

CLIMATE ANALYTICS

A fossil-free Australia

Opportunities for employment in a high renewable power sector

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About Climate Analytics

Climate Analytics is a global climate science and policy institute. Our mission is to deliver cutting-edge science, analysis and support to accelerate climate action and keep warming below 1.5°C.

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Climate Analytics Australia Ltd acknowledges the Traditional Custodians of the lands where we work and live, the Whadjuk people of the Noongar nation. We celebrate the diversity of Aboriginal and Torres Strait Islander peoples and their ongoing cultures and connections to land, sea and community.

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Executive Summary

At COP30, Australia joined the Belém Declaration, calling for a "just, orderly and equitable transition away from fossil fuels". Australia's transition away from fossil fuels is often framed as a trade-off between climate ambition and jobs. Our analysis finds that a transition away from fossil fuels will generate major employment opportunities across the country, but that it is critical to ensure a just and fair transition of the workforce.

In our report A fossil-free Australia, we established the fossil fuel phase-out (FFPO) scenario, a new Paris-aligned pathway for Australia, which we compared against a current policy projections scenario (CPP) that reflects the measures the government has put in place. In this companion report, we analyse the employment implications of our FFPO scenario for the electricity sector.

We find that a 1.5°C aligned deployment of renewable energy would substantially expand power sector employment and surpass the potential decline in jobs from a phase-out of fossil fuels in the "transitioning industry" by a large margin.[1]

In our Paris-aligned pathway, the power sector employs more than ten times as many full-time equivalent (FTE) workers in 2050 as legacy, carbon-intensive fossil fuel power generation does today. Annual labour demand in the national power sector doubles, from 37,000 FTE jobs in 2025 to 76,000 in 2035 and 87,000 by 2050, after a peak at nearly 90,000 in 2030.

In contrast to the FFPO scenario, current policies see employment in the power sector only increasing to 51,000 FTE jobs by 2050, assuming the government reaches its own renewable and climate targets. Here, power sector employment first rises to around 55,000 FTE in 2030, but then falls by about a third, to around 35,000 by 2033, and stays below its 2030 level until the late 2040s.

[1] Occupations employed in electricity supply includes workers in manufacturing, installation and construction, maintenance and operation for electricity generation and distribution.

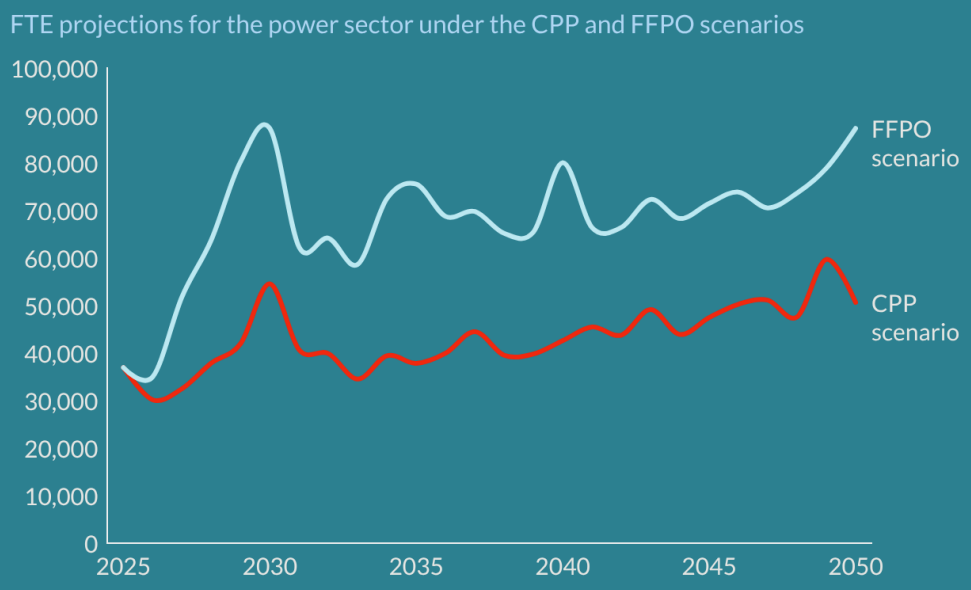


Figure 1: FTE projections for the power sector under the CPP and FFPO scenarios

A 2035 target supports employment

Both scenarios see a post-2030 decline in power sector employment as the initial surge in renewable energy construction subsides. Our CPP scenario, based on the government's projections, is optimistic. Without renewable energy targets for 2035 and beyond and a coal and gas phase-out timeline, there will be uncertainty for electricity workers.

Under the FFPO scenario, the sharper initial adjustment reflects the exceptionally rapid deployment required to achieve a Paris-aligned pathway by 2030, but employment remains substantially higher than under CPP afterwards. A 2035 renewable energy target gives workers, but also investors, the predictability and certainty that they need. Comprehensive planning is critical not only to anticipate the policy needs, but also to scale the training and upskilling required to supply an adequate workforce, and enable a just and fair transition.

Locations for future jobs critical to the transition

Due to the decentralised nature of renewable energy, the new jobs created will not necessarily be in the same location where fossil fuel jobs are lost. The FFPO scenario sees a transition of the entire national electricity system, instead of only the main grids covered by the 82% renewable target. The new jobs will be spread around Australia, providing opportunities in regional areas and mining and industrial clusters that are currently lagging behind in the transition.

Areas away from the East Coast's National Electricity Market (NEM) and Western Australia's South West Interconnected System (SWIS) will generate around 17,000 jobs in 2050, up from only 2,000 currently, or up from 5% to 19% of the total power sector workforce, exploiting Australia's abundant regional renewables potential.

These jobs will also give rise to demand for a wide array of skills. Construction and installation jobs, including project-based workers, experience volatility in demand. By

contrast, long-term positions in operation and maintenance (O&M) work increase steadily from today's 18,000 jobs to 25,000 jobs by 2030, and 59,000 jobs by 2050. That is roughly the size of today's entire coal mining and fossil fuel power workforce combined, and 23,000 more than under current policies. Such jobs would give coal workers a realistic path into the new industry.

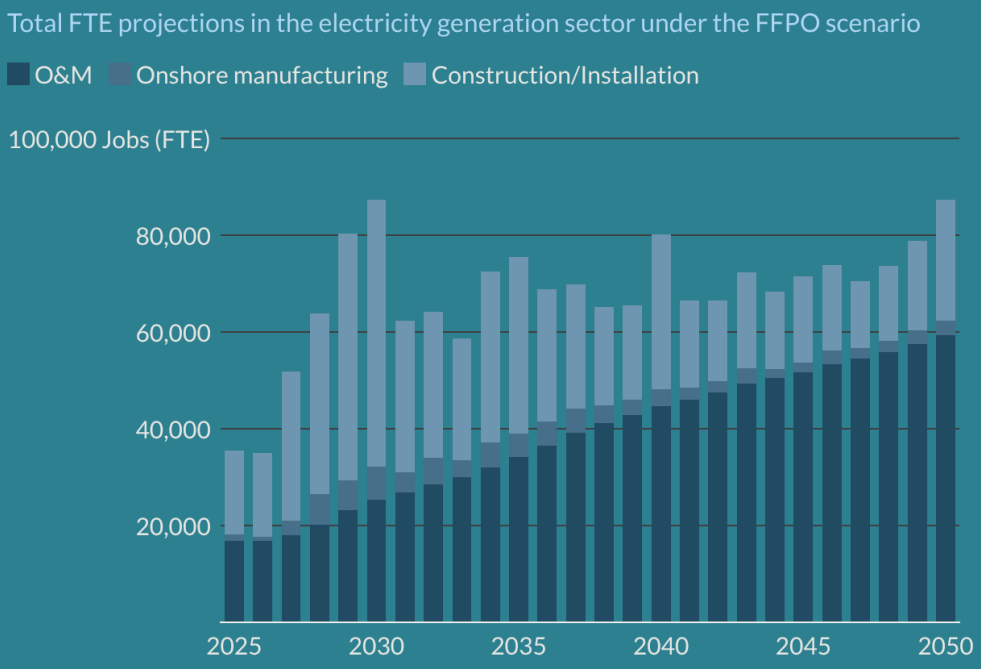


Figure 2: Total FTE projections in the electricity generation sector under the FFPO scenario.

Realising these opportunities will require active workforce planning. In the initial phase of the transition, renewable capacity will need to be deployed rapidly to replace existing fossil fuel generation, creating a sharp increase in demand for construction and installation workers, including in regions away from major population centres.

This surge in labour demand could place significant pressure on local and sectoral labour markets. After that initial buildout, employment demand associated with project development and construction is expected to fall sharply in the early 2030s. Similar, though smaller, workforce pressures are present even under current policies.

Planning for the next wave of renewable energy, transmission and storage projects for 2031–2035 by identifying when and where labour will be required, ensuring an adequate pipeline of appropriately skilled workers, coordinating renewable energy deployment with other major infrastructure projects, and setting interim goals like a 2035 renewable target would reduce the risks associated with these changes.

Ensuring a just transition

Ensuring a just transition away from fossil fuels for workers in affected sectors is crucial. Around 6,000 workers are currently employed in fossil fuel power generation, with 52,000 and 27,000 employed in the coal mining and oil and gas sectors, respectively – representing, combined, 0.6% of the national workforce.

While these numbers are relatively small, these jobs are clustered in communities with strong links to fossil-based activities. This geographic concentration leads to challenges for affected communities and individual workers despite overall net employment gains at the national level. A just transition is therefore essential to a fair labour adjustment, active economic diversification, and genuine and inclusive dialogue on the future of these communities.

A poorly managed transition can put these workers, and by extension these communities, at risk of hardship. Australia should learn from its past experiences of badly managed transitions to avoid repeating them. Transition policy must therefore focus on where jobs are being lost as well as how many jobs and what types of jobs are being created. Extending support to contractors and supply-chain workers, who often miss out, is also an important step to ensure the transition benefits all Australians.

Renewables deployment goes hand in hand with electrification

Our analysis focuses solely on employment in the electricity generation sector and should not be read as capturing the full picture of the broader co-benefits from a transition aligned with the moral and legal boundary that is the 1.5˚C warming limit, or the broader employment opportunities in the rest of the economy.

Electrification and wind and solar deployment are two sides of the same transition, and electrification will also generate major employment opportunities. COP31 host government Türkiye and negotiating president Australia have proposed a global goal to raise electricity's share of final energy demand from about 20% today to 35% by 2035. As a developed, wealthy country, Australia needs to reach it faster and go beyond that collective goal. In the FFPO scenario, it reaches 50% by 2035.

