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Transitioning communities dependent on coal mining in NSW

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by Patrick McCarthy

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EXECUTIVE SUMMARY

Several regional communities in NSW and Australia are highly dependent on the coal mining industry. These communities could be disproportionately impacted by a global shift away from thermal coal as action is taken to meet the emissions reduction targets agreed to under the 2016 Paris Agreement.

Overview of the coal mining industry

In 2018-19, the NSW coal industry produced coal worth around $25.5 billion. Most of this coal (75%) is thermal coal, mainly used for power generation. **[Section 2.1]** As at August 2020, the Australian Bureau of Statistics estimates that the NSW coal mining industry directly employed 19,239 people. Other sources have estimated that an additional 115,000 people are indirectly employed through mine and non-mine related services. The Hunter is the NSW region most dependent on coal mining. Other regions that would be disproportionately impacted by a decline in thermal coal demand include Central West, Newcastle and Lake Macquarie, New England and North West, and Illawarra. **[2.5]**

Future of the coal mining industry

The International Energy Agency's World Energy Outlook 2019 provides three scenarios for international coal demand based on alternative policy choices: (1) Current Policies; (2) Stated Policies; and (3) Sustainable Development. Both the Stated Policies and the Sustainable Development scenarios have significant implications for the future of the coal mining industry in NSW. **[3.1]** The Reserve Bank of Australia anticipates future international demand for thermal coal to decline in the long-term as renewable electricity generation becomes more viable. In contrast, the NSW Minerals Council considers that small reductions in demand from China and Japan will be offset by large increases in demand from India, Vietnam, Philippines, and Bangladesh. **[3.2]**

Managing the economic transition

NSW policy developments: Neither the NSW Government nor the Commonwealth Government have introduced a coordinated and detailed plan for managing the regional impacts of an economic transition from coal to clean energy. Until recently, the transition issue in NSW has mainly been addressed through the regional planning process. For example, the NSW Government has released several broad-based economic development plans for the Hunter Region. **[4.1]**

In March 2019, Alex Greenwich MP, Greg Piper MP, and Joe McGirr MP called for the establishment of a Transition Authority and a 10-Year Adjustment Strategy for coal mining communities. On 24 June 2020, the NSW Government released its *Strategic Statement on Coal Exploration and Mining in NSW*. One of its four actions is supporting diversification of coal-reliant regional economies to assist with the phase-out of thermal coal mining. **[4.1]**

Commonwealth policy developments: In a 2017 report on options for

managing the transition away from coal fired power stations, the Senate Standing Committee on Environment and Communications recommended that the Commonwealth Government establish an energy transition authority with sufficient powers and resources to plan and coordinate the transition in the energy sector, including a just transition for workers and communities. In separate dissenting reports, Labor Senators made a similar recommendation, while Coalition Senators did not support these recommendations. **[4.2]**

Stakeholder views and reports: The NSW Minerals Council argues that there will be growth in international demand for coal up to 2040 so there is no need for a general transition strategy for mining communities. The ACTU contends that there is a need for a transition plan, a jobs plan, and an energy plan to ensure the transition in the coal-fired electricity sector occurs in a "fair and just way". A report commissioned by Lock the Gate Alliance criticised the NSW Government's existing Hunter region strategies and action plans for not providing concrete actions and for not coming with resources to stimulate diversification in the region. The Environmental Defenders Office NSW has called for the establishment of a statutory authority to coordinate the planning and funding required for a just transition of regional communities. **[4.3]**

Case studies:

Victoria: In 2016, in response to the closure of the Hazelwood Power Plant and Mine in the Latrobe Valley, the Victorian Government announced the creation of a $266 million Economic Growth Zone in the Latrobe Valley as well as a $22 million support package for workers and $20 million to fund the establishment of the Latrobe Valley Authority. In a 2019 report, the Authority stated its work had created 2,500 new jobs and contributed to the generation of more than $99 million of private investment. A 2019 European Commission case study attributed the Authority's success to its bottom-up approach. **[4.4]**

Germany: In a 2018 report prepared for CFMEU Mining & Energy, Germany's Ruhr Region was analysed as an example of a successful structural adjustment away from a reliance on coal mining. The Ruhr was able to avoid long-term economic decline and recorded average annual economic growth of 1.3% between 1957 and 2000 despite the decline of its most important industry. The report identified five initiatives that accounted for the success including large scale public investment to modernise infrastructure and to develop strong university and technical education systems. **[4.4]**

Canada: In 2016, the Canadian Government announced it would accelerate the transition from coal power to clean energy by 2030. The Government established the Task Force on Just Transition for Canadian Coal and Power Workers and Communities. The Task Force released its final report in 2018, making a series of recommendations. The 2019 Budget included some actions in response to the report including creating worker transition centres, and a dedicated $150 million infrastructure fund to support priority projects and economic diversification in impacted communities. **[4.4]**

1. INTRODUCTION

As the world takes action to meet the emissions reduction targets agreed to under the Paris Agreement in 2016, the International Energy Agency is forecasting a decline in thermal coal demand. Australia is the world's second-largest exporter of thermal coal and more than two-thirds of Australia's thermal coal exports comes from NSW. Several regional communities in NSW and Australia are highly dependent on the coal mining industry and could be disproportionately impacted by the global shift away from thermal coal.

Several countries have committed to a "Just Transition"[1] to renewable energy that is fair for local workers and communities in coal regions.[2] In March 2019, NSW independent MPs Alex Greenwich, Greg Piper, and Joe McGirr called for the establishment of a transition authority and a 10-year adjustment strategy for coal mining communities in NSW.[3] The Legislative Assembly Committee on Environment and Planning is currently examining this issue as part of its inquiry into the sustainability of energy supply and resources in NSW.[4] On 24 June 2020 the NSW Government also released its *Strategic Statement on Coal Exploration and Mining in NSW* which identifies four areas of action to address the transition to new energy sources.[5]

This research paper discusses the options available for managing economic transition in NSW regional communities affected by a decline in the coal mining industry. It first provides an overview of the current state of the coal mining industry in NSW and Australia. It then outlines the outlook for the industry based on international trends and forecasts for coal demand and the adoption of renewable energy. The final section examines current policies in NSW for transitioning coal regions, outlines the positions of key stakeholders, and provides case studies of approaches to transition that have been deployed in the Latrobe Valley in Victoria, the Ruhr in Germany, and in Canada.

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1 Just Transition is a framework developed by the trade union movement in North America in the 1990s to describe a support system for workers unemployed due to environmental protection policies. Over time, the term evolved to describe a strategic effort to transition to sustainable jobs, sectors and economies in response to the threat of climate change.

2 United Nations Climate Change Conference (COP 24), *Solidarity and Just Transition Silesia Declaration*, December 2018. 55 out of 197 countries agreed to this declaration (Australia did not agree to the declaration).

3 *Letter from independent cross-bench Members of the Legislative Assembly to the Premier*, 28 February 2019.

4 Legislative Assembly Committee on Environment and Planning, Sustainability of energy supply and resources in NSW, [website – accessed 17 November 2020].

5 NSW Government, Strategic Statement on Coal Exploration and Mining in NSW, June 2020.

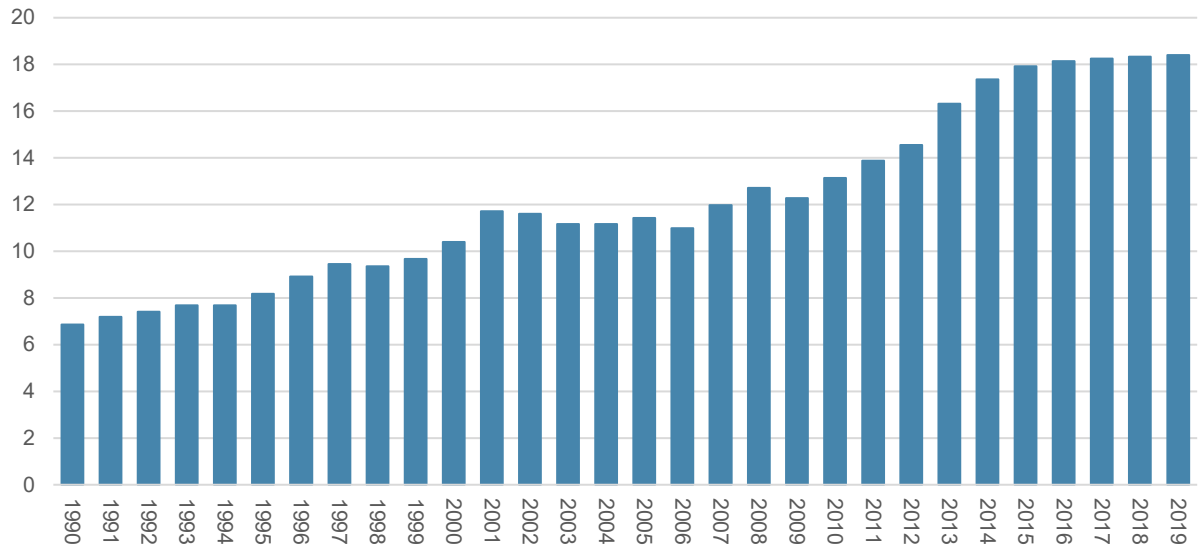
2. OVERVIEW OF THE COAL MINING INDUSTRY

2.1 Value

In 2018-19, the NSW coal industry produced 196.6 mega tonnes of saleable coal worth around $25.5 billion or 80% of the total value of the state's mineral production.[6] Most of this coal (75%) is thermal coal, mainly used for power generation. The rest is metallurgical coal, largely used in steel production.[7]

In 2019, the mining industry accounted for $18.3 billion of Gross Value Added (GVA) in NSW (Figure 1). GVA is used to measure the contribution of an industry and measures the value of output minus the value of intermediate consumption.

Figure 1: NSW Mining Industry Gross Value Added, $bn, 1990 to 2019[8]



In 2018-19, the mining industry accounted for 3.3% of NSW's Gross Value Added (GVA).[9] It is unclear what proportion of that 3.3% of GVA is accounted for by coal mining alone as opposed to the entire mining industry. Mining ranked 15th out of 20 industries in its contribution to NSW's GVA.

The Hunter Region is the biggest mining region in NSW. In 2017-18, the total value added of the mining industry in the Hunter Region was $11.1 billion out of a total of $20.8 billion in NSW. Mining accounted for 20.8% of total value added in the region compared to 3.6% for all of NSW.[10]

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[6] NSW Resources and Geoscience, *Thermal Coal: Opportunities in New South Wales, Australia*, October 2019, p 1.

[7] NSW Department of Planning, Industry and Environment, *NSW Government Submission: Inquiry into sustainability of energy supply and resources in NSW*, 2 October 2019, p 9.

[8] Australian Bureau of Statistics, *5220.0 - Australian National Accounts: State Accounts, 2018-19*, 21 November 2019.

