



Jobs and Energy Transition

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Energy transition in coal mining & generation -
workforce perspective

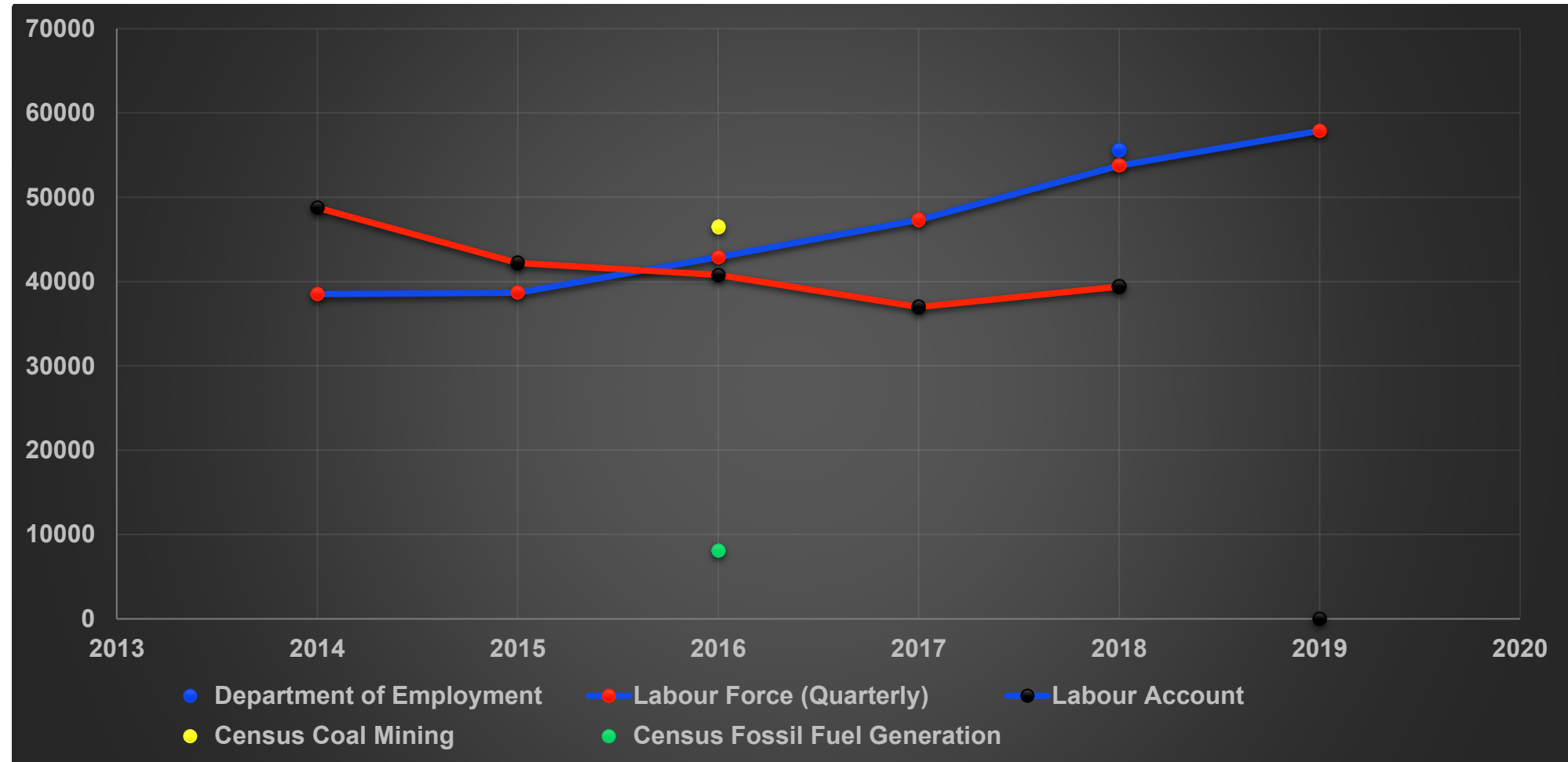
What is the role of renewable energy jobs?