For that electrification to cut emissions, the electricity must come from clean sources. A global electrification goal has to be paired with a commitment to clean power. To go beyond the global goal in line with a 1.5°C aligned trajectory, Australia needs to set interim targets for both renewables, including for 2035 and beyond, and electrification.

One additional co-benefit of both renewable deployment and electrification is energy security. Solar panels, wind turbines, batteries and electric vehicles have never been so cost-effective, and electricity generated from these sources relies on neither global fuel prices nor supply chains vulnerable to conflict on the other side of the world.

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Introduction

At the 2025 COP30 climate talks, Australia signed the Belém Declaration for a "just, orderly and equitable transition away from fossil fuels" and supported a global-level roadmap to operationalise this.[2] As the world will likely pass the Paris Agreement's 1.5°C warming limit by the early 2030s, a fossil fuel phase-out is necessary both to reduce the magnitude and duration of overshoot, and to bring warming back below 1.5°C before 2100.[3]

COP31 host government Türkiye and negotiating president Australia have proposed a global electrification goal to increase electricity's share of final energy consumption to 35% by 2035.[4] At the same time, a fossil fuel phase-out in the power sector can deliver deep emissions reductions, and the integration of renewable energy generation will create substantial new job opportunities.

This report complements "A fossil-free Australia", which sets out structural changes in energy demand by level and source, across all sectors, under a Paris Agreement-aligned future.[5] In our 1.5°C aligned FFPO scenario, Australia's final energy electrification reaches 50% by 2035 (versus around 33% under current-policy projections), supported by wind and solar providing approximately 85% of national generation in 2030 and 95% in 2035.

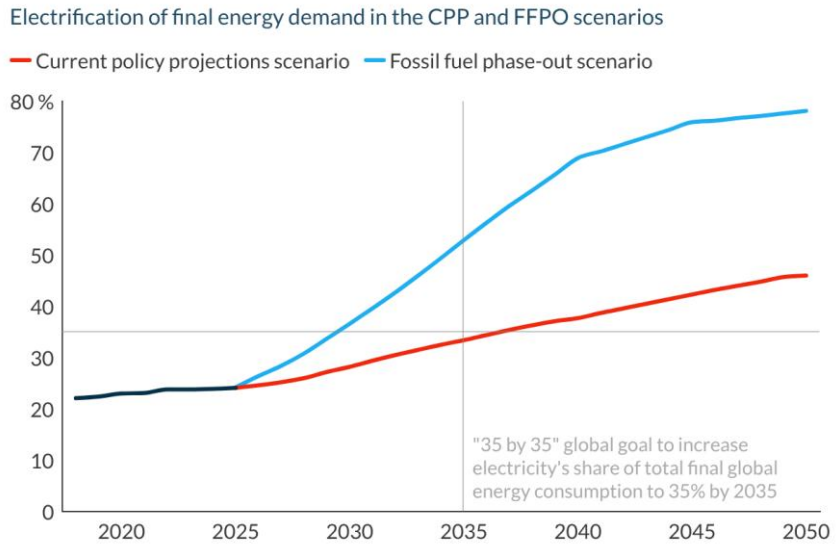


Figure 3: Electrification of final energy demand in the CPP and FFPO scenarios

[2] DCCEEW, "Australia's Participation at COP30."
[3] Climate Analytics, *Rescuing 1.5°C: New Evidence on the Highest Possible Ambition to Deliver the Paris Agreement*.
[4] UNFCCC, "COP31 Presidency Announces New Targets on Global Electrification, Cutting Waste, Resilient Cities; Press Conference Transcript."
[5] Climate Analytics, *A Fossil Fuel Free Australia*.

We extend this work to consider changes in energy-related employment in a 1.5°C compatible power sector pathway in Australia. This report illustrates how a Paris-aligned fossil fuel phase-out and renewable energy expansion could interact with Australia's employment landscape. One of our key findings is that a net loss in jobs is unlikely to be the central energy transition challenge facing Australia's workers. The expansion of renewable energy and related industries is expected to grow aggregate national employment, but the net job creation will not necessarily be equally distributed by location, sector, or time period.

Current fossil fuel-related employment in Australia is relatively small at the national scale but highly geographically concentrated and therefore important in some regions and communities. By contrast, the expansion of renewable energy and related sectors is projected to generate substantially more employment in aggregate, though with differently structured labour demand. This leads to the critical policy question for workers within Australia's fossil fuel phase-out: whether national leaders can implement a well-managed and equitable transition, supported by forward-looking labour market, industrial, and regional development commitments, or whether a lack of suitable planning will see adjustment costs fall disproportionately on workers.

We find that a 1.5˚C aligned fossil fuel phase-out and renewable energy expansion can deliver abundant employment growth linked to the power sector alone – far exceeding fossil fuel-linked job losses.[6] Policymakers must closely guide the transition. Careful planning, both short- and long-term, is essential to minimising the economic and social disruptions from dramatic structural adjustment in affected sectors and locations. We conclude with policy recommendations to ensure labour shortages do not become a bottleneck, and that workers, and their families and communities, help to deliver successful climate action while benefitting from a just and equitable transition.

[6] Jay Rutovits et al., *The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050*.

Labour market state-of-play

Globally, the clean energy transition is expected to be more labour-intensive than current fossil fuel-based energy activity, with potential to generate significantly higher employment per unit of energy produced.[7]

This analysis identifies seven major "transitioning industry" segments within the Australian and New Zealand Standard Industrial Classification (ANZSIC) used by the Australian Bureau of Statistics (ABS): coal mining; oil and gas extraction; coal and petroleum refining; electricity supply[8]; gas supply; petroleum product wholesaling; and fuel retailing.[9,10] Several of these have relatively limited shares of the labour market; the combined workforce accounted for 1.8% of Australia's total employed workforce of 14.7 million people as of 2025 (Figure 4).

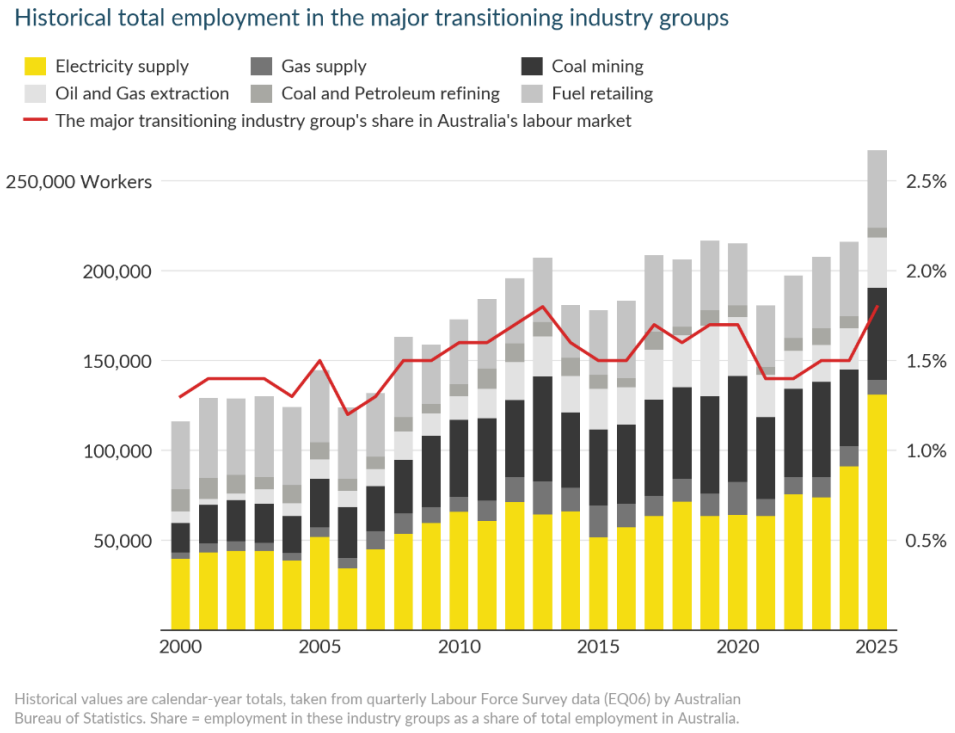


Figure 4: Historical total employment in the major transitioning industry groups

Employment trajectories across these sectors are not uniform. Critical clean energy occupations, such as electricians, electrical distribution trades workers, and electrical engineers, are seeing unparalleled job growth from the buildout of capacity, storage, and

[7] IRENA, *Renewable Energy and Jobs: Annual Review 2025*.
[8] Occupations employed in electricity supply includes workers in manufacturing, installation and construction, maintenance and operation for electricity generation and distribution.
[9] Dr. Jim Stanford, *Employment Aspects of the Transition from Fossil Fuels in Australia*.
[10] Jobs and Skills Australia, *The Clean Energy Generation | Jobs and Skills Australia*.

grid transmission infrastructure, as part of a progressive shift from a baseload to a distributed, renewables-based system.[11] The electricity supply sector's employment doubled between 2020 and 2025, reaching 130,000 workers, which is equivalent to 1% of the national workforce.

ABS industry classifications also understate the scale of employment associated with the renewable-energy transition, because many jobs created by the buildout are recorded in construction, manufacturing and professional services rather than electricity supply. The Australian Energy Market Operator (AEMO) workforce projections reflect this, noting that "construction dominates the employment profile [of the energy transition] through the 2020s."

In 2023, the Clean Energy Council estimated that, if Australia were to reach its targets of 82% renewables in the National Electricity Market (NEM) – the largest national grid – and a 43% economy-wide emissions reduction by 2030 (from a 2005 baseline), electricity-linked construction jobs would represent one third of economy-wide job growth nationally by 2030.[12]

In contrast to the electricity sector, coal and oil & gas extraction are both relatively small Australian employers. As per the ABS Labour Force Survey, coal mining employed 52,000 people and oil and gas extraction 27,000 in 2025, representing only 0.4% and 0.2% of the national workforce respectively.[13] A poll found Australians substantially overestimated these figures, believing coal and oil and gas extraction each employed around 10% of workers.[14]

Coal and oil & gas extraction have also experienced a gradual employment decline since 2020, an 8% reduction for each, driven by relative output contraction and the end of the LNG construction boom. Production in both sectors is overwhelmingly export-oriented, with more than 80% of Australia's coal and gas destined for overseas markets.