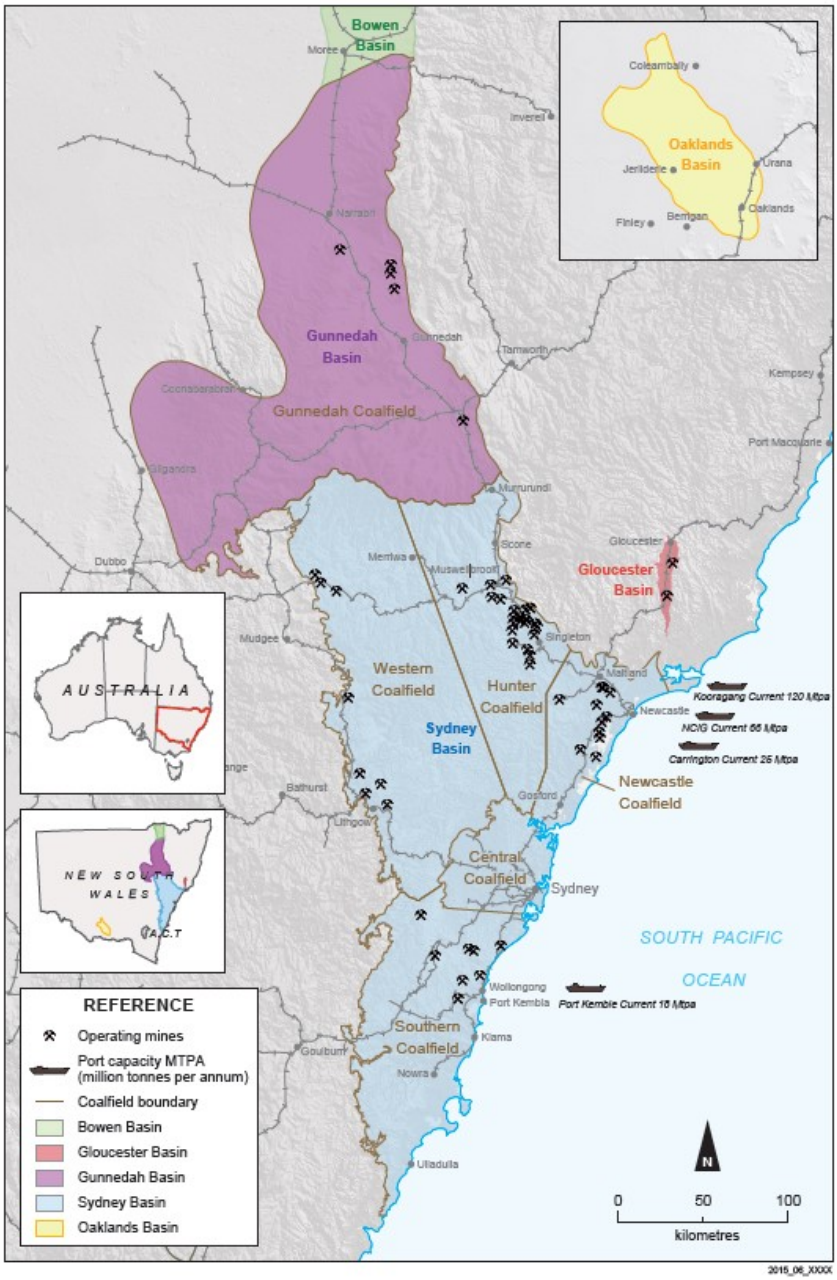
[9] Australian Bureau of Statistics, note 8.

[10] REMPLAN, *Muswellbrook Economy Profile*, [website - accessed 29 April 2020].

2.2 Production

Most of NSW's coal resources are located in the Sydney-Gunnedah Basin (Figure 2). It extends from south of Wollongong to north of Newcastle and north-west through Narrabri into Queensland. The basin is divided into five major coalfields: Hunter, Newcastle, Southern, Western, and Gunnedah. Minor coal resources are also located in the Gloucester and Oaklands Basins.[11]

Figure 2: Map of the Sydney-Gunnedah Basin[12]



[11] NSW Division of Resources & Geoscience, *NSW coalfields*, [website - accessed 24 March 2020].

[12] NSW Department of Treasury, *Coal in NSW*, [website - accessed 24 March 2020].

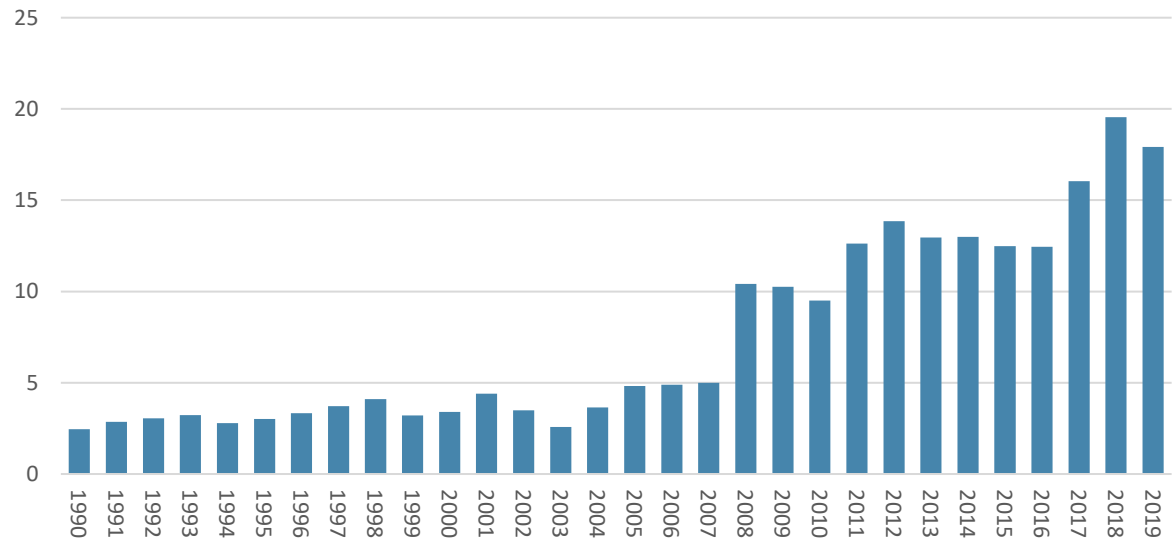
As at 30 June 2020, there were 38 coal mining operations in NSW consisting of 21 open cut mines and 17 underground mines.[13] Refer to this map on MinView, an interactive web map maintained by the NSW Department of Planning, Industry and Environment, for the locations of operating coal mines across NSW.

Domestic thermal coal consumption used for power generation accounts for around 13% of total coal production in NSW.[14] Just two of the State's 38 coal mines (Myuna Colliery in the Hunter Valley and Chain Valley Colliery in the Central Coast) supply their coal exclusively to coal-fired power stations in NSW.[15]

2.3 Trade

Australia is the world's second-largest exporter of thermal coal after Indonesia and more than two-thirds of thermal coal exports comes from NSW. In 2019, NSW coal exports were worth $17.9 billion (Figure 3). While the value of coal exports has risen in recent years, export volumes peaked in 2014 (Figure 4).

Figure 3: NSW Value of Coal Exports, $bn, 1990 to 2019[16]



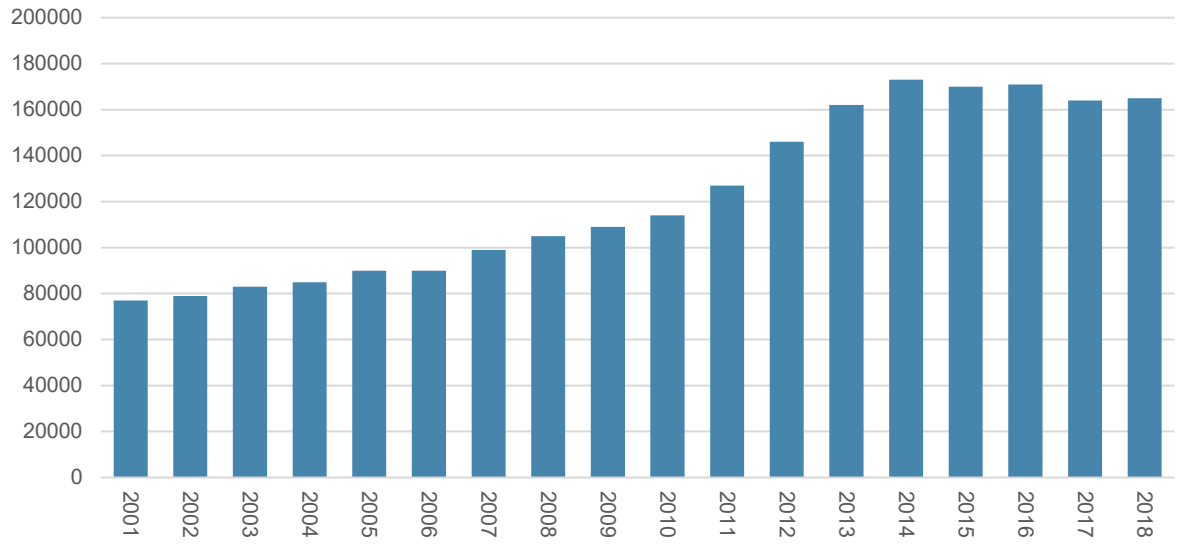
[13] Coal Services, *Statistics*, [website - accessed 26 October 2020].

[14] NSW Department of Planning, Industry and Environment, note 7, p 9.

[15] NSW Department of Planning, Industry and Environment, note 7, p 9.

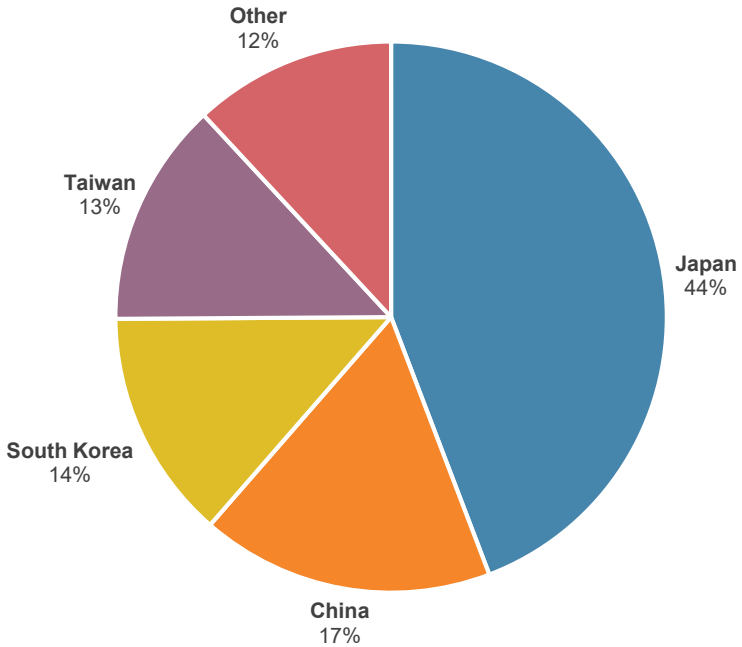
[16] Department of Foreign Affairs and Trade, *Trade statistical pivot tables - Country and TRIEC pivot table 1990 to 2019*, March 2020. For 2018-19 statistics, see also Department of Regional NSW, *NSW Mining Industry Overview FY 2018-19*, [online].

Figure 4: NSW Thermal Coal Exports, tonnes, 2001 to 2018[17]



In 2017-18, 88% of NSW coal was exported to Japan, China, South Korea, and Taiwan (Figure 5).

Figure 5: NSW Coal Export Markets, 2017-18[18]



[17] The Australia Institute, *Sustainability of energy supply and resources in NSW: Submission*, 13 September 2019, p 9. For 2018-19 statistics, see also Department of Regional NSW, *NSW Mining Industry Overview FY 2018-19*, [online].

[18] Coal Services, *Statistics*, [website - accessed 23 March 2020].