Lessons from other nations on energy transition in
coal regions

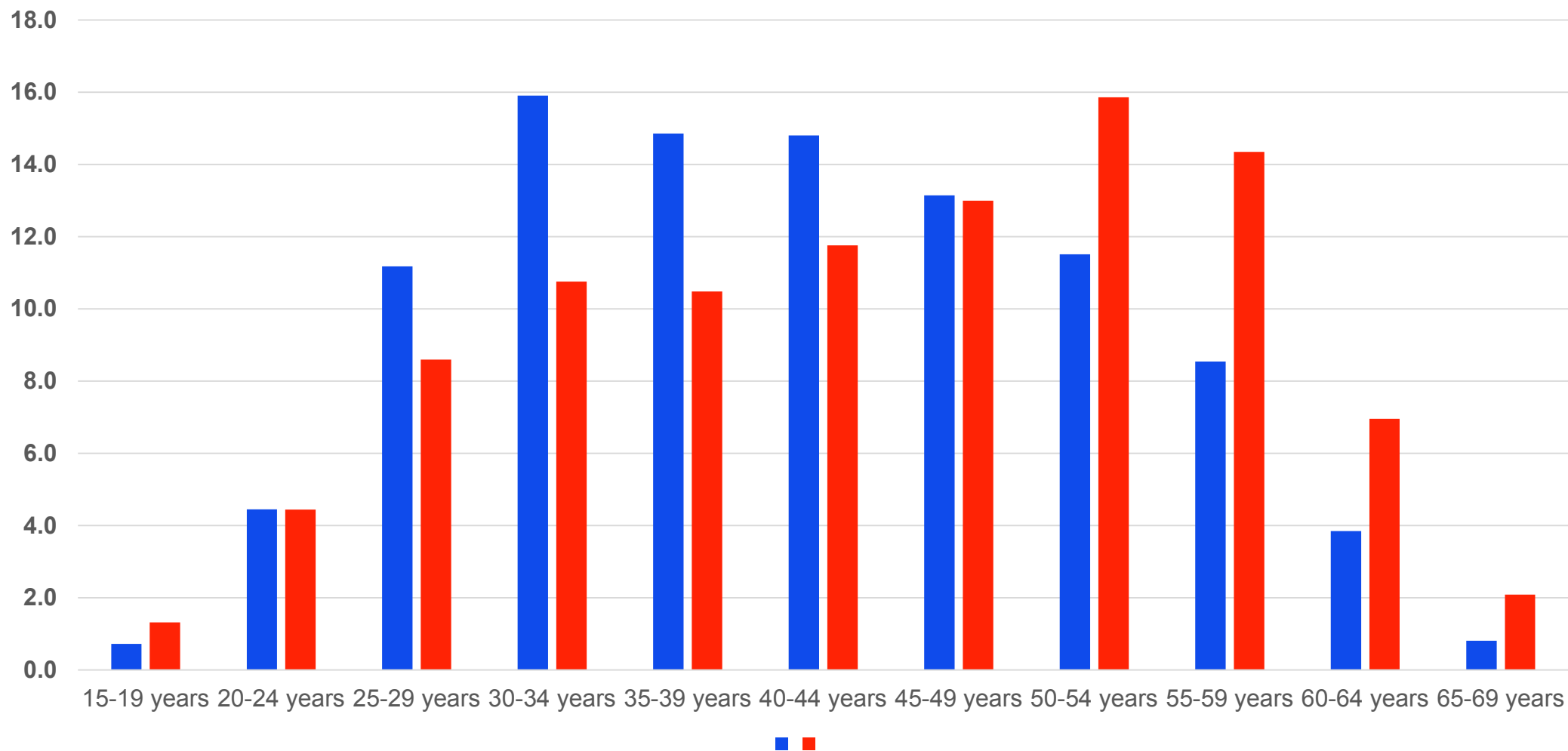




There are more coal miners than power workers ..



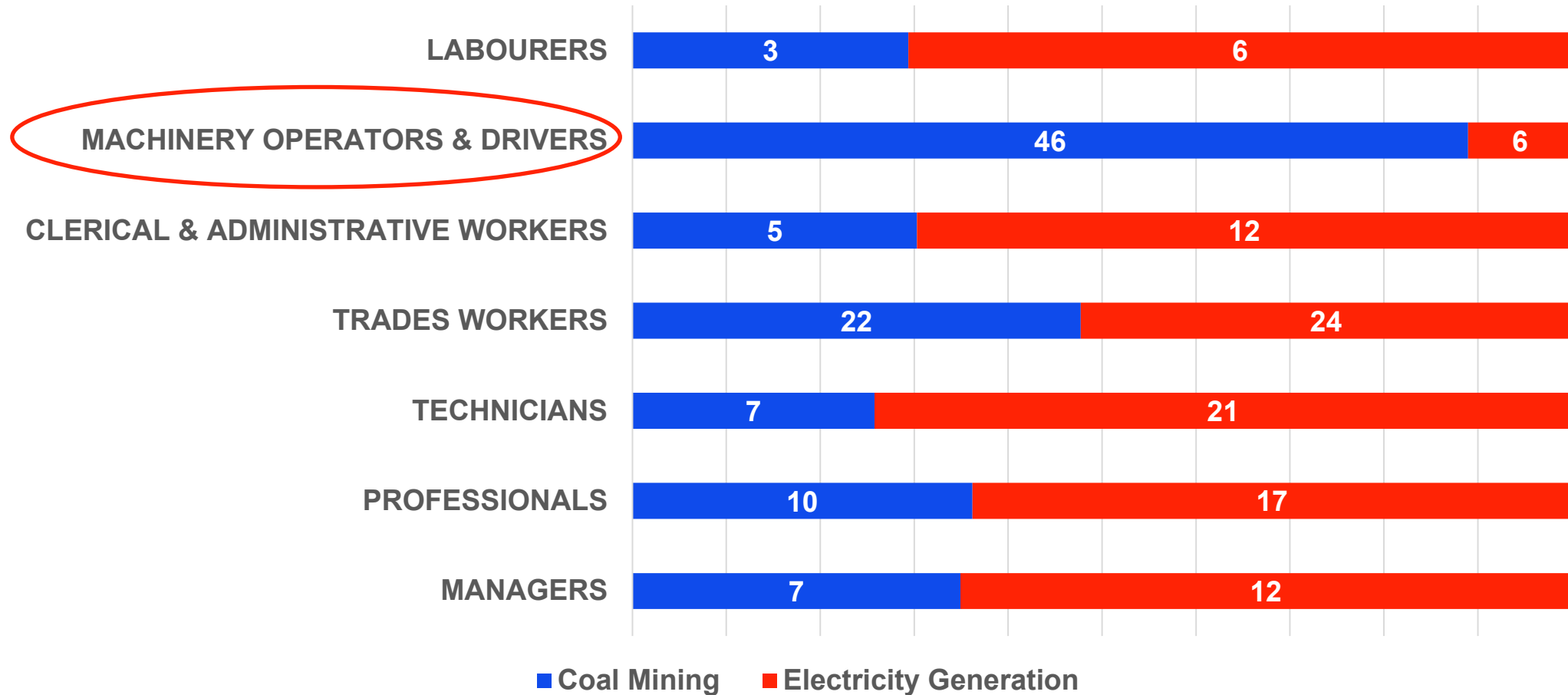
they're much younger ...