Although fossil fuel jobs make up a relatively small share of employment nationally, they are concentrated in specific regions, such as Queensland's Bowen Basin and Western Australia's Pilbara. As a result, the employment impacts of the transition are likely to be much greater in those areas compared to the national level. Different regions face different pressures. Where jobs depend on exports, as in the Bowen Basin, the Pilbara and the Hunter Valley, losses are driven by global demand, not national policies, and replacement jobs are more likely to come from new export industries such as green iron and minerals processing. Where jobs depend on coal-fired power stations and mines that supply them, as in the Latrobe Valley and Collie and around the power stations of the

[11] Jobs and Skills Australia, *The Clean Energy Generation: Workforce Needs for a Net Zero Economy*.
[12] Clean Energy Council, "Jobs Report Guides Future For The Clean Energy Workforce."
[13] Australian Bureau of Statistics, "Labour Force, Australia, Detailed."
[14] The Australia Institute, "Climate Concern at Record High amid Floods: Largest Tracking Research on Climate in Australia."

Hunter and Lake Macquarie, losses follow directly from the power-sector transition, and new renewable, transmission and storage projects can replace them locally.

A further complication arises from the concentration of energy transition jobs in construction and technical services, which are already experiencing capacity constraints.[15] Addressing these challenges requires strong policy responses and well-organised transition mechanisms to ensure a just transition in the affected regions. These challenges and suggested solutions are discussed further in the conclusion and policy recommendations.

The overall conclusion is that the primary labour market threat of a fossil fuel phase-out is not large-scale job loss. It is the challenge of ensuring a timely reallocation of workers with respect to regions and sectors of greatest need, while also avoiding skills shortages.

Electricity sector jobs in a 1.5°C aligned scenario

A Paris-aligned future without fossil fuels entails a rapid structural transformation of Australia's electricity sector, as discussed in our report on an economy-wide fossil fuel phase-out. Retired fossil fuel-based generation is progressively replaced by renewable energy, storage technologies, and grid modernisation. As explored in the following sections, this necessitates a comprehensive reconfiguration of the sector's underlying labour demand.

Methodology

The report A fossil-free Australia sets out two distinct scenarios:

- The Fossil Fuel Phase-out (FFPO) scenario, which is of most interest here, is a Paris-aligned fossil fuel phase-out and renewable energy expansion scenario, derived primarily from the global Highest Possible Ambition pathway, calculated with the REMIND Integrated Assessment Model. The results from the Highest Possible Ambition pathway for the cluster of countries Australia is in inform the renewable targets used for this analysis.

[15] In a February 2026 report, the Reserve Bank of Australia (RBA) observed that "availability of labour remains a constraint for many firms, consistent with some tightness remaining in the labour market."

- We contrast this ambitious pathway with the Current Policy Projections (CPP). The CPP scenario is based on the Australian government's own projections, which assume Australia meets its 82% on-grid renewable target. Australia is currently far off track for this target, so the CPP employment results should be read as an optimistic view of current policies.[16]

To assess the employment consequences of the FFPO scenario, we draw on the methodology developed in The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050, a report prepared by Reliable Affordable Clean Energy for 2030 (RACE for 2030) in partnership with AEMO and the University of Technology Sydney.[17] That report provides a detailed analysis of employment in the NEM across all three of AEMO's Integrated System Plan 2024 scenarios. Our analysis builds on the related employment factors and applies them to the FFPO scenario.

The numerical values and totals in the Australian Electricity Workforce report are constructed with a different methodology from that of the ABS. The figures cover employment in operations and maintenance and construction and manufacturing of renewables, while excluding electricity retailing and operation of transmission and distribution networks. These structural differences mean the figures presented below are not directly comparable to ABS data. This explains the divergence between values in Figure 1 above and those that follow. See the Methodology section for full details of our approach.

A transformed electricity employment landscape

A Paris-aligned fossil fuel phase-out transition fundamentally reshapes Australia's electricity workforce through a sequence of distinct labour market phases rather than a homogeneous expansion. Overall, our analysis shows the transition will generate a significant number of new power sector jobs.[18] Potential annual labour demand more than doubles over the 2025-2050 period considered, from 37,000 FTE to 87,000 FTE, compared to 51,000 FTE (in 2050) under the CPP scenario. These include manufacturing of renewable energy equipment, construction and operation and maintenance of

[16] Climate Change Authority, *2025 Annual Progress Report*.
[17] Jay Rutovits et al., *The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050*.
[18] In this analysis, full-time equivalent (FTE) employment represents the workload of one person working full-time for one year. It therefore measures the total amount of labour required rather than the number of individual workers employed.

renewable energy capacity and storage capacity (see Textbox 1 about manufacturing opportunities in Australia).

The 2026 to 2030 period is the most intensive period of job creation. Meeting Paris-aligned renewable targets requires rapidly adding high volumes of renewable capacity to the grid to displace the existing fossil capacity. Over this period, the renewable energy and battery storage sectors are projected to add around 31,000 and 25,000 jobs (FTE) respectively, an order of magnitude greater than total projected annual employment losses in the fossil fuel sector over the next two decades.

This rapid build-out in the initial years of the transition creates a spike in construction demand, as also observed in other studies.[19] Manufacturing, construction, and installation activities are projected to generate an additional annual total of 44,000 FTE in 2030 from 18,000 FTE in 2026 (Figure 5). Under the CPP scenario, this increase is about half that of the FFPO scenario, adding 21,000 FTE in 2030 from 12,000 FTE in 2026 (see scenario comparison in Table 1). As the installation phase concludes, the workforce is projected to fall, with a single-year drop of approximately 25,000 FTE between 2030 and 2031. This reflects the higher labour intensity of construction and installation jobs compared with O&M, although construction jobs are project-based while O&M jobs are long-term and tied to a single asset.

Table 1: Comparison of estimated total additional annual jobs (in FTE) in the renewable energy sector in 2030 relative to 2026.

	CPP	FFPO
Manufacturing	4,200	5,900
Construction and installation	16,400	38,000
O&M	3,700	8,500

Both the immediate job creation spike and post-2030 contraction also occur under current policies, and are visible in the 2024 Workforce Report that informs our CPP scenario. Australia's need to rapidly make up ground on its renewable energy targets contributes to the uneven activity. Our FFPO scenario includes a much higher share of renewables than the CPP scenario (at least 87% by 2030 compared to 77% nationwide, including off-grid, as per the government's 82% renewable generation target, see Figure 7 scenario comparison).

[19] Jay Rutovits et al., *The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050*.

If appropriately anticipated and planned for, the post-2030 employment decline in construction activity under the FFPO scenario is likely to be absorbed at an economy-wide level through normal labour market movement between jobs, projects, and sectors. There is, indeed, precedent for this in Australia's regular resources booms in both fossil fuel and non-fossil fuel sectors. Australia's labour market is already characterised by a relatively high degree of employment flexibility, including casual, contract, and project-based work, particularly in construction and related trades. The construction sector also tends to be more resilient to boom-and-bust cycles than other sectors of the Australian economy. With a sufficiently sequenced project pipeline, labour mobility can help smooth the employment effects of the post-2030 contraction and other volatility.

The situation is different under the CPP scenario, which assumes a catch-up build-out to meet the 82% on-grid renewables goal in 2030, followed by a slower pace of additions in the absence of a comparable 2035 target. Project-based construction demand therefore falls sharply after the initial build-out, while operations and maintenance jobs grow more gradually. Hence, the absence of post-2030 targets for renewables, transmission and storage would increase the risk of this employment gap due to uncertainty in policy continuity.

After 2031, employment in the power sector grows more slowly, as power demand rises with the electrification of the whole economy, and with expected population and economic growth. New uses of electricity are expected to add further to that demand and require additional capacity: the production of green hydrogen and green ammonia, and, from the 2040s, the limited deployment of direct air capture so that Australia can meet its goal of reaching net zero greenhouse gas emissions by 2050.

The nature of jobs in the renewable energy industry changes as the transition progresses and Australia moves from a fossil fuel-based to a renewable-powered economy. Where construction and installation roles dominate in the period to 2030, O&M roles begin to rise in importance thereafter. From 18,000 at present, O&M FTE positions rise to 25,000 in 2030 and 59,000 in 2050.

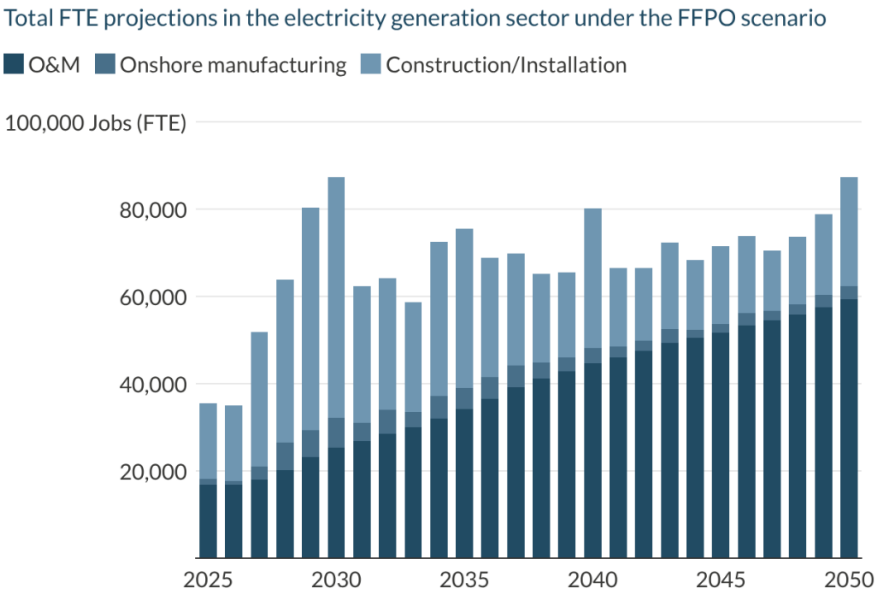


Figure 5: Total FTE projections in the electricity generation sector under the FFPO scenario

Throughout the modelled time period, employment dynamics also vary across locations and technologies, as different clean electricity sources require distinct skill sets. Meeting this demand and responding to these evolving dynamics will require political leadership.

The counterpoint to the growth in renewables jobs is a consistent decline in the fossil fuel-linked power sector workforce. The number of jobs in the fossil fuel-fired power sector is much smaller, at 6,000 FTE, and mostly confined to O&M for ageing assets. The share of the total number of jobs in fossil fuel assets falls below 1% by 2034, excluding jobs in decommissioning of fossil fuel assets.