2.4 Ports

Coal mined in NSW is exported via the Port of Newcastle and Port Kembla.

The Port of Newcastle is a major Australian trade gateway, handling 4,600 ship movements and 166 million tonnes of cargo per year.[19] Coal exports accounted for 96% of the Port of Newcastle's trade in 2019.[20] In 2017, the Port of Newcastle estimated its facilitation of the export of coal accounts for $2.9 billion in revenue, 8,243 FTE jobs, and $1.45 billion contribution to Gross Regional Product (GRP).[21]

Port Kembla is the second largest coal export port in NSW. In 2018, the Port Kembla Coal Terminal was forecast to handle 5 million tonnes of coal, down from a peak of 14.4 million tonnes.[22]

2.5 Employment

As at August 2020, the Australian Bureau of Statistics (ABS) estimates that the NSW coal mining industry directly employed 19,239 people.[23] Other sources have estimated that an additional 115,000 people are indirectly employed through mine and non-mine related services.[24]

According to the 2016 ABS Census of Population and Housing, the NSW coal mining industry employed 19,156 people[25] accounting for 0.57% of all jobs in NSW.[26] This was an increase of 7,821 from the 2011 Census.

As of the 2016 Census, the Hunter region was the region most dependent on coal mining, accounting for 7.95% of total jobs in the region (Table 1). Several communities in the Hunter region are highly dependent on the coal mining industry. For example, mining represents 31% of all jobs in Muswellbrook and 41% of all jobs in Singleton.[27]

Other regions that would be disproportionately impacted by a decline in thermal coal demand include Central West, Newcastle and Lake Macquarie, New England and North West, and Illawarra.

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[19] The Port of Newcastle, *Submission: Sustainability of Energy Supply and Resources in NSW Inquiry*, 15 September 2019, p 1.

[20] The Port of Newcastle, *Port of Newcastle Trade Report 2019*, April 2020.

[21] The Port of Newcastle, note 19, p 1.

[22] ABC News, *Leaked documents reveal plan to replace workers at Port Kembla Coal Terminal*, 17 January 2018.

[23] Australian Bureau of Statistics, Labour Force, Australia, Detailed, 24 September 2020, Data Cube EQ06.

[24] NSW Department of Planning, Industry and Environment, note 14, p 9. See also Department of Regional NSW, *NSW Mining Industry Overview FY 2018-19*, [online].

[25] Australian Bureau of Statistics, *Census of Population and Housing*, 2016, TableBuilder.

[26] Australian Bureau of Statistics, note 25.

[27] Western Sydney University, *Weathering the storm: The case for transforming the Hunter Valley*, 29 January 2019, p 8.

Table 1: Coal Mining Jobs by Region, 2016[28]

Region	Coal Mining Jobs	% of Total Jobs	Total Jobs
Hunter	8,824	7.95%	110,962
Central West	2,108	2.44%	86,288
Newcastle and Lake Macquarie	2,871	1.79%	160,448
New England and North West	1,240	1.63%	75,986
Illawarra	2,000	1.57%	127,328
Other	16	0.46%	3,457
Southern Highlands and Shoalhaven	180	0.32%	56,895
Central Coast	344	0.25%	139,595
Mid North Coast	201	0.27%	74,159
Richmond-Tweed	123	0.13%	96,433
Far West and Orana	58	0.12%	46,712
Coffs Harbour-Grafton	35	0.07%	52,076
Sydney	1,106	0.05%	2,133,117
Capital Region	28	0.03%	97,338
Riverina	11	0.02%	69,454
Murray	7	0.01%	50,100
Total	**19,152**	**0.57%**	**3,380,348**

[28] Australian Bureau of Statistics, note 25.

3. FUTURE OF THE COAL MINING INDUSTRY

3.1 Alternative Scenarios

The International Energy Agency's (IEA) World Energy Outlook 2019 provides scenarios that map out the implications of alternative energy and policy investment choices:[29] It outlines three scenarios:

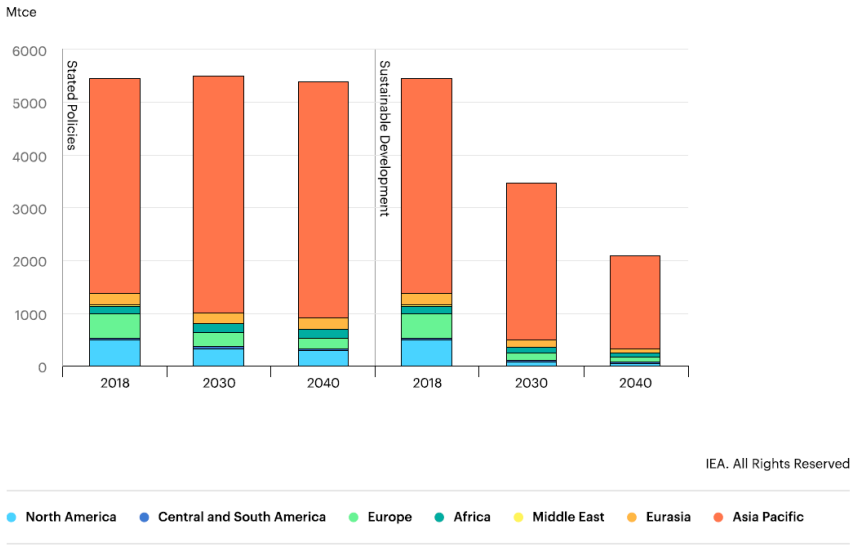
1. Current Policies;,
2. Stated Policies; and
3. Sustainable Development.

The Current Policies Scenario shows what will happen if governments make no changes to their existing policies and measures, while the Stated Policies Scenario incorporates announced policy ambitions and targets. The Sustainable Development Scenario charts a path aligned with the Paris Agreement by holding the rise in global temperatures to "well below 2°C … and pursuing efforts to limit [it] to 1.5°C".[30]

Under the Stated Policies Scenario, the share of coal in the global energy mix declines from 27% in 2018 to 21% in 2040. By contrast, there would be a dramatic decline in global coal use under the Sustainable Development Scenario:[31]

> With a much more stringent focus on reducing emissions, global coal use decreases steeply at an annual rate of 4.2%. By 2040, world coal use is 60% lower than in the Stated Policies Scenario and coal's share in the primary energy mix falls towards 10%.

Figure 6: Coal demand by region and scenario, 2018-40[32]



[29] International Energy Agency, *World Energy Outlook 2019*, November 2019.

[30] International Energy Agency, note 29.

[31] International Energy Agency, *Coal - World Energy Outlook 2019*, November 2019. The IEA's *World Energy Outlook 2020* does not provide comparable figures.

[32] International Energy Agency, note 31.

Both the Stated Policies and the Sustainable Development Scenarios have significant implications for the future of the coal mining industry in NSW.

3.2 International Markets

The future of the coal mining industry in NSW will be determined by international energy policies. There is considerable uncertainty about the future international demand for coal and this has created an ongoing debate as to whether NSW's coal export volumes will increase, decline, or stabilise in the future.

In a 2019 bulletin, the Reserve Bank of Australia discussed the outlook for international demand for coal from Australia:[33]

> Coal is one of Australia's largest exports, and has accounted for around one-quarter of Australia's resource exports by value over the past decade. However, demand in the global market for coal has been evolving in recent years, which is creating some uncertainties for the longer-term outlook for coal exports. Looking forward, demand will be shaped by the speed of the transition towards renewable energy sources, changing steel production technologies, and the pace of global economic growth.

In the near term, the Reserve Bank anticipates existing demand for thermal coal will remain supported by increases in coal-powered electricity generation in India and South-East Asia, but states it is unclear whether this growth will temporarily outpace the global transition to renewable energy:[34]

> Over the next five years or so, some continued increase in coal demand, particularly from India and economies in South-East Asia, may partly offset a more general decline in demand as global electricity generation transitions away from coal to other energy sources.
>
> … It is difficult to forecast whether continued growth in exports to these markets might for a period outpace the global transition to less carbon-intensive electricity generation.

The Reserve Bank anticipates future demand for thermal coal to decline as renewable electricity generation becomes more viable:

> Over the longer term, however, the balance of risks for demand appear to be to the downside, as the transition from coal to other energy sources in advanced economies continues – including in Europe, the United States, South Korea and Japan. Over the next 20 years, the increase in global energy demand is expected to be largely met by renewable energy sources, and by 2040 renewables are expected to account for a larger share of electricity generation than coal. The increasing uptake of renewables is expected to be supported by changes in technologies that make renewable electricity generation more viable, such as battery storage and upgraded electricity grid networks. Policies in many regions are also likely to be directed at reducing the carbon intensity of

[33] The Reserve Bank of Australia, *The Changing Global Market for Australian Coal*, September 2019, p 28.

[34] The Reserve Bank of Australia, note 33, p 35-37.

> electricity generation, including through an increase in the share of renewables generation.

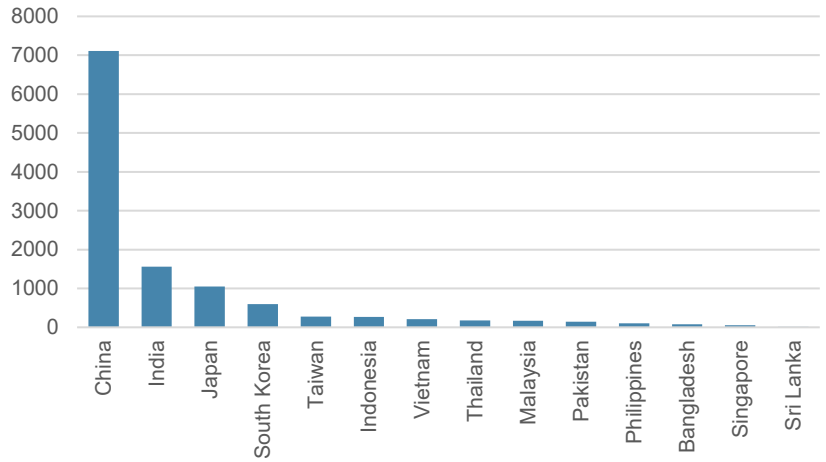
There is a general consensus across government, policy institutes, and industry that there will be a decline in demand for thermal coal from Japan, China, South Korea, and Taiwan. However, there is debate around how much demand will decline and whether the decline will be offset by increasing demand from India and South-East Asia.

The NSW Minerals Council argues "small reductions in demand from China and Japan" will be "offset by large increases in demand from India, Vietnam, Philippines, and Bangladesh". This is based on a Commodity Insights report commissioned by the NSW Minerals Council:[35]

> Contrary to claims of a decline in coal demand in our export markets, an analysis of Government policies in India and the Asian region by coal market experts Commodity Insights forecasts an increase in thermal coal demand of almost 500 million tonnes by 2040. If NSW is just to maintain our current market share, NSW thermal coal production would need to increase by 75 million tonnes over this period, more than outweighing any potential decline in domestic demand. This forecast presents a strong future for the State's 22,000 coal miners and the coal mining communities that rely on the industry as well as the flow on benefits to the broader NSW economy. Cutting off NSW coal supply to these markets would force these countries to source their coal from other markets, which are likely to supply poorer quality coal that create higher carbon emissions.

In contrast, the Institute for Energy Economics and Financial Analysis (IEEFA) argues an increase in demand from small electricity markets in South-East Asia (Figure 7) will not offset the decline from large electricity markets in Japan, China, South Korea, and Taiwan.