AGE PROFILE OF WORKFORCE (%)

SOURCE: ABS CENSUS (2016)

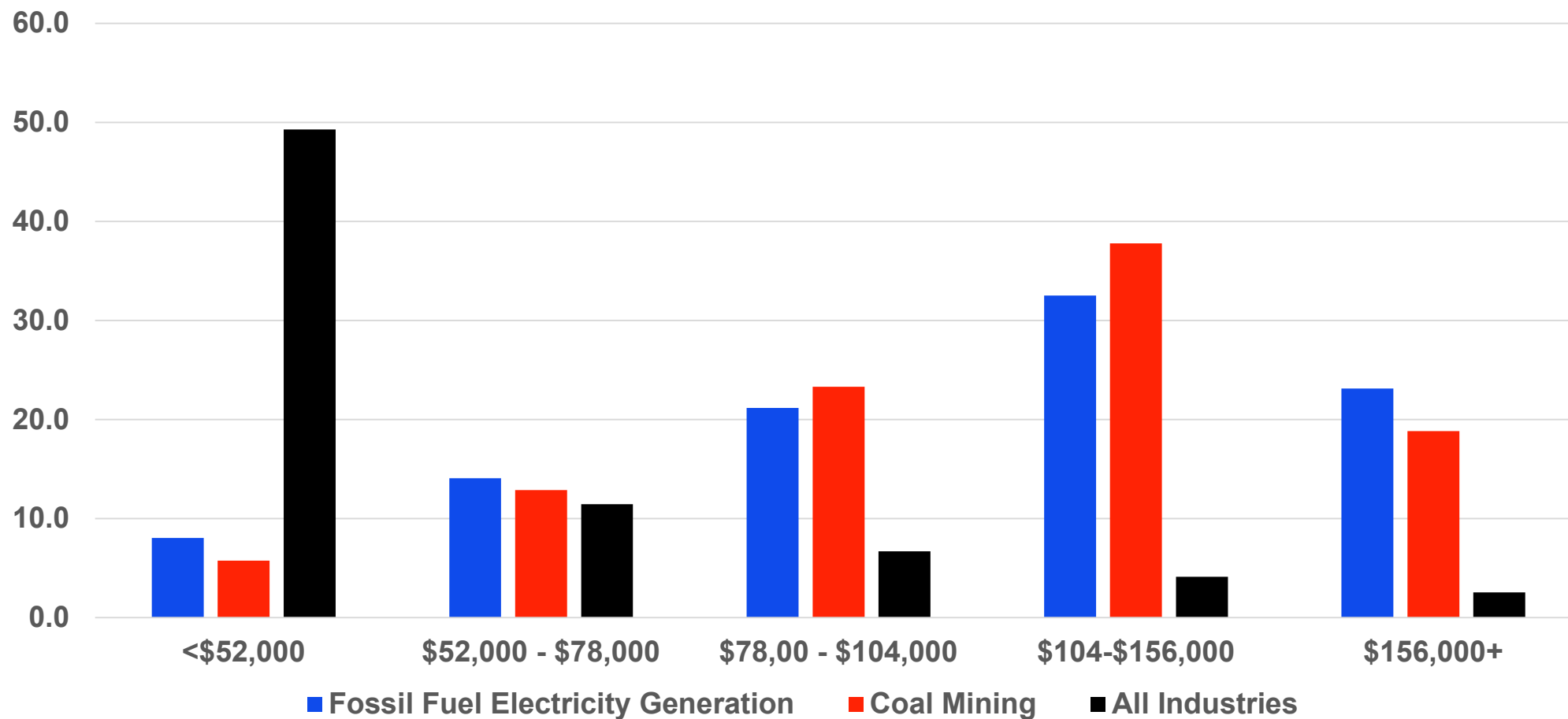
... and lower-skilled



Skill profile of Workforce (%)

Source: ABS Census

.. and very well-paid



Workforce earnings (%)

