

An Apprentice First Strategy for Australia

**A national capability strategy for resilient,
adaptive and future-focused skills**

**A policy paper by the National Australian
Apprenticeships Association**

This paper argues that apprenticeships and traineeships should be treated as national capability and resilience infrastructure. Australia needs an integrated work-based learning system that can build competence, then proficiency, then mastery in the occupations that will keep the country productive, resilient and cohesive through the next five years of economic change.

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Acknowledgement of Country

We acknowledge the Wiradjuri, Birpai, Gadigal of the Eora Nation, and Jagera and Turrbal peoples as the Traditional Custodians of the lands on which this paper was researched and written. We pay our respects to their Elders past and present and recognise their continuing connections to Country, culture and community.

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**National Australian
Apprenticeship Association**

1. Executive Summary

The core workforce challenge over the next five years is that Australia will need more workers in practical, technical, care and infrastructure occupations at the same time as employers face uncertainty, training pipelines weaken, migration becomes more contested, misinformation erodes trust, cyber risk expands and AI reshapes entry-level pathways. If the apprenticeship system does not adapt, workforce shortages will constrain housing delivery, energy transition, climate resilience, care services, digital infrastructure and national productivity.¹

This paper develops three economic scenarios that model the implications of these megatrends and global risks.

- **Constrained stability** in a contested world – where the labour market remains broadly resilient tracking current Treasury forecasts. Here apprenticeships help defend baseline growth.
- **Industrial acceleration** under bloc competition – where productivity increases if bottlenecks can be addressed. Here apprenticeships help capture productivity gains.
- **Compound disruption** and trust breakdown- where the labour market is transformed under stress. Here apprenticeships help maintain social cohesion and avoid a skills austerity trap.

Across the three scenarios the world is more contested, AI-enabled, cyber-exposed, climate-stressed and misinformation-prone. So, Australia will need workers who can keep essential systems functioning under pressure. It will also need visible pathways into secure work that help maintain social trust during transition.

Integrated work-based learning is the bridge. It builds competence by making people perform safely. It builds proficiency by exposing them to variation and feedback. It builds mastery by placing them in communities of practice where judgement is modelled, tested and passed on.

But current policy settings are not sufficient to narrow the gap between the growth in the labour force and the raw number of apprentices and trainees we need. Or supply the optimal mix of trade and technical skills Australia will require over the next five years. Recent changes to incentive levels mean that financial supports for apprentices, trainees and their employers will be at a decade low next year.² Whilst in-training levels are already lower than 10 years ago.

The central policy choice is whether apprenticeships and traineeships are treated as a less favoured training pathway, or whether they are refreshed as a strategic national asset and a visible vehicle for productivity, resilience and social cohesion.

Apprenticeships achieve strong workforce outcomes because the learning is purposeful, relevant, flexible and clearly connected to work, income, career mobility or personal goals. They develop skills highly valued by employers. JSA have found that apprenticeships and traineeships have the highest wage uplift of any VET qualifications and NCVER research showed a 94.8% employment rate after completion, the highest in the tertiary sector.³

The policy paper is structured around three themes from the economic scenarios we have modelled:

- **First**, integrated work-based learning is the best available model for building competence, proficiency and mastery of occupational skills.
- **Second**, Australia's apprenticeship pipeline is weakening at the very moment national demand for trade, technical, care and infrastructure capability is rising.
- **Third**, a policy refresh is needed to make apprenticeships and traineeships central to productivity, climate adaptation, housing delivery, care, industrial capability and social cohesion.

Apprenticeships and traineeships are sometimes thought of as an old fashioned pathway. That is the wrong frame. They are one of the few learning models already designed for the economy that is coming: an economy where people must learn continuously, use technology intelligently, build real things, care for real people, manage real risks and keep improving through work.



AI will answer questions, draft documents and generate technical suggestions. It will not carry the ladder, comfort the client, notice the smell of overheating equipment, judge whether a workaround is safe, mentor a first-year apprentice or rebuild trust after a service failure. The economy will need people who can connect knowledge to action.

The Association argues that the policy response should be a future focused Apprentice First Strategy: a national commitment to expand, modernise and protect integrated work-based learning through apprenticeships and traineeships.

1. CSIRO (2022); WEF (2026); DEWR (2026) AI and employment; JSA (2025) GenAI.

2. Budget Paper No. 1 (2026-27); DEWR (2025) Apprenticeship Incentive Review.

3. JSA (2024) apprentice review inputs; JSA (2026) Partial VET completion; NCVET (2026) apprentice outcomes.

Apprentice First Strategy

Coaching and Trust: Make workplace quality the foundation of improved completion rates and system engagement

Apprentice and employer supports need to be restored and rebalanced. Future incentive settings must ensure increased employer participation in the system by recognising and supporting the quality of the apprenticeship employment and training experience, including active supervision, safety, wellbeing, fair treatment and completion levels.

The Training Contract sign-up process should be streamlined to remove repetitive bureaucracy whilst introducing a registration process for first time employers of apprentices. An Apprentice Connect Australia Gateway service should assist first time employers with best practice recruitment and induction.

Each Apprentice and Trainee should have a named coach in the workplace who they meet with regularly to discuss their wellbeing, progress and address any issues. Through the Skills Agreement this coaching role should be a feature of a nationally harmonised Training Contract where lodgment rules are aligned.

Higher employer completion rates should be rewarded. Employer participation, quality supervision and early intervention should be treated as trust infrastructure – ensuring a fair deal for apprentices and trainees, and locally visible pathways to secure work for the wider community.

Touchpoints and targets: Make the Australian Apprenticeship Support System more demand-driven, responsive and counter-cyclical

The Apprentice Connect Australia support system should provide multiple touchpoints with apprentices, trainees and employers. It should include a quality focused employer gateway, streamlined sign-up processes, judicious use of AI tools, an apprentice app linked to ADMS to improve the user experience, a frictionless claims process, demand-driven mentoring support, and targeted specialist supports delivered through efficient generalist infrastructure.

The system should also include automatic stabilisers. When downturn, disaster or employer-withdrawal indicators rise, wage subsidies, group training, public-sector placements and shared-employer models should expand automatically.

The incentive regime should be set to restore apprenticeship and traineeship participation to at least 2.5 per cent of the workforce. The average achieved this century prior to the pandemic. Today that would mean 370,000 apprentices and trainees in-training and 120,000 businesses with the confidence to provide these employment opportunities.⁴

Stronger harmonisation: A national model linking VET in schools with school-based and pre-apprenticeships

VET in Schools is expanding strongly, but school-based apprenticeships and traineeships are not capturing a commensurate share of that growth.

The school system now has 276,860 school students already choosing vocational learning, yet fewer than 20,000 of them are combining it with an actual apprenticeship or traineeship. There is therefore a very large pool of students who have already demonstrated an interest in vocational pathways, but who are not being connected to structured employment-based training.

A national approach which emulated the model in Queensland could triple the number of school based apprentices within 5 years.

Ai enabled pathways: Design fast-track career transition traineeships for displaced and exposed workers

The next five years are likely to involve displacement or reduced hiring in routine cognitive work, retail, administration, lower-skill services and some traditional industries. Many affected workers will be adults, not school leavers.

Policy should support adult transitions through the build out and implementation of the National Skills Taxonomy, a skills passport, wage supplements, recognition of prior learning and experience. Accelerated training where safe, flexible delivery, career counselling and wraparound support through Apprentice Connect Australia.⁵

A flexible six-month career transition traineeship should be designed for AI-enabled roles that can recognise prior experience and move displaced workers into growing occupations. The contestable training market needs to be refreshed to ensure Australia has the breadth and depth of private and community RTOs needed to support the transitions ahead.

Essential workers: Treat apprenticeships and traineeships as national capability and resilience infrastructure

The policy frame should move beyond “earn while you learn”. Apprenticeships and traineeships build the workforce that keeps the country functioning under pressure. They are essential to housing supply, climate adaptation, energy transition, care provision, industrial capability, defence readiness, disaster recovery, digital infrastructure, cyber-physical maintenance and social cohesion.

The strategy should explicitly recognise that domestic training capability reduces dependence on fragile global labour and supply chains. This is not an argument against skilled migration; it is an argument for having the domestic capability to maintain, repair and adapt essential systems when global conditions become less reliable.

This is a driving rationale for restoring the financial supports funding envelope.

Build it up: Link apprenticeships more strongly to housing delivery

Housing is the political hinge for migration, social cohesion and economic stability. Construction apprenticeship targets should be aligned to housing targets. Public housing and major housing projects should carry training obligations. Small and medium construction employers should receive incentive and support settings that allow them to take on apprentices safely and sustainably.

Women’s participation in construction trades should be treated as a mainstream workforce priority. Housing-linked apprenticeship pathways should also include climate-resilient building, prefabrication, digital plans, safety technology and repair capability.

The Key Apprenticeship Program needs to be redesigned to better balance financial supports and drive employer engagement based around a quality compact.

Update and embed: Include AI and cyber-physical transition into apprenticeship and traineeship qualifications

AI should be fully embedded across priority qualifications. Relevant capabilities include AI-assisted diagnostics, digital work orders, automated compliance, sensors, data interpretation, remote expert support, digital customer communication, ethical AI use and human review in high-stakes decisions.⁶

Cyber safety should be treated as a mainstream vocational capability. Energy, water, transport, health, aged care, buildings, logistics and data centres are increasingly cyber-physical systems. The qualified tradesperson, technician or trainee in 2031 should be comfortable working in AI-enabled and cyber-aware environments.⁷

Reduce and react: Create an integrated work-based learning plan for climate adaptation

Climate adaptation requires skilled labour. Heat-resilient building, home retrofits, electrical upgrades, HVAC and refrigeration, water systems, drainage, flood mitigation, bushfire recovery, coastal resilience, emergency infrastructure, telecommunications resilience and distributed energy should all have linked apprenticeship and traineeship pathways.⁸

The WEF risk outlook highlights that environmental risk may be politically crowded out in the short term even as long-term environmental stress intensifies. Australia should build the adaptation workforce before crisis demand peaks. Climate policy without a workforce plan will underdeliver.

Joined up policy: Integrate industrial, skills and geoeconomic resilience policies to underpin social cohesion

Major public investments should create training pipelines. Critical minerals processing, grid scale batteries, renewable energy, grid construction, defence manufacturing, shipbuilding, robotics, data centres, telecommunications, cyber-physical infrastructure and autonomous mining and agriculture all require applied technical workers.

In a world of geoeconomic confrontation, skills policy should be part of sovereign capability. Public procurement should create apprenticeships and traineeships in strategic sectors, and the Australian Skills Guarantee should be expanded so major projects build the workforce needed to operate, maintain, secure and upgrade the assets they create.⁹

Hyperscalers should enter a “Skills Compact” as they build out AI infrastructure to ensure they employ net additional apprentices and trainees rather than poaching existing ones from small and medium enterprises.

Lead indicators: Establish a scenario-based skills and risk dashboard with national targets

Australia needs better leading indicators. A national dashboard should track apprenticeship commencements, completions and cancellations; employer participation; mature-age apprentice uptake; vacancies in priority occupations; construction and care workforce shortages; grid and energy labour demand; climate recovery demand; AI adoption; migration settings; international student and VET enrolments; and employer completion performance.¹¹

The dashboard should also include WEF-aligned risk indicators: geoeconomic confrontation signals, trade disruption, cyber incidents affecting critical infrastructure, inflation and interest-rate stress, business insolvencies, AI-linked asset-market exposure, misinformation and social-cohesion indicators, migration sentiment, climate disaster recovery demand and public infrastructure delays. The Skills Minister should be a member of Cabinet and develop an annual targets for employer participation, apprenticeship commencements, in-training and completion levels based on the economic conditions ahead.

4. [ABS Labour Force \(Sep 2025\)](#); [NCVER DataBuilder \(Sep 2025\)](#).

5. [JSA National Skills Taxonomy \(2026\)](#).

6. [JSA \(2025\) GenAI](#); [FSO Uplift Digital Capability \(2026\)](#); [FSO Digital Capability Trial \(2026\)](#).

7. [WEF \(2026\)](#).

8. [National Climate Risk Assessment \(2025\)](#); [CSIRO \(2022\)](#).

9. [DEWR Australian Skills Guarantee \(2026\)](#); [Finance ASG procurement policy \(2026\)](#).

10. [Scanlon \(2025\)](#); [Lowy Poll \(2026\)](#); [UNHCR \(2025\)](#).

11. [WEF \(2026\)](#); [JSA employment projections \(2025\)](#).



The implementation test is simple: by 2031, Australia should have more qualified workers in the occupations that are least exposed to direct AI substitution and most important to national resilience. It should also have redesigned pathways for occupations whose task base is being reshaped by AI and a support system capable of maintaining training through disruption.

