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SUSTAINABILITY OF ENERGY SUPPLY AND RESOURCES IN NSW

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The Australia Institute
Research that matters.

Sustainability of energy supply and resources in NSW

Submission

NSW is a major coal exporter and has an emissions-intensive electricity system. Implementing a policy such as a moratorium on new coal mines would provide considerable community benefit with minimal economic disruption. It would also address the contradiction between support for the Paris Agreement and continuous expansion of coal supply.

Rod Campbell
Matt Grudnoff
September 2019

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Summary

The Australia Institute welcomes the opportunity to submit to the New South Wales parliamentary inquiry into sustainability of energy supply and resources in NSW.

NSW is a large coal exporter, exporting 165 million tonnes in 2018, 12% world's traded coal. Project proponents and government forecasters had anticipated that the coal boom of the early 21st century would continue. This did not happen. World coal demand has plateaued and NSW exports have declined from a peak in 2014.

If the goals of the Paris Agreement are met, world coal demand and trade will decline rapidly. Despite this, NSW continues to approve new mines and promote the growth of the industry. NSW is not planning for the reduction of coal exports that is required if the world acts on climate change.

There is a serious contradiction between NSW policy on coal and on climate. On the one hand, NSW supports the Paris Agreement, which would see a dramatic reduction in world coal use and NSW coal exports. On the other hand, the government states its support for expanded coal exports at any opportunity. This contradiction is not unique to NSW but is shared by most Australian governments.

Despite the volume of coal exported from NSW, the industry is not a significant part of the economy, representing 0.5% of employment, paying 2% of the state budget and making up only 3% of gross state product. Detailed modelling of a phase out of the NSW coal industry with a moratorium on new coal mines shows that the difference in the NSW economy out to 2040 is very small.

The export coal industry does, however, have a significant impact on certain communities and regions. Many of these communities are sharply divided between support for and opposition to the coal industry. This division is exacerbated by uncertainty around coal projects, both in relation to their long term future under climate policy and more short-to-medium term factors such as government assessment processes.

A contributing factor to uncertainty is the lack of capacity within the NSW Department of Planning and Environment to assess the economic aspects of coal projects, or to critically review the assessments commissioned by proponents. Commissioned assessment invariably overstates the benefits the project, while downplaying costs. The Department's lack of review capacity has led to some poor outcomes for communities.

- The Angus Place Mine near Lithgow was to expand, but was shuttered just a month after declaring there was “no questioning its operational viability”.
- The Cobbora coal project bought out significant numbers of family farms from the Dunnedo area, and was approved based on commissioned economic assessment claiming a $2 billion net benefit. The project was never viable and has been abandoned, leaving the town with a smaller population.

In fact, some parts of the Department appear to have been captured by the coal industry. After a scathing review of the economic assessment of the Wallarah 2 coal project, then Planning Minister Pru Goward undertook to strengthen the Department’s economic credentials. Instead of building capacity internally and consulting publicly, the Department worked with the coal industry and their economic consultants to water down proposed changes to assessment guidelines.

Many communities are being affected by the coal industry’s rush for project approval before coal markets decline further. The Department’s reluctance or inability to scrutinize proponents’ claims has extended periods of uncertainty for communities around projects such as Bylong, Hume, Wallarah 2, Watermark and many others.

NSW coal issues also resonate beyond the state’s borders. Development of Queensland’s Galilee Basin would have a significant impact on the NSW industry according to several industry players and supporters. For example, federal Shadow Minister for Resources Joel Fitzgibbon has described support for Adani’s project as “a blow to the Hunter region” and praised the Port of Newcastle’s opposition to Adani as “absolutely correct”. Industry modelling suggests Galilee Basin development could reduce NSW royalty revenue by $10 billion to 2035 and reduce Hunter Valley employment by over 9,000 jobs.

The NSW Government avoids these problems by claiming the higher energy content of NSW coal means that it does not compete directly with Galilee Basin coal. This shows a misunderstanding of coal markets. The different grades of thermal coal are highly substitutable and their prices move in almost perfect unison. Galilee Basin development would push down the prices received by NSW coal producers.

Australia is the third largest exporter of greenhouse gases in the world, behind just Russia and Saudi Arabia, and NSW coal exports are a significant part of this dubious distinction. The actions of major exporters like NSW and Queensland have an influence on international energy markets. A moratorium on new coal mines in the state would exert upward pressure on international coal prices, disincentivizing investments in coal-fired power that would lock in emissions for decades.