Source: ABS Census

There is little transition planning for coal power or exports

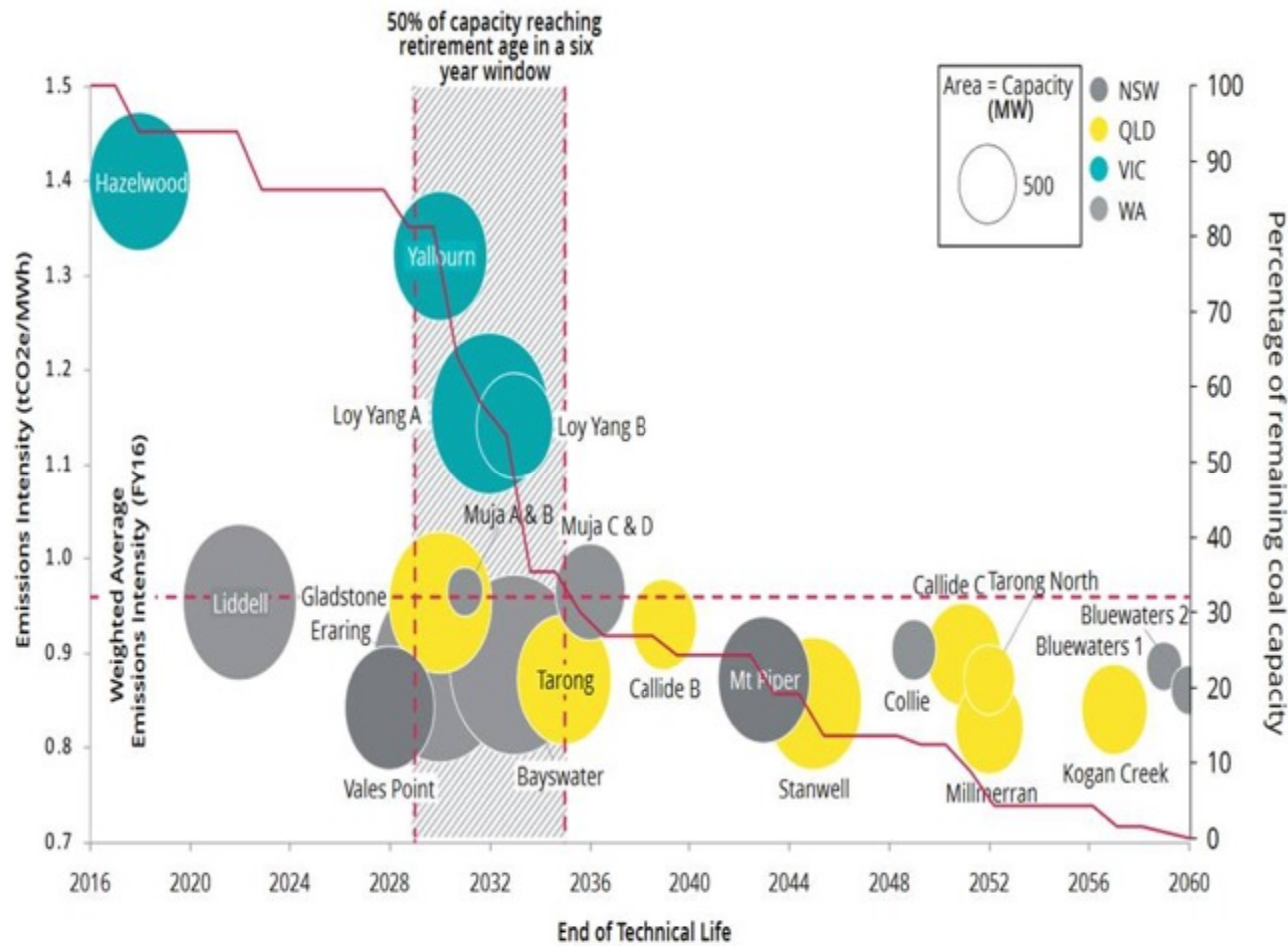


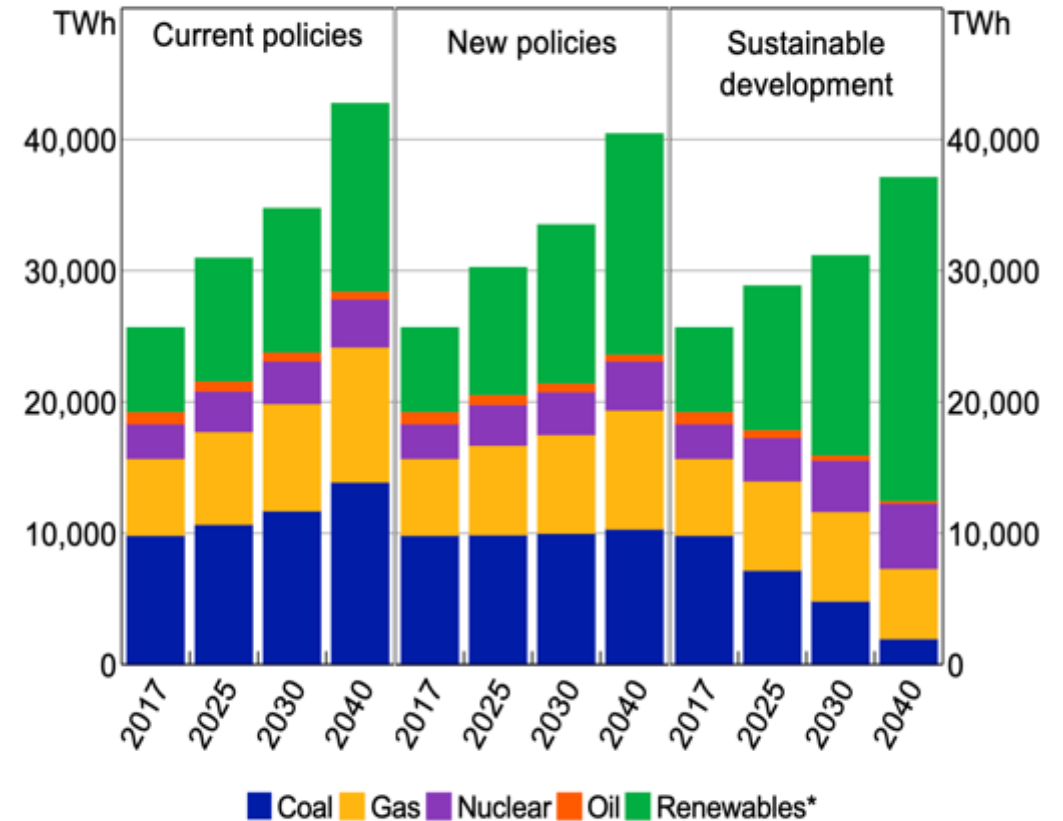
Figure 4 - Potential future coal-fired capacity losses, based on coal generator age (Australian Energy Market Operator, 2017; EY analysis)