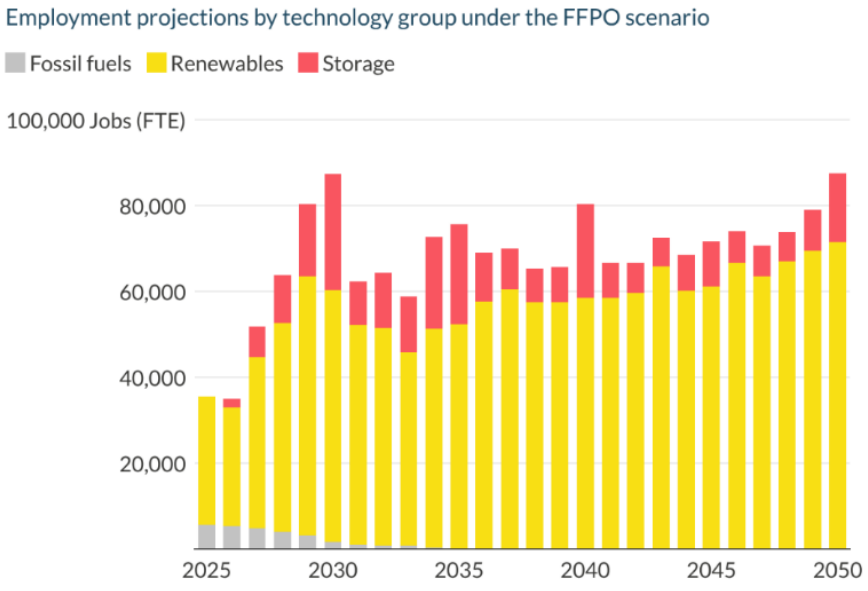


Figure 6: Employment projections by technology group under the FFPO scenario

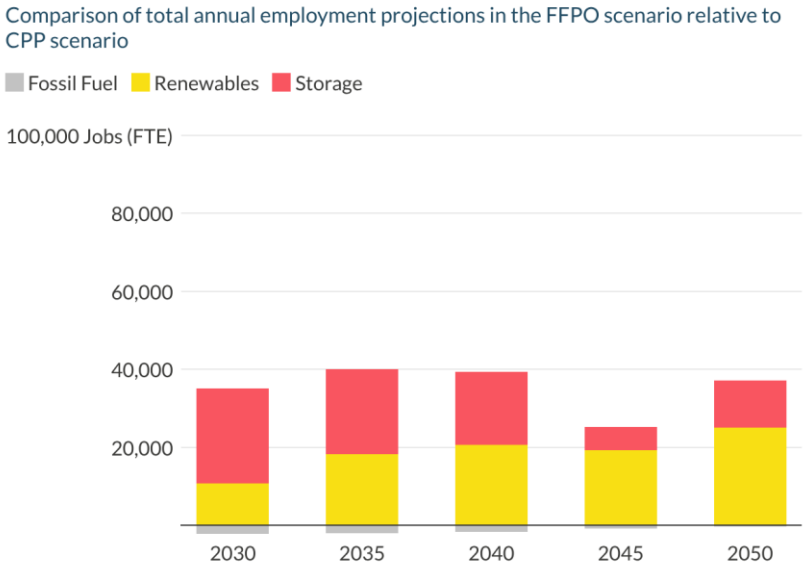


Figure 7: Comparison of total annual employment projections in the FFPO scenario relative to CPP scenario

The median age of the electricity supply workforce is 42 years, compared with 39 years nationally.[20] Workers in critical clean energy occupations, such as electricians and electrical engineers, are younger than the sub-segment average. Conversely, workers in power generation plants are older, with a median age of 48, and a higher proportion of workers approaching retirement age.[21] This reinforces the need for early and coordinated workforce planning. Australia will need to expand the pipeline of workers in occupations where demand is expected to grow rapidly, while also anticipating retirements and managing the transition of workers from declining fossil fuel generation. Aligning training capacity, apprenticeships and reskilling programmes with the timing and location of new clean energy investment can help avoid skill shortages during the build-out phase and reduce the risk of labour-market bottlenecks delaying the transition.

Grid-level results

While a power sector aligned with the FFPO scenario generates significant Australian jobs in aggregate across our modelled period, the unlocked opportunities are not evenly distributed across geography and time.

The early decommissioning of the coal power fleet is concentrated in Queensland, New South Wales and Victoria, which currently generate over half of their electricity from coal. This occurs alongside an accelerated deployment of new solar, wind, and storage capacity and completion of major projects like Snowy 2.0, transforming the NEM.

[20] Jobs and Skills Australia, "Jobs and Skills Atlas."
[21] Jobs and Skills Australia, "Jobs and Skills Atlas."

Given its dominant share of national electricity generation, the NEM commands 63% of all electricity sector job creation to 2030. The NEM also has the highest need to manage the potential labour shortages identified in AEMO's 2024 Workforce Report, which called for "measures to scale up the electricity workforce."[22]

A Paris-aligned fossil fuel phase-out delivers similar benefits in the SWIS, where 6% of the national power sector workforce is currently employed. Fossil fuels meet 60% of electricity demand there. While fossil gas plays a larger role in that grid than in the NEM, the SWIS transition resembles the NEM's, with coal phased out in the early 2030s, followed by gas a few years later, and demand rising with electrification and economic growth. This is supported by a steady rollout of renewables and storage.

The decentralised nature of variable renewable energy provides additional employment opportunities away from the capital cities. Regional Australia, the Northern Territory's Darwin-Katherine Interconnected System (DKIS) and WA's North West Interconnected System (NWIS) see steady jobs growth: these areas, which employed 5% of the national power sector workforce in 2025, have eight times as many jobs in 2050.

The mass transition of smaller-scale but industry-intensive grids, such as the Pilbara-focused NWIS, and of isolated communities and mining sites, drives employment growth alongside new regional economic activity. The uptake of alternative fuels and direct air capture consolidates this trend, generating significant energy demand growth that can be met through abundant solar and wind potential near industrial clusters away from major population centres. Total renewable capacity employment outside of the NEM and the SWIS grows from 2,000 FTE in 2025 to 14,000 FTE in 2030 and 17,000 FTE in 2050.

Beyond direct employment benefits, the shift to renewables in regional areas strengthens Australia's competitiveness and resilience. It allows industries such as mining, as well as isolated communities, to decouple from fragile supply chains and volatile global markets for fossil fuels, including dampening the impact of potential future energy shocks such as that emanating from Iran in early 2026. It also incentivises investment in Australia's comparatively affordable renewables-powered economy.

While regional opportunities increase, the renewables boom is heavily weighted towards project-based opportunities, particularly in construction. Current coal power plant jobs, by contrast, are more heavily concentrated in specific regions like Queensland's Surat Basin and Victoria's Latrobe Valley, and tend to employ experienced workers with long tenure and strong ties to local communities. This mismatch necessitates comprehensive just transition planning in impacted fossil fuel communities.

[22] Jay Rutovits et al., *The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050*.

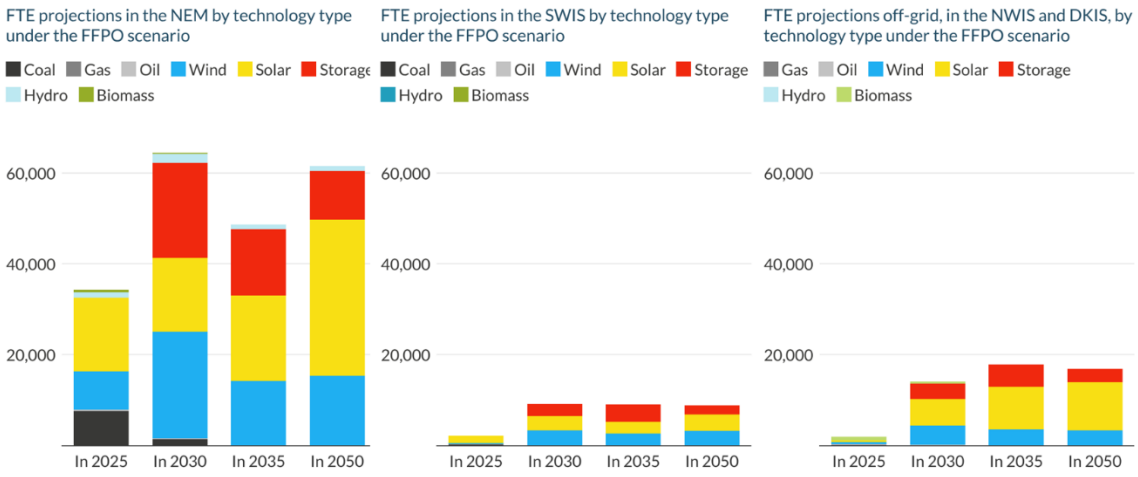


Figure 8: FTE projections by grid, by technology type under the FFPO scenario.

Box 1: Manufacturing opportunities

Phasing out fossil fuels provides Australia with opportunities for valuable economic rebalancing, including some degree of manufacturing revival. Manufacturing across all sectors currently accounts for a small share of Australian employment, at about 6%.[23] Australia also has the lowest manufacturing share of employment and GDP in the OECD.[24]

Long-term decline in Australian manufacturing, from 13% of the workforce in the mid-1990s to 6% today, has generally occurred alongside the maintenance of strong growth and high living standards.[25] The Australian government has presented manufacturing jobs growth as a potential energy transition benefit and supported it through programmes including the economy-wide Future Made in Australia green industrial strategy and the more targeted Solar Sunshot solar panel commitment.[26] These might also compensate for some fossil fuel job losses.

Under the Paris-aligned FFPO scenario, there are relatively modest but still important manufacturing growth opportunities in power sector manufacturing, particularly related to solar, wind, and battery storage components.

[23] Australian Bureau of Statistics, "Labour Force, Australia, Detailed."
[24] World Bank Group, "Manufacturing, Value Added (% of GDP) - OECD Members."
[25] Australian Bureau of Statistics, "Labour Force, Australia, Detailed."
[26]

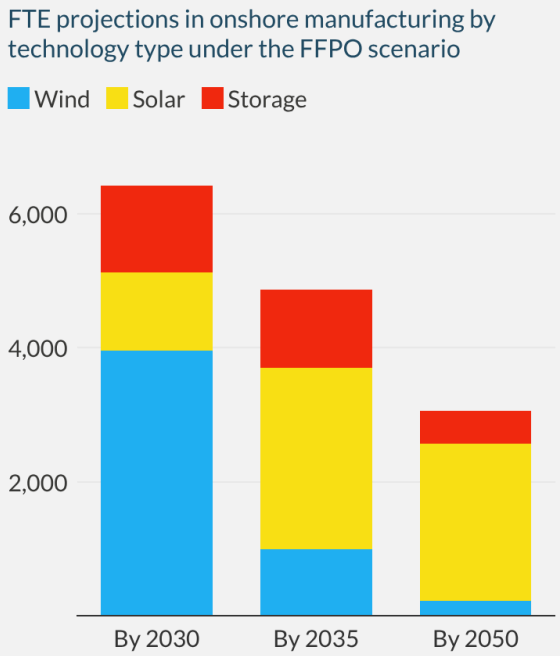


Figure 9: FTE projections in onshore manufacturing by technology type under the FFPO scenario.