A move towards considering downstream emissions has already been made by the Independent Planning Commission in the United Wambo project determination. This could easily be strengthened to consider not just whether customers are a party to the Paris Agreement, but whether they have policies in place that are consistent or aligned with the global goals of it.

Another international benefit of a moratorium on new mines in NSW would be improving diplomatic relations in the Pacific. Pacific leaders have been calling for an end to new coal mines since at least 2015 with one recently describing Australia as an “abusive relative”.

Aside from exports, the NSW energy system is also fossil fuel-intensive. In 2018 black coal made up 60 per cent and gas 14 per cent of generation.

The state’s fleet of fossil fuel generators is old and unreliable, breaking down 27 times in 2018, or once per fortnight. Unlike variable renewable energy, breakdowns at gas and coal-fired power stations occur without warning and can result in hundreds of megawatts of capacity instantly dropping from the system.

NSW taxpayers have paid almost $1 million for a consultant’s report on “the Future of NSW Coal Fired Electricity Generation Industry”. While the report appears to have been completed, it has never been released. This inquiry should recommend its immediate publication.

This study was funded by the $100 million Coal Innovation NSW Fund. Despite a decade of operation its achievements have been minimal, and this money should be redirected towards a transition to renewable energy in NSW.

As bushfires rage in September and Murray Darling Basin towns prepare to go without drinking water supplies, it is clear that NSW needs to prepare for a future with a different climate. The state also needs to consider how it can reduce its emissions and those it can influence globally. Fortunately, there is much the state can do.

Introduction

The Australia Institute welcomes the opportunity to make a submission to the New South Wales Parliamentary Inquiry into *Sustainability of Energy Supply and Resources in NSW*. This submission focuses on NSW coal exports and domestic coal use, addressing several of the terms of reference of the inquiry:

2. Emerging trends in energy supply and exports, including investment and other financial arrangements.
3. The status of and forecasts for energy and resource markets.
4. Effects on regional communities, water security, the environment and health.
5. 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.

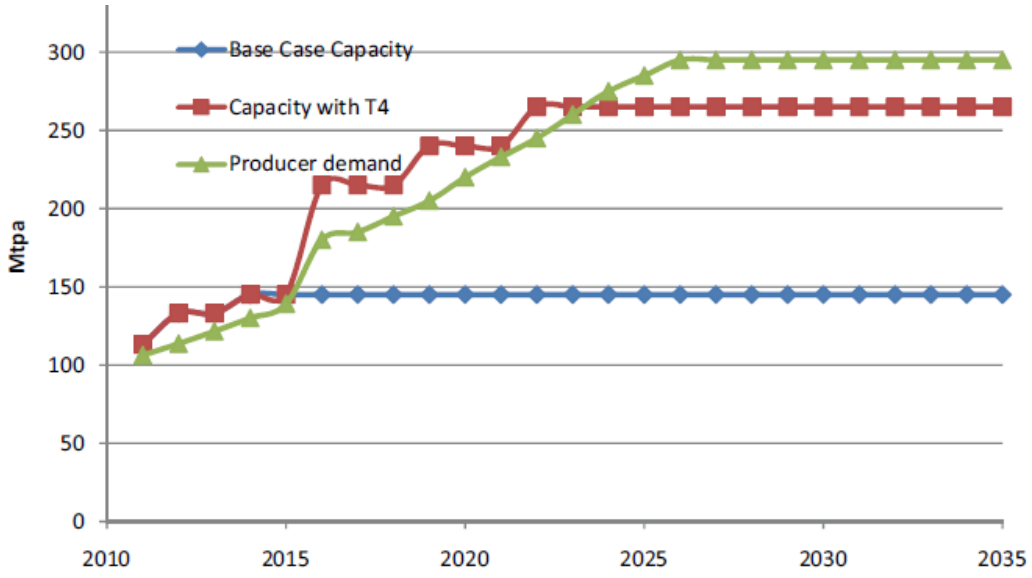
Please note that a separate submission has been made addressing the first point in the terms of reference, the capacity and economic opportunities of renewable energy. That submission summarises ongoing joint research between The Australia Institute and University of Sydney Environment Institute.

Coal exports

NSW is a large coal exporter in any terms. The 165 million tonnes that were exported in 2018 represent 12% of the world's approximately 1,370 million tonnes of traded coal that year.[1] If NSW were a country, it would be the 3nd largest coal exporter behind Indonesia and Queensland.