Coal Plant Closures in Australia

Graph 16

Electricity Generation Mix

IEA scenarios



* Includes solar, hydropower, wind, bioenergy, geothermal, concentrated solar power and marine

Sources: IEA (2018b); RBA

Thermal Coal Exports – IEA Scenarios

Planned Transition

- Closure timetable & mechanisms to enable planning
- Managed workforce decline: early retirements & voluntary redundancy, industry redeployment, retraining
- No forced redundancies
- Site remediation & other employment programs at times of major closures
- Economic diversification investment over decade-plus – from ‘Muswellbrook’ to ‘Orange’

e.g. Germany coal phase-out by 2035/38 (\$40bn over 20 years), Spain

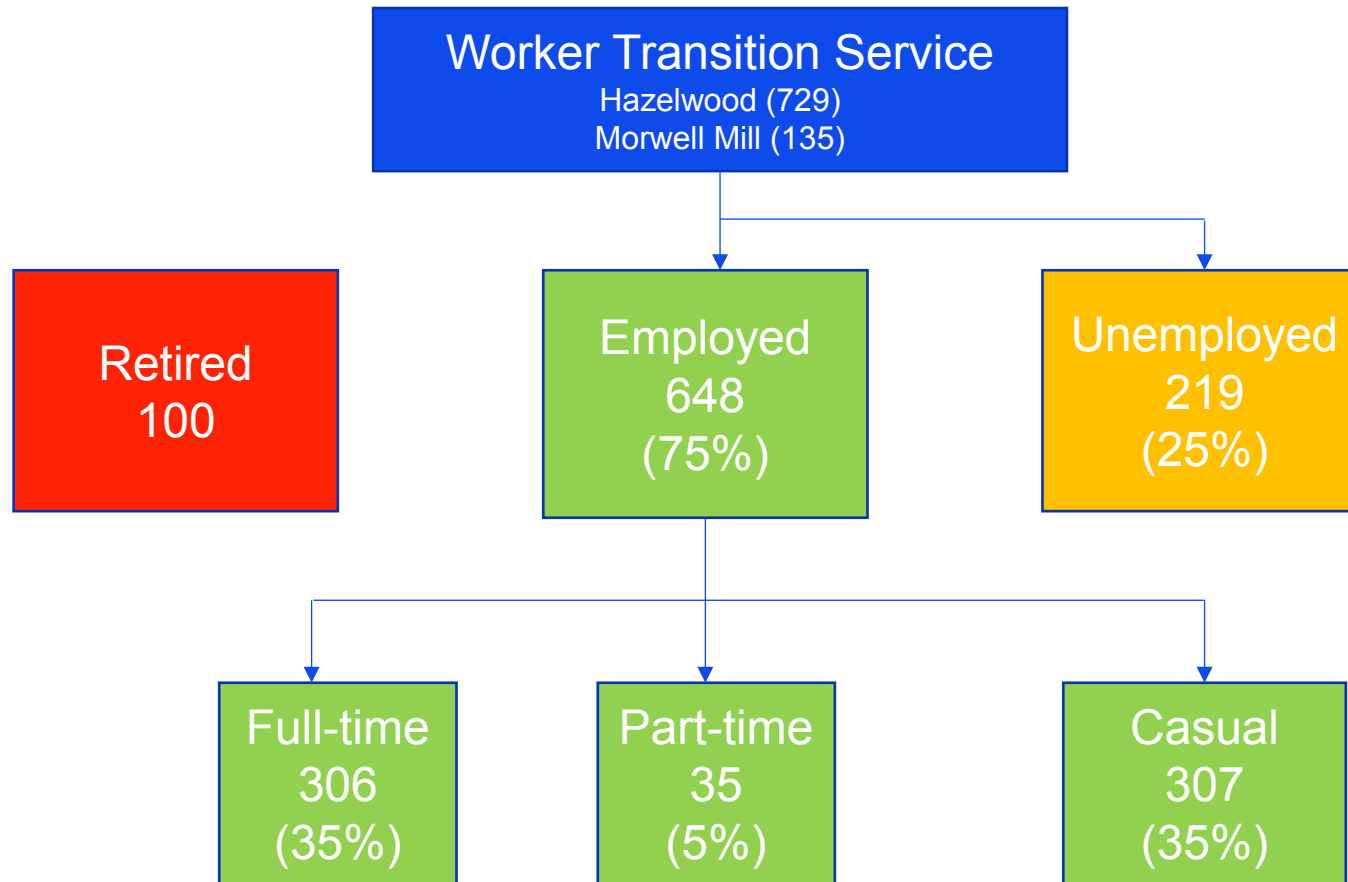
Unplanned Transition



“A number of studies suggest that in major structural adjustments (without just transition programs) ...