Manufacturing employment in renewables, electrification, and related sectors starts slowly but reaches a peak of more than 6,800 FTE by 2030, when the phase-out of coal-fired power generation is well advanced.

Wind – including manufacturing of nacelles, blades, and towers – is by far the biggest job-generating sector, peaking near 4,000 FTE in 2030. Other sectors are less manufacturing-intensive, but do at least provide varied activity peaks and a sense of balance out to 2050. Batteries peak at more than 1,000 FTE in 2030, and solar peaks the latest, in 2036, at around 3,000 FTE.

Manufacturing job creation in the power sector is far lower in the CPP scenario, peaking at less than 5,000 in 2030. As explored below (see Textbox 3: Potential for export-led industrial transformation), phasing out fossil fuels from the energy system also incentivises employment growth opportunities outside the power sector. There is particularly high potential in more value-added, export-focused industrial sectors. These have a higher need for technically skilled workers than power sector equivalents. They might also better compensate for lost fossil fuel jobs by location.

Textbox 1: Manufacturing opportunities in Australia

Box 2: Renewable share in the power sector

Renewable share in the power sector is endogenously determined based on the techno-economic parameters, including renewable share in the generation, capital costs, O&M costs, and fuel costs. In the CPP scenario, renewable share is constrained to align with the government's projections, while in the FFPO scenario, it is set based on the regional renewable share in the HPA scenario (87% in 2030, 95% in 2040, and 100% in 2050). Table 2 presents the renewable share in power generation by grid under both scenarios.

Table 2: Floor constraints for renewable share of generation by scenario and grid

	Renewable share of generation (%)			
Scenario	**CPP**	**CPP**	**FFPO**	**FFPO**
Grids	**NEM, SWIS**	**Off-grid**	**NEM, SWIS**	**Off-grid**
2030	84%	38%	91%	87%
2040	87%	68%	99%	98%
2050	97%	82%	100%	100%

Textbox 2: Renewable share in the power sector

Technology-level employment impact

The transition to a 1.5°C aligned electricity system restructures employment across technologies, shifting from a concentrated, homogeneous fossil fuel workforce to a diversified, multi-technology labour system with distinct skill requirements.

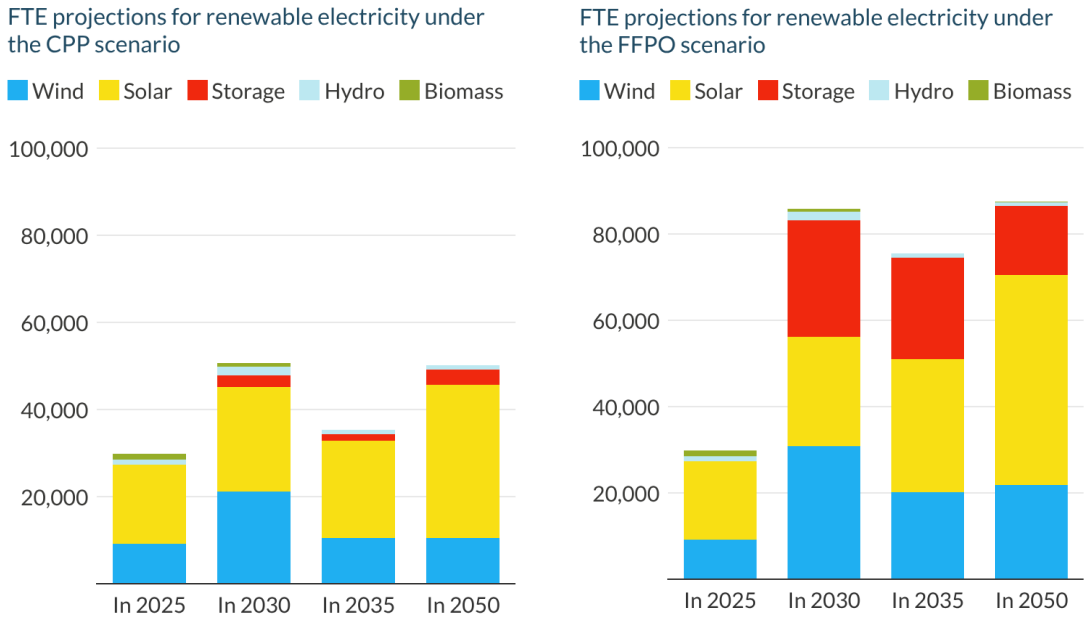


Figure 10: FTE projections for renewable electricity under the FFPO scenario.

The FFPO scenario sees Australia transition to a diversified energy mix, where wind and solar installation lead workforce demand growth, representing nearly two-thirds of total employment needs in 2030. By 2030, about 85% of electricity demand is met by wind and solar PV. Battery storage plays a critical supporting role in ensuring system stability and creating additional employment, representing the second-largest contribution to new jobs (31%), with other contributions by wind (35%) and solar PV (29%).

Throughout the transition, workforce distribution across technologies is likely to remain broadly balanced among wind, solar, and storage. All serve different roles in meeting daily power demand, and battery capacity expansion contributes to both grid stability and job creation. Each technology carries distinct skill sets, requiring tailored training pathways. For example, onshore wind is relatively labour-intensive, particularly in manufacturing and installation of large components; solar PV benefits from rapid deployment but generates shorter-duration employment; and battery storage combines modular construction with increasing importance as system penetration of renewables rises.

Beyond the NEM and the SWIS, expansion of solar capacity contributes significantly to employment growth in regional and remote areas, sustaining nearly 8,000 FTE a year between 2035 and 2050. This trend reinforces the broader spatial shift of the electricity workforce, often far from existing electricity demand hotspots, which can be supported by relocation packages.

Other technologies, including biomass and hydro generation, see more limited employment demand in a Paris-aligned future without fossil fuels. These peak at approximately 2,000 FTE and 1,000 FTE respectively in 2030, and must also contend with competition for the same skilled workers.

Overall, transition-linked employment opportunities fluctuate more than in fossil fuel-based systems, owing to shorter construction timelines and decentralised operations.

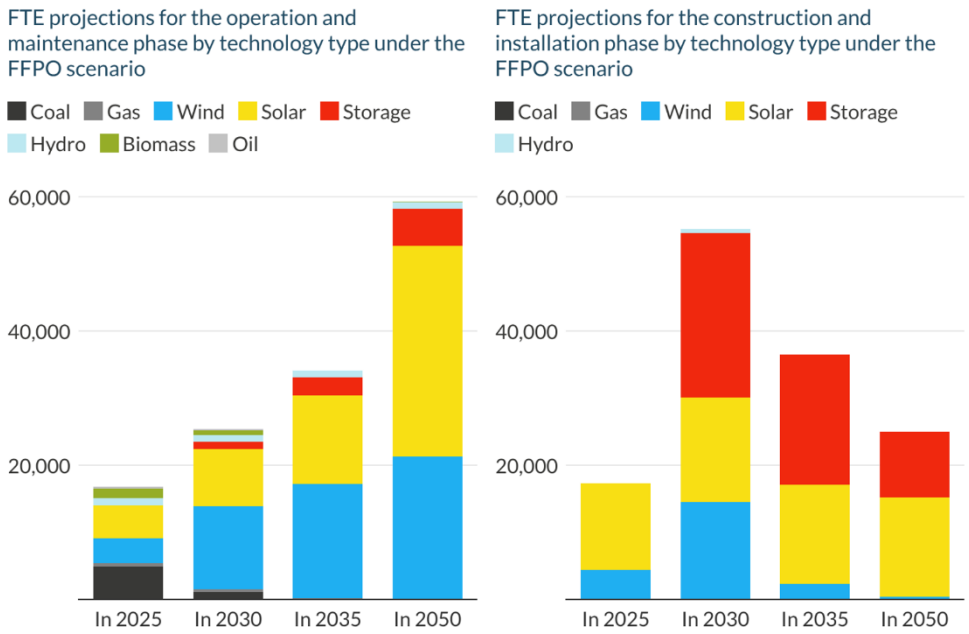


Figure 11: FTE projections for different types of jobs by technology under the FFPO scenario.

Demand for O&M workers grows steadily as the total of wind, solar PV, and storage capacity increases. Annual O&M workforce demand rises continuously, reaching around 25,000 FTE in 2030 and 59,000 FTE in 2050.

Fossil fuel extraction in the transition

As Australia is one of the largest fossil fuel producers in the world, workers in coal mining and oil & gas extraction will be impacted. Australia is the world's largest metallurgical coal exporter and second-largest thermal coal exporter.[27] While coal generates nearly half of the country's electricity through the NEM and SWIS, over 90% of domestic black coal production is exported. The greenhouse gas emissions from the combustion of Australian

[27] Department of Industry, Science and Resources, *Resources and Energy Quarterly - December 2025*.

coal outside its borders are almost 150% higher than total emissions from the Australian economy (excluding land use, land use change, and forestry).[28]

A Paris-aligned fossil fuel phase-out transition entails the closure of Australia's coal mines as part of a global phase-out. Coal extraction from a total of approximately 100 mines currently accounts for about 0.4% of the national workforce. Under our FFPO scenario, employment in the industry falls to about 28,000 FTE positions in 2030, 2,000 by 2040, and just a few hundred by 2050.

The median age of coal mining workers is 43, higher than the median of 40 in other mining subsectors, which employ nearly half of the mining workforce. However, this still leaves a large share of the workforce well short of retirement age, and retirements alone will absorb only a fraction of the rapid job losses projected by 2035.

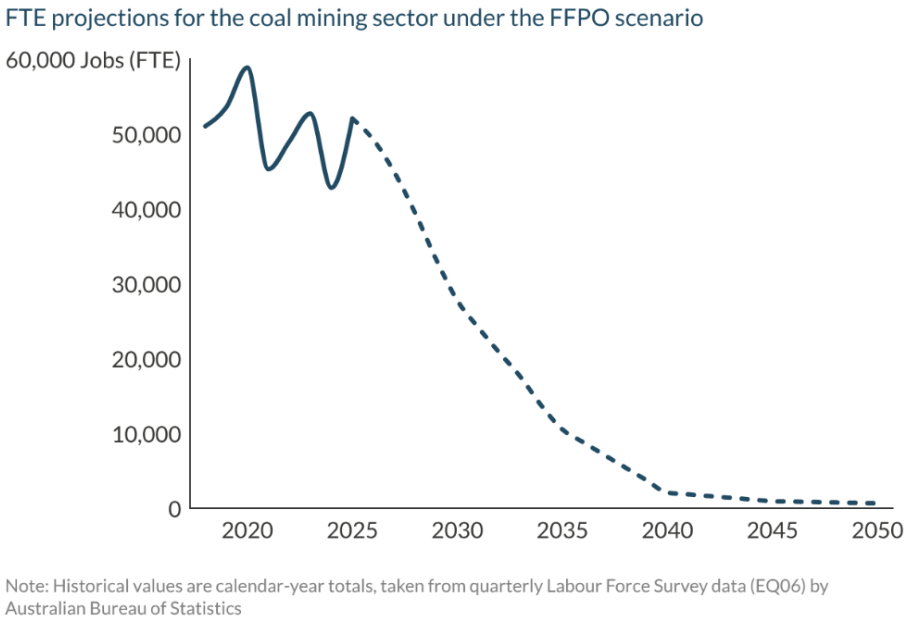


Figure 12: FTE projections for the coal mining sector under the FFPO scenario.