As large as NSW coal exports are, they were supposed to be much bigger. Forecasts and project proposals from the end of the coal boom were for NSW to export much more coal. A key example came from the proponents of Newcastle's fourth coal terminal (T4). Figure 1 below shows the forecast submitted as part of the planning process for the T4 project:

Figure 1: Forecast coal demand through Port Waratah Coal Services' terminals



Source: Gillespie Economics (2012) Port Waratah Coal Services Terminal 4 Project Economic Assessment

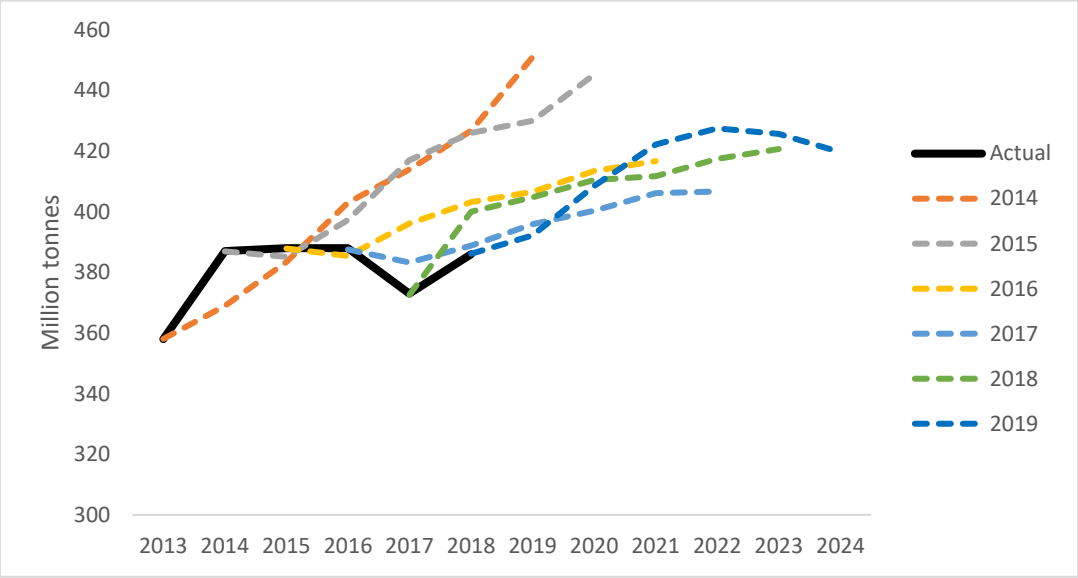
Figure 1 shows that in 2012 the proponents of T4 expected to ship 200 million tonnes of coal through their terminals in 2019. Demand was expected to grow to almost 300 million tonnes per year by the mid 2020s. In viewing Figure 1, it is important to

[1] NSW Mining (2019) *New analysis shows NSW coal export volumes have doubled since 2001,* 31 March 2019, http://www.nswmining.com.au/menu/media/news/2019/march/new-analysis-shows-nsw-coal-export-volumes-have-do; Department of Industry (2019) *Resources and Energy Quarterly*, https://publications.industry.gov.au/publications/resourcesandenergyquarterlyjune2019/documents/Resources-and-Energy-Quarterly-June-2019.pdf

remember that in addition to this company's terminals, NSW has other terminals in Newcastle and at Port Kembla which would have seen forecast state exports at least 70 million tonnes per year higher still.

The T4 proponents were not alone in overestimating coal demand. Australia's Federal Government forecasters did little better, expecting coal exports to grow each year. Figure 2 below shows the federal government forecasts of coal exports compared to the volumes that were actually exported:

Figure 2: Forecast and actual Australian coal export volumes

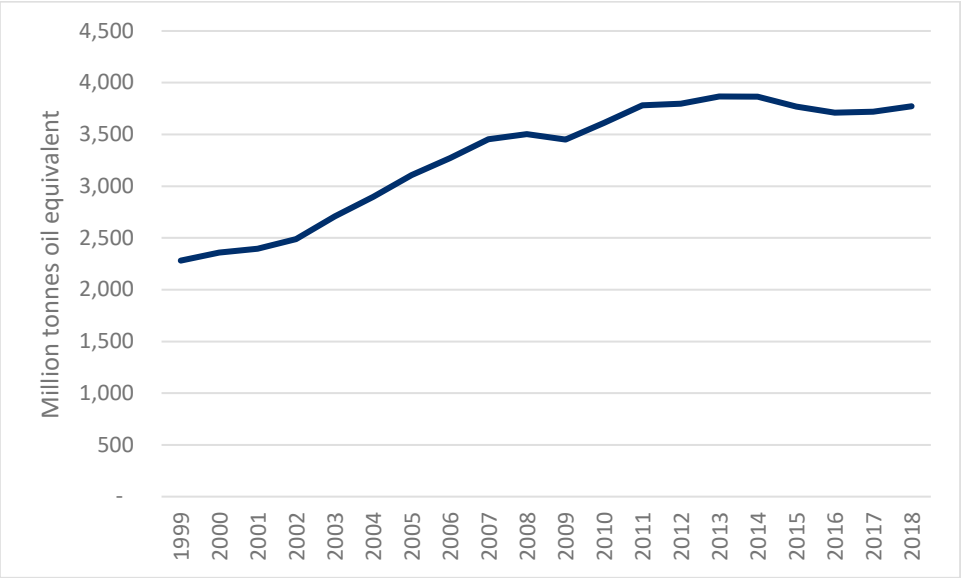


Source: Department of Industry, various years, Resource and Energy Quarterly

Figure 2 above shows that Australia's official forecasters have consistently overestimated coal export growth in the past and still forecast substantial growth into the future. The dotted orange line shows that in 2014 the forecast was for Australia to export 451 million tonnes in 2019, while this number is likely to be around 380 million tonnes.

The forecast growth has not happened. Almost as soon as the T4 forecast was made, the unexpected happened – the long coal boom ended. Demand for coal globally and in key markets like China flattened and declined, as shown in Figure 3 below:

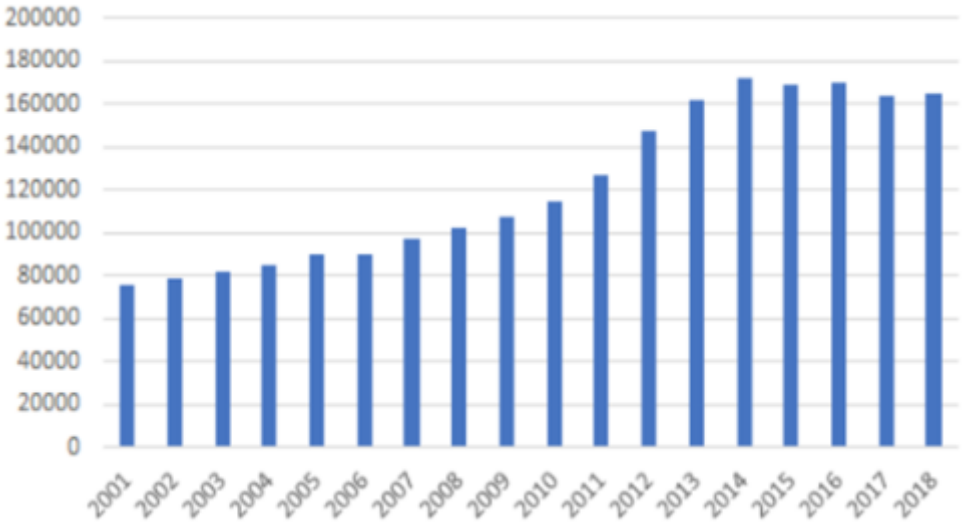
Figure 3: World coal consumption 1999 to 2018



Source: BP (2019) Statistical Review of World Energy

Figure 3 shows that after decades of strong growth, interrupted only by the global financial crisis in 2007-09 that growth in coal demand stopped or slowed dramatically from around 2012. The unthinkable happened from 2014 to 2017, with coal demand declining, before some increase in 2018. These global trends were reflected in NSW, as shown in Figure 4 below:

Figure 4: NSW coal exports 2001 to 2018

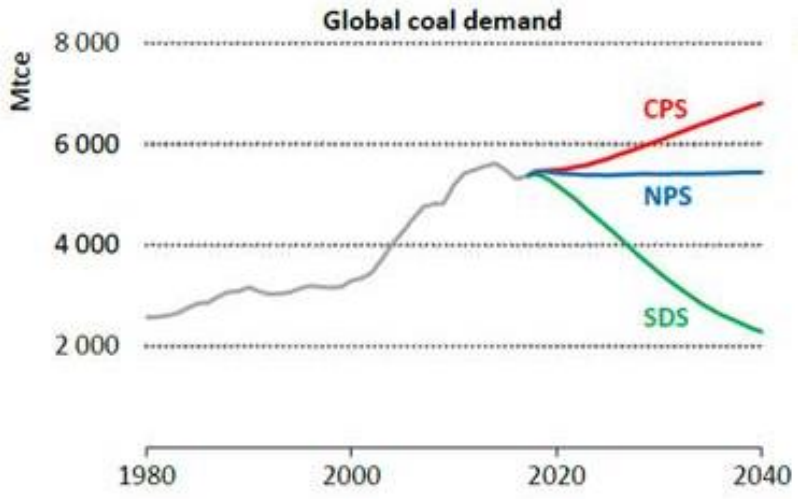


Source: Coal Services Pty Ltd (2019) data, quoted by NSW Minerals Council (2019) http://www.nswmining.com.au/menu/media/news/2019/march/new-analysis-shows-nsw-coal-export-volumes-have-do

Figure 4 shows that NSW coal exports peaked in 2014, around the same time that world coal consumption peaked in Figure 3. The reasons usually cited for this change are China's economy shifting towards less energy-intensive growth, Chinese policies to reduce coal use to improve air quality, cheaper electricity from competitors such as renewable energy and the beginning of serious efforts to implement climate policies that reduce fossil fuel use.

Looking to the future, if the goals of the Paris Agreement goals are met, coal use will decline substantially. Figure 5 below shows the International Energy Agency (IEA)'s estimates for global coal demand under its three modelled scenarios. The green line labelled "SDS" represents the 'sustainable development scenario' in line with the Paris Agreement, while the blue 'new policies scenario' is insufficient to meet Paris goals and the red 'current policies scenario' represents minimal change from today's trajectory:

Figure 5: IEA coal demand estimates



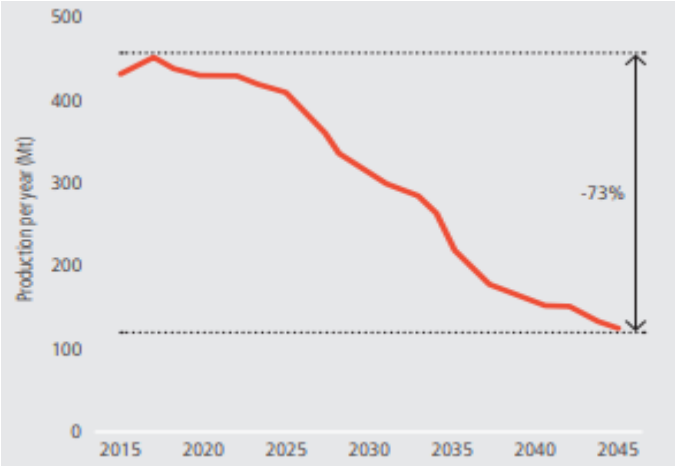
Source: IEA (2018) *World Energy Outlook 2018*, www.iea.org

Figure 5 shows that under the SDS scenario coal demand declines significantly in the years ahead, reducing by two thirds by 2040. This would have a major effect on the Hunter Valley industry as the IEA expects the volume of traded coal to decline from over 1,100 million tonnes per annum (Mtpa) in 2017 to 815Mtpa in 2025 and 518Mtpa in 2040.[2]

Australia already has large volumes of coal supply approved out to the 2040s, as shown in Figure 6 below:

[2] IEA (2018) *World Energy Outlook 2018*, table 5.1, www.iea.org.

Figure 6: Production outlook for operating mines in Australia



Source: NERA (2016) Coal Industry Competitiveness Assessment, citing Wood Mackenzie data

Figure 6 above shows that even if Australia allowed no new coal mines to go ahead and restricted production to those currently in operation, ie excluding those approved but not operational such as Adani, Australia would still produce more than 100 million tonnes of coal in 2045. Roughly half this volume would be in NSW. It is clear than no new coal mines are needed in NSW, at least not for some years. A moratorium on new coal mines until the future of the coal market is clearer would be a prudent policy for NSW.