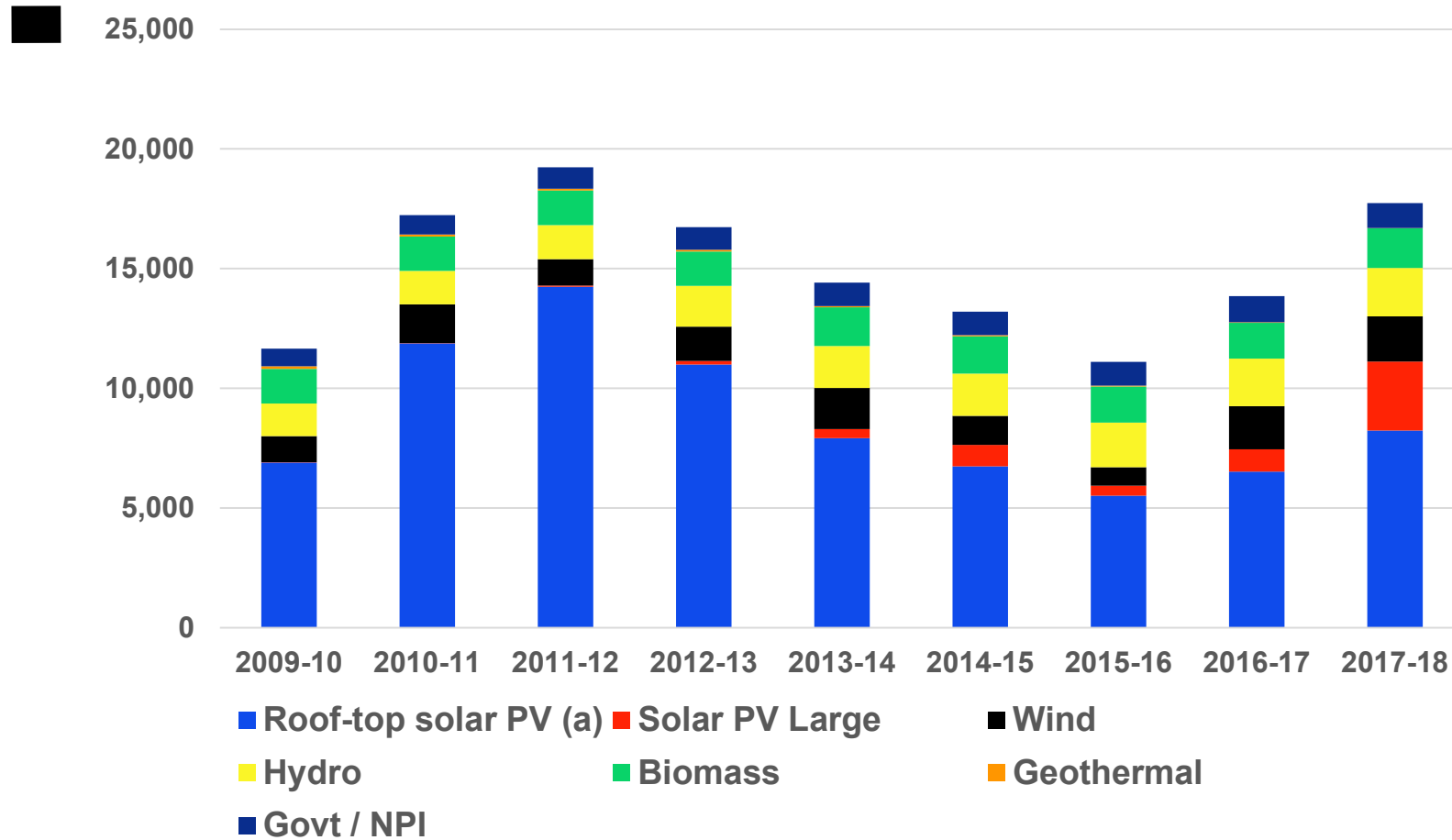
- About 1/3 of affected workers find similar types of decent work
- Another 1/3 is forced to accept a deterioration in their employment
 - A further third takes early retirement, sometimes unhappily and to their disadvantage”
(Sheldon et. al 2018:22)

Hazelwood – Worker Transition Outcomes



SOURCE: QUESTION ON NOTICE, VICTORIAN PARLIAMENT

Renewable Energy Jobs



ABS: EMPLOYMENT IN RENEWABLE ENERGY ACTIVITIES

- Renewable energy jobs not measured through surveys
- ~20,000 (ABS) – 30,000 (Green Energy Markets)
- Energy efficiency jobs 69,000 – 236,000 (Green Energy Markets)
- Large body of studies that find renewable energy is more labour-intensive than fossil-fuel industries

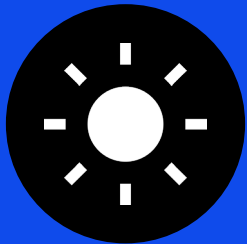
What is a Renewable Energy Job?