A key implication is that the federal government funding envelope will need to be restored to ensure the apprenticeship system can deliver its vital and strategic purpose.

2. First Principles

What is the workforce challenge Australia must solve?

Australia's workforce challenge is no longer simply a matter of matching training supply to current vacancies. The next five years will test whether the skills system can build national capability under conditions of uncertainty. The CSIRO's work on global megatrends points to a future shaped by climate adaptation, resource constraints and net zero, rising health demand, geopolitical shifts, digital transformation, increasing autonomy and the growing importance of trust, transparency and human-centred decision making.¹²

The latest World Economic Forum Global Risks Report identifies geoeconomic confrontation, misinformation and disinformation, cyber insecurity, economic downturn risk, inflation, asset-bubble risk, social polarisation, erosion of civic freedoms and long-term environmental stress now becoming core planning risks for governments, businesses and communities.¹³

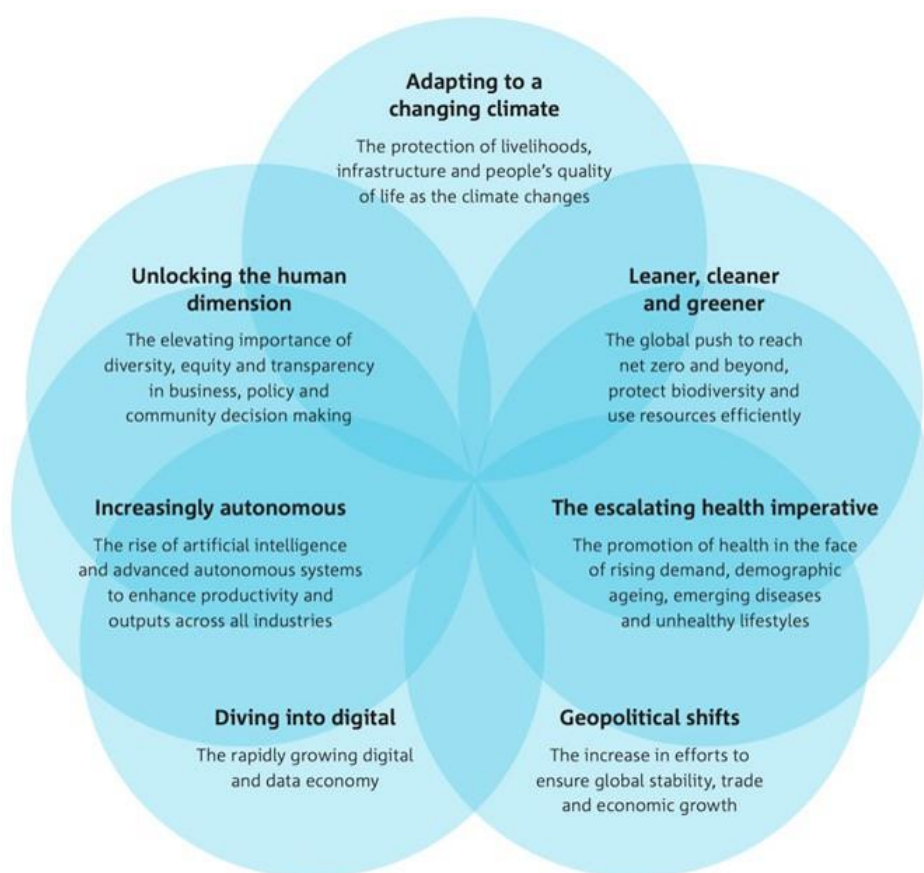


Figure 1 Our Future World CSIRO

These trends are converging. Climate change increases demand for construction, repair, water, energy, emergency response and heat-adaptation skills. The energy transition increases demand for electricians, lineworkers, technicians, mechanics, construction trades and digitally capable field workers. Population ageing and disability support needs increase demand for care workers. AI changes task content across the economy, with the greatest immediate pressure falling on routine cognitive and administrative work. Geoeconomic instability increases the value of sovereign industrial capability and secure supply chains.¹⁴

12. [CSIRO \(2022\)](#).

13. [WEF \(2026\)](#).

14. [CSIRO \(2022\)](#); [National Climate Risk Assessment \(2025\)](#); [JSA Clean Energy Generation \(2023\)](#); [JSA \(2025\) GenAI](#).

The WEF risks report presents a world where Australia cannot assume stable supply chains, benign global technology markets, uninterrupted migration flows or high levels of public trust.



Figure 2 WEF global risks report 2026 - risk summary

The megatrends describe the structural direction of change; the WEF risk outlook describes the stress channels through which that change may reach Australian employers, workers and communities. The following themes converge:¹⁵

- Geoeconomic confrontation becomes an organising global risk. Trade tariffs, finance, technology, sanctions, regulation, capital flows and supply chains are increasingly used as strategic instruments. This can disrupt export markets, technology access, equipment prices, critical inputs and employer confidence.
- Economic stress is broader than an AI stock correction. Downturn risk, inflation, debt stress and asset-bubble risk can reduce hiring and employer willingness to train, especially among small and medium employers.
- Misinformation and disinformation become labour-market risks. False or polarising narratives can undermine support for migration, climate adaptation, renewable infrastructure, AI adoption, VET reform and public investment.
- Cyber insecurity becomes a workforce issue. Energy, water, transport, health, aged care, buildings, logistics and data centres are increasingly cyber-physical systems. Field workers will need cyber-safe practices and systems awareness.
- Trust becomes productive infrastructure. Inequality, social polarisation and declining trust can weaken the capacity of governments and businesses to respond. Apprenticeships have a critical advantage because they are visible, local and connected to real jobs.

Environmental risk remains structurally severe even when short-term politics are crowded by other crises. Extreme weather, biodiversity loss and critical Earth-system change will intensify demand for adaptation, repair and resilience work over the decade.

The core problem is that Australia will need more workers in practical, technical, care and infrastructure occupations at the same time as employers face uncertainty, training pipelines weaken, migration becomes more contested, misinformation erodes trust, cyber risk expands and AI reshapes entry-level pathways. If the apprenticeship system does not adapt, workforce shortages will constrain housing delivery, energy transition, climate resilience, care services, digital infrastructure and national productivity.

15. [CSIRO \(2022\); WEF \(2026\)](#).

3. Why integrated work-based learning matters now more than ever.

Australia will not merely need more people who have been taught about work. It will need more people who can do work, improve through work, and adapt work as technology, climate pressure and labour-market demand change around them. That is why integrated work-based learning through apprenticeships and traineeships should be treated as a strategic national capability model¹⁶

Institution-based learning remains essential. It provides structured theory, safety knowledge, technical principles, assessment discipline and transferable concepts. But by itself it is not enough for the occupations the economy will increasingly rely on; trades, care, clean energy, construction, digital infrastructure, advanced manufacturing, logistics, maintenance, repair, climate adaptation and community services.

These occupations require people to move from knowing to doing to judging. They require the formation of competence, then proficiency, then mastery. That formation is difficult to achieve in a classroom alone. It is developed in the live environment of work, where tasks are real, standards are enforced by customers and supervisors, mistakes have consequences, and learners are gradually entrusted with greater responsibility.

The workplace is not just a training location. It is the setting where knowledge becomes judgement.

Formal training provides concepts. Workplace learning provides repetition, feedback, accountability and occupational identity.

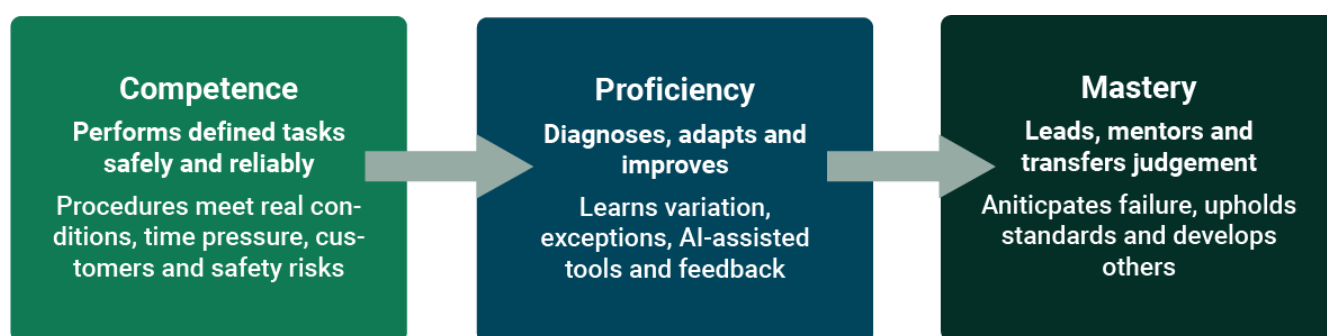


Figure 3: Work-based learning builds capability in stages

Competence: performing safely and reliably

Australia has a competency based training system, but competence is just the foundation. At this stage, the learner acquires the ability to perform defined tasks safely and to standard. In a training institution, competence can be demonstrated through simulated exercises, written assessment or controlled practical tasks. In the workplace, competence is tested against real constraints: time pressure, weather, imperfect information, equipment variation, safety risks, team interdependence and customer expectations.

This matters because many of Australia's future workforce needs are safety-critical and context-specific. An apprentice electrician, plumber, carpenter, mechanic, aged care trainee or telecommunications technician must learn how standards apply when the environment is untidy, the client is anxious, the equipment is old, the documentation is incomplete and the job must be completed without compromising safety.

16. [NCVER work-based education in VET \(2020\); JSA skills-first tertiary system \(2026\).](#)

Proficiency: diagnosing, adapting and improving

Proficiency emerges when a worker can handle variation. A proficient worker does not merely follow instructions. They diagnose, adapt, communicate, manage risk and learn from feedback. This is where apprenticeships and traineeships become especially powerful, because the workplace provides a continuous stream of varied cases that no institution can fully reproduce.

In the next five years, proficiency will become more valuable because technology will change the task mix in many occupations. A technician may use AI-assisted diagnostics but still need to judge whether the diagnosis makes sense. A care worker may use digital records and remote monitoring, but still need to notice distress, build trust and make human judgements. Proficiency is the stage at which workers learn to use systems without becoming dependent on them.

Mastery: leading, mentoring and transferring judgement

Mastery is not simply speed or technical excellence. It is the ability to exercise judgement, anticipate failure, mentor others, coordinate teams, uphold standards and transfer knowledge across situations. Mastery turns a qualified worker into a productive supervisor, a safe tradesperson, a reliable carer, a team leader, a business owner or a mentor for the next generation.

A purely institution-based model struggles to produce mastery because mastery requires repeated exposure to real work, accountability, feedback and responsibility. Apprenticeship systems matter beyond the individual learner because they are a social technology for reproducing occupational standards across generations.

It is mastery that employers value most and this is the basis for the high wage uplift and unparalleled employment outcomes achieved through apprenticeships.

Adult learning

From the apprentice and trainee perspective the latest research suggests that adults prefer learning that is purposeful, relevant, flexible and clearly connected to work, income, career mobility or personal goals. They are more likely to engage when their prior experience is respected, existing skills are recognised, practical barriers such as time, caring responsibilities and income are addressed, and the learning can be applied quickly.¹⁷

This is why adult learning policy should not begin with the assumption that adults simply need more access to courses. Adults need learning that fits their lives, builds confidence and produces visible value.

An optimal approach is to recognise that adults benefit from multi-modal learning: seeing, doing, discussing, practicing, reflecting, receiving feedback and applying judgement in context. Apprenticeships and traineeships are well suited to this because they combine structured instruction with observation, coaching, repetition, workplace problem-solving and assessment against real occupational standards.

Integrated work-based learning turns formal knowledge into occupational capability. The learner first builds competence by performing defined tasks safely and reliably; then develops proficiency by diagnosing variation, adapting to real constraints and learning from feedback; and finally moves toward mastery by exercising judgement, mentoring others and transferring standards across situations.

Institution-based learning can provide concepts, theory and controlled practice, but the workplace adds time pressure, safety consequences, customer expectations, team interdependence, imperfect information and the discipline of real work. This combination meets the needs of practical, social, reflective and self-directed adult learners.

This will become more important over the next five years as AI makes information more abundant but increases the value of applied capability. Adults displaced from routine cognitive, administrative or lower-skill service roles will need more than short courses; they will need credible bridges into new labour markets, including employment, income, supervision, mentoring, recognition and portable credentials.

17. [JSA Forces at Work \(2026\); OECD adult learners \(2026\); Learning and Work Institute \(2024\).](#)

Coaching

High-quality apprenticeships and traineeships provide that bridge when they are supported by flexible entry, recognition of prior learning, mature-age wage support, strong workplace coaching and supervision and early intervention where the training relationship is at risk. Their strategic value is that they help adults keep learning while working and keep working while learning.