The reality of lower coal demand has been slow to sink in. The T4 project was only abandoned in 2018, even though its marginal financial and economic viability had been highlighted for years.[3] New coal projects continue to be proposed, even though other mines have stalled due to these changes in the coal market. The coal industry continues to claim "there's plenty of opportunity for [NSW coal exports] to continue and grow out to 2040 and beyond."[4]

Because of this optimism, or perhaps denialism, NSW is not planning for the reduction of coal exports that is inevitable if the world acts on climate change. The state has no specific policy on coal, but is guided by documents such as the 2015 Minerals Industry Action Plan, which claimed:

[3] Wakatama et al (2018) *T4 scrapped: Controversial multi-billion-dollar coal loader in Newcastle won't go ahead*, https://www.abc.net.au/news/2018-05-31/plans-for-five-billion-dollar-coal-loader-scrapped/9821890

[4] NSW Minerals Council (2019) *New research highlights strong future for NSW coal exports*, http://www.nswmining.com.au/menu/media/news/2019/september/new-research-highlights-strong-future-for-nsw-coal

Increasing global demand for coal, minerals and associated technology and services is certain.[5]

The government's response outlined its determination to "support the long-term competitiveness and growth of the industry."[6]

There is a serious contradiction between NSW policy on coal and on climate. On the one hand, NSW supports the Paris Agreement that would see a dramatic reduction in world coal use and almost certainly a similar reduction in NSW coal exports. On the other hand, the government states its support for expanded coal exports at any opportunity. This contradiction is not unique to NSW but is shared by most Australian governments.

Perhaps one reason for the lack of clear policy and action at a high level is the relative lack of importance of the coal industry to the overall state economy and state government budget. While coal advocates are fond of describing the industry as "critical to the economy of NSW",[7] in fact, coal is a minor contributor to most aspects of the state's economy:

- Just half of one percent of people employed in NSW work in coal mining, 19,000 out of 3.4 million in total at the last census.[8]
- Royalties make up just over 2% of the NSW state budget, $2 billion of $84 billion in the 2019-20 budget.[9] Most, but not all, royalty revenue is from coal.
- Just 3% of Gross State Product is from the whole mining industry, with coal's share smaller still.[10]

[5] NSW Minerals Industry Taskforce (2015) *Industry action plan*, https://www.resourcesandgeoscience.nsw.gov.au/__data/assets/pdf_file/0005/583844/2015-nsw-minerals-industry-action-plan.pdf

[6] NSW Government (2015) *Government response to the Minerals Industry Action Plan*, https://www.resourcesandgeoscience.nsw.gov.au/__data/assets/pdf_file/0005/583871/final-government-response-MIAP.pdf

[7] Galilee (2019) Policy settings must support coal industry, https://www.qrc.org.au/media-releases/coals-massive-contribution-eastern-australia-continues/

[8] ABS (2016) *Census of population and housing*, accessed through TableBuilder Basic

[9] NSW Government (2019) Budget paper 1, Revenue, https://www.budget.nsw.gov.au/sites/default/files/budget-2019-06/4.%20Revenue-BP1-Budget_201920.pdf

[10] ABS (2018) *Australian National Accounts: State Accounts, 2017-18*, Table 2. Expenditure, Income and Industry Components of Gross State Product, New South Wales, Chain volume measures and current prices https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5220.02017-18?OpenDocument

- Coal exports make up 19% of NSW export value. However, around 80% of the NSW industry is foreign owned, meaning that little of this value remains in Australia.[11]

Victoria University and The Australia Institute have conducted detailed modelling of the economic impacts of a phase out of the NSW coal industry through a moratorium on new coal mines. The difference between the NSW economy with and without a moratorium out to 2040 is very small.[12] Two factors ensure the impact is minimal. Firstly, the coal industry is a relatively small part of the NSW economy to begin with. Secondly, with years to adjust, the resources used by the coal industry are redeployed to other industries with relatively little disruption.

While the export coal industry is not particularly significant to the state economy, it does have significant impacts on regional development, particularly in the Hunter Valley. The size of NSW exports within the world coal market also mean that the state's decisions on coal have national and international implications.

These decisions about the future of the industry and regional communities are currently being made by foreign corporations in the interests of their shareholders, rather than in the best interests of the NSW community.