Figure 7: Relative size of Asian electricity markets, 2018[36]



[35] NSW Minerals Council, *Inquiry into the Sustainability of Energy Supply and Resources in NSW: Submission*, 19 September 2019, p 4.

[36] BP, *BP Statistical Review of World Energy*, 2019, p 54.

IEEFA notes India is an exception but government policies there do not indicate there will be a substantial increase in coal demand. In January 2018, India released its National Electricity Plan (NEP) with a target of 275 gigawatts of renewables by 2027 and a target for closing 48.3 gigawatts of end-of-life coal-fired power stations.[37]

IEEFA also notes coal-fired power stations in South-East Asia and India will not escape increasing competition as the cost of renewable energy continues to decline over time.[38]

The outlook for metallurgical coal (26% of the coal produced in NSW) is different. In The Reserve Bank forecasts Chinese demand for metallurgical coal will "gradually decline" because "population growth and the rate of urbanisation are expected to slow." However, Indian steel production is expected to continue to grow over the next decade and India is forecast to become one of the world's largest importers of metallurgical coal by 2020. Further, the Reserve Bank anticipates growing steel production in Vietnam, Malaysia and Indonesia will support ongoing demand for metallurgical coal.[39]

3.3 Domestic Markets

Coal is the primary fuel source for electricity in NSW. As of August 2019, NSW had around 21,100 megawatts of electricity generation capacity installed across three main sources, 10,200 megawatts from coal, 2,300 megawatts from gas and oil, and 8,700 megawatts from renewables.[40] Figure 8 shows the maximum possible electricity that could be generated using each method of generation.

Figure 8: NSW Generation Capacity, August 2019[41]

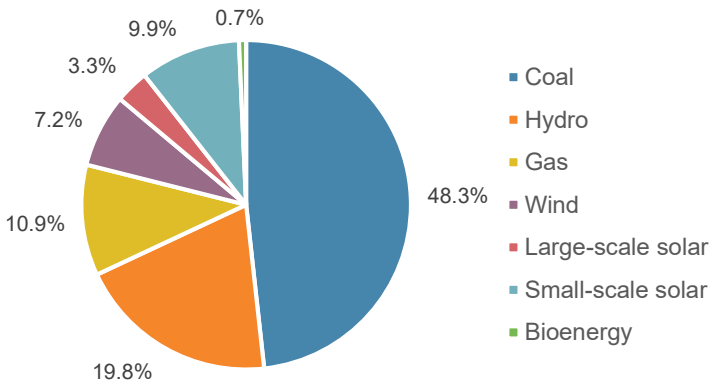


Figure 9 shows that coal generates a greater proportion of electricity than other

[37] Institute for Energy Economics and Financial Analysis (IEEFA), *NSW Coal Exports Outlook: Submission to Sustainability of Energy Supply and Resources in NSW Inquiry*, 13 September 2019, p 26.

[38] Institute for Energy Economics and Financial Analysis (IEEFA), note 37, p 26.

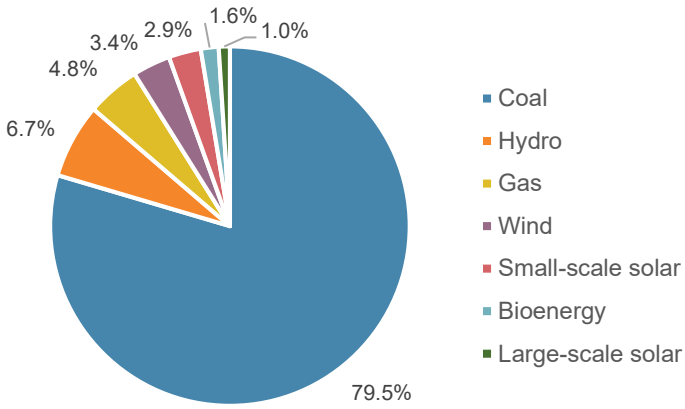
[39] The Reserve Bank of Australia, note 33, p 36.

[40] NSW Department of Planning, Industry and Environment, note 7, p 2.

[41] NSW Department of Planning, Industry and Environment, note 7, p 2.

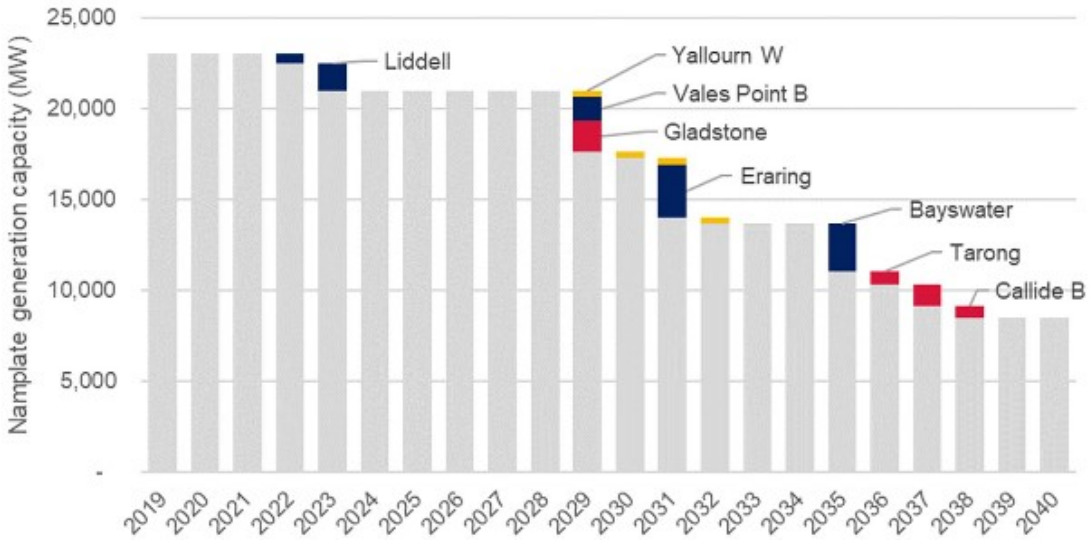
sources. In 2017-18, 79.5% of total NSW electricity generation came from coal, 6.7% from hydro, 4.8% from gas, 3.4% from wind, 2.9% from small-scale solar, 1.9% from bioenergy, and 1% from large-scale solar.[42]

Figure 9: NSW Energy Generated, 2017-18[43]



NSW's electricity generation mix is changing as coal-fired power stations reach the end of their technical lives. NSW's five operating coal-fired power stations are scheduled for retirement between 2022 and 2043 based on an assumed 50-year technical lifespan (Figure 10; NSW power stations are marked in dark blue).[44]

Figure 10: National Electricity Market (NEM) coal-fired generation fleet operating life to 2040, by 50th year from full operation or announced retirement[45]



[42] NSW Department of Planning, Industry and Environment, note 7, p 2.
[43] NSW Department of Planning, Industry and Environment, note 7, p 2.
[44] NSW Department of Planning, Industry and Environment, note 7, p 4.
[45] Australian Energy Market Operator (AEMO), *Integrated System Plan 2019-20 Assumptions Book*, 8 August 2019.

In a 2018 paper, the Australian National University's Centre for Climate & Energy Policy considered the future of coal-fired power generation in Australia:[46]

> Australia's coal fired power plant fleet is relatively old with about half the plants and about two thirds of overall generating capacity older than 30 years. At the same time, renewable power has become competitive, and Australia has practically unlimited opportunities for renewable energy installations. New coal fired power stations would not be commercially viable in competition with renewables, and existing coal plants are likely to come under increasing economic pressure as the amount of renewable electricity generation increases. This is likely to cause accelerated closure of coal fired power plants.

Domestic demand for coal is expected to continue in the short to medium term. In its 13 September 2019 submission to the Legislative Assembly Inquiry into the sustainability of energy supply and resources, the NSW Government stated coal will continue to play a role in energy security for NSW.[47] The submission also noted three of the state's five coal-fired power generators at Mount Piper, Bayswater and Vales Point are investing in turbine efficiency upgrades, indicating their owners are confident in their future.[48]

A long term decline in domestic coal-fired generation capacity would have limited impact on overall demand because most of the coal produced in NSW is exported. Domestic thermal coal consumption used for power generation accounts for around 13% of total coal production in NSW.[49] As noted above, just two of the State's 38 coal mines (Myuna Colliery in the Hunter Valley and Chain Valley Colliery in the Central Coast) supply their coal exclusively to coal-fired power stations in NSW.[50]

[46] Australian National University, *Coal transition in Australia: an overview of issues*, September 2018, p 4.

[47] NSW Department of Planning, Industry and Environment, note 7, p 4.

[48] NSW Department of Planning, Industry and Environment, note 7, p 4.

[49] NSW Department of Planning, Industry and Environment, note 7, p 9.

[50] NSW Department of Planning, Industry and Environment, note 7, p 9.

4. MANAGING THE ECONOMIC TRANSITION

4.1 NSW Policy Developments

Neither the NSW Government nor the Commonwealth Government have introduced a coordinated and detailed plan for managing the regional impacts of an economic transition from coal to clean energy. Until recently, the transition issue in NSW has mainly been addressed through the regional planning process. For example, the NSW Government has released several broad-based economic development plans for the Hunter Region including the Hunter Strategic Plan 2036, the Upper Hunter Economic Diversification Project: Action Plan and the Hunter Regional Economic Development Strategy 2018-2022.

Table 2: Overview of Regional Strategy Plans

Plan	Published	Description
Hunter Strategic Plan 2036	October 2016	The Plan sets out 27 directions for the Hunter Region for 2016 to 2036 period. It is described as a "20-year blueprint for the future that reflects community and stakeholder aspirations, the significance of the region's contribution to Gross State Product and its location on the fastest growing population corridor in the State."[51] Action 5.1 of the Plan is to: "Prepare for the diversification and innovation of the economy in response to long term industry restructuring in coal and power generation and the growth in new high-technology primary industry and associated specialist knowledge-based industries and rural tourism."[52]
Upper Hunter Economic Diversification Project: Action Plan	April 2017	The Action Plan sets "renewed priorities for encouraging new business and employment opportunities" and "sustainable regional transition for the region." Of particular relevance to the coal mining industry, it focuses on the Local Government Areas (LGAs) of Dungog, Muswellbrook, Singleton, and the Upper Hunter. The Action Plan recognised that the Upper Hunter is "vulnerable to global and regional shocks" including "weak trading conditions for the coal industry reflecting global energy market restructuring." It also identifies "significant new opportunity areas for the region" including "supporting transition into agribusiness production", and "working with power asset owners, industry and research partners to foster growing renewable energy capacities".[53] However, the Action Plan states that coal will remain a "major industry in the Upper Hunter Region, with continued export demand in Asia and India" and will

[51] NSW Government, *Hunter Regional Plan 2036*, October 2016, p 1.

[52] NSW Government, note 51 p 24.

[53] NSW Government, *Upper Hunter Economic Diversification Project: Action Plan*, April 2017, p 4.

Plan	Published	Description
		continue as a "major local employer at mines and in support industries located in the Upper Hunter and the broader region."
Hunter Regional Economic Development Strategy 2018-22	July 2018	The Strategy sets out a "long term economic vision and associated strategy for the Hunter Functional Economic Region."[54] The Strategy recognised that coal mining is the most significant industry in the Hunter and that there does not appear to be any capacity or resource constraints that will limit coal mining in the foreseeable future. However, it acknowledged the macroeconomic risks to the industry. The second of three core strategies is to: "Manage transitions and risks to the Coal Mining and Electricity Generation sectors and diversity the Region's economy to build resilience." The Strategy stated that actions which account for uncertainties in the coal mining sector will also assist in building economic stability and resilience. However, as with the Hunter Strategic Plan 2036 and the Upper Hunter Diversification Project: Action Plan, the Strategy assumes coal mining will remain a major industry.