- **Mining for renewable energy technologies:** alumina, rare earths, lithium
- **Large-scale renewable** project development, construction workers, O&M
- **Rooftop solar** – warehouses & assembly, sales, distribution, installers, maintenance
- **Renewable energy hydrogen**
- **Manufacturing (Australia)** – solar hot water, PV frames, batteries, steel & cement, wind towers, transformers, cabling, inputs
- **Professional services** – R&D, policy & regulation, legal, finance, engineering, consulting & advocacy
- **Enabling technologies & start-ups** – software, on-line platforms, data analytics

“People over-estimate the number of mining jobs ... and don't see renewable energy as creating 'real jobs'. They think of someone installing solar panels and ask 'what comes next' “ (Rebecca Huntley)

Objectives



Survey of Clean Energy Council members - bottom-up data collection on jobs in Australia



*Employment
Factors &
Total Jobs*

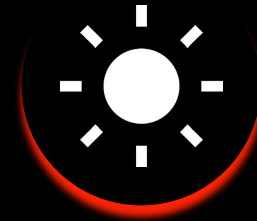


*Occupational
mix*



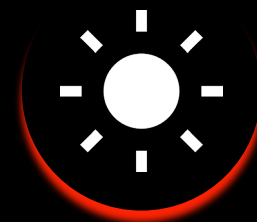
Skill shortages

Technologies



Stage One

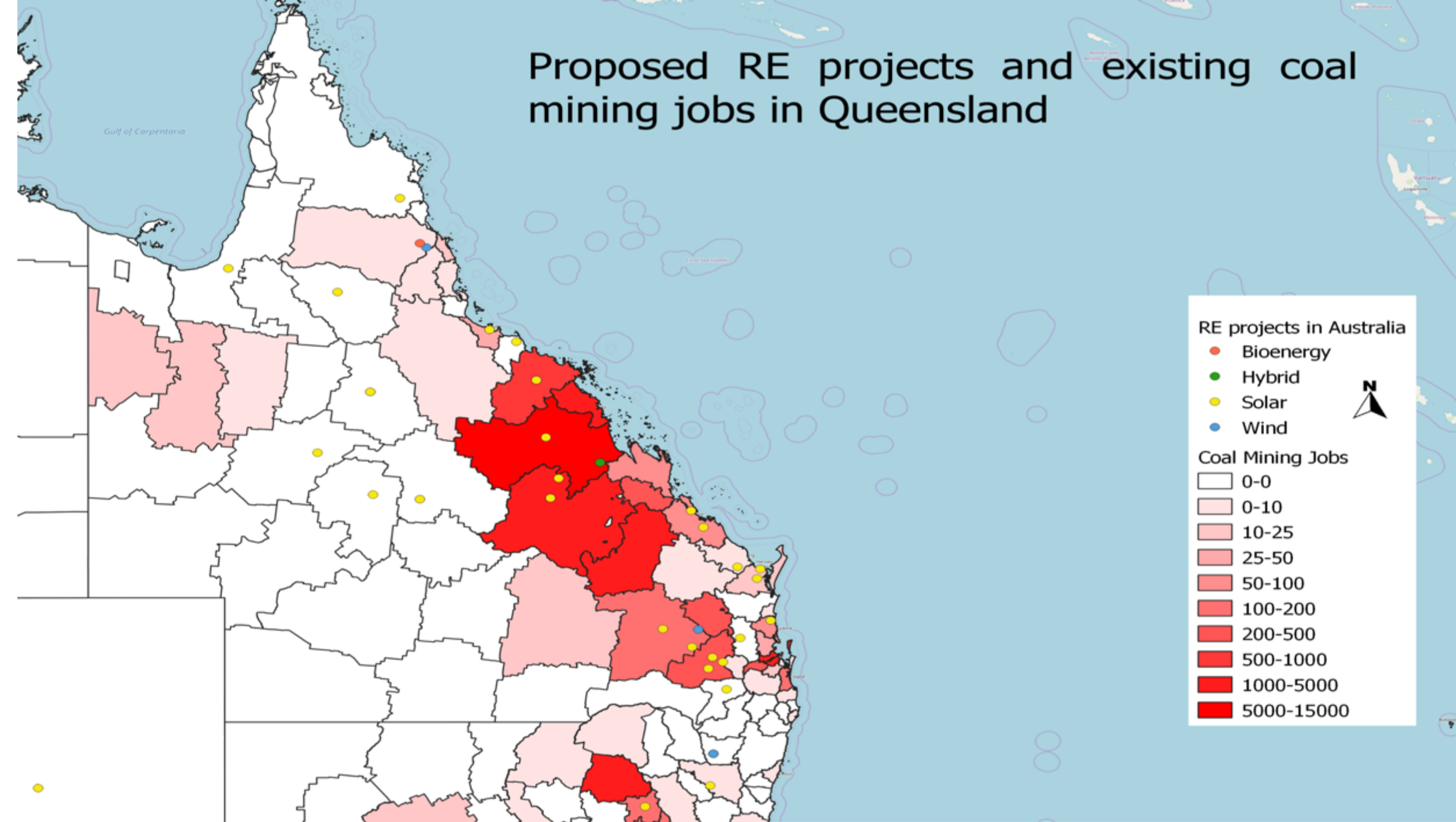
Large-solar
Large-wind
Distributed Solar & Solar Hot Water
Battery storage
Hydro
Supply-chain (manufacturing, warehousing, sales & distribution)