COMMUNITIES AND REGIONAL DEVELOPMENT

The export coal industry has a major impact on the communities and environment of the Hunter Valley, as well as areas further west and south to the Lithgow region. Air quality is often poor in these regions, affecting human health and agriculture, particularly animal industries such as horse breeding. The industry will leave at least 45 voids, covering an area of over 6,000 hectares, which will impact on water resources.[13]

While coal mining accounts for only around 5% of total Hunter Valley employment, it is a major employer in towns like Singleton (23%), Muswellbrook (22%) and Lithgow

[11] DFAT (2018) *New South Wales*, https://dfat.gov.au/trade/resources/Documents/nsw.pdf; Campbell (2014) Seeing through the dust: coal in the Hunter Valley economy, https://www.tai.org.au/content/seeing-through-dust-coal-hunter-valley-economy

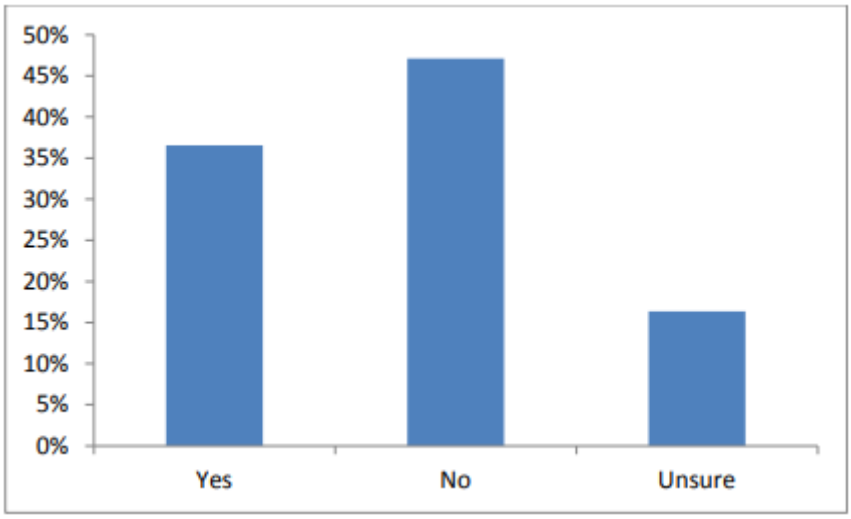
[12] Denniss et al (2016) *Never gonna dig you up! Modelling the economic impacts of a moratorium on new coal mines,* https://www.tai.org.au/sites/default/files/P198%20Never%20gonna%20dig%20you%20up%20FINAL.1.pdf

[13] Walters (2016) *The hole truth: The mess coal companies plan to leave in NSW,* http://downloads.erinsights.com/reports/the_hole_truth_LR.pdf

(9%).[14] Mining companies often source inputs from local suppliers, making them an important local economic actor.

Within communities like these is both support for and opposition against the coal industry; the industry has negative impacts on environment and health but provides jobs and other local benefits. This division was highlighted in 2014 research by The Australia Institute. Figure 7 below shows the local attitudes towards this trade off:

Figure 7: Do the economic benefits of coal mining outweigh effects on health, the environment and other industries?



Source: Campbell (2014) *Seeing through the dust: coal in the Hunter Valley economy*

This division is exacerbated by uncertainty around coal projects, both in relation to their long term future under climate policy and more short-to-medium term factors such as government assessment processes and coal prices. In addition to the lack of overall policy, a major contributor to uncertainty has been the lack of capacity within the NSW Department of Planning and Environment to assess the economic and financial aspects of coal projects, or to critically review the assessments commissioned by proponents.

Within the project approval process, coal project proponents are usually required to conduct some form of economic analysis to assess whether the project is in the interests of the NSW community. This analysis usually forms an appendix of the wider environmental impact statement (EIS) that is submitted to the Department. The key results of the economic assessment are usually reproduced at other points within the EIS, noted in the Department's assessment reports and often feature prominently in proponent's media and public relations materials.

[14] Campbell (2014) *Seeing through the dust: coal in the Hunter Valley economy*; ABS (2016) *Census of population and housing*, accessed through TableBuilder Basic

Almost invariably, these commissioned economic assessments overstate the financial viability of the project, job numbers and other potential benefits, while downplaying any environmental or social costs. Perhaps the most outstanding example of this tendency was the economic assessment of Centennial Coal's Angus Place mine. In response to submissions critical of the project's assessment, Centennial's consultants wrote:

> It should also be noted that in relation to the Angus Place Colliery, the mine has operated continuously since 1979. [There has been substantial] volatility in thermal coal prices over a 30-year period. As noted, this volatility has not affected continuation of mining at Angus Place Colliery. Centennial Coal submits that this would amply establish the viability of continued operation of the mine… Centennial Coal's extensive community consultation programs have not produced any material questioning the operational viability of Angus Place or other Centennial Coal mines operating in the area.[15]

This claim of Angus Place's long-term financial viability was published on 24 September 2014. Just one month later Centennial announced the mine would close.[16] It has been in mothballed in 'care and maintenance' ever since.[17] Jobs were lost despite Centennial's claims, adding to divisions in the local community.