ACA provider research indicates that 75% of apprentices rate their on-the-job training as good or excellent but for 25% there is a mismatch between how well their employers think their apprentice is progressing and the feelings of the apprentices themselves - that are often more nuanced and critical of an absence of workplace supports.

In some jurisdictions the name and qualifications of the supervisor are captured in the Training Contract, but this is not a consistent national requirement. We also know that supervisors may change from year to year, and from worksite to worksite.

A better model would be for each apprentice and trainee to have a named workplace coach who meets with them regularly to discuss their wellbeing progress and address any issues that they are encountering.

The best employers already provide this type of support, whether formally or informally and where it occurs it is a critical success factor. The Association recommends that identifying a named workplace coach becomes a standard part of the Training Contract.

Training system

The rapidity of change is a key challenge for the training system. There is an understandable lag as qualifications are systematically upgraded and trainers refresh their workplace knowledge and currency. The Future Skills JSC is alive to this challenge with streams of work that build AI capability across the workforce, create faster training product development, create specialist AI pathways, drive tri-partite mobilisation around implementation and national coordination.¹⁸

At the same time the contestable training market is being weakened as governments have shifted funding allocations to the Public Providers rather than increasing overall investment in line with need.

This has diminished the capability and capacity of community and private RTOs to offer flexible workplace based traineeships and apprenticeships.

There is a challenge to ensure that the top down adaptive work meets a capable RTO ecosystem able to integrate real workplace practice into their training programs. It's the private and community RTOs that have predominantly serviced thin markets and regional areas as well as providing a sales force for the uptake of traineeships and apprenticeships. But these are exactly the organisations that have been hardest hit by the decline in traineeship commencements as training places and financial supports have been removed.

A refreshed approach to the contestable training market must ensure there is training capability able to meet the coming demand for integrated work based learning.

School based apprenticeships

VET participation in Australian schools is at its highest level since the national collection began in 2006. In 2025, among students aged 19 and under:

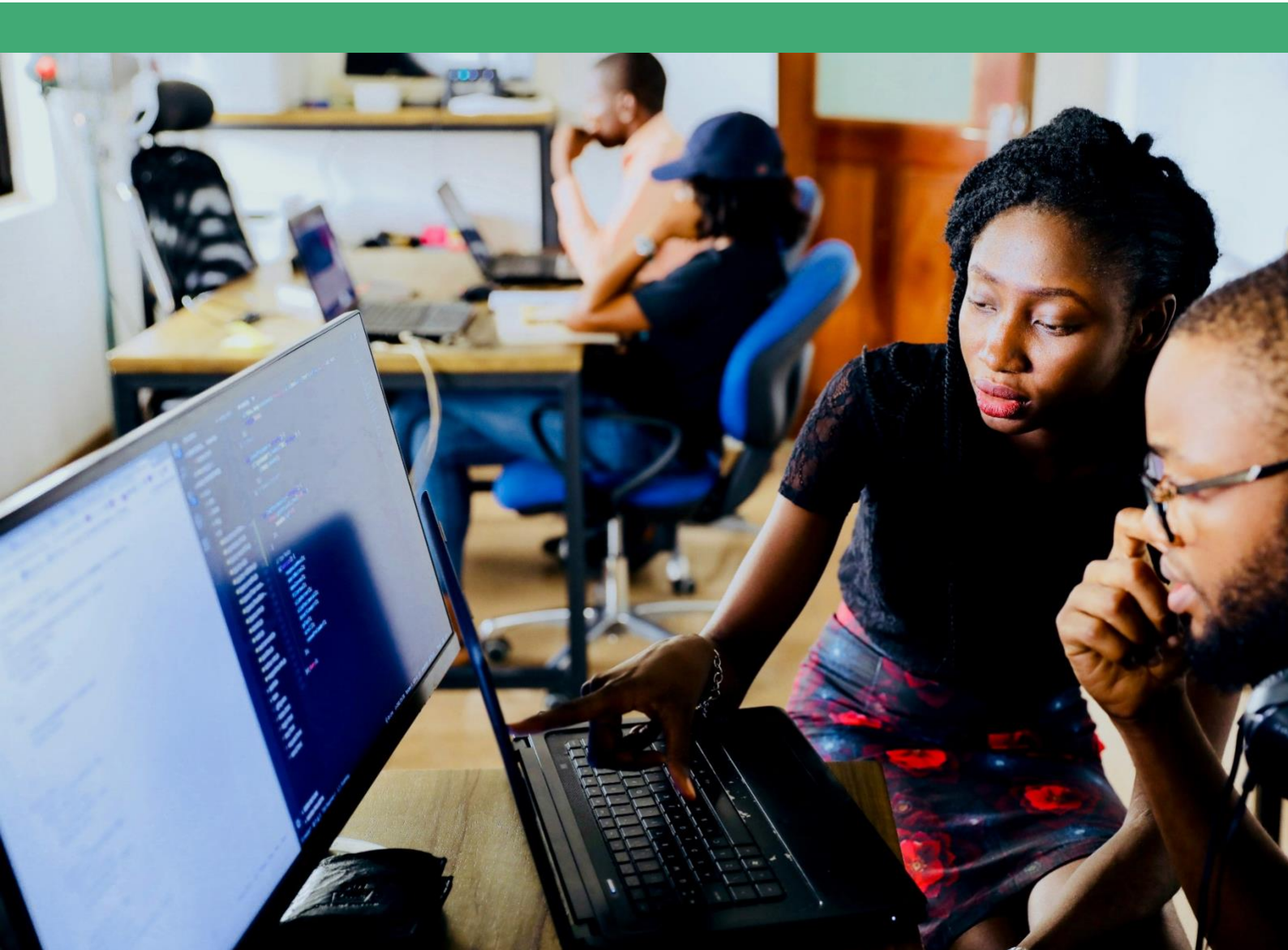
- 276,860 students undertook VET in Schools, up 4.1% on 2024.
- There were 412,840 program enrolments, up 4.8%.
- There were 151,485 program completions, up 6.4%.

All three measures—students, enrolments and completions—were at record levels.

Relative to the school population, 22.6% of Australian secondary students aged 14–19 participated in VET in Schools in 2025, up from 22.1% in 2024. However, conversion into a formal school based apprenticeship is patchy with Queensland leading the way as shown here:

Rank	Jurisdiction	SBAT Sep-2025	SBAT per 10k students	SBAT per 100k labour force	SBAT change since Mar-2022	School enrolment change 2022-25	Interpretation
1	Queensland	12,550	141.1	403.7	-4.3%	+2.2%	Clear national leader on scale and intensity
2	South Australia	1,925	67.6	188.7	+3.5%	+3.2%	Strong, balanced performance
3	Northern Territory	225	56.2	148.9	-10.0%	-0.2%	Small system, but relatively high intensity
4	Tasmania	565	70.4	188.3	-29.4%	-1.5%	High intensity, but weakening trend
5	ACT	570	73.2	198.4	-30.9%	+2.6%	High relative intensity, but sharp decline
6	NSW	3,490	27.7	75.6	+11.0%	+1.2%	Best growth performance, but low penetration
7	Victoria	1,550	14.6	39.2	-16.9%	+4.8%	Weakest current intensity except WA
8	Western Australia	1,100	23.6	63.9	-46.6%	+6.1%	Weakest overall due to steep decline

A nationally harmonised approach to pre- apprenticeships and school based apprenticeships based on the Queensland approach could triple this pathway within five years.



18. [FSO Uplift Digital Capability \(2026\)](#); [FSO Digital Capability Trial \(2026\)](#); [FSO Skills Accelerator-AI \(2026\)](#); [FSO Specialist AI \(2026\)](#); [Mandala and FSO \(2024\)](#).

4. The evidence: work-based learning delivers stronger outcomes.

Work-based learning produces stronger economic outcomes because it joins skill acquisition to employment, supervision, occupational identity and employer recognition. Jobs and Skills Australia's evidence for the Strategic Review of the Australian Apprenticeship Incentive System found strong intelligence across multiple data sources that workers taking apprenticeship pathways experience better outcomes than those entering occupations through non-apprenticeship pathways.¹⁹

These outcomes include employment up to three years after completing a qualification or entering an occupation, retention in a related occupation, and income after completion and after five years. This is important because apprenticeships and traineeships place learners inside a productive employment relationship where skills are acquired, tested, refined and recognised by employers while the learner is already participating in work. The wage evidence is particularly strong. JSA's analysis of VET qualifications that can be completed through apprenticeship and non-apprenticeship pathways found that the overall median income uplift was substantially higher for the apprenticeship pathway, around \$21,000, compared with around \$9,000 for the non-apprenticeship pathway.²⁰

The advantage was visible across the largest fields of education, with Architecture and Building showing the largest gap: around \$32,000 for the apprenticeship pathway compared with about \$2,000 for the non-apprenticeship pathway. This wage uplift has a corresponding economic and productivity benefit for the economy more broadly.

JSA's interpretation was that graduates via apprenticeship pathways tend to experience stronger outcomes because hands-on experience and on-the-job training better prepare graduates for employment, while workplace relationships can lead to stronger job opportunities and retention in the chosen occupation.

The same research shows that apprenticeship pathways are more likely to translate training into work that uses the qualification. JSA found that, overall, VET graduates via an apprenticeship pathway were more likely to work in relevant occupations than those graduating via a non-apprenticeship pathway, 54 per cent compared with 27 per cent.²¹

In Architecture and Building, the difference was 60 per cent compared with 31 per cent. This is an important economic finding because the value of training is not only measured by whether a qualification is completed; it is measured by whether the learner moves into work where the skills are used productively. Apprenticeships achieve this because the occupational pathway is built into the training contract: the learner is formed in the occupation, by the occupation, and for the occupation. JSA's recent research on partial VET completion reinforces the same point from a different angle. Nationally, partial VET completers recorded a median income uplift of \$7,000 and improved employment outcomes. But apprentices and trainees who partially completed their training recorded substantially stronger outcomes: a 90 per cent employment rate and a \$13,800 median income uplift, almost double the national median uplift for partial completers.²²

This does not mean partial completion is equivalent to completion; JSA is clear that qualification completion remains the stronger pathway, particularly for licensed and credential-dependent occupations. But it does show that work-based learning creates economic value even before the full qualification is recorded, because learners are already building capability in a real employment setting.

NCVER's 2025 apprentice and trainee outcomes evidence points in the same direction. Among trade apprentices and trainees, 94.8 per cent of completers and 80.8 per cent of non-completers were employed after training. Among non-trade apprentices and trainees, 89.2 per cent of completers and 70.4 per cent of non-completers were employed after training.²³

19. [JSA \(2024\) apprentice review inputs.](#)

20. [JSA \(2024\) apprentice review inputs.](#)

21. [JSA \(2024\) apprentice review inputs.](#)

22. [JSA \(2026\) Partial VET completion.](#)

23. [NCVER \(2026\) apprentice outcomes.](#)

NCVER also found strong occupational relevance: close to three-quarters of trade completers were employed in the same occupational group as their apprenticeship or traineeship, while a further group were employed in different occupations where the training remained relevant. This evidence is important because it shows that apprenticeships and traineeships generate both direct occupational attachment and transferable labour-market value.

The economic logic is straightforward. Institution-based learning can build knowledge, but work-based learning builds productive capability. It develops the habits and judgements that employers value but cannot easily infer from a certificate alone: reliability, safety awareness, teamwork, customer interaction, persistence, communication, problem-solving under real constraints and the ability to apply knowledge when conditions are imperfect.

JSA's research on employers' experiences of young job applicants found that employers placed greatest value on the right attitude, good communication skills and relevant experience, with 60 per cent placing the highest value on applicants demonstrating the right attitude. Apprenticeships and traineeships build these attributes in the setting where they matter: the workplace.²⁴

This is why the case for work-based learning is becoming stronger as the economy changes. JSA's work on adult learning argues that lifelong learning is becoming essential as rapid technological change, demographic change and economic restructuring alter how Australians develop skills across their working lives.²⁵

JSA's skills-first tertiary paper similarly argues that stronger connections between skills and qualifications can improve learner mobility, workforce participation and productivity.



Apprenticeships and traineeships provide one of the strongest existing models for making those connections real, because they combine formal training, employment, supervision, practice, recognition and progression.