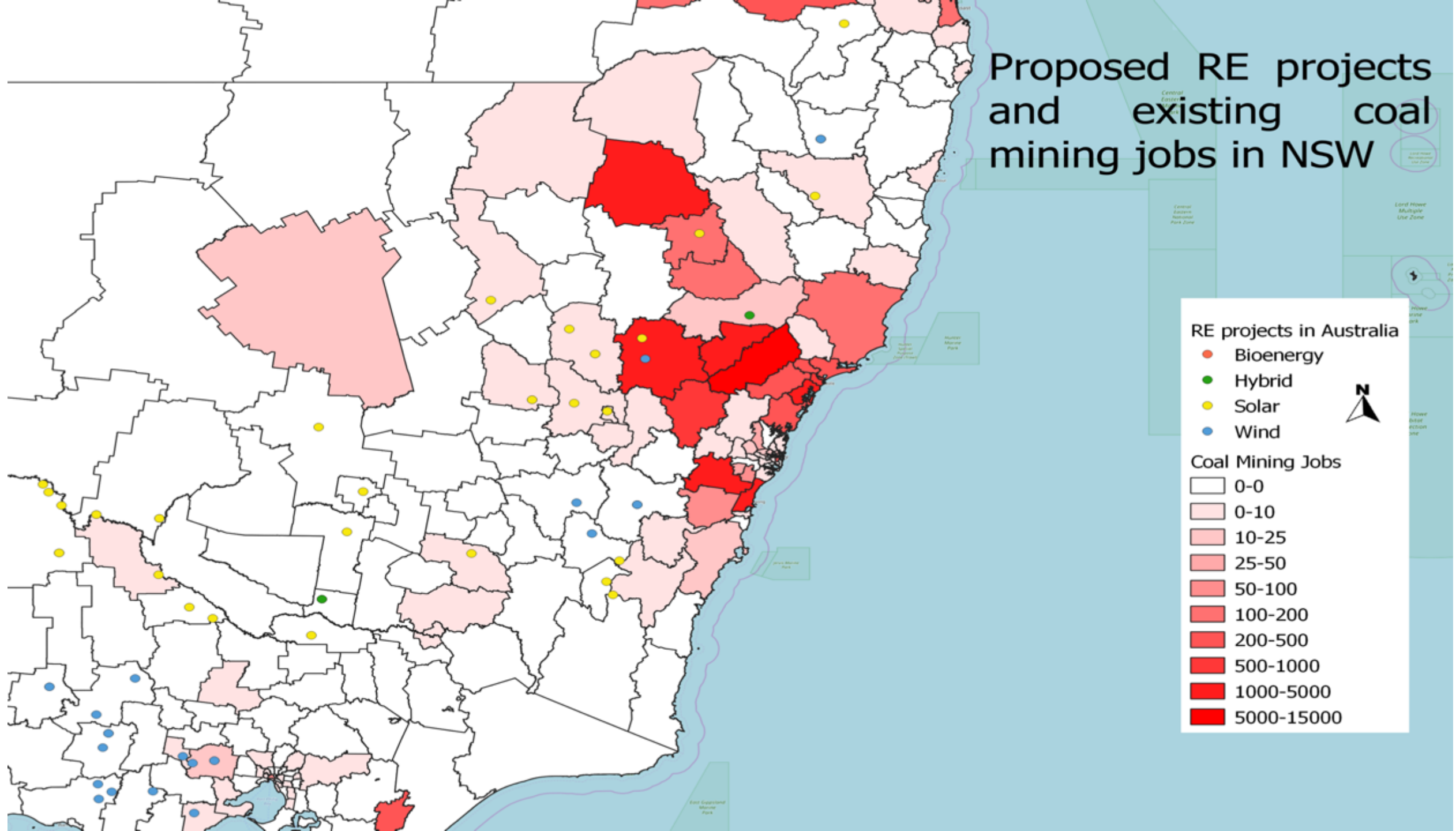
Stage Two

Bio-energy
Professional service jobs (R&D, start-ups etc)
Renewable hydrogen
Electricity networks and retailing

Proposed RE projects and existing coal mining jobs in Queensland



Proposed RE projects and existing coal mining jobs in NSW



Role of Renewable Energy Jobs

- Renewable energy (and energy efficiency) will create more jobs than fossil fuel industries
- Many of these jobs are in regional areas, some of these jobs are in coal regions and there are emerging opportunities (pumped hydro, RE hydrogen)
- Renewable energy jobs are part of answer – but only as part of wider transition plan and investment
- More could be done:
 - Telling the story of renewable energy jobs (esp. the diversity of jobs);
 - More pro-active advocacy, collaborations for jobs in energy transition plans;
 - Industry suffers from skill shortages which increases costs and represents lost local job opportunities;
 - Renewable energy auctions: use of economic criteria increases local jobs and supply-chain development

Next Steps - lessons from other nations on coal transition

- 1. Build a social compact → Transition Commissions (e.g. Germany, South Africa, Canada)
- 2. Plan early for closures → National plans for phase-out of generation and mining – or at least better notice mechanisms (generation) & ‘plan b’ (mining)
- 3. Diversify regional economies → ‘Smart specialisation’ to build on existing industries
Labour-intensive projects (e.g. site remediation)
Renewable energy (large RE construction & O&M, pumped hydro, hydrogen, supply chain, local RE)
Infrastructure upgrades
- 4. Establish transition authorities/
funds → LaTrobe Valley Authority a promising model.