This steep decline in production and associated jobs is not uniform across coal types and locations. Brown coal production, concentrated in Victoria's Latrobe Valley, where it feeds the lignite-fired power stations of Loy Yang and Yallourn, winds down first. Brown coal is the lowest-ranked coal by quality, with a lower carbon content relative to black (metallurgical) coal, though its higher share of impurities makes it the most emissions-intensive coal.

Metallurgical coal exports persist longer than thermal coal equivalents. This higher-quality coal supplies heavy industry processes, principally steel production, for which clean alternatives are currently less cost-effective, particularly when compared with

[28] Climate Analytics, "Australia's Massive Global Carbon Footprint Set to Continue with Fossil Fuel Exports."

power sector substitution options. Nonetheless, Australia's total coal exports across all types are marginal by 2050.

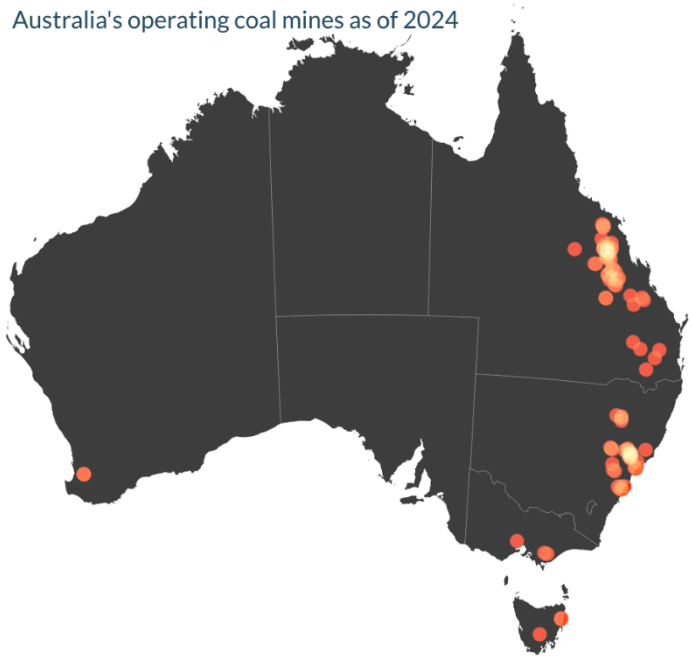


Figure 13: Australia's operating coal mines as of 2024

Coal dynamics mean different regions face differing transition pressures over time. The Latrobe Valley faces the most pressing need for transition planning because of the nature of its coal. Domestic market-focused coal mines located close to power stations in Queensland, New South Wales and Western Australia will also close earlier than export-oriented mines as coal power is phased out nationally by the early 2030s at the latest.

The transition in the power sector will also, more marginally, affect workers in oil and gas extraction. Oil and gas generate 1% and 11% of the country's electricity respectively, compared with nearly half from coal. Most extracted oil is converted to oil products, including petrol and diesel for domestic transport, and the majority of fossil gas extracted in Australia is exported as LNG. For the former, under the FFPO scenario, demand will decline as petrol and diesel are phased out from transport and industry, while gas declines due to its elimination from power, industry and buildings, and declining demand from Australia's trade partners.

Under the FFPO scenario, LNG exports decline from 80 Mtpa in 2024 to 7 Mtpa by 2050, while domestic gas demand falls by 98% between 2025 and 2050 and oil is phased out by 2050. The total oil and gas workforce declines to 22,000 FTE in 2030, falls to below 10,000 by 2040, and reaches about 1,600 in 2050, with the remaining LNG production soon to be eliminated.

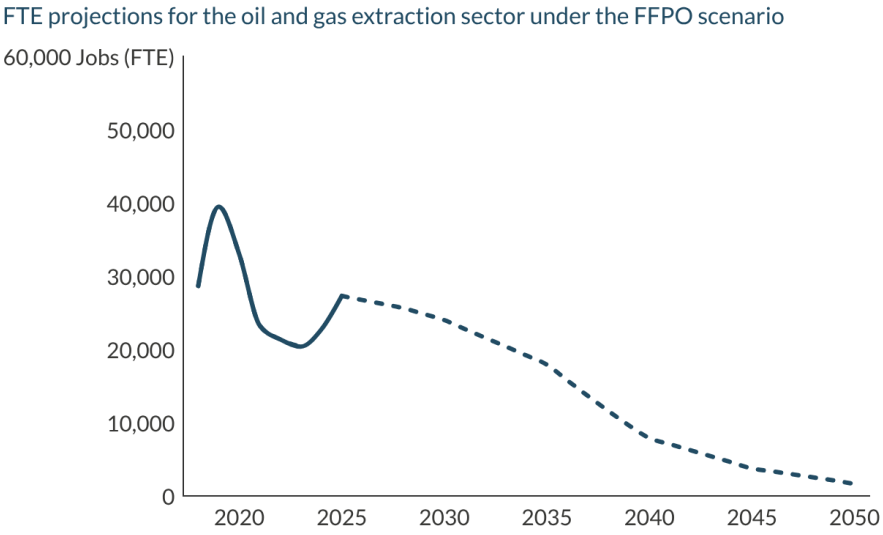


Figure 14: FTE projections for the oil and gas sector under the FFPO scenario.

Our analysis does not include employment in on-site electricity generation at LNG plants separately, as those jobs are aggregated under the broader oil and gas category by the ABS. As domestic gas consumption is effectively eliminated by 2050, a few years before LNG, jobs at LNG plants make up the remaining workforce by mid-century, while LNG exports are still being phased out. The location of LNG plants, many of them in regional Australia such as northern WA, coincides with areas where the renewable potential is high and, in the case of Karratha for example, where industrial clusters are located. This eases the potential transition of the workforce in these areas.



Source: Resources and Energy Quarterly September 2026

Figure 15: Australia's operating LNG projects as of 2026 (locations approximated for clarity).

Employment dynamics comparing scenarios

This section compares the impacts of the CPP scenario with the FFPO scenario. While both scenarios see expanded electricity sector employment and gradual decline in fossil fuel jobs, they differ significantly in the scale, timing, and composition of labour demand.

As described above, the CPP scenario draws from the Australian government's Emissions Projections. It assumes, optimistically, that Australia will meet its 2030 renewable energy target and that the government's principal climate action tool, the Safeguard Mechanism, will result in substantial emissions abatement. Like the government's projections, it assumes Australia will fail to meet its 2035 NDC commitment because the policy framework for the period post-2030 is not in place yet.

The employment numbers under CPP are conditional on delivery of the planned renewable roll-out by 2030. The absence of an explicit 2035 renewable target in the policy framework is then reflected in a less sustained build-out. Consequently, the employment difference between CPP and FFPO captures both the greater scale of renewable deployment in FFPO and the importance of maintaining an investment pipeline beyond 2030.

Given its higher climate ambition, the FFPO scenario produces more jobs in the electricity sector. Cumulatively, the FFPO scenario generates 60% more FTE positions than the CPP scenario over the 2025-2050 period. Structural differences between scenarios also mean different types of jobs are created, with diverging localised impacts.

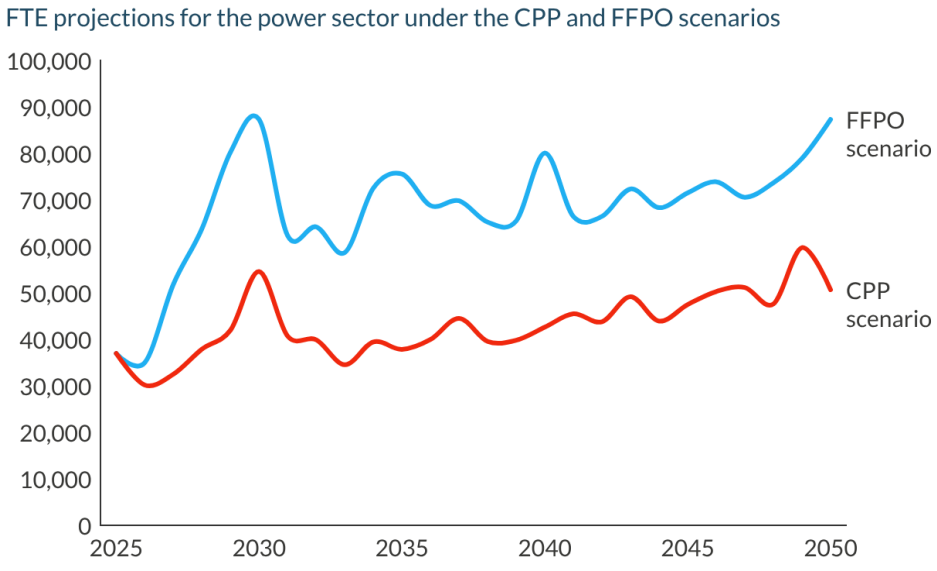


Figure 16: FTE projections for the power sector under the CPP and FFPO scenarios.

Reaching the 82% on-grid target by 2030, as the CPP does, leads to a 77% share of renewable energy in the overall national generation mix, once off-grid power is accounted for. This contributes to an employment spike by 2030, though far more tempered than in the FFPO scenario, which has much greater front-loaded renewables deployment.

In the CPP scenario, the annual FTE total reaches 55,000 in 2030, with 28,000 in construction and installation before the total peaks at 60,000 in 2049. This compares with 87,000 total FTE and 55,000 construction and installation jobs in the FFPO scenario for 2030. After contracting in 2030-2031 once the on-grid target has been achieved, total employment in the CPP scenario's electricity sector grows steadily at an average of 1.2% per year through to 2050.