24. [JSA young job applicants \(2024\).](#)

25. [JSA Forces at Work \(2026\); JSA skills-first tertiary system \(2026\).](#)

5. The current trajectory is moving the wrong way.

It's ironic that at a time when higher education providers are expanding their integrated work based learning offers, federal government support for the traditional apprenticeship pathways is waning. With financial supports for apprentices and their employers reduced to the lowest level in a decade.²⁶

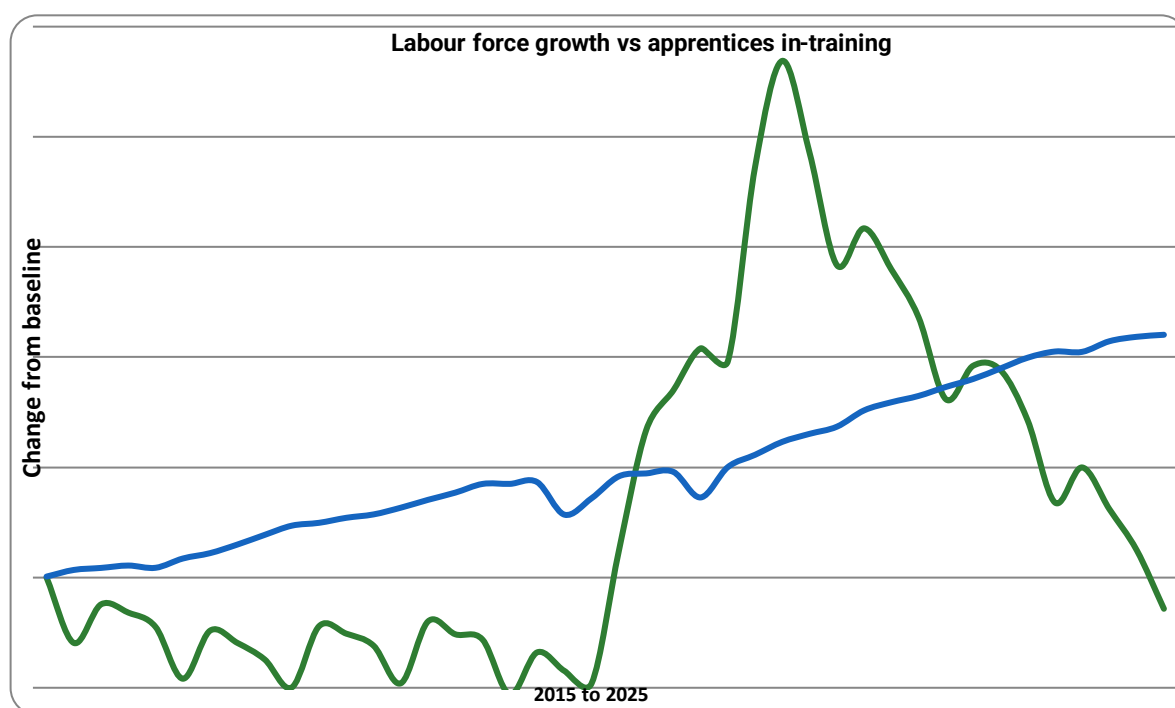


Figure 4: In-training since 2015 compared with labour force growth

2015 to 2019 marked a gradual decline in apprentices and trainees in-training (green line) by comparison to the growth in the Australian Labour Force (blue line). Record incentive investment during the pandemic saw a rapid increase in commencements. This accounts for higher in- training levels between 2020 and 2022 and higher completion levels through to December 2025. However, in-training levels are now lower (at 282,430) than they were in 2015 (290,660) whilst the labour force has grown by 22% over the decade.

What the 10 year view also demonstrates is that employers will engage with the system given a positive value proposition. During the height of the pandemic around 160,000 did so. Today only around 98,000 are offering apprenticeships and traineeships.

The recent decline is most severe in non-trade apprenticeships and traineeships, which historically provide structured entry pathways into service, administration, care, retail, community and business roles. As AI changes routine clerical and administrative work, these pathways need redesign rather than abandonment. They should prepare workers for AI-enabled service delivery, case coordination, data integrity, human escalation, privacy and compliance rather than routine clerical processing.

This is not simply a training-sector issue. It is an economic resilience issue. If the system continues to shrink while demand for practical, technical and care capability rises, Australia will face higher project costs, slower housing delivery, weaker climate adaptation, greater reliance on migration and increased pressure on employers already struggling to recruit.

The policy settings that influence employer participation therefore matter. Employer incentives, sign-up processes, Apprentice Connect Australia support, Group Training capacity, mentoring, supervision and administrative burden all influence whether employers choose to train. An Apprentice First Strategy should treat employer participation as a national capability and resilience objective, not as a residual market decision.

26. [Budget Paper No. 1 \(2026-27\); DEWR \(2025\) Apprenticeship Incentive Review.](#)

27. [NCVER DataBuilder \(Sep 2025\)](#)

28. [NCVER DataBuilder \(Sep 2025\); ABS Labour Force \(Sep 2025\).](#)

6. The five-year scenario lens

This policy paper is informed by three five-year scenarios to 2031. They are not forecasts. They are planning cases that test whether the apprenticeship and traineeship system is fit for purpose under different economic, technological, climatic, cyber, social and geopolitical conditions.²⁹

Scenario 1: Constrained stability in a contested world

In this scenario, the Australian labour market remains broadly resilient tracking current Treasury forecasts, but the environment in which work is organised becomes more contested and less predictable. Headline employment continues to grow, unemployment remains manageable by historical standards, and there is no sudden collapse in work caused by AI. The transformation is subtler. Employers use technology, cost control and process redesign to cope with higher uncertainty, higher compliance costs, cyber risk, insurance pressure, energy volatility and more fragile supply chains.

This is not a stable global economy into which AI and climate adaptation are smoothly absorbed. It is a world where trade settings can shift quickly, supply chains can be disrupted by strategic rivalry, foreign platforms can become security risks, and public trust can be undermined by misinformation. In this environment, firms adopt AI not only to innovate, but to reduce exposure to cost and coordination pressures.

The first visible transformation occurs in the administrative core of organisations. Teams that previously relied on clerks, receptionists, payroll support, accounts officers, routine HR support, call-centre workers, executive assistants and project administrators use AI to draft correspondence, summarise files, answer routine queries, triage requests, prepare meeting notes, reconcile data, generate standard reports and maintain records. These roles do not disappear at once. Instead, vacancies are not refilled, casual roles are reduced, junior roles are combined and remaining workers are expected to supervise AI outputs and handle exceptions.³⁰

This means the labour market changes through slower hiring rather than mass retrenchment. A business that once needed five administrative support workers may still need three or four, but those remaining workers manage more workflow with AI support. Public agencies pursue similar changes through digital service channels, automated triage, case-management tools and AI-supported correspondence. The result is a quiet but important risk: the traditional ladder into office work becomes thinner. Many younger workers, women returning to work, migrants and people without degrees have historically gained labour-market attachment through administrative and customer-service entry roles. Those roles become less reliable as first jobs.

Misinformation and low trust compound this trend. Workers may be told that AI is taking their jobs, migrants are taking their jobs, climate policy is taking their jobs or government is hiding the true state of the economy. In practice, the labour market is being reshaped by a mix of AI adoption, cost pressure, demographic change, climate adaptation, supply-chain disruption and employer risk aversion. But the politics of work becomes more polarised because people experience these changes locally and often interpret them through broader narratives of exclusion or decline.

Professional work also changes, but mainly through augmentation. Accountants, lawyers, policy officers, software workers, analysts, marketing staff and project managers use AI to draft, analyse, summarise, code, prepare slides and process information. Senior workers gain leverage because they combine judgement, client knowledge and AI tools. Junior workers face more risk because the tasks most easily handed to them - first drafts, summaries, basic research, simple coding, data cleaning and standard document preparation - are also the tasks AI can do cheaply. The labour market may not employ fewer professionals overall, but the path into professional competence becomes less automatic.

29. [Budget Paper No. 1 \(2026-27\)](#); [CSIRO \(2022\)](#); [CSIRO \(2022\)](#); [WEF \(2026\)](#); [JSA \(2025\)](#) GenAI; [DEWR \(2026\)](#) AI and employment.

30. [DEWR \(2026\)](#) AI and employment; [JSA \(2025\)](#) GenAI.

At the same time, demand strengthens for workers whose jobs are tied to physical systems, care relationships and local service delivery. Housing shortages, infrastructure repair, population ageing, disability support, energy transition and climate adaptation keep demand high for construction trades, electricians, plumbers, carpenters, HVAC and refrigeration workers, civil construction workers, aged care workers, disability support workers, telecommunications technicians, mechanics and transport workers. These jobs are less exposed to direct generative AI automation because they involve tools, physical presence, safety judgement, licensing, human trust and site-specific problem-solving.

However, these occupations are not technology-free. The tradesperson increasingly uses AI-supported diagnostics, digital job cards, photo-based defect recognition, automated quoting, customer messaging, safety documentation, remote expert support and compliance systems. The care worker uses digital records, AI-assisted rostering, translation tools, incident reporting and remote monitoring. The construction worker uses digital plans, prefabricated components, site cameras, compliance apps and increasingly data-rich building systems. The transformation is not the replacement of practical workers by AI, but the conversion of practical work into digitally mediated work.

Risks

Geoeconomic confrontation affects labour demand by making supply chains, equipment prices and export markets more volatile. Employers in construction, manufacturing, agriculture, transport, energy and mining become more cautious when materials, inputs, shipping, equipment and market access are uncertain. This can delay projects even where underlying demand remains strong. It can also raise the value of local maintenance and repair capability because businesses cannot assume replacement parts, imported equipment or overseas technical support will always be available quickly.

Cyber insecurity becomes a routine operational concern. Energy systems, water systems, building-management systems, aged care platforms, transport networks and customer data systems become more vulnerable as they become more digital. Employers need workers who can follow cyber-safe procedures, protect data, report anomalies and maintain digitally enabled assets. This expands the skill requirements inside otherwise familiar occupations.

Labour supply becomes constrained by employer willingness to train. Many small businesses remain under cost pressure from interest rates, insurance, energy bills, cyber compliance and uncertain demand. They may need skilled workers but hesitate to take on apprentices. This is particularly important in construction, automotive, plumbing, electrical and small service firms. The result is a paradox: occupations remain in demand, but the apprenticeship pipeline may not expand unless risk is shared between employers and government.

Regional labour markets become more uneven. Regions exposed to floods, bushfires, heat and insurance withdrawal experience bursts of demand for building, repair, civil works, electrical and emergency services. Regions with renewable energy, transmission, mining, data centres or defence projects face acute shortages of electricians, lineworkers, technicians and civil trades. Outer-suburban regions face demand for housing, care and community services. These shortages are practical, local and difficult to solve with institution-only training or online learning.

31. [DEWR \(2026\) AI and employment; JSA Clean Energy Generation \(2023\).](#)

Implications for apprenticeships and traineeships

In this scenario, apprenticeships and traineeships are the main mechanism for defending baseline growth against labour shortages and declining trust. The system needs to do two things at once. It must expand pathways in low-AI-exposure, high-demand occupations, and it must redesign traineeships in occupations where AI is changing the task base.

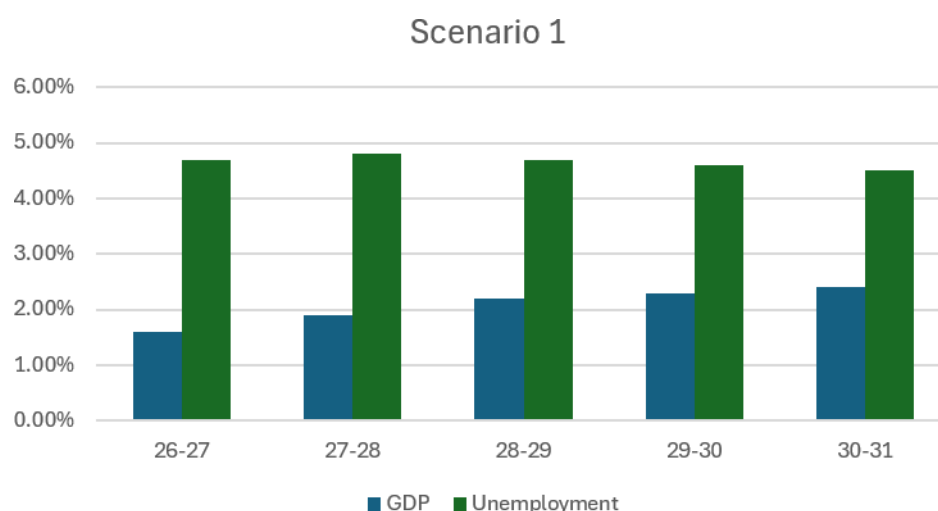
Construction apprenticeships should be linked directly to housing supply, public housing, repair programs and climate-resilient building. Electrotechnology pathways should include distributed energy, batteries, EV charging, smart meters, grid support, building management systems and AI-assisted diagnostics. Plumbing, drainage and civil construction pathways should be linked to water security, flood mitigation and infrastructure resilience. HVAC and refrigeration pathways should be treated as climate adaptation occupations, not merely building services occupations.³²

Care traineeships should be upgraded with stronger supervision, digital records capability, career ladders and pathways into higher care and health roles. Business administration and customer-service traineeships should be redesigned around AI workflow supervision, privacy, human escalation, case coordination and data integrity rather than routine clerical processing. Telecommunications and field-service pathways should include cyber hygiene and critical infrastructure resilience.