In March 2019, Alex Greenwich MP, Greg Piper MP, and Joe McGirr MP called for the establishment of a Transition Authority and a 10-Year Adjustment Strategy for coal mining communities.[55] In a letter to the Premier, the three independent members warned of "serious economic disruption" to coal communities as a result of "an expected decline in the coal export market."[56]

In July 2019, the Legislative Assembly's Committee on Environment and Planning announced it would inquire into and report on the sustainability of energy supply and resources in NSW.[57] The Terms of Reference include "Opportunities to support sustainable economic development in regional and other communities likely to be affected by changing energy and resource markets, including the role of government policies." Selected stakeholder submissions to the inquiry are discussed in section 4.3 below.

On 24 June 2020, the NSW Government released its Strategic Statement on Coal Exploration and Mining in NSW (the Statement). The Statement provides the following outlook for the future of coal:

> In the short to medium term, coal mining for export will continue to have an

[54] NSW Government, *Hunter Regional Economic Development Strategy 2018-22*, July 2018, p 3.

[55] Ten News, *Here's How We Get Serious About Transitioning Away From Coal*, 1 March 2019.

[56] Piper, G., Greenwich, A., McGirr, J., *Letter to the Hon. Gladys Berejiklian MP - Coal Communities Transition Plan*, 28 February 2019.

[57] Legislative Assembly Committee on Environment and Planning, *Sustainability of energy supply and resources in NSW*, 17 July 2019.

> important role to play in NSW. In our immediate region of the world, as elsewhere, there has been a reduction in demand caused by the economic impacts of COVID19. However, in the medium term, demand is likely to remain relatively stable. Some developing countries in South East Asia and elsewhere are likely to increase their demand for thermal coal as they seek to provide access to electricity for their citizens. Under some scenarios, this could see the global demand for thermal coal sustained for the next two decades or more. The use of coal in the manufacture of steel (coking coal) is likely to be sustained longer as there are currently limited practical substitutes available.[58]

The Statement describes the transition to new energy sources as a long-term economic change that will reshape regional communities that currently rely on the coal industry. It then comments:

> These communities are resilient and can adapt, but need time and support to diversify their economies and develop new sources of employment. It is critical that we continue to responsibly manage the transition away from coal to enable these regional communities to continue to thrive. Part of this will involve supporting the growth of mining for metals that are in increasing demand in the longer run, such as copper, cobalt and rare earths, driven by high technology industries such as the information, energy and transport sectors. NSW has significant untapped potential in these metals, and the NSW Minerals Strategy sets out our plan to grow investment and jobs in the minerals sector. Given our non-fossil fuel minerals are principally in the Central and Far West, there will still be significant disruption for coal-reliant communities. Another part will be the opportunity for the integrated development of Renewable Energy Zones, as recently announced by the NSW Government in the Electricity Strategy.[59]

The Statement identifies four areas of action:

1. Improving certainty about where coal mining should occur.
2. Supporting responsible coal production in areas deemed suitable for mining.
3. Addressing community concerns about the impacts of coal mining.
4. Supporting diversification of coal-reliant regional economies to assist with the phase-out of thermal coal mining.

In relation to the diversification of coal-reliant regional economies, the Statement declares that the NSW Government will:

> … continue to work to strengthen regional economies, including the development and implementation of location-specific plans to diversify those heavily dependent on coal mining. There will be regional variations in the profile of coal production. Some areas will see gradual decline over the next few years, while others could see increased coal production in the short to medium term. We will adopt a systematic, place-based approach to transition planning, starting with the regions that are expected to experience the earliest coal production declines and the Upper Hunter region given the importance of its

[58] NSW Government, *Strategic Statement on Coal Exploration and Mining in NSW*, 24 June 2020, p 6.

[59] NSW Government, note 58, p 6.

coal industry.[60]

The NSW Government's plan to create Renewable Energy Zones (REZs) in regional areas of NSW may assist coal mining regions to transition their economies.[61] Although not part of the original three priority regions for REZs, the Illawarra and Hunter-Central Coast were added as priority regions during the passage of the Electricity Infrastructure Investment Bill 2020.

4.2 Commonwealth Policy Developments

In October 2016, the Senate Standing Committee on Environment and Communications announced it would inquire into the retirement of coal fired power stations in Australia.[62] The Terms of Reference included "policy mechanisms to give effect to a just transition for affected workers and communities likely impacted by generator closures, as agreed in the 'Paris Agreement'".[63] The Committee was chaired by Greens Senator Peter Whish-Wilson. In its Final Report, the Committee noted that there was widespread support for a "consistent, long-term national transition plan" in submissions to the inquiry. Several submissions, including the Australian Council of Trade Unions (ACTU), argued that the establishment of a new statutory authority would be "the most effective way to ensure a consistent, long-term national plan."[64]

Recommendation 4 of the Final Report states that the Australian Government should establish an "energy transition authority with sufficient powers and resources to plan and coordinate the transition in the energy sector, including a Just Transition for workers and communities."[65] In a dissenting report, Labor Senators recommended the establishment of "mechanisms to support a just transition for workers … including a national framework for worker redeployment schemes modelled on the Victorian Government's Latrobe Valley Worker Transfer Scheme."[66] In contrast, Coalition Senators' dissenting report indicated that they do not support the Recommendations contained in the Final Report as they do not "adequately or fairly reflect the evidence presented to the committee" and are "counter to the Government's technology agnostic policy approach."[67]

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[60] NSW Government, note 58 , p 9.

[61] NSW Department of Planning, Industry and Environment, *NSW Electricity Infrastructure Roadmap*, November 2020.

[62] Australian Senate Standing Committee on Environment and Communications, *Retirement of coal fired power stations*, 29 March 2017.

[63] Australian Senate Standing Committee on Environment and Communications, *Retirement of coal fired power stations – Referral and conduct of the inquiry*, 29 March 2017.

[64] Australian Senate Standing Committee on Environment and Communications, *Retirement of coal fired power stations – Options for managing the transition away from coal fired power stations*, 29 March 2017.

[65] Australian Senate Standing Committee on Environment and Communications, *Retirement of coal fired power stations – Committee view*, 29 March 2017.

[66] Australian Senate Standing Committee on Environment and Communications, *Retirement of coal fired power stations – Labor Senators' Dissenting Report*, 29 March 2017.

[67] Australian Senate Standing Committee on Environment and Communications, *Retirement of coal fired power stations – Coalition Senators' Dissenting Report*, 29 March 2017.

In December 2017, the Productivity Commission released a Study Report on Transitioning Regional Economies. This report was commissioned to examine the geographic impacts of the transition of the Australian economy following the resources investment boom. However, its findings are relevant to a discussion of transitioning regions in general and its terms of reference acknowledge the impact of technological and environmental change.

The Commission constructed an index of regional adaptive capacity. Under this metric, most major cities have a relatively higher adaptive capacity and many regional areas have relatively lower adaptive capacity. [68] The Commission noted that most mining regions have a below average adaptive capacity due to a high concentration of employment in the mining industry and their exposure to cyclical downturns in commodity prices.[69]

The Commission found:

> Australian, State and Territory governments already have a suite of existing arrangements aimed at redistributing resources across regions, achieving service delivery objectives and planning for regional transition and development. … Assistance beyond these arrangements should be rare, occurring in response to extreme circumstances that strongly portend the development of permanent disadvantage in a regional community, and that cannot be addressed by existing arrangements. Additionally, such assistance should be designed carefully to ensure that it is only temporary.

While acknowledging that there is no single approach, the Commission identified seven principles which should guide the scoping of economic and social development in regions:

1. Incorporate the views and knowledge of regional communities.
2. Consider a region's relative strengths and inherent advantages.
3. Identify barriers to people or businesses relocating, either within the region, or to other regions.
4. Identify unnecessary regulatory impediments to people or businesses taking up economic opportunities.
5. Include robust and transparent evaluation of existing programs and policies.
6. Include rigorous strategic regional planning and cost–benefit analysis of any proposed programs, policies or strategies.
7. Consider the scope for private economic activity that is not dependent on ongoing government financial support (other than payments made under general taxation, social security and welfare laws).

In November 2018, the Australian Labor Party made an election commitment to establish a Just Transition Authority.[70] The Just Transition Authority would have

[68] Australian Government Productivity Commission, *Transitioning Regional Economies: Productivity Commission Study Report*, December 2017, p 2.

[69] Australian Government Productivity Commission, note 68, p 136.

[70] The Australian Labor Party, *Supporting Australia's Energy Workforce*, 22 November 2018.

overseen pooled redundancy schemes and economic diversification plans in impacted regions. However, it focused on coal power generation and would not have covered coal mines.

In July 2019, the Australian Senate established a Select Committee into Jobs for the Future in Regional Areas to inquire into and report on new industries and employment opportunities that can be created in the regions. The Committee found that regional communities are affected disproportionately by the closure of significant employers and that these closures affect workers, their families, economic activity within regional areas, and the social fabric of communities. However, the Committee was unable to reach agreement on a unanimous set of recommendations. Instead, the report included attachments which presented the views of the Chair, the Labor Senators, and Government Senators.[71]

In his comments, the Chair, Richard Di Natale, described Australia as an "economy in transition" and stated that Australian needs to "diversify production and economic activity in regional areas to reduce the impact of external shocks." One of his recommendations was that the Australian Government establish an independent Regional Transition Authority that would:[72]

- provide financial and 'in-kind' support provided to bring together industry, governments, unions and community groups in regions undergoing economic transformation;
- steer and facilitate local decision-making on what jobs and industries regional communities want to attract, how they intend to make it happen and what resources and timelines are required; and
- collate and disseminate final outcomes and reports for each region and ensure cross-pollination for other regions through previous or current work with other communities.

Labor Senators' did not comment on this recommendation. They stated:

> There have been many valuable ideas and policy propositions put before the inquiry. Many of them will require more careful consideration and consultation with local communities than is feasible within the timeframe and terms of reference of this inquiry.

In contrast, Government Senators opposed the establishment of "any National Transition Authority which dictates to the people of the regions what they can or cannot do." Their comments argued that the role of the federal government is to be "supportive" and allow local communities to "shape their own future." It warned that there is a danger that a National Transition Authority would "seek to impose a world view on the regions which is inconsistent with the views of the local communities."[73]

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[71] Australian Senate, *Select Committee into Jobs for the Future in Regional Areas – Chapter 6: Committee view*, 4 December 2019.

[72] Australian Senate, *Select Committee into Jobs for the Future in Regional Areas – Chair's additional comments*, 4 December 2019.

[73] Australian Senate, *Select Committee into Jobs for the Future in Regional Areas –*

4.3 Stakeholder Views and Reports

Since the Paris Agreement was signed in 2016, there has been an increased focus on whether or not there is a need to transition Australia's coal regions and how this could be achieved. This section of the paper outlines the positions of and policy proposals on transitioning Australia's coal regions from key industry groups, trade unions, researchers, and environmental organisations.

