training and workforce development planning, and should be integrated at the sector, industry and proponent/business level.

There is a well-established body of evidence that shows that First Nations participation and outcomes improve when programs are designed by and for First Nations communities[109]. This includes Indigenous-owned businesses, local governance, culturally safe workplaces, and partnerships that respect community priorities rather than imposing generic labour-market models. Wrap-around services need to be treated as core workforce infrastructure, not a discretionary add-on.

Recommendations:

- Industry to invest in and prioritise wraparound supports when developing employment plans such as on-site support roles (buddy systems, cultural liaisons, mentors) and coordinate with community-led 'outside the gate' services covering transport, financial wellbeing and mentoring.
- The Indigenous Centre of Vocational Excellence (ICOVE) to steward the development of training support and mentoring programs that align to emerging clean tech manufacturing and net zero qualifications.

Notes/Sources: [108]NSW Department of Education (2026). Barranggirra: Skilling for Employment Initiative. https://education.nsw.gov.au/skills-nsw/aboriginal-and-torres-strait-islander-peoples/programs-and-initiatives/barranggirra [109]Butler, T., Gall, A., Garvey, G., Ngampromwongse, K., Hector, D., Turnbull, S., Lucas, K., Nehill, C., Boltong, A., Keefe, D., & Anderson, K. (2022). A Comprehensive Review of Optimal Approaches to Co-Design in Health with First Nations Australians. International journal of environmental research and public health, 19(23), 16166. https://doi.org/10.3390/ijerph192316166

Finding nine: Effective workforce development requires developing industry and education and training system capacity

First Nations workforce development needs to first be considered in the context of self-determination – First Nations people have the right to, and should be empowered to govern, design and make choices about training, education, employment and workforce participation.

Workforce development for clean tech manufacturing should be considered as a part of Closing the Gap (CTG)[110] and the wider efforts to dismantle systems that perpetuate inequity. Systemic change means assessing structural barriers and working together to address them and to open up new opportunities. Barriers include limited access to training, weak school-to-work transitions, geographic remoteness, transport and housing constraints and cultural safety issues. In manufacturing contexts, these barriers can be intensified by the concentration of facilities in regional industrial hubs.

System change also means building the capability of system actors, such as industry and employers, and education and training providers. Employers, therefore, need support and capability development to become culturally competent and safe workplaces that value, cultivate and encourage First Nations workers' unique contributions.

Building the capability of industry is a critical part of effective workforce development. This needs to be done in concert with the education and training system.

Recommendations:

- Invest in the supporting structures which enable workforce participation, such as affordable and accessible transport, childcare, housing, and healthcare, particularly in remote and regional industrial hubs.
- Partner with First Nations people to co-design and co-deliver ongoing, comprehensive cultural safety training for employers.
- Support employers financially so that they can provide sufficient on-the-job training, meaning higher likelihood of employee success and longevity in the role.
- Build structured, visible pathways from secondary school into clean tech manufacturing roles including careers education, industry visits, work experience, VET in Schools and school-based apprenticeships in relevant trade and technical streams.

Finding ten: Independent First Nations intermediaries are critical

There is strong support for trusted First Nations intermediaries that sit between community, government, and industry. Without this layer, staff employed directly by companies or government can be pulled between corporate obligations and community accountability.

Participants stressed the need to build First Nations capacity to understand projects, assess options and negotiate on their own terms and to lift industry capability to engage properly with communities. First nations intermediaries operate to enable effective communication and translation of community and cultural governance and protocols between systems and actors. In the context of intensified industry engagement, First Nations intermediary organisations can alleviate some of the pressure on AB&TIS organisations, enabling smoother processes. They can also function to deliver First Nations-led workforce and training wraparound support and industry capability building.

Recommendations:

- Government and Education and Training programs to prioritise funding for:
- Community controlled organisations
- Aboriginal run mentoring and support providers, including First Nations Group Training Organisations
- Independent First Nations advisory/consultant functions
- First Nations-led RTOs

Notes/Sources: [110]Workforce development supports Closing the Gap targets 6 (By 2031, increase the proportion of Aboriginal and Torres Strait Islander people aged 25-34 years who have completed a tertiary qualification (Certificate III and above) to 70 per cent); 7 (By 2031, increase the proportion of Aboriginal and Torres Strait Islander youth (15-24 years) who are in employment, education or training to 67 per cent.) and 8 (By 2031, increase the proportion of Aboriginal and Torres Strait Islander people aged 25-64 who are employed to 62 per cent.). https://www.closingthegap.gov.au/national-agreement/targets

List of tables and figures

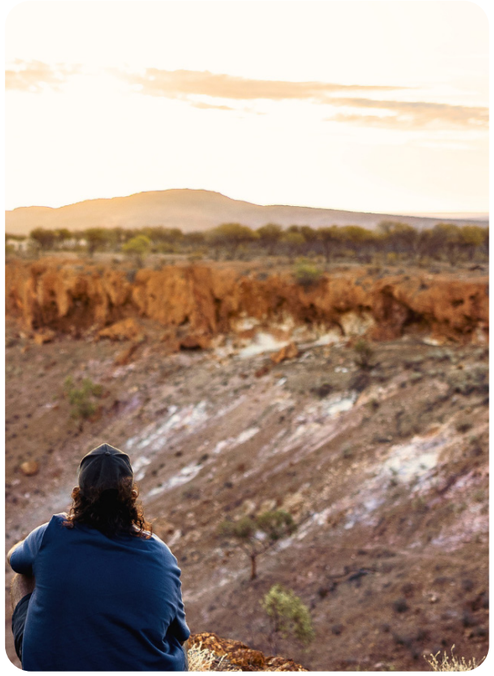


Table of abbreviations

Name	Abbreviations
Australian Bureau of Statistics	ABS
Aboriginal and Torres Strait Islanders'	AB&TSI
Australian and New Zealand Standard Classification of Occupations	ANZSCO
Battery Electric Vehicles	BEVs
Capacity Investment Scheme	CIS
First Nations Clean Energy Strategy	FNCES
First Nations Clean Energy Network	FNCEN
Future Made in Australia	FMIA
Gross Value Added	GVA
Indigenous Energy Agency	IEA
Indigenous Land Use Agreement	ILUA
Leadership & Workforce Development Plan	LWDP
Low Carbon Liquid Fuels	LCLF
Renewable Energy Zone	REZ
Registered Training Organisation	RTO
Sector Competitiveness Plan	SCP
Technical and Further Education	TAFE
University of Technology Sydney, Institute for Sustainable Futures	UTS-ISF
Vocational Education and Training	VET