The central policy point is that apprenticeships and traineeships provide a trusted, visible and practical response to economic anxiety. They show households and communities that transition is not only about abstract productivity or technology adoption. It is about real jobs in real places, building homes, maintaining infrastructure, caring for people and keeping essential systems working.

At the time of writing the war in the Middle East continues with no obvious end in sight. This impacts our analysis of the GDP and unemployment expectations over the next five years under the scenarios.

For this scenario they are:



Key message:

In a constrained but stable economy, apprenticeships and traineeships are the workforce instrument that helps Australia defend baseline growth, maintain social trust and keep essential systems functioning in a more contested world.

32. [JSA Clean Energy Generation \(2023\)](#); [National Climate Risk Assessment \(2025\)](#); [JSA Occupation Shortage Report \(2026\)](#).

33. [Budget Paper No. 1 \(2026-27\)](#); [IMF WEO update \(July 2026\)](#); [OECD Economic Outlook \(2026\)](#); <https://www.worldbank.org/en/publication/global-economic-prospects>

34. [Budget Paper No. 1 \(2026-27\)](#); [IMF WEO update \(July 2026\)](#); [OECD Economic Outlook \(2026\)](#); <https://www.worldbank.org/en/publication/global-economic-prospects>

Scenario 2: Industrial acceleration under bloc competition

In this scenario, productivity increases and economic growth accelerates as long as bottlenecks are addressed. AI moves from being mainly a tool for office productivity to becoming an operating layer across the physical economy. Low-cost models, embedded AI, machine vision, robotics, predictive maintenance, sensors, digital twins and autonomous systems spread through mining, agriculture, manufacturing, logistics, construction, energy, defence and infrastructure. The key economic question shifts from whether workers can use chatbots to whether Australia can deploy AI into production systems at scale.³⁵

Industrial acceleration does not occur in a neutral global marketplace it occurs under bloc competition. Countries use technology standards, export controls, subsidies, investment screening, sanctions, procurement rules, cyber operations and supply-chain influence to advance national interests. Firms and governments must decide not only whether a technology is efficient, but whether it is trusted, secure, interoperable and strategically acceptable.

The labour market bifurcates between firms that can integrate AI, robotics and digital systems into their operations and firms that cannot. Digitally mature firms reduce back-office headcount, raise output per worker and require fewer routine coordinators. At the same time, they increase demand for technicians, supervisors, maintainers, cyber-aware field workers, data-literate tradespeople and operators who can work with AI-enabled equipment. Less mature firms struggle to compete, particularly if they face higher wages, energy costs, insurance costs and compliance requirements without equivalent productivity gains.

Manufacturing and maintenance work change significantly. Rather than a simple decline in manufacturing employment, the composition shifts toward advanced, automated and maintenance-intensive production. Workers who can repair machines, calibrate sensors, maintain robotic systems, interpret machine data, troubleshoot electrical and mechanical faults and work safely around autonomous equipment become more valuable. There is pressure for traditional mechanical and electrical trades to converge with mechatronics, software diagnostics and systems thinking.

Construction also changes. AI supports planning, design, scheduling, materials estimation, compliance checking and site monitoring. Modular construction, prefabrication and digital design tools expand where supply chains and regulation allow. This may reduce some manual rework and administrative friction, but it increases demand for workers who can translate digital plans into physical delivery. Carpenters, plumbers, electricians and civil workers are still needed, but they increasingly work in data-rich environments and need to understand smart building systems, energy efficiency, embedded sensors and digital quality assurance.

Energy and infrastructure become central labour-market engines. “Electrification of everything”, renewable generation, batteries, transmission, distribution, EV charging, data centres and industrial decarbonisation all require practical workers. The most constrained occupations are likely to include electricians, lineworkers, electrical engineers, grid technicians, battery technicians, HVAC specialists, civil construction workers, telecommunications technicians and project supervisors with technical credibility. AI may improve design and scheduling, but it cannot remove the need to physically build, connect, maintain and govern infrastructure.³⁶

The care economy becomes more technologically enabled. Aged care and disability care use AI-assisted rostering, monitoring, documentation, translation and incident detection. However, the core labour demand remains human. Population ageing, disability support needs, social isolation and health complexity increase demand for workers who can provide trust, continuity and personal care. Technology changes the workflow, not the ethical and relational core of the work.

35. [State Council AI Plus guideline \(2025\)](#); [IFR China robotics strategy \(2026\)](#); [USCC Two Loops \(2026\)](#); [JSA \(2025\) GenAI](#).

36. [JSA Clean Energy Generation \(2023\)](#); [Fareri et al. \(2023\)](#).

Risks

Geoeconomic confrontation changes the nature of industrial strategy. Australia cannot simply import the cheapest AI-enabled equipment and assume it will serve national interests. The same system that is efficient may also create dependence, expose data, increase cyber risk or bind the economy to standards controlled elsewhere. This creates demand for workers who can operate across trusted systems, maintain sovereign capability and adapt technologies to Australian regulatory, safety and security requirements.

Cyber insecurity becomes a binding constraint. The more Australia integrates AI into grids, ports, mines, farms, hospitals, water systems, aged care platforms and buildings, the more vulnerable it becomes to cyber-physical disruption. A cyberattack on a hospital, water utility, data centre, logistics network or energy system is not only an IT event. It becomes a labour-market and service-delivery event, requiring field technicians, electricians, telecommunications workers, engineers, cyber-support staff and emergency-response workers who can restore function safely.

Economic risk also shapes this scenario. Productivity gains are possible, but high debt, inflation, asset-price volatility and infrastructure financing constraints may slow investment. Firms may want to automate but lack capital. Governments may want to build resilience but face fiscal pressure. The upside scenario therefore depends on sequencing: energy, housing, migration, training, procurement, cyber standards and industrial policy must be aligned rather than pursued as separate programs.

Labour demand rises most strongly for hybrid workers who combine occupational competence with digital, data and systems capability. These workers may not need to be university-trained engineers, but they do need stronger applied technical skills than many current entry-level pathways provide. The apprenticeship and traineeship system becomes the mechanism for producing a broad layer of applied technical workers who can operate between engineers, managers, software systems and field delivery.

The labour market also becomes more exposed to global industrial competition. If China or other countries deploy low-cost AI and robotics into production faster than Australia, Australian firms may face stronger import competition and lose opportunities in clean technology, advanced manufacturing and industrial services. Conversely, if Australia aligns clean energy, minerals, industrial precincts and technical training, it can capture new value in critical minerals processing, green metals, batteries, defence sustainment, energy services and AI-enabled infrastructure maintenance.

Entry-level professional pathways face a new challenge. AI reduces the cost of routine coding, drafting, analysis, marketing content and project documentation. This may reduce the number of junior positions in some firms even while demand for experienced professionals remains high. The labour market therefore needs alternative structured learning pathways, including cadetships, traineeships and supervised work-integrated learning, so that new entrants still acquire judgement and experience.

Implications for apprenticeships and traineeships

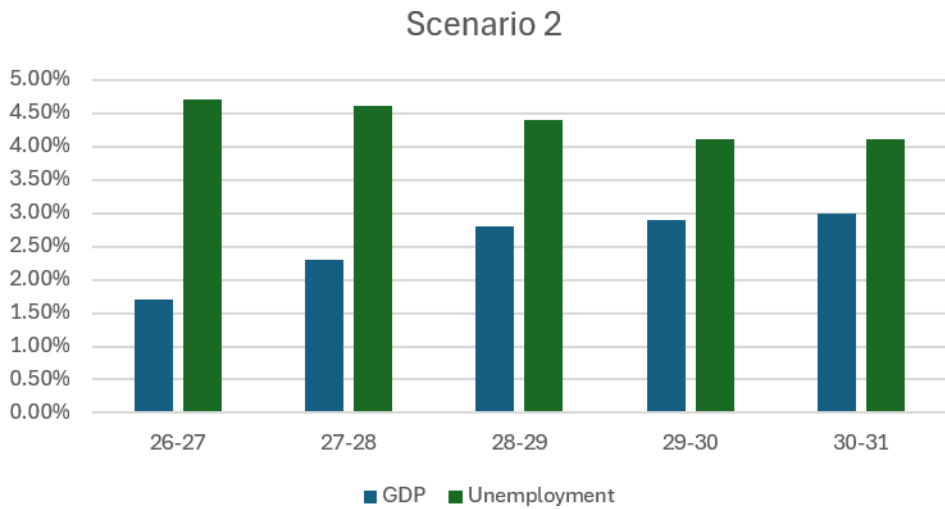
In this scenario, apprenticeships and traineeships become instruments of industrial sovereignty. They are not simply a response to employer demand; they are a way of building national deployment capacity in AI-enabled physical systems. The system needs to supply people who can install, maintain, adapt and operate the technologies on which productivity growth depends.

Priority apprenticeship streams should be created in electrotechnology, linework, robotics, mechatronics, advanced manufacturing, defence trades, construction, telecommunications, HVAC, EV maintenance, battery systems, data-centre operations and cyber-physical infrastructure maintenance. Relevant qualifications should embed AI diagnostics, sensors, machine vision, predictive maintenance, digital twins, cyber safety and data interpretation.

Major public procurement in defence, energy, housing, infrastructure, data centres and climate resilience should create apprenticeship and traineeship pipelines. This should not be an optional social benefit attached to major projects. It should be treated as part of the project's capability requirement. If a project requires long-term maintenance, upgrade and operational resilience, it must also contribute to the workforce that will sustain it.

TAFE and VET infrastructure should be upgraded with robotics labs, EV workshops, renewable-energy training facilities, smart-building systems, cyber-physical test environments and simulation tools. Adult technical conversion pathways should allow workers from routine clerical, logistics, retail and manufacturing roles to move into technical support, field service, care and infrastructure occupations. New traineeships should be developed for AI-enabled operations roles, including data-centre operations, digital asset management, procurement assurance, cyber-safe service coordination and critical infrastructure support.

The central policy point is that the productivity upside of AI will not be captured by software alone. It will be captured by firms, regions and countries that can deploy AI into real systems. That requires applied technical labour. Apprenticeships and traineeships are the route through which industrial strategy becomes operational capability.



Key message:
In an AI-enabled industrial acceleration scenario, apprenticeships and traineeships determine whether Australia captures productivity gains or becomes dependent on imported systems it cannot fully deploy, repair, secure or govern.

37. [Budget Paper No. 1 \(2026-27\); IMF WEO update \(July 2026\); OECD Economic Outlook \(2026\); World Bank GEP \(June 2026\).](#)
38. [Budget Paper No. 1 \(2026-27\); IMF WEO update \(July 2026\); OECD Economic Outlook \(2026\); World Bank GEP \(June 2026\).](#)

Scenario 3: Compound disruption and trust breakdown

This scenario describes compound disruption and a labour market transformed under stress. An AI-linked asset correction weakens equity markets, venture capital, technology investment and business confidence. Broader asset-bubble risk, debt pressure and renewed inflation add to the shock. Climate events increase costs for insurance, food, housing repair, infrastructure, health and disaster recovery. Geoeconomic confrontation raises trade, technology and supply-chain risks. Migration becomes more politically contested just as labour shortages intensify in care, construction, energy and regional services.³⁹

The defining feature of this scenario is compounding risk. No single shock is necessarily catastrophic on its own. The danger is that shocks interact. A market correction reduces investment. Credit tightening weakens construction and infrastructure. Climate disasters increase public spending. Misinformation undermines trust in government response. “Zero day” AI driven cyber incidents disrupt essential services. Migration backlash reduces labour supply. Employers reduce hiring and training. The result is not a normal downturn, but a systems-stress scenario.

The labour-market effect is not a uniform rise in unemployment across all occupations. It is a pattern of weak hiring in some parts of the economy and acute shortages in others. Firms exposed to lower demand, tighter credit and investor pressure use AI defensively: they freeze recruitment, consolidate support functions, automate routine processing and delay graduate hiring. Entry-level white-collar workers, clerical workers, call-centre staff, routine analysts, junior marketers, accounts support workers, HR administrators and some junior technology workers face weaker opportunities. The downturn appears through fewer vacancies and fewer starts rather than immediate mass redundancies.

Young workers are vulnerable because employers often adjust through hiring before retrenchment. The first sign of disruption may be fewer graduate intakes, fewer administrative traineeships, more contract work, more unpaid or low-paid experience expectations and slower movement from study into career-track roles. This is particularly important for young people who would previously have entered the labour market through business administration, customer service, retail management, junior finance, project support, ICT support or routine marketing roles.