NSW Minerals Council

The NSW Minerals Council (NSWMC) is a lobby group representing the mining industry in NSW. According to its website, the NSWMC supports a "measured transition to a low emissions global economy" and a policy framework that encompasses:[74]

- Australia's participation in global agreements such as the Paris Agreement with greenhouse gas emission reduction commitments from major emitting nations.
- A combination of short, medium and long-term market-based policy measures that:
  - Provide for least-cost abatement of greenhouse gas emissions
  - Maintain the international competitiveness of Australian industry
  - Minimise adverse social and economic impacts on households
  - Provide industry with policy certainty to make long-term investments.
- Substantial investment in a broad range of low emissions technologies and adaptation measures.

In its submission to the Legislative Assembly Committee on Environment and Planning's inquiry into the sustainability of energy supply and resources in NSW, the NSWMC argued there is no need for any general transition strategy for mining communities.[75] This is based on its position that there will be a strong growth in demand for thermal coal from South East Asia and India to 2040.[76] Instead, the NSWMC recommends the "ongoing development and diversification of regional economies" which includes "the development of metalliferous mines and the potential switching of domestic coal suppliers to production for export markets if domestic demand falls."[77]

In addition, the NSWMC recommends the NSW Government support investment in mineral exploration. This recommendation builds on the NSW Minerals Strategy. The Strategy states that NSW is well positioned to meet

Government Senators' dissenting comments, 4 December 2019.

[74] NSW Minerals Council, *Climate Change, Energy and Emissions*, [website – accessed 26 October 2020].

[75] NSW Minerals Council, *Legislative Assembly Committee on Environment and Planning: Inquiry into the Sustainability of Energy Supply and Resources in NSW – Submission*, September 2018, p 19.

[76] NSW Minerals Council, note 75, p 4.

[77] NSW Minerals Council, note 75, p 19.

growing global demand for "high technology" minerals used to build smartphones, electric cars, solar panels, batteries, and satellites.[78]

Australasian Institute of Mining and Metallurgy

The Australasian Institute of Mining and Metallurgy (AusIMM) is a professional organisation representing the 65,000 resources sector professionals in the Australasian region. In its submission to the Committee inquiry into the sustainability of energy supply and resources in NSW, AusIMM argued that opportunities for sustainable economic development in regional areas "do not necessarily preclude coal."[79]

Like the NSWMCC's position, AusIMM's position is based on its forecasts that there will be an increase in demand for thermal coal from South East Asia and India that will offset the expansion of renewable energy in the rest of the world and result in a net zero growth in coal-fired power generation to 2040. Based on this, AusIMM identified alternative uses of thermal coal that would promote sustainable economic development in the regions into the future. For example:

1. Enabling low cost base load power generation to gain a competitive advantage in processing metals for the high technology industries of the future.
2. Providing additional base load power generation for electric vehicle recharging.
3. Providing a source of hydrogen for hydrogen powered vehicles as "the lowest cost source of hydrogen is from gas or coal coupled with a combined cycle gas turbine."[80]
4. Replacing retiring power stations with new "high efficiency, low emission (HELE) power stations" that will "reduce greenhouse gas emissions while maintaining a low cost power supply for industry until alternative low cost base load power supply is proven and available."

Australian Council of Trade Unions

The Australian Council of Trade Unions (ACTU) is the largest peak body representing workers in Australia. On 9 November 2016, the ACTU released a policy discussion paper on a just transition for coal-fired electricity sector workers and communities.[81] The ACTU argues that transitioning an industry is a massive economic and social disruption and the coal-fired electricity sector is

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[78] NSW Minerals Council, *Legislative Assembly Committee on Environment and Planning: Inquiry into the Sustainability of Energy Supply and Resources in NSW – Submission*, September 2019, p 19.

[79] Australasian Institute of Mining and Metallurgy, *New South Wales House of Representatives Environment and Planning Committee: Sustainability of Energy Supply and Resources in NSW*, September 2019, p 3.

[80] Australasian Institute of Mining and Metallurgy, note 79, p 3.

[81] Australian Council of Trade Unions, *Sharing the challenges and opportunities of a clean energy economy: A Just Transition for coal-fired electricity sector workers and communities*, November 2016.

currently facing a transition in Australia. It also argues that transition has often been done poorly in Australia, but international examples demonstrate that a transition can be done "equitably, achieve positive outcomes for workers, save communities and forge new areas of industrial growth and prosperity."[82]

The ACTU argues that, in light of Australia's commitment to the 2016 Paris Agreement, "specific policies are needed to help ensure working people, their families and communities do not unfairly shoulder the burden of Australia's transition to a clean energy economy." This will require governments to "actively put in place plans and policies that focus on transitioning working people into decent and secure employment, alongside supporting investment in new green technologies and the creation of new industries." [83]

The ACTU argues the transition should be guided by the seven "key principles underpinning a Just Transition" identified by the International Trade Union Congress (ITUC):[84]

1. Equitable sharing of responsibilities and fair distribution of the costs across society;
2. Institutionalised formal consultations with relevant stakeholders including trade unions, employers and communities, at national, regional and sectoral levels;
3. The promotion of clean job opportunities and the greening of existing jobs and industries through public and private investment in low carbon development strategies and technologies in all nations;
4. Formal education, training, retraining, and life-long learning for working people, their families, and their communities;
5. Organised economic and employment diversification policies within sectors and communities at risk;
6. Social protection measures (active labour market policies, access to health services, social insurances, among others); and
7. Respect for, and protection, of human and labour rights.

The ACTU states there is a need for a transition plan, a jobs plan, and an energy plan to ensure the transition in the coal-fired electricity sector occurs in a "fair and just way". The recommendations in this discussion paper focus on a transition plan for affected workers and communities and include:

1. Creating a new independent statutory authority, Energy Transition Australia (ETA), that would … be responsible for navigating and managing Australia's transition to a clean energy economy." Its main roles would include:
   a. Overseeing an orderly transition plan and closure of Australia's coal-fired power stations, which ensures a Just Transition for working people, their families and communities.

   …

[82] Australian Council of Trade Unions, note 81, p 2.

[83] Australian Council of Trade Unions, note 81, p 8.

[84] Australian Council of Trade Unions, note 81, p 9.

b. Overseeing an industry-wide multi-employer pooling and redeployment scheme which provides retrenched workers with the opportunity to transfer to roles with renewable or low emission generators as well as remaining fossil fuel generators.

c. Administering and developing a labour adjustment package that supports workers transition into new decent and secure jobs. The main labour market policies should include:

   i. job placement and information services;

   ii. retraining with an option for this to be undertaken whilst still employed;

   iii. financial and personal support; and

   iv. travel subsidies and relocation assistance.

2. Developing specific plans to support the economic diversification of high emission power generation regions and communities. This would include:

   a. Mapping potential new industries to affected regions based on competitive and other advantages as well as worker skills. As part of this mapping exercise, infrastructure gaps should be identified and prioritised.

   b. Developing and implementing specific industry and environmental policies to attract new investment, the growth of new industries and the creation of quality, secure jobs in affected regions. Such policies could include additional renewable energy investment incentives, investment tax incentives and the prioritised construction of new infrastructure.

Construction, Forestry, Maritime, Mining and Energy Union – commissioned report

In October 2018, Peter Sheldon, Raja Junankar, and Anthony Pontello de Rosa from the University of New South Wales published a report commissioned by the CFMEU Mining & Energy Division analysing what would constitute a "best practice" structural adjustment program for coal regions titled "The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities".[85]

Sheldon et al. compared the differing outcomes of industry transition in the Appalachian region in the United States and the Ruhr region in Germany and how lessons learned from both case studies can be applied to coal regions in transition in Australia. The report argues the unsuccessful transition in the Appalachian region was characterised by short-term and reactive responses to closures of coal mines whereas the successful transition in the Ruhr region was characterised by a coordinated national response which included forward planning, industry diversification, staggering of mine closures, and a comprehensive package of measures to ensure a just transition.[86]

The report argues a just transition requires a structural adjustment policy which

[85] Sheldon, P., Junankar, R. De Rosa Pontello, A., *The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities*, The University of New South Wales, October 2018.

[86] Sheldon, P., Junankar, R. De Rosa Pontello, A., note 85.

links the adoption of a clean energy transition to an economic development transition at the local and regional scale. It identifies five "fundamental requirements for effective structural adjustment" for Australia's coal energy industry:[87]

1. That legislation, public policy and practice ensure that owners of power stations and mines also prioritise the longer-term interests of their workers and their community before, during and after any closures…
2. Consistent, engaged top-down leadership with sufficient funding from the highest level of government: the Australian (Commonwealth) government…
3. The establishment of a national, independent statutory authority to plan, coordinate and manage an orderly, staged set of closures in ways that produce a Just Transition as well as a clean-energy transition…
4. Consistent, engaged coordination across all levels of government—federal, state and local—plus regional coordinating bodies where these exist.…
5. Recognition of unions, alongside owners and government, as full partners to information gathering and sharing, planning and negotiations over processes and outcomes…
6. Structured networks for consultation, information gathering and distribution with other local stakeholder and civil society groups.

Lock the Gate Alliance – commissioned report

In January 2019, Neil Perry and Gillian Hewitson from the School of Business at Western Sydney University published a report analysing the consequences of a decline in thermal coal demand for the Hunter Valley titled "Weathering the storm: the case for transforming the Hunter Valley".[88] The report was commissioned by the Lock the Gate Alliance. The report states:

There are enormous risks and impacts if the region does not prepare for the global changes that are underway. Over 5,000 jobs and $700 million in wages and salaries could be lost if predicted global declines in coal occur and the Hunter Valley is not prepared for those changes.[89] Perry and Hewitson criticise the NSW Government's existing Hunter region strategies and action plans (see section 4.1 above) for not providing "concrete actions and programs" or "coming with resources to stimulate diversification and shield the region from the economic consequences of coal market contraction."[90]

Perry and Hewitson argue that transition and diversification in the Hunter is "a necessary insurance against declining global coal demand" and "important for stability and long-run growth."[91] This is because an undiversified economy is susceptible to changes in demand for its specialised products.

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[87] Sheldon, P., Junankar, R. De Rosa Pontello, A., note 85, p 8.

[88] Perry, N., Hewitson, G., *Weathering the storm: the case for transforming the Hunter Valley*, Western Sydney University, January 2019.

[89] Perry, N., Hewitson, G., note 88, p 4.

[90] Western Sydney University, note 88, p 13.

[91] Perry, N., Hewitson, G., note 88, p 15.