From 2031 to 2050, both the construction and installation and the O&M workforces in the CPP scenario expand gradually, reaching 12,000 FTE in construction and installation and 37,000 in O&M by 2050. In the FFPO scenario, construction and installation jobs see greater volatility but remain above 13,000 FTE throughout the entire period, while O&M jobs grow at a faster pace, reaching 59,000 FTE by 2050, nearly 23,000 more than under current policies.

Under the CPP scenario, fossil fuel power employment also declines steadily, from 6,000 FTE in 2025 to 1,700 by 2040 and 250 by 2050. This is because coal-fired power stations keep closing after 2030 even without new policy, as units in the ageing coal fleet retire on reaching the end of their operating lives or announced closure dates and are displaced by cheaper renewables. Coal capacity in the main grids falls from around 22 GW in 2025 to 14 GW in 2030, 7 GW in 2035 and 5 GW in 2040, with the last units closing by 2050, while gas plants shift to a backup role and their capacity also declines. As operations and maintenance jobs scale with installed capacity, fossil fuel power employment falls in step. These jobs remain longer, but transition under the CPP provides fewer total employment opportunities than a Paris-aligned fossil fuel phase-out and renewable expansion pathway.

Just transition of the energy sector labour force

Ensuring a just transition is a central policy challenge for a 1.5°C aligned fossil fuel phase-out transition. While this concept is multi-dimensional, ensuring optimal employment outcomes for fossil fuel-dependent workers is perhaps its most immediate and politically salient dimension. As shown in the preceding sections, a 1.5°C aligned fossil fuel phase-out transition generates substantial net employment gains in the electricity sector. However, these aggregate outcomes mask important distributional dynamics that cannot be ignored.

Scale vs distribution: the dynamics of just transition

The FFPO scenario projects the near disappearance of jobs in the fossil fuel generation sector by 2040 and the loss of 51,000 FTE jobs in coal mining by 2050. These figures are modest relative to the job opportunities being generated across the broader electricity sector, and the transitioning workforce represents a small share of the national labour market. Nevertheless, the speed and volume of job losses risk overwhelming economies heavily dependent on high-emissions industries.

The central priority is to ensure transition-linked job opportunities are accessible to workers and communities who need them most. Employees of emissions-intensive power stations remain vulnerable, and their future resilience depends on sustained management of the phase-out, fair labour adjustment, active economic diversification, and genuine and inclusive dialogue on the future of their communities.

Coal mining and power generation each carry their own challenges, compounded by the fact that power stations are often located in the same regions as the mines they serve, deepening the local fossil fuel footprint. Around 92% of Australia's coal miners are concentrated in New South Wales and Queensland.[29] In areas like the Bowen Basin and the Hunter Valley, the industry has deep ties with local economies and communities. These communities stand to be disproportionately disrupted by the transition away from coal.

The loss of high-paying blue-collar jobs has cascading effects on local economies. It reduces income circulation in local businesses and shrinks opportunities across the community. It also encourages some residents to relocate in search of better work, which creates a negative spiral of population decline and further economic contraction.[30]

[29] Australian Bureau of Statistics, "Labour Force, Australia, Detailed."
[30] Br. Acad., "Towards a Just Transition from Coal in Australia?"

Inadequate forward planning risks serious negative consequences for workers, their families, and the communities that depend on these industries.

Lessons from the past and ongoing experiences

Earlier coal power station closures in Australia illustrate the risks associated with limited planning and short notice. The closure of the Northern Power Station in South Australia's Port Augusta in 2016, for example, occurred without a clearly defined transition pathway.[31] This constrained the ability of workers to prepare for alternative employment and limited the scope for coordinated regional adjustment.

More recent approaches in Australia suggest a shift toward more coordinated management of the transition is underway. WA's approach to Collie's pending coal mining and power generation closure is one example. The Just Transition Working Group, established in 2018 with government, unions, industry, and community representatives, has now produced two successive plans: the first covering 2021 to 2025, and the second covering 2026 to 2030, with four updated priorities spanning worker support, job creation, economic diversification, and closure preparation. That said, the high level of WA government involvement and state ownership of the plant operator may limit how far this model can be scaled to other contexts.[32]

International experience reinforces the importance of long-term policy consistency. In the United Kingdom, the recently completed phase-out of coal was driven by a sustained policy trajectory beginning in the early 2000s, combining regulatory measures and financial incentives. This enabled the closure of 25 coal plants over two decades, culminating in a coal-free power system in October 2024 with the shutdown of the Ratcliffe-on-Soar power station.[33] Lessons from achieving this milestone are now informing the pursuit of a target of 95% clean power by 2030.

[31] Port Angusta City Council, "Parliamentary Inquiry into the Retirement of Coal-Fired Power Stations."
[32] Mark Paterson et al., *Just Transition Navigating Australia's Energy Transformation*.
[33] Frankie Mayo, *The UK's Journey to a Coal Power Phase-Out*.

Institutional context and emerging policy frameworks

Table 3: Upcoming fossil fuel power station closures in Australia. [34,35,36,37]

	Closure Year	Key Takeaway
Torrens Island Power Station B	June 2028	First case of obligations under the Energy Industry Jobs Plan.
Eraring Power Station/Myuna Colliery	April 2029	Closure of Australia's largest coal power plant and associated mine.
Collie/Muja Power Station (WA)	October 2027/2030	Value of long-term, community-centred economic diversification.

Australia has begun to establish institutional mechanisms to support a more coordinated and proactive approach to a just transition, although important gaps remain. At the national level, the creation of the Net Zero Economy Authority represents a step toward addressing the shortcomings observed in earlier transition experiences. Its mandate reflects a shift toward more structured, forward-looking support for affected workers and communities, with an emphasis on coordination across government, industry, and regional stakeholders.

The Energy Industry Jobs Plan complements the Net Zero Economy Authority and establishes more formalised mechanisms for supporting workers affected by power station closures. The Plan sets out formal obligations for employers to support workers impacted by coal and gas-fired power station closures, through measures such as job-transition support, training, job matching and related assistance.[38]

The Plan was applied to the closure of AGL's Torrens Island B gas power station in November 2025, through the Fair Work Commission.[39] In the first case of its kind under the new scheme, the Commission ruled that AGL is legally obliged to provide transition support to the affected workforce. Such cases are likely to become more frequent as further closures approach. In the Hunter region, for example, the transition around Eraring Power Station and Myuna Colliery has already raised fair-transition concerns.

The Net Zero Economy Authority, together with federal and state policymakers, can also draw lessons from transitions in other industries, such as the decline of car manufacturing following trade liberalisation undertaken in the late 20th century. That transition required a systematic approach to managing complex, layered disruption across the automotive

[34] Australian Services Union SA+NT Branch et al., *Joint Torrens Island Union Submission*.
[35] *Energy Industry Jobs Plan Consultation – Eraring Power Station*.
[36] Collie Delivery Unit, *Collie's Just Transition Plan 2021- 2025*.
[37] Collie Delivery Unit, *Collie's Just Transition Plan 2026 - 2030*.
[38] Net Zero Economy Authority, "How the Energy Industry Jobs Plan Works."
[39] Net Zero Economy Authority, "Fair Work Commission Determination Establishes First Energy Industry Jobs Plan for Torrens Island B Power Station."

industry, with all levels of government providing long-term support for transition mapping, managing impacts, and community well-being [40].

Emerging evidence highlights some continuing limitations in the current framework, particularly in relation to its coverage. A key gap concerns workers employed through contractors and across supply chains. While these workers are often equally exposed to closure-related risks, they may not be consistently able to access support mechanisms. Although the Energy Industry Jobs Plan is intended to extend support to the "other businesses that are reliant on the closing power stations", its practical implementation in this regard remains uneven.[41]

The Net Zero Economy Authority's ongoing Eraring consultation illustrates these challenges. A joint submission by unions argued that workers employed through contractors and along the supply chain, "including the captured coal mine Myuna, are receiving no transition support while facing the same uncertainties over closure dates and the future jobs market".[42] It further claimed that 26% of surveyed Origin workers were not offered transition support. [43] The submission noted that the combined power station and mine supports at least 3,600 relatively well-paid direct and indirect local jobs, whose loss would have major flow-on effects for the Lake Macquarie and Lower Hunter economies.[44]

Box 3: Potential for export-led industrial transformation

As noted above, a fossil fuel phase-out provides relatively straightforward, though modest, employment growth opportunities via power sector decarbonisation. Under the FFPO scenario, the number of newly created positions helps offset fossil fuel-linked job losses at the economy-wide level. But new roles will not neatly substitute for all positions lost in fossil fuel extraction and related sectors in terms of location, skillset, and financial compensation.

There is, however, significant potential for a fossil fuel phase-out to generate considerable additional employment through export-led green industrial growth. While the impacts of this are not directly captured in our model, Australia's comparative energy cost advantages in a renewables and electrification-dominated world could significantly increase its international competitiveness. Instead of just substituting for lost jobs, this could create growth opportunities for

[40] Vigya Sharma and Julia Loginova, *Just Transition out of Coal-Fired Power: Policy Lessons from Australia's Automotive Sector Closure*.
[41] Net Zero Economy Authority, "Supporting Workers in Closing Power Stations."
[42] Mining and Energy Union et al., *Energy Industry Jobs Plan Consultation – Eraring Power Station*.
[43] Mining and Energy Union et al., *Energy Industry Jobs Plan Consultation – Eraring Power Station*.
[44] *Energy Industry Jobs Plan Consultation – Eraring Power Station*.

highly paid skilled workers, typically in currently fossil fuel-dominated areas such as WA's Pilbara and Queensland's Bowen Basin.

Within the confines of the current fossil fuel-based energy system, for example, Australia is a world-leading exporter of both metallurgical coal and iron ore. But it has been unable to competitively use these domestic resources to produce and export significant iron or steel and realise a related economic and jobs boom.

With fossil fuels phased out of both domestic and international economies, Australia could reverse this trend. It could combine its domestic iron ore with affordable and less tradeable renewable energy inputs, including electricity and green hydrogen, to decarbonise ironmaking and potentially also steel, generating higher value exports and related jobs.

Under a fossil fuel phase-out scenario, Australia has similar opportunities to move up the value-adding ladder in other minerals and metals sectors and in producing decarbonised fertilisers, fuels, and other materials. Australia also has abundant critical minerals resources for producing batteries and other clean technologies. As well as benefitting from extraction demand growth, Australia could again use energy and technology switching, and policy interventions, to attract more minerals processing, manufacturing, and related job activities.

The FFPO scenario contains modest assumptions on growth in export-focused value-added industrial activities. This reflects uncertainty in the literature surrounding Australia's and its trading partners' shifting comparative advantages and political desire to decouple from existing economic arrangements. However, various sources have estimated Australia's total growth potential to be immense.