At the same time, the physical economy becomes more labour hungry. Climate disasters create urgent demand for builders, electricians, plumbers, roofers, civil construction workers, telecommunications technicians, mechanics, emergency services, community service workers and health support staff. Heat increases demand for HVAC, refrigeration, building retrofits, urban greening, heat-health services and energy-system resilience. Floods and storms increase demand for drainage, roads, bridges, housing repair and water infrastructure. Population ageing and stress-related illness increase demand for care and health-support roles.⁴⁰

The contradiction is severe: the economy needs more practical workers, but private employers may be least willing to train when uncertainty is highest. Small businesses may avoid taking on apprentices because they cannot carry wage and supervision costs through volatile demand. Construction firms may need workers for reconstruction but lack capacity to supervise. Care providers may need trainees but struggle with turnover, low margins and workforce burnout. If migration is restricted at the same time, shortages become more acute and inflationary in essential services.

Social cohesion becomes a labour-market variable. Migration backlash, xenophobia and political polarisation can reduce access to migrant labour, weaken international education, discourage overseas workers and create workplace tensions. Misinformation can turn complex labour-market transitions into simple blame narratives. Communities may be told that migrants, AI, climate policy, unions, employers or government are solely responsible for housing stress and job insecurity. If those narratives harden, support for long-term training and adaptation investment may weaken.⁴¹

39. [WEF \(2026\); IMF WEO update \(July 2026\); OECD Economic Outlook \(2026\); World Bank GEP \(June 2026\).](#)

40. [National Climate Risk Assessment \(2025\); CSIRO \(2022\).](#)

41. [Scanlon \(2025\); Lowy Poll \(2026\); UNHCR \(2025\).](#)

Risks

Geoeconomic confrontation makes the crisis harder to manage. Australia cannot rely on stable export markets, predictable supply chains, uninterrupted technology access or smooth foreign investment flows. Critical inputs may become more expensive. International students may be affected by visa, security or diplomatic tensions. Skilled migration may become harder to sustain politically, even where labour shortages are severe. Industries linked to China, the United States or contested technologies may face sudden shifts in demand or compliance requirements.

Cyber insecurity becomes a crisis accelerator. A major cyber incident affecting energy, health, water, ports, transport or government services would draw skilled workers away from planned work into restoration and emergency response. It would also increase business caution and public distrust. In a labour market already under pressure, cyber disruption can deepen shortages by interrupting the systems that coordinate work, payments, supply chains and service delivery.

Economic downturn and inflation interact in damaging ways. If the downturn is accompanied by higher costs for food, insurance, energy, housing repair and materials, households experience recession-like insecurity even if headline employment remains positive. Employers face weaker demand and higher costs simultaneously. Public budgets face lower revenue and higher demand for support. In this environment, training can appear discretionary even though cutting it worsens the recovery problem.

Labour demand becomes crisis driven. Instead of orderly project pipelines, demand arrives in bursts: disaster recovery, emergency infrastructure repair, energy resilience, public housing acceleration, aged-care surge capacity, defence urgency and regional reconstruction. The labour market rewards flexibility, mobility and practical capability. Workers able to move between repair, maintenance, construction, logistics and emergency response become more valuable.

Labour supply becomes constrained by income risk. Displaced adult workers may want to move into trades or care but cannot afford low apprentice wages. Young people may avoid long training pathways if they perceive the economy as unstable. Employers may underinvest in training because the returns are uncertain. Governments therefore face a choice: either allow training to fall during the downturn, creating a deeper shortage later, or treat apprenticeships and traineeships as counter-cyclical infrastructure.

This scenario also changes the geography of work. Regions hit by disasters need reconstruction workers, but may lose population, housing and training capacity. Regions with defence, energy, food and water assets become strategically important. Outer suburbs face high demand for care, public services, transport and affordable housing. The skills system needs to respond to place-based shocks, not just national averages.

Implications for apprenticeships and traineeships

In this scenario, apprenticeships and traineeships are recovery infrastructure. Their role is to prevent a temporary economic shock from becoming a long-term skills crisis. The system must maintain workforce formation even when employers are reluctant to train.

A counter-cyclical apprenticeship guarantee should be introduced using wage subsidies, public-sector placements, group training organisations and shared-employer models. Disaster recovery, public housing, energy resilience and defence infrastructure spending should be tied to apprenticeship and traineeship places. Mature-age apprenticeship wage supplements should allow displaced adults to move into priority trades, care and technical roles without taking an unsustainable income hit.⁴²

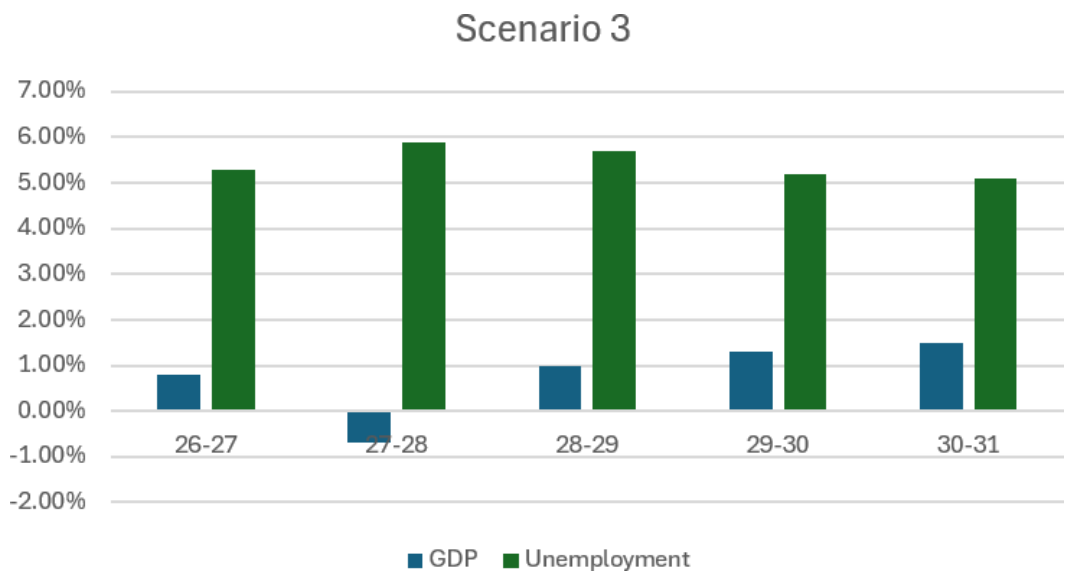
Group training should be expanded in small-business sectors where employers need labour but cannot carry apprentices alone. Rapid recognition and bridging pathways should be created for workers with adjacent experience in logistics, retail, administration, manufacturing, labouring, overseas trades, defence or community services. Exposed workers should be protected through redesigned traineeships in AI-supervised service delivery, case coordination, compliance, community services and digital operations.

42. [Bowers et al. \(2026\); DEWR \(2025\) Apprenticeship Incentive Review.](#)

Local training places should be used as part of social-cohesion strategies in regions affected by unemployment, migration pressure or climate recovery. Apprenticeships and traineeships can show communities that government is investing in local opportunity.

This matters because trust is not only a social virtue; it is a condition for labour-market adjustment. People are more willing to accept transition when they can see a credible pathway for themselves, their children and their communities.

The central policy point is that cutting training during a downturn would create a skills austerity trap: fewer skilled workers, slower rebuilding, higher costs and deeper economic scarring. In a compound disruption scenario, the apprenticeship system must be protected as part of national recovery capacity.



Key message:
In a compound disruption and trust breakdown scenario, apprenticeships and traineeships are counter-cyclical recovery infrastructure. They help Australia rebuild, maintain social cohesion and avoid a skills austerity trap.

43: Budget Paper No. 1 (2026-27); IMF WEO update (July 2026); OECD Economic Outlook (2026); World Bank GEP (June 2026).
44: Budget Paper No. 1 (2026-27); IMF WEO update (July 2026); OECD Economic Outlook (2026); World Bank GEP (June 2026).

7. The Apprentice First Strategy.

NAAA recommends an Apprentice First Strategy built around the principle that apprenticeships and traineeships are national capability and resilience infrastructure. The strategy is designed to expand supply, lift completion, modernise training content, improve employment quality and make the support system more responsive to employers and learners.

Coaching and Trust: Make workplace quality the foundation of improved completion rates and system engagement

Apprentice and employer supports need to be restored and rebalanced. Future incentive settings must ensure increased employer participation in the system by recognising and supporting the quality of the apprenticeship employment and training experience, including active supervision, safety, wellbeing, fair treatment and completion levels.

The Training Contract sign-up process should be streamlined to remove repetitive bureaucracy whilst introducing a registration process for first time employers of apprentices. An Apprentice Connect Australia Gateway service should assist first time employers with best practice recruitment and induction.

Each Apprentice and Trainee should have a named coach in the workplace who they meet with regularly to discuss their wellbeing, progress and address any issues. Through the Skills Agreement this coaching role should be a feature of a nationally harmonised Training Contract where lodgment rules are aligned.

Higher employer completion rates should be rewarded. Employer participation, quality supervision and early intervention should be treated as trust infrastructure – ensuring a fair deal for apprentices and trainees, and locally visible pathways to secure work for the wider community.

Touchpoints and targets: Make the Australian Apprenticeship Support System more demand-driven, responsive and counter-cyclical

The Apprentice Connect Australia support system should provide multiple touchpoints with apprentices, trainees and employers. It should include a quality focused employer gateway, streamlined sign-up processes, judicious use of AI tools, an apprentice app linked to ADMS to improve the user experience, a frictionless claims process, demand-driven mentoring support, and targeted specialist supports delivered through efficient generalist infrastructure.

The system should also include automatic stabilisers. When downturn, disaster or employer-withdrawal indicators rise, wage subsidies, group training, public-sector placements and shared-employer models should expand automatically.

The incentive regime should be set to restore apprenticeship and traineeship participation to at least 2.5 per cent of the workforce. The average achieved this century prior to the pandemic. Today that would mean 370,000 apprentices and trainees in-training and 120,000 businesses with the confidence to provide these employment opportunities.⁴

Stronger harmonisation: A national model linking VET in schools with school-based and pre-apprenticeships

VET in Schools is expanding strongly, but school-based apprenticeships and traineeships are not capturing a commensurate share of that growth.

The school system now has 276,860 school students already choosing vocational learning, yet fewer than 20,000 of them are combining it with an actual apprenticeship or traineeship. There is therefore a very large pool of students who have already demonstrated an interest in vocational pathways, but who are not being connected to structured employment-based training.

A national approach which emulated the model in Queensland could triple the number of school based apprentices within 5 years.

Ai enabled pathways: Design fast-track career transition traineeships for displaced and exposed workers

The next five years are likely to involve displacement or reduced hiring in routine cognitive work, retail, administration, lower-skill services and some traditional industries. Many affected workers will be adults, not school leavers.

Policy should support adult transitions through the build out and implementation of the National Skills Taxonomy, a skills passport, wage supplements, recognition of prior learning and experience. Accelerated training where safe, flexible delivery, career counselling and wraparound support through Apprentice Connect Australia.⁵

A flexible six-month career transition traineeship should be designed for AI-enabled roles that can recognise prior experience and move displaced workers into growing occupations. The contestable training market needs to be refreshed to ensure Australia has the breadth and depth of private and community RTOs needed to support the transitions ahead.

Essential workers: Treat apprenticeships and traineeships as national capability and resilience infrastructure

The policy frame should move beyond “earn while you learn”. Apprenticeships and traineeships build the workforce that keeps the country functioning under pressure. They are essential to housing supply, climate adaptation, energy transition, care provision, industrial capability, defence readiness, disaster recovery, digital infrastructure, cyber-physical maintenance and social cohesion.

The strategy should explicitly recognise that domestic training capability reduces dependence on fragile global labour and supply chains. This is not an argument against skilled migration; it is an argument for having the domestic capability to maintain, repair and adapt essential systems when global conditions become less reliable.

This is a driving rationale for restoring the financial supports funding envelope.

Build it up: Link apprenticeships more strongly to housing delivery

Housing is the political hinge for migration, social cohesion and economic stability. Construction apprenticeship targets should be aligned to housing targets. Public housing and major housing projects should carry training obligations. Small and medium construction employers should receive incentive and support settings that allow them to take on apprentices safely and sustainably.

Women’s participation in construction trades should be treated as a mainstream workforce priority. Housing-linked apprenticeship pathways should also include climate-resilient building, prefabrication, digital plans, safety technology and repair capability.

The Key Apprenticeship Program needs to be redesigned to better balance financial supports and drive employer engagement based around a quality compact.