The report uses gap analysis of import patterns to identify a range of potential growth industries in Singleton and Muswellbrook. This would allow policymakers to target the creation of local industries to meet existing demand for goods and services that are currently produced elsewhere and imported into the region. Based on this method, the report identifies six key sectors that could be targeted to promote diversification:

1. Professional, Scientific and Technical Services
2. Financial Insurance Services
3. Construction and Construction Services
4. Accommodation and Food Services
5. Transport
6. Technical Equipment Appliance Manufacturing[92]

Another method discussed in the report to identify potential growth industries is shift-share analysis. This method removes the national or state effects of employment growth to isolate the local effect, determining which industries have a comparative advantage in the region. The report analyses the shift-share analysis of the Hunter conducted in the 2018-22 Hunter Regional Economic Development Strategy which suggest comparative advantages for the agriculture, manufacturing, and accommodation industries. Comparative advantages for specific sub-industries included horse farming, grape growing, poultry farming, wine and alcoholic beverages, meat processing, ready-mix concrete, metal coating and finishing, baking product manufacturing, motor vehicle body and trailer manufacturing.[93]

However, diversification alone does not ensure a fair and equitable transition for workers. The report also analyses the occupations that will be affected by a reduction in global coal demand and how the workforce could be restructured into other industries. The report notes that the two major occupations in NSW's mining sector are Machinery Operators and Drivers (5,080 workers) and Technicians and Trade Workers (2,821 workers). Both of these occupations have a strong presence in a range of other industries across NSW. Machinery Operators and Drivers have a strong presence in the (1) Transport, Postal and Warehousing, (2) Manufacturing and (3) Construction industries. Technicians and Trade Workers have a strong presence in the (1) Construction, (2) Other Services, and (3) Manufacturing industries. Based on this analysis, the report argues that a transition plan should be "cognisant of the needs of these workers and plan transition around the industries that require their skills wherever possible."[94]

Clean Energy Council – commissioned report

In June 2020, the UTS Institute of Sustainable Futures published a report commissioned by the Clean Energy Council estimating the size and

[92] Perry, N., Hewitson, G., note 88, p 17.
[93] Perry, N., Hewitson, G., note 88, p 19.
[94] Perry, N., Hewitson, G., note 88, p 22.

characteristics of the renewable energy workforce in 2035.[95] With respect to coal regions in Australia, a key finding was that:

> Renewable energy will create employment across regional Australia including coal regions. The occupational mix and location of renewable energy jobs indicates the sector can play a meaningful role in creating alternative employment as the global transition out of coal accelerates - but only within comprehensive industry plans and investment to diversify these regional economies.[96]

The Australia Institute

In May 2020, the Australia Institute published a report on the economic and social policies to manage the phase out of thermal coal in Australia. The report argued an adequate response to the threat posed by climate change demands an immediate halt to new thermal coal mines and a gradual closure of existing thermal coal mines. Successful implementation of such a policy requires:[97]

> … a strong and concrete commitment to facilitating employment transitions for workers in the industry (including to alternative jobs and/or support for early retirement), and equally strong and concrete measures to promote alternative sources of development and employment for regional communities dependent on coal mining.

The Australia Institute identified a range of policies which could be adopted to ensure an "orderly, effective, and fair phase-out of thermal coal".[98] Key measures to ensure that workers and communities involved in the coal industry did not bear the costs of transition included:

- Strong rights to redeployment, no forced redundancies, early retirement incentives, and income protections for people who end up in alternative but lower-paying jobs.
- A transition fund to assist workers with specialised coal-related skills in retraining or moving to other parts of the mining sector, and the creation of a transition authority with adequate funds and decision-making powers to guide and support transitions in fossil-fuel-dependent regions.[99]

Environmental Defenders Office NSW

The NSW Environmental Defenders Office (EDO NSW) is a community legal centre specialising in public interest environment and planning law. In its submission to the Legislative Assembly Committee inquiry into the sustainability of energy supply and resources in NSW, EDO NSW argued for the

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[95] Briggs, C., Rutovitz, J., Dominish, E., Nagrath, K. *Renewable Energy Jobs in Australia: Stage One*, Prepared for the Clean Energy Council by the Institute for Sustainable Futures, University of Technology Sydney, June 2020.

[96] Briggs, C., Rutovitz, J., Dominish, E., Nagrath, K. note 95, p 4.

[97] The Australia Institute, *Getting off coal: Economic and social policies to manage the phase-out of thermal coal in Australia*, May 2020, p 1.

[98] The Australia Institute, note 97, p 1-2.

[99] The Australia Institute, note 97, p 19.

establishment of a statutory authority to coordinate the planning and funding required for a just transition of regional communities affected by the transition away from fossil fuel production and use. It identified seven principles that should be incorporated into the design the authority:[100]

1. The authority must be established, and must commence its planning function, as soon as possible given that the impacts of climate change are already being felt and will intensify.
2. The authority should be created by statute, have statutory independence and have long-term funding secured by the statute.
3. The whole range of stakeholders from any community must be involved as decision makers in the planning process for their region.
4. The authority must be flexible enough to deliver different and regionally-appropriate transition plans for each affected community.
5. There must be strong protections, such as a duty to report to Parliament and real transparency obligations, to ensure that the authority acts with the highest levels of integrity.
6. Part of the authority's remit should be to, where possible, deliver co-benefits such as skilled jobs in environmental restoration projects with biodiversity benefits or industry development aimed at addressing the current waste and recycling crisis.
7. The powers necessary to deliver the transition are unlikely to rest in any single agency. As a consequence, supporting the delivery of the transition must be core business for relevant government departments.

EDO NSW also emphasised the disproportionate impact the effects of climate change will have on the economies of regional areas:[101]

> This will include for example, changes to the viability of agriculture in certain regions as temperatures and rainfall patterns change and potentially the loss of tourism through climate change driven loss of the biodiversity or altered conditions (e.g. snow in alpine areas, water in wetlands for bird watching) which bring visitors to regional NSW.

4.4 Case Studies

4.4.1 Domestic

Victoria (La Trobe Valley)

On 3 November 2016, energy company Engie announced it would close its Hazelwood Power Plant and Mine in the Latrobe Valley as a result of a transformation plan to invest in low-carbon projects as well as "lower electricity prices and a surplus of electricity supply in Victoria."[102] Established in 1964, Hazelwood Power Plant had a capacity of 1,600 MW and relied on coal

[100] Environmental Defenders Office NSW, *Committee on the Sustainability of Energy Supply and Resources in NSW*, 15 September 2019, p 2-3.

[101] Environmental Defenders Office NSW, note 100, p 2.

[102] Engie, *Hazelwood power station in Australia to close at the end of March 2017*, 3 November 2016.

extracted from the adjoining Hazelwood Coal Mine. At the time of its closure, it employed 750 people.

In response to the closure, the Victorian Government announced the creation of a $266 million Economic Growth Zone in the Latrobe Valley as well as a $22 million support package for workers and $20 million to fund the establishment of the Latrobe Valley Authority (the Authority).[103] The Authority was established to manage the transition process and support workers and businesses affected by the closure of the Hazelwood Power Plant and Mine. However, it also aimed to go beyond the immediate response to the closure and foster strategic and sustainable long-term growth for the region.

In its immediate response to the closure of Hazelwood, the Authority focused on providing crisis support to affected workers and their families. This included:

1. The Worker Transition Service provided support to transition into new jobs or retirement, access to training, and personal and financial counselling. 80% of affected Hazelwood workers registered for the Service.

2. The Worker Transfer Scheme facilitated the transfer of former Hazelwood employees to other power generators in the Latrobe Valley. 90 former Hazelwood employees have found ongoing employment through the Scheme.

3. The Back to Work Scheme funded up to $9,000 per employee forbusinesses who employ and train unemployed people who live in the Latrobe Valley. 1,245 payments have been made under the Scheme.[104]

As of November 2019, 74% of former Hazelwood employees were employed or not looking for work and more than 1,400 workers and their families had been offered support services.[105]

The Authority also delivered support for businesses and major investments in community facilities and infrastructure. This included:

- Reimbursements of state and local government fees related to the establishment or expansion of a business in the region valued at more than $6.9 million facilitated by the designation of the Economic Growth Zone.

- Leveraging $94.4 million in capital investment via the Latrobe Valley Economic Facilitation Fund. The Fund was delivered by Regional Development Victoria and created 968 jobs in the Latrobe Valley.

[103] Premier of Victoria, *Labor Government To Support Hazelwood Workers*, 3 November 2016.

[104] Latrobe Valley Authority, *Latrobe Valley Community Report: Transitioning to a strong future*, December 2019, p 3-4.

[105] Latrobe Valley Authority, note 104, p 3.

- Funding of $20 million for 186 community infrastructure projects and 50 events via the Community and Facility Fund.[106]

In its December 2019 Community Report, the Authority stated its work has created 2,500 new jobs and contributed to the generation of more than $99 million of private investment in the Latrobe Valley. The Latrobe-Gippsland unemployment rate fell by 3.7% from 8.0% in September 2016 to 4.3% in October 2019.[107]

The Authority is now shifting its focus toward promoting long-term strategic and sustainable growth in the Latrobe Valley. This includes the Smart Specialisation Project which works across the public, private, and education sectors to identify and develop the region's unique strengths and opportunities. It is focused on four sectors that have been identified for future growth:

1. food and fibre,
2. new energy,
3. health and wellbeing, and
4. the visitor economy.

The European Commission, in its 2019 Case Study of the Latrobe Valley Authority, attributed the Authority's success to its bottom-up approach despite being established by a top-down initiative from the Victorian Government:

> Transitioning the traditional leadership relationship between the government and local level to a locally-driven, place-based partnership with flexible funding and operational agreements was a challenge that has been successfully mastered - and can provide inspiration for future collaborations between state government and local communities in general.
>
> The key success factors for the Latrobe Valley Authority were:
>
> - having a local team who are skilled and are in direct relationships with the affected community
> - working continually by building capacity and new projects step-by-step, and putting emphasis on long-term rather than short-term development
> - using already existing local clusters and networks as a basis to further expand and address new stakeholders
> - working with local businesses that help lead the efforts, growing skills within the community and building collaboration, cooperation and mutually beneficial partnerships between key actors that previously operated in relative isolation.[108]

In a September 2018 report from the Australian National University, the Latrobe

[106] Latrobe Valley Authority, note 104, p 4-5.

[107] Latrobe Valley Authority, note 104, p 3.

[108] The European Commission, *Case Study: Latrobe Valley Authority, Australia*, December 2019, p 4.

Valley Authority was examined as a case study on coal transitions in Australia. In its analysis of the implications of the Hazelwood example for coal transition policy, Jotzo, F., et al argued there is a need for improved strategy and policy mechanisms to achieve an orderly transition and achieve better outcomes for local communities when coal-fired plants and mines are closed:

> As the Hazelwood closure case shows, recent practice has seen sudden and poorly anticipated closures, with government support coming in relatively late and in the form of substantial on-budget financial commitments. This has obvious drawbacks for the likely effectiveness of the measures, cost-effectiveness of public support, and ultimately the societal acceptance of assistance provided by the nation or States for transition in one particular sector for closures in specific localities.[109]

4.4.2 International

Germany (Ruhr Region)

In Germany's Ruhr Region, coal production has been in decline since the late 1950s. The number of coal mining employees in the Ruhr fell from 473,600, 41 per cent of total employment, in 1957 down to just 24,000, 2 per cent of total employment, in 2017.[110]

In its October 2018 report prepared for CFMEU Mining & Energy, the Industrial Relations Research Centre (IRRC) analysed Germany's Ruhr Region as an example of a successful structural adjustment away from a reliance on coal mining.[111] The IRRC divides the decline into two phases. The first phase, from the late 1950s to 2007, is described as "a set of long-run and interacting evolutionary responses to a dramatic collapse of economic activity and employment in coal and steel." The second phase, from 2007 to 2018, is described as the result of "a 2007 tripartite agreement to close the remainder of coal mining in the Ruhr (and adjacent regions), but not coal-fired power stations or manufacturing." It notes that, as a result of its era, the first phase did not address climate change, but did seek to build a just transition for the affected workers and communities. However, the second phase does address "clean-energy economic development criteria through a just transition perspective."