The Superpower Institute, for example, estimates Australia realising its green exports potential could precipitate a period of economic growth that surpasses previous resource-led booms, "characterised by real wage growth, full employment, and a foundation for inclusive, multi-generational economic growth".[45] A consortium of environmental NGOs, business groups, and unions has also estimated Australia could create up to 400,000 new green industrial jobs by 2040.[46,47]

Textbox 3: Potential for export-led industrial transformation

[45] The Superpower Institute.
[46] Accenture, *Sunshot in 2023: Accelerating towards Australia's Renewable Exports Opportunity*.
[47] Australian Council of Trade Union, "Future Made in Australia Investment to Deliver Hundreds of Thousands of New Jobs by 2040."

Conclusion and policy recommendations

The findings and analysis presented in this report make clear that a Paris-aligned transition away from fossil fuels can generate substantial employment in the electricity system, with positive spillover effects across the wider economy. But the employment trajectory under the energy transition is not straightforward; it can act as both an enabler and an obstacle. While important, an aggregate employment improvement does not easily solve location and sector-specific challenges. Two policymaker priorities stand out in light of this:

Set a 2035 renewable energy target to reduce uncertainty

Under Australia's current policies, power-sector employment rises to around 55,000 FTE in 2030 and then falls by more than a third by 2033, because there is no target or fossil fuel phase-out timeline to keep new projects coming. A 1.5°C aligned pathway sustains around 19,000-38,000 more FTE jobs every year from 2027 onwards. The absence of a 2035 renewables target therefore comes at a direct cost, creating uncertainty among workers and investors.

The 82% renewable generation target for the main grids is not legally binding, and Australia is a long way from meeting it. AEMO has warned that, with continued delays in transmission, storage and approvals, renewables could supply only 75% of NEM generation by 2030.[48]

A 1.5°C aligned 2035 renewable energy target with binding phase-out dates for coal and gas power would give investors, workers and labour market planners the certainty needed to keep the project pipeline flowing beyond 2030, avoid the post-2030 employment slump, and give coal workers a realistic path into permanent operations and maintenance roles. A strong 2035 renewables target and supporting policies are therefore a prerequisite for a just transition.

The government should also set a national clean electrification target. Türkiye and Australia have proposed a COP31 goal to raise electricity's share of global final energy demand from about 20% today to 35% by 2035. In our 1.5°C aligned pathway, electricity meets half of Australia's final energy demand by 2035, while under current policies it meets only 33%, short of the proposed global goal.

A national target well above 35% for 2035, tied explicitly to clean electricity, would drive the employment growth identified in this report and give Australia a credible platform at

[48] AEMO, "2026 Integrated System Plan."

COP31. The global goal itself should refer to clean electrification, as electrifying with fossil-fuelled power would not cut emissions.

Ensure the labour market enables rather than impedes the transition

The number of workers required for a fossil fuel phase-out risks placing additional pressure on an already tight labour market and deterring investment. Easing these pressures will require stronger national planning, investment in training and education, and better mapping of workforce needs over time and across regions.

Government guidance of the process should aim to maximise visibility around what must be achieved, when, and how. Setting a 2035 renewables target and a timeline for coal and gas phase-out would help stakeholders to identify workforce needs and support long-term private sector investment strategies.

The necessary planning process must address three distinct concerns. First, it must be temporally appropriate. Under an accelerated energy transition, labour demand is front-loaded, with a large number of workers required now, especially in construction. Meeting this surge requires targeted training and skills programmes, particularly in construction, electrical and mechanical trades, and project delivery.

Beyond this initial rush, planning can also contribute to managing the boom-and-bust nature of employment development. In our FFPO scenario, the number of FTEs in the electricity sector transition falls to below 2030 levels in 2040. This volatility, especially in new capacity construction, risks creating an overly small workforce that will struggle to respond to unanticipated events, while creating precarious employment terms for workers.

This boom-and-bust cyclical nature was already identified by the ISP 2024 workforce report on which we based our methodology.[49] It is therefore not unique to an ambitious fossil fuel phase-out. Even under current policies, reaching the government's current (inadequate) 2030 renewables target would require a significant ramp-up of workers.

Cross-sector planning and coordination can address and anticipate this eventual electricity workforce decline. Because the Australian labour market already shows high job turnover and capacity for reallocation across sectors and regions, areas with potential overlapping skill demand such as mining, construction and emerging clean industries may absorb part of this labour supply over time.

Second, planning must be highly geographical. Unlike legacy fossil fuel assets, renewable energy sources are more decentralised, making the most of Australia's widespread solar

[49] Jay Rutovits et al., *The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050*.

and wind potential, and many installations will be located away from major coastal urban centres. Accounting for the geographical distribution of workforce needs, and taking into consideration the provision of mobility, housing, and community infrastructure can reinforce skills-focused measures.

Sensitivity to skills development is the third necessary planning attribute. The bulk of additional workers is needed now, before construction and installation labour demand eases. Planning must connect temporal and geographic requirements to specific skillset development, including with respect to construction versus ongoing operations and maintenance. This could potentially be achieved in parallel with broader national infrastructure development conversations. Such planning can help smooth the uneven labour demand curve and reduce the risk of both skills shortages and underemployment.

Ensuring a just and fair transition

As this report notes, Australia has a history of policy failures and successes in managing the burden of energy and broader economic transitions on workers. There is a positive trend towards more comprehensive forward planning, as evidenced in case studies such as the coal transition underway in Collie, WA. Australian policymakers can continue to learn from global best-practice just transition efforts.

The economic co-benefits of a just and fair Paris-aligned fossil fuel phase-out transition extend beyond employment. In the NEM, gas prices have historically shown a near-perfect correlation with electricity prices.[50] There is also a substantial body of international evidence showing that renewable-based power systems can reduce energy bills for households and businesses alike, improving affordability and lowering cost-of-living pressures.

Another timely co-benefit is energy security. A 1.5°C aligned energy system does not depend on imported diesel and petrol, nor are its electricity costs exposed to events on other continents. It has, sadly, become almost *a cliché* to mention the two major global fossil fuel supply shocks of the 2020s as dramatic reminders of that reality.

[50] Tahila Nolan et al., *The Role of Gas Price in Wholesale Electricity Price Outcomes in the Australian National Electricity Market*.

Methodology

Employment forecasts in the power sector

We have applied the Employment Factor Method, the standard approach to estimating the power sector workforce.[51,52] In this approach, jobs of each type are calculated by multiplying a capacity metric (MW) by a technology-specific employment factor (jobs per MW), then adjusting for the share of employment retained domestically (Table 4).

Total employment in each sector can be calculated based on the modelling results: added capacity is taken for the calculation of manufacturing and construction, and cumulative capacity for operation and maintenance. This analysis presents jobs as full-time equivalent (FTE) for each year, which is equivalent to one person working full time for a year, or two people working full time for six months.

Table 4: Employment calculation methods

	Equation
Manufacturing	$\text{Added capacity (MW/year)} \times \text{Manufacturing employment factor (job} - \text{years/MW)}$
Construction	$\text{Added capacity (MW/year)} \times \text{Construction employment factor (job} - \text{years/MW)}$
Operation and Maintenance	$\text{Generation capacity (MW)} \times \text{O\&M employment factor for that year (jobs/MW)}$

Employment factors (jobs/MW) are technology-specific and drawn primarily from AEMO's 2025 Inputs, Assumptions and Scenarios Report (IASR) Workbook (Table 5), which also provides the inputs for AEMO's Integrated System Plan (ISP).[53] [54] The ISP report also provides fuel employment factors, which cover jobs in the mining sector. We used them to calculate fuel supply workforce demand in the coal mining and oil and gas extraction sectors (see below for more details).

[51] Jay Rutovits et al., *The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050*.
[52] UTS Institute for Sustainable Futures, *Renewable Energy Employment in Australia: Methodology*.
[53] AEMO, *2025 Inputs Assumptions and Scenarios Report*.
[54] AEMO, "2025 Input and Assumptions Workbook."

Table 5: Summary of employment factors in 2025

	Construction (Job-years/MW)[55]	Onshore manufacturing (Job-years/MW)[56]	Operation and Maintenance (Jobs/MW)[57]
Coal	11.1	1.62	0.22
Gas	1.3	0.28	0.14
Wind (onshore)	2.7	0.35	0.21
Wind (offshore)	1.5	0.90	0.20
Utility solar	1.6	0.07	0.09
Rooftop PV	4.2	0.12	0.13
Utility batteries	0.5	0.08	0.03
Distributed batteries	4.4	0.08	0.23
Hydro	7.4	1.04	0.14
Pumped hydro	7.2	0.70	0.08
Biomass	14.0	2.90	1.50

This study modifies the given employment factors by applying a cost decline factor to account for further technological improvements and cost reduction.[58]

Technology costs are taken directly from AEMO's 2025 workbook, where AEMO presents three alternative scenarios: Slower Growth, Step Change, and Accelerated Transition. [59] This study uses two of these: Step Change for the CPP scenario and Accelerated Transition for the FFPO scenario. The decline factor is given by the following equation. Note that this study considers 2025 as the base year.

$$\text{Technology decline factor for year} = \frac{\text{Technology cost (year X)}}{\text{Technology cost (base year)}} \quad \cdots (1)$$

[55] AEMO, *2025 Inputs Assumptions and Scenarios Report*.
[56] AEMO, *2025 Inputs Assumptions and Scenarios Report*.
[57] AEMO, *2025 Inputs Assumptions and Scenarios Report*.
[58] Jay Rutovits et al., *The Australian Electricity Workforce for the 2024 Integrated System Plan: Projections to 2050*.
[59] AEMO, *2025 Inputs Assumptions and Scenarios Report*.

Thus, each employment factor for year X is given by:

$$\text{Employment factor (year X)} = \text{Employment factor(base year)} \times \text{decline factor (year X)} \cdots (2)$$

Since the build cost reduction is not directly related to operation and maintenance costs, we apply the decline factors only to the manufacturing and construction employment factors.

Employment in coal mining

Workforce demand in coal mining and oil and gas extraction is associated with onsite mining or extraction work and the fuel supply role for power stations. AEMO's ISP defines the employment factor of coal and gas power stations in jobs per GWh generated, so the future workforce in fuel supply is determined with our LEAP simulation results.[60]

$$\text{Fuel employment} = \text{GWh used per year} \times \text{Fuel employment factor for that year (job} - \text{years/GWh)}$$

Onsite jobs are harmonised with total output, which depends on both demand and exports.

[60] The AEMO's ISP does not provide employment factor of oil power station in jobs per GWh generated; this analysis therefore assumed it is the average of coal and gas employment factor in jobs per GWh generated.

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