Update and embed: Include AI and cyber-physical transition into apprenticeship and traineeship qualifications

AI should be fully embedded across priority qualifications. Relevant capabilities include AI-assisted diagnostics, digital work orders, automated compliance, sensors, data interpretation, remote expert support, digital customer communication, ethical AI use and human review in high-stakes decisions.⁶

Cyber safety should be treated as a mainstream vocational capability. Energy, water, transport, health, aged care, buildings, logistics and data centres are increasingly cyber-physical systems. The qualified tradesperson, technician or trainee in 2031 should be comfortable working in AI-enabled and cyber-aware environments.⁷

Reduce and react: Create an integrated work-based learning plan for climate adaptation

Climate adaptation requires skilled labour. Heat-resilient building, home retrofits, electrical upgrades, HVAC and refrigeration, water systems, drainage, flood mitigation, bushfire recovery, coastal resilience, emergency infrastructure, telecommunications resilience and distributed energy should all have linked apprenticeship and traineeship pathways.⁸

The WEF risk outlook highlights that environmental risk may be politically crowded out in the short term even as long-term environmental stress intensifies. Australia should build the adaptation workforce before crisis demand peaks. Climate policy without a workforce plan will underdeliver.

Joined up policy: Integrate industrial, skills and geoeconomic resilience policies to underpin social cohesion

Major public investments should create training pipelines. Critical minerals processing, grid scale batteries, renewable energy, grid construction, defence manufacturing, shipbuilding, robotics, data centres, telecommunications, cyber-physical infrastructure and autonomous mining and agriculture all require applied technical workers.

In a world of geoeconomic confrontation, skills policy should be part of sovereign capability. Public procurement should create apprenticeships and traineeships in strategic sectors, and the Australian Skills Guarantee should be expanded so major projects build the workforce needed to operate, maintain, secure and upgrade the assets they create.⁹

Hyperscalers should enter a “Skills Compact” as they build out AI infrastructure to ensure they employ net additional apprentices and trainees rather than poaching existing ones from small and medium enterprises.

Lead indicators: Establish a scenario-based skills and risk dashboard with national targets

Australia needs better leading indicators. A national dashboard should track apprenticeship commencements, completions and cancellations; employer participation; mature-age apprentice uptake; vacancies in priority occupations; construction and care workforce shortages; grid and energy labour demand; climate recovery demand; AI adoption; migration settings; international student and VET enrolments; and employer completion performance.¹¹

The dashboard should also include WEF-aligned risk indicators: geoeconomic confrontation signals, trade disruption, cyber incidents affecting critical infrastructure, inflation and interest-rate stress, business insolvencies, AI-linked asset-market exposure, misinformation and social-cohesion indicators, migration sentiment, climate disaster recovery demand and public infrastructure delays. The Skills Minister should be a member of Cabinet and develop an annual targets for employer participation, apprenticeship commencements, in-training and completion levels based on the economic conditions ahead.

8. Implementation priorities for the next two years

The next two years should be used to reset the system before labour-market pressures become more acute. NAAA proposes an implementation sequence that begins with stabilising the pipeline, then modernising the model, then scaling strategic pathways and embedding resilience triggers. The funding envelope will need to be restored to ensure the apprenticeship system can deliver its vital and strategic purpose.

Stabilise the pipeline

The immediate priority is to stop further erosion in trade and non-trade apprenticeships and traineeships. This requires a clearer employer value proposition, targeted incentives, streamlined administration, stronger support for first-time employers, early intervention for at-risk apprentices and restored confidence that the system is worth participating in. Stabilisation should be treated as a national capability measure, not as a short-term market subsidy.

Modernise the model

The second priority is to update the content and support architecture of apprenticeships and traineeships for AI-enabled and cyber-physical work. This includes digital diagnostics, AI-assisted workflows, data integrity, cyber safety, sensors, remote support, human review and ethical practice. It also includes redesigning business and administration traineeships so they prepare workers for higher-value coordination, assurance and service roles rather than declining clerical task bundles.⁵¹

Create transition pathways for exposed workers

A fast-track career transition traineeship model should be designed for AI-enabled occupations that can qualify displaced or exposed workers within six months where safe and appropriate. This should be supported by wage supplements, recognition of prior experience, employer matching and Apprentice Connect Australia wraparound support.

Scale strategic pathways

The third priority is to build national pipelines in housing, clean energy, climate adaptation, care, digital infrastructure, defence and advanced industry. Public procurement should be used to create places. Group Training should be strengthened where small businesses cannot carry the full risk. Mature-age pathways should be expanded so displaced or underutilised adults can move into shortage occupations.⁵²

Embed counter-cyclical protections

The WEF risk outlook makes it likely that the apprenticeship system will be exposed to periods of employer caution, economic stress, climate recovery demand, cyber disruption or migration pressure. Support settings should be able to expand automatically when leading indicators show the training pipeline is at risk. This would prevent a temporary shock from becoming a long-term skills shortage.

Build trust through transparency and visible local opportunity

The strategy should include a communication and evidence plan. Communities need to see that apprenticeships and traineeships lead to real employment, real wages and real capability. Employers need to see that the system reduces risk rather than adds bureaucracy. Apprentices and trainees need to see that the system is safe, fair and supported. In a period of misinformation and social polarisation, trust must be treated as part of the implementation task.

The implementation test is simple: by 2031, Australia should have more qualified workers in the occupations that are least exposed to direct AI substitution and most important to national resilience. It should also have redesigned pathways for occupations whose task base is being reshaped by AI and a support system capable of maintaining training through disruption.

⁴⁵ [JSA \(2025\) GenAI: FSO Uplift Digital Capability \(2026\): FSO Digital Capability Trial \(2026\).](#)

⁴⁶ [JSA Clean Energy Generation \(2023\); JSA food supply chain \(2025\); Finance ASG procurement policy \(2026\).](#)

9. Conclusion: apprenticeships are a future-facing model

Apprenticeships and traineeships are sometimes thought of as an old fashioned pathway. That is the wrong frame. They are one of the few learning models already designed for the economy that is coming: an economy where people must learn continuously, use technology intelligently, build real things, care for real people, manage real risks and keep improving through work.⁵³

AI will answer questions, draft documents and generate technical suggestions. It will not carry the ladder, comfort the client, notice the smell of overheating equipment, judge whether a workaround is safe, mentor a first-year apprentice or rebuild trust after a service failure. The economy will need people who can connect knowledge to action.

In a more contested, cyber-exposed, climate-stressed and misinformation-prone world Australia will need workers who can keep essential systems functioning under pressure. It will also need visible pathways into secure work that help maintain social trust during transition.

Integrated work-based learning is the bridge. It builds competence by making people perform safely. It builds proficiency by exposing them to variation and feedback. It builds mastery by placing them in communities of practice where judgement is modelled, tested and passed on.

The funding envelope will need to be restored to ensure the apprenticeship system can deliver its vital and strategic purpose.



Final Conclusion:

An Apprentice First Strategy is not a nostalgic defence of a legacy system. It is a practical workforce strategy for productivity, resilience and social cohesion in a changing economy.

[47. NCVER work-based education in VET \(2020\); JSA skills-first tertiary system \(2026\).](#)



10. Reference List

Australian labour market, VET and apprenticeship evidence

Australian Bureau of Statistics. (2025). Labour Force, Australia, May 2025. ABS.

<https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/may-2025>

Australian Bureau of Statistics. (2025). Labour Force, Australia, September 2025. ABS.

<https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/sep-2025>

Australian Bureau of Statistics. (2025). Labour Force, Australia, Detailed, September 2025. ABS.

<https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia-detailed/sep-2025>

Australian Government Ministers for the Department of Employment and Workplace Relations. (2026). Research shows apprenticeships deliver strong job outcomes. Ministerial media release.

<https://ministers.dewr.gov.au/giles/research-shows-apprenticeships-deliver-strong-job-outcomes>

Department of Employment and Workplace Relations. (2024). The Australian Skills Guarantee is now in effect. Australian Government. <https://www.dewr.gov.au/newsroom/articles/australian-skills-guarantee-now-effect>

Department of Employment and Workplace Relations. (2025). Skills for tomorrow: Shaping the future of Australian apprenticeships - Strategic Review of the Australian Apprenticeship Incentive System, final report. Australian Government.

<https://www.dewr.gov.au/australian-apprenticeships/resources/strategic-review-australian-apprenticeship-incentive-system-final-report>

Department of Employment and Workplace Relations. (2026). Australian Apprenticeships Priority List - 1 January 2026. Australian Government.

<https://www.dewr.gov.au/skills-support-individuals/resources/australian-apprenticeships-priority-list-1-january-2026>

Department of Employment and Workplace Relations. (2026). Australian Skills Guarantee. Australian Government.

<https://www.dewr.gov.au/australian-skills-guarantee>

Department of Employment and Workplace Relations. (2026). National Skills Plan 2025-26 update. Australian Government.

<https://www.dewr.gov.au/download/17396/national-skills-plan-2025-26-update/41816/national-skills-plan-2025-26-update/pdf>

Department of Employment and Workplace Relations. (2026). Strategic Review of the Australian Apprenticeship Incentive System: Final report. Australian Government. <https://www.dewr.gov.au/australian-apprenticeships/strategic-review-australian-apprenticeship-incentive-system>

Department of Finance. (2026). Australian Skills Guarantee Procurement Connected Policy. Australian Government.

<https://www.finance.gov.au/government/procurement/clausebank/australian-skills-guarantee-procurement-connected-policy>

Jobs and Skills Australia. (2023). The Clean Energy Generation: Workforce needs for a net zero economy. Australian Government.

<https://www.jobsandskills.gov.au/research/studies/clean-energy-capacity-study>

Jobs and Skills Australia. (2024). Employers' experiences of young job applicants. Australian Government.

<https://www.jobsandskills.gov.au/data/recruitment-experiences-and-outlook-survey/research-articles/employers-experiences-young-job-applicants>

Jobs and Skills Australia. (2024). How employers recruit. Australian Government.

<https://www.jobsandskills.gov.au/research/how-employers-recruit>

Jobs and Skills Australia. (2024). Occupation Shortage Report - June 2024. Australian Government.

<https://www.jobsandskills.gov.au/publications/occupation-shortage-report-june-2024>

Jobs and Skills Australia. (2024). Strategic Review of the Australian Apprenticeship Incentive System: JSA apprentice review inputs. Australian Government.

https://www.jobsandskills.gov.au/sites/default/files/2024-09/4._consolidated_presentation_jsa_apprentice_review_inputs_may_2024_final_pdf_0.pdf

Jobs and Skills Australia. (2025). An Essential Ingredient: The Food Supply Chain Workforce. Australian Government.

<https://www.jobsandskills.gov.au/studies/food-supply-chain-capacity-study>

- Jobs and Skills Australia. (2025).** Connecting for Impact: Jobs and Skills Report 2025. Australian Government. <https://www.jobsandskills.gov.au/publications/jobs-and-skills-report-2025>
- Jobs and Skills Australia. (2025).** Employment Projections - May 2025 to May 2035. Australian Government. <https://www.jobsandskills.gov.au/data/employment-projections>
- Jobs and Skills Australia. (2025).** Pathways to economic mobility and improved equity: VET National Data Asset 2020-21 graduate outcomes. Australian Government. <https://www.jobsandskills.gov.au/vet-national-data-asset/dashboard/2020-21>
- Jobs and Skills Australia. (2025).** Understanding the importance of training. Australian Government. https://www.jobsandskills.gov.au/sites/default/files/2025-11/understanding_the_importance_of_training_factsheet.pdf
- Jobs and Skills Australia. (2026).** Employment Projections. Australian Government. <https://www.jobsandskills.gov.au/data/employment-projections>
- Jobs and Skills Australia. (2026).** National Skills Taxonomy. Australian Government. <https://www.jobsandskills.gov.au/data/national-skills-taxonomy>
- Jobs and Skills Australia. (2026).** Occupation Shortage Report. Australian Government. <https://www.jobsandskills.gov.au/research/occupation-shortage-report>
- Jobs and Skills Australia. (2026).** Partial VET completion: Insights on outcomes and pathways. Australian Government. <https://www.jobsandskills.gov.au/data/vet-national-data-asset/partial-vet-completion>
- Jobs and Skills Australia. (n.d.).** VET National Data Asset. Australian Government. <https://www.jobsandskills.gov.au/data/vet-national-data-asset>
- Karmel, T., and Mlotkowski, P. (2008).** School-based apprenticeships and traineeships. National Centre for Vocational Education Research. <https://www.ncver.edu.au/research-and-statistics/publications/all-publications/school-based-apprenticeships-and-traineeships>
- National Centre for Vocational Education Research. (2026).** Apprentice and trainee outcomes 2025. NCVER. <https://www.ncver.edu.au/research-and-statistics/publications/all-publications/apprentice-and-trainee-outcomes-2025>
- National Centre for Vocational Education Research. (2026).** Apprentices and trainees 2025: December quarter. NCVER. <https://www.ncver.edu.au/research-and-statistics/publications/all-publications/apprentices-and-trainees-2025-december-quarter>
- National Centre for Vocational Education Research. (2026).** Apprentices and trainees 2025: September quarter. NCVER. <https://www.ncver.edu.au/research-and-statistics/publications/all-publications/apprentices-and-trainees-2025-september-quarter>
- National Centre for Vocational Education Research. (2026).** Apprentices and trainees 2025: September quarter DataBuilder. NCVER. https://qap.ncver.edu.au/anon01/extensions/AT_2025_Sep/DB.html
- Adult learning, work-integrated learning and skills-first tertiary education**
- Clinton, V., and others. (2024).** Is it really a neuromyth? A meta-analysis of the learning styles matching hypothesis. *Frontiers in Psychology*, 15, Article 1428732. <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1428732/full>
- Jobs and Skills Australia. (2025).** Higher education outcomes: Exploring administrative data. Australian Government. <https://www.jobsandskills.gov.au/publications/higher-education-outcomes-exploring-administrative-data>
- Jobs and Skills Australia. (2026).** Forces at Work: Adult learning and the Australian labour market. Australian Government. <https://www.jobsandskills.gov.au/publications/forces-work-adult-learning-and-australian-labour-market>
- Jobs and Skills Australia. (2026).** Lifelong learning. Australian Government. <https://www.jobsandskills.gov.au/studies/lifelong-learning>
- Jobs and Skills Australia. (2026).** Skills, mobility and productivity: Why Australia needs a skills-first tertiary education system. Australian Government. <https://www.jobsandskills.gov.au/publications/skills-mobility-and-productivity>
- Kovalev, A., Stefanac, N., and Rizoïu, M.-A. (2025).** Skill-driven certification pathways: Measuring industry training impact on graduate employability <https://arxiv.org/abs/2506.04588>