Due to a strong connection between coal and the local identity of the region, there was a reluctance to accept that the Ruhr's coal industry had entered a structural decline. Prior to the 1980s, the German Government invested in both economic diversification and propping up the Ruhr's coal industry. However, policymaking and implementation at this time were "highly centralised" and sought "little input from stakeholders at local and district levels." Despite these issues, many projects, including "the establishment of new universities and technical colleges as well as environmental clean-up schemes" were "very

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[109] Jotzo, F., Mazouz, S., Wiseman, J., *Coal transition in Australia: Preparing for the looming domestic coal phase-out and falling export demand*, 2018, p 28.

[110] The Industrial Relations Research Centre (IRRC), *The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities*, October 2018, p 28.

[111] The Industrial Relations Research Centre (IRRC), note 110, p 28.

successful in slowing the pace of job losses and laying important foundations for later developments." As a result, the Ruhr was able to avoid long-term economic decline and recorded average annual economic growth of 1.3% between 1957 and 2000 despite the structural decline of its most important industry. The IRRC identified five initiatives that account for the Ruhr's success:

1. Large-scale public investment to modernise infrastructure.
2. Large-scale public investment to develop strong university and technical education systems…
3. Investment in new leisure and cultural industries.
4. Investment in new service sector growth focused on building upon existing regional strengths…
5. Re-industrialisation support policies focused on environmental technologies.

In 2007, the German Government announced it would phase-out all subsidies for coal mining. The date for the end of the phase-out was set to the end of 2018 in order to "ensure socially acceptable staff reduction … that met community expectations of fairness." This was to be achieved via a "comprehensive package of Just Transition measures for affected mineworkers" facilitated by "federal legislation, collective bargaining agreements, and internal company programs." This included:

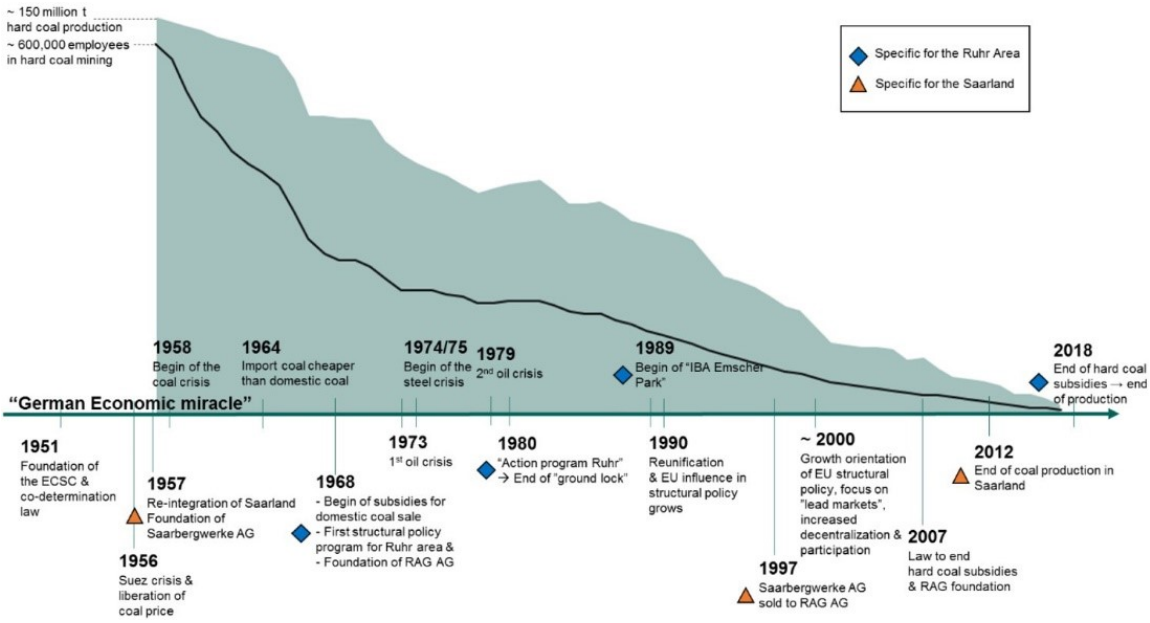
- Re-location of about 10,600 employees within and to still-producing coal-fields.
- A generous early retirement scheme that pays more to underground miners and compensates younger retirees for age-related gaps in their retirement pensions.
- Extensive opportunities for workers to transfer jobs within the company either as a temporary placement or through ongoing redeployment.
- Qualification/requalification through training and on-the-job certification.
- External transition into the services sector.

In a 2019 *Climate Policy* study, Oei et al evaluated the success of the policies used to phase-out coal-mining in Germany. Oei et al argued that "the protection of a declining industry for decades caused increased transition costs compared to an earlier phase-out" and highlighted the importance of combining "not only policies addressing unemployment and the attraction of new energy corporations and investments, but also measures improving infrastructure, education, research facilities, and soft location factors." Soft location factors include "cultural and leisure time possibilities, as well as environmental issues (e.g. air pollution levels and clean rivers)" and influence the public perception of a region. Oei et al argued that improved soft location factors increased the quality of life in a region and persuaded people to stay and migrate there. Oei et al concluded that a "just and in-time transition" needs to:[112]

[112] Oei, P., Brauers, H., Herpich, P., *Lessons from Germany's hard coal mining phase-out: policies and transition from 1950 to 2018,* *Climate Policy,* 28 November 2019.

- be jointly managed in a polycentric approach by city, regional, national, and international governments and institutions.
- combine climate, energy, social, and structural policies, whilst recognizing both local specifics and global connections.
- consider long-term effects, external independent advice apart from the incumbent regime and beyond-border thinking, while aiming to diversify the economy and enabling broad stakeholder participation.
- address unemployment, the economy, and the energy system, as well as measures to improve infrastructure, universities, research facilities, and soft location factors.

Figure 11: Coal Production in Germany and Structural Policy Programs in the Ruhr and Saarland, 1951-2018[113]



Canada (national task force)

In 2016, the Canadian Government announced it would accelerate its phase-out of coal-fired electricity with a target of 90 per cent of its electricity from non-emitting sources by 2030.[114] Recognising the disproportionate impact this would have on some workers and communities, the Canadian Government established the Task Force on Just Transition for Canadian Coal and Power Workers and Communities (the Task Force) to provide "knowledge, options and recommendations to the Minister of the Environment and Climate Change on implementing a just transition for workers and communities directly impacted by the accelerated phase out of coal fired electricity in Canada."[115] The Task Force estimated the phase-out of coal-fired electricity will affect 3,000 to 3,900

[113] Oei, P., note 112.

[114] Government of Canada, *The Government of Canada accelerates investments in clean electricity*, Media Release 21 November 2016.

[115] Environment and Climate Change Canada, *Task Force on Just Transition for Canadian Coal Power Workers and Communities Terms of Reference*, February 2018.

workers in 50 communities from over a dozen coal-fired power stations and nine thermal coal mines.[116]

The Task Force released its Final Report in December 2018. Task Force members visited 15 affected communities, met with more than 80 stakeholders, hosted eight public engagement sessions to hear from the general public and toured five coal-fired power stations, two thermal coal mines, and one port. Based on its extensive stakeholder consultation, the Task Force made a series of recommendations to enable a Just Transition:[117]

1. Develop, communicate, implement, monitor, evaluate, and publicly report on a just transition plan for the coal phase-out, championed by a lead minister to oversee and report on progress.
2. Include provisions for just transition in federal environmental and labour legislation and regulations, as well as relevant intergovernmental agreements.
3. Establish a targeted, long-term research fund for studying the impact of the coal phase-out and the transition to a low-carbon economy.
4. Fund the establishment and operation of locally-driven transition centres in affected coal communities.
5. Create a pension bridging program for workers who will retire earlier than planned due to the coal phase out.
6. Create a detailed and publicly available inventory with labour market information pertaining to coal workers, such as skills profiles, demographics, locations, and current and potential employers.
7. Create a comprehensive funding program for workers staying in the labour market to address their needs across the stages of securing a new job, including income support, education and skills building, re-employment, and mobility.
8. Identify, prioritize, and fund local infrastructure projects in affected communities.
9. Establish a dedicated, comprehensive, inclusive, and flexible just transition funding program for affected communities.
10. Meet directly with affected communities to learn about their local priorities, and to connect them with federal programs that could support their goals.

In its 2019 Case Study of the Task Force, the European Commission said that the Task Force's extensive consultation with affected stakeholders strengthened the legitimacy of its recommendations with the community and the Canadian Government.

In its response on 11 March 2019, the Canadian Government welcomed the Final Report of the Task Force and stated its work will "help lay the foundation

[116] Government of Canada, *Final Report by the Task Force on Just Transition for Canadian Coal Power Workers and Communities*, December 2018.

[117] Government of Canada, note 116.

for a just transition away from coal electricity."[118] The 2019 Federal Budget included a section on "A Just Transition for Canadian Coal Power Workers and Communities" and included the following actions in response to the Task Force:[119]

- Create worker transition centres that will offer skills development initiatives and economic and community diversification activities in western and eastern Canada. These efforts are being supported by a federal investment of $35 million over five years, funded through Budget 2018, for Western Economic Diversification Canada and the Atlantic Canada Opportunities Agency.
- Work with those affected to explore new ways to protect wages and pensions, recognizing the uncertainty that this transition represents for workers in the sector.
- Create a dedicated $150 million infrastructure fund, starting in 2020–21, to support priority projects and economic diversification in impacted communities. This Fund will be administered by Western Economic Diversification Canada and the Atlantic Canada Opportunities Agency.

[118] Government of Canada, *Government of Canada welcomes report from Just Transition Task Force for Canadian Coal Power Workers and Communities*, 11 March 2019.

[119] Government of Canada, *Budget 2019 – Chapter 2: Building a Better Canada*, 19 March 2019.

5. CONCLUSION

There remains considerable uncertainty about the future domestic and international demand for coal. This has led to an ongoing debate as to whether the volume of coal production in NSW will increase, decline, or stabilise in the future. However, the NSW and Commonwealth Governments have both endorsed the 2016 Paris Agreement which aims to limit the increase in global temperatures to well below 2°C and pursue efforts to limit the rise to 1.5°C. There would be a dramatic reduction in demand for coal if the world takes action to meet the emissions targets agreed to under the Paris Agreement.

A decline in coal mining would impact on certain regions of NSW. For example, the social and economic consequences of a decline in coal would be significant for the Hunter Region where coal mining accounts for 7.95% of jobs compared to 0.57% for all of NSW. Until recently, the NSW Government has sought to address the issue through the regional planning process communities (e.g. the Hunter Strategic Plan 2036) In June 2020, the NSW Government released its *Strategic Statement on Coal Exploration and Mining in NSW* which identifies four areas of action to address the transition to new energy sources.

Critics of the existing strategies and policies argue that they are not adequate and a more comprehensive transition strategy is required to meet the scale of the structural adjustment that will occur in coal dependent communities. There is widespread support among these stakeholders for a strategy informed by just transition principles and administered by a statutory authority. In contrast, industry groups such as the NSW Minerals Council argue that there is no need for a general transition strategy because there will be increased demand for high quality thermal coal from South East Asia and India even as other more advanced economies transition to renewable energy.

The challenge of transitioning communities away from coal is not unique to NSW or Australia. Other jurisdictions are grappling with how to manage the social and economic consequences from closures of coal mines and power plants, whether that is the result of action to reduce carbon emissions or the decreasing cost of renewable energy compared to coal-fired electricity (e.g. Victoria's Latrobe Valley, Germany's Ruhr Region, and Canada). Learning from the successes and failures from domestic and international examples like these will better allow policymakers to develop transition strategies that work for affected regions in NSW.