Learning and Work Institute. (2024). Adult Participation in Learning Survey 2024. Learning and Work Institute.
<https://learningandwork.org.uk/adult-participation-in-learning-survey-2024/>

National Centre for Vocational Education Research. (2020). Work-based education in VET. NCVER.
https://www.ncver.edu.au/__data/assets/pdf_file/0041/9662936/Work_based_education_in_VET.pdf

OECD. (2026). The many faces of adult learners. OECD Publishing.
https://www.oecd.org/en/publications/the-many-faces-of-adult-learners_a5a1893a-en.html

Whalley, J., Imbulpitiya, A., Clear, T., and Ogier, H. (2024). From student to working professional: A graduate survey. arXiv.
<https://arxiv.org/abs/2410.07560>

AI, employment and labour-market transformation

Australian Government. (2025). AI Plan for the Australian Public Service 2025. Digital.gov.au.
<https://www.digital.gov.au/policy/ai/australian-public-service-ai-plan-2025>

Del Rio-Chanona, R. M., Ernst, E., Merola, R., Samaan, D., and Teutloff, O. (2025). AI and jobs: A review of theory, estimates, and evidence. arXiv.
<https://arxiv.org/abs/2509.15265>

Department of Employment and Workplace Relations. (2026). AI and employment in Australia: Monitoring framework and evidence to date. Australian Government. <https://www.dewr.gov.au/workplace-relations/resources/ai-and-employment-australia>

Department of Industry, Science and Resources. (2025). National AI Plan. Australian Government.
<https://www.industry.gov.au/publications/national-ai-plan>

Jadhav, R., and Danve, J. (2026). The AI skills shift: Mapping skill obsolescence, emergence, and transition pathways in the LLM era. arXiv.
<https://arxiv.org/abs/2604.06906>

Jobs and Skills Australia. (2025). Our Gen AI Transition - Final release. Australian Government.
<https://www.jobsandskills.gov.au/publications/our-gen-ai-transition-final-release>

Jobs and Skills Australia. (2025). Our Gen AI Transition: Implications for work and skills. Australian Government.
<https://www.jobsandskills.gov.au/publications/generative-ai-capacity-study-report>

Pan, S., Gong, H., Sun, X., Xu, X., and Zhu, L. (2026). The creation and analysis of government AI transparency statements in Australia. arXiv.
<https://arxiv.org/abs/2604.26075>

Popa, D. M., Oprea, S.-V., and Bara, A. (2026). Generative-AI and the transformation of workforce: A job postings-driven analysis. arXiv.
<https://arxiv.org/abs/2605.00843>

Reddig, J. M., Smith, G. R., Ahmadzadeh Siyahrood, S., Morris, W. G., Bae, Y., Crutcher, K., Kos, J., Dass, R. K., Kim, J., Naushad Siddiqui, M., Weitekamp, D., Thajchayapong, P., Kakar, S., Endert, A., Crossley, S., Dede, C., Goel, A., and MacLellan, C. J. (2026). Guidelines for designing AI technologies to support adult learning. arXiv. <https://arxiv.org/abs/2605.04616>

Walsh, T. (2023). More than programming? The impact of AI on work and skills. arXiv. <https://arxiv.org/abs/2306.05669>

Zhang, L., Lin, J., Borchers, C., Sabatini, J., Hollander, J., Cao, M., and Hu, X. (2024). Predicting learning performance with large language models: A study in adult literacy. arXiv. <https://arxiv.org/abs/2403.14668>

Future Skills Organisation and Jobs and Skills Council AI capability reform

Future Skills Organisation. (2024). Training Product Trial Concept Paper. Future Skills Organisation.
<https://www.futureskillsorganisation.com.au/reports-papers/training-product-trial-concept-paper>

Future Skills Organisation. (2026). Building an AI-enabled workforce: Priority framework. Future Skills Organisation.
<https://www.futureskillsorganisation.com.au/building-an-ai-enabled-workforce-priority-framework/>

Future Skills Organisation. (2026). BSB Update: Uplift Digital Capability. Future Skills Organisation.
<https://www.futureskillsorganisation.com.au/uplift-digital-capability/>

Future Skills Organisation. (2026). Digital Capability Training Product Trial. Future Skills Organisation.

<https://www.futureskillsorganisation.com.au/digital-capability-training-product-trial/>

Future Skills Organisation. (2026). Digital Knowledge Exchange. Future Skills Organisation.

<https://www.futureskillsorganisation.com.au/projects-dkx/>

Future Skills Organisation. (2026). ICT Update: ICT Training Package Update. Future Skills Organisation.

<https://www.futureskillsorganisation.com.au/ict-training-package-update/>

Future Skills Organisation. (2026). ICT Update: Specialist Artificial Intelligence. Future Skills Organisation.

<https://www.futureskillsorganisation.com.au/specialist-artificial-intelligence/>

Future Skills Organisation. (2026). Skills Accelerator-AI. Future Skills Organisation.

<https://www.futureskillsorganisation.com.au/skills-accelerator-ai/>

Mandala Partners and Future Skills Organisation. (2024). Impact of generative AI on skills in the workplace. Mandala Partners.

<https://mandalapartners.com/reports/generative-ai-workplace-skills>

Skills Insight. (2026). AI, digital and workforce futures - National AI Skills Report. Skills Insight.

<https://skillsinsight.com.au/ai-digital-and-workforce-futures/>

Macroeconomic, fiscal and geoeconomic risk sources

Australian Government. (2026). Budget Paper No. 1: Budget strategy and outlook 2026-27. Australian Government.

https://budget.gov.au/content/bp1/download/bp1_2026-27.pdf

Australian Treasury. (2026). Treasury Portfolio Budget Papers. Australian Government. <https://treasury.gov.au/treasury-portfolio-budget-papers>

International Monetary Fund. (2026). World Economic Outlook Update, July 2026: Global Economy in Crosscurrents of War and Technology.

IMF. <https://www.imf.org/en/publications/weo/issues/2026/07/08/world-economic-outlook-update-july-2026>

OECD. (2026). OECD Economic Outlook, Volume 2026 Issue 1: Under Pressure. OECD Publishing.

https://www.oecd.org/en/publications/oecd-economic-outlook-volume-2026-issue-1_2d1956f0-en.html

World Bank. (2026). Global Economic Prospects, June 2026. World Bank.

<https://www.worldbank.org/en/publication/global-economic-prospects>

World Bank. (2026). Middle East conflict sends global growth to lowest rate since COVID-19. Press release.

<https://www.worldbank.org/en/news/press-release/2026/06/11/global-economic-prospects-june-2026-press-release>

World Economic Forum. (2026). Global Risks Report 2026: Chapter 1 - Global risks 2026. World Economic Forum.

<https://www.weforum.org/publications/global-risks-report-2026/in-full/global-risks-report-2026-chapter-1/>

World Economic Forum. (2026). The Global Risks Report 2026. World Economic Forum.

<https://www.weforum.org/publications/global-risks-report-2026/digest/>

World Economic Forum. (2026). The Global Risks Report 2026: PDF report. World Economic Forum.

https://reports.weforum.org/docs/WEF_GlobalRisks_Report_2026.pdf

Climate, megatrends, migration and social cohesion

Australian Climate Service and Department of Climate Change, Energy, the Environment and Water. (2025). Australia's National Climate Risk Assessment Report 2025. Australian Government.

https://unfccc.int/sites/default/files/resource/Australia_National_Climate_Risk_Assessment_Report_2025.pdf

Commonwealth Scientific and Industrial Research Organisation. (2022). Our Future World: Global megatrends impacting the way we live over coming decades. CSIRO. <https://www.csiro.au/-/media/D61/Our-Future-World-Megatrends-report/FIN-OFW-Megatrends-22-report.pdf>

Lowy Institute. (2026). 2026 Lowy Institute Poll. Lowy Institute. <https://www.lowyinstitute.org/publications/2026-lowy-institute-poll>

Nazarian, N., Pitman, A. J., Lipson, M. J., Hart, M. A., Cleugh, H., Harman, I., Thatcher, M. J., Hirsch, A. L., Di Virgilio, G., Riley, M. L., Tapper, N., Evans, J. P., Jakob, C., and Perez, P. (2025). Strengthening national capability in urban climate science: An Australian perspective. arXiv. <https://arxiv.org/abs/2509.03968>

Scanlon Foundation Research Institute. (2025). Mapping Social Cohesion 2025. Scanlon Foundation Research Institute. <https://scanloninstitute.org.au/mapping-social-cohesion-2025/>

UNHCR. (2025). Extreme weather driving repeated displacement among conflict-affected communities. United Nations High Commissioner for Refugees. <https://www.unhcr.org/news/press-releases/unhcr-report-reveals-extreme-weather-driving-repeated-displacement-among>

Clean energy, food supply chain and industrial workforce sources

Fareri, S., Apreda, R., Mulas, V., and Alonso, R. (2023). The energy worker profiler from technologies to skills to realize energy efficiency in manufacturing. arXiv. <https://arxiv.org/abs/2301.09445>

Geopolitics, China AI+, robotics and AI-market-risk sources

International Federation of Robotics. (2026). China makes AI-powered robots core of national strategy. IFR. <https://ifr.org/ifr-press-releases/news/china-makes-ai-powered-robots-core-of-national-strategy>

National Institute of Standards and Technology. (2025). CAISI evaluation of DeepSeek AI models finds shortcomings and risks. NIST. <https://www.nist.gov/news-events/news/2025/09/caisi-evaluation-deepseek-ai-models-finds-shortcomings-and-risks>

State Council of the People's Republic of China. (2025). Guideline to accelerate AI Plus integration across key sectors. State Council of the People's Republic of China. https://english.www.gov.cn/policies/latestreleases/202508/27/content_WS68ae7976c6d0868f4e8f51a0.html

U.S.-China Economic and Security Review Commission. (2026). Two loops: How China's open AI strategy reinforces its industrial dominance. USCC. https://www.uscc.gov/sites/default/files/2026-03/Two_Loops-How_Chinas_Open_AI_Strategy_Reinforces_Its_Industrial_Dominance.pdf

Wang, J., Kunievsky, N., Lou, B., Sun, T., and Evans, J. (2026). U.S. policies unintentionally accelerated China's open AI ecosystems. arXiv. <https://arxiv.org/abs/2606.15999>

Ying, Z., Huang, Y., et al. (2025). Towards understanding the safety boundaries of DeepSeek models: Evaluation and findings. arXiv. <https://arxiv.org/abs/2503.15092>

Zhang, W., Lei, X., et al. (2025). Safety evaluation of DeepSeek models in Chinese contexts. arXiv. <https://arxiv.org/abs/2502.11137>

Apprenticeship policy, wage-subsidy and programme evaluation sources

Bowers, P., Rehill, P., and Slaven, E. (2026). A rapid evaluation of Australia's COVID-era apprentice wage subsidy programs. arXiv. <https://arxiv.org/abs/2604.19178>

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Apprenticeship Association**