Another example was the Cobbora Coal Project. The economic assessment commissioned by the state-owned proponents claimed net benefits of around $2 billion.[18] NSW Treasury by contrast wrote that the "total loss to the Government, if arrangements are unchanged, would be in excess of $1.5 billion."[19] Despite Treasury's warning, the Department of Planning recommended approval, which was later given by Planning Assessment Commission chair Gabrielle Kibble.

The Cobbora project had bought up substantial land holdings from family farmers, many of whom left the district, creating difficulties for the local community of Dunnedo. As a result, there was considerable local support for the project in the hope it would bring jobs and

[15] AIGIS Group (2014) *Angus Place Colliery Extension Project: Response to submission by The Australia Institute*

[16] Pearce (2014) *Another coal mining blow for Lithgow: Angus Place mothballed*, https://www.abc.net.au/news/2014-10-29/another-coal-mining-blow-for-lithgow3a-angus-place-mothballed/5850380

[17] Centennial (2019) *Angus Place*, https://www.centennialcoal.com.au/Operations/OperationsList/Angus-Place

[18] Gillespie Economics (2012) *Cobbora Coal Project Economic Assessment*

[19] NSW Treasury (2013) *Budget Statement 2013-14,* Chapter 9 Public Trading Enterprises

people back to the area. However, the project was never financially viable and attempts to sell it to a private operator were not successful.[20]

These are not isolated examples. Each time the approval of coal projects have been challenged in the NSW Land and Environment Court, the economic assessments of the projects have been heavily criticised:

- The community of Bulga won its case against Rio Tinto's Mount Thorley-Warkworth mine, arguing that proponent claims of 45,000 jobs created were wildly exaggerated, with actual job creation from the extension project being close to zero.[21]
- Yancoal's Ashton SE Open Cut project entirely discarded its EIS economic assessment and commissioned new analysis in trying to defend against community opponents' ultimately "showstopping" legal victory.[22]
- The judgement in the Rocky Hill court case found the economic benefits of the project were "uncertain and in any event substantially overstated".[23]

After a "scathing" review of the economic assessment of the Wallarah 2 coal project, then Planning Minister Pru Goward undertook to strengthen the Department's economic credentials.[24] However, instead of implementing changes that would increase the Department's ability to scrutinise coal consultant's assessments, the Department consulted with the coal industry and its consultants well before concerned community groups even knew a review was taking place. A long process of revising the NSW Guidelines was undertaken, but the revised guidelines were heavily influenced by the coal industry and the very consultants the guidelines were meant to guide.[25]

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[20] Macdonald-Smith (2014) *Weak coal market leaves Cobbora in NSW state hands*, https://www.smh.com.au/business/companies/weak-coal-market-leaves-cobbora-in-nsw-state-hands-20141222-12c8wy.html; Ferguson (2017) *Failed NSW Government mine land sales bring in $73m*, https://www.abc.net.au/news/2017-11-02/cobbora-sold/9111724

[21] Martin (2013) *Rio fails basic maths at the coalface,* https://www.smh.com.au/business/rio-fails-basic-maths-at-the-coalface-20130421-2i8b4.html

[22] Ray (2014) *Win for residents as Wendy Bowman locks gate on Ashton's Camberwell mine expansion*, https://www.newcastleherald.com.au/story/2779384/locking-the-gate-on-mine-expansion/

[23] *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7, https://www.caselaw.nsw.gov.au/decision/5c59012ce4b02a5a800be47f

[24] McKenny and Whitbourn (2014) *Mining assessments to be beefed up after scathing review*, https://www.smh.com.au/national/nsw/mining-assessments-to-be-beefed-up-after-scathing-review-20140616-zs9sd.html

[25] Campbell (2015) *Coal industry writing the NSW Govt's rules on economics*, https://www.theaustralian.com.au/business/business-spectator/news-story/fa754fbc0db2bd3bd14153a2647580fe; McCarthy (2015) *Critics claim coal industry 'writing its own rules' in NSW*, https://www.newcastleherald.com.au/story/3280198/coal-industry-writing-its-own-rules-in-nsw/

Affected communities and the wider NSW public can have little faith in the Department's scrutiny of the economics of coal projects. Parts of the Department appear to have been captured by the industry they are supposed to regulate.

As the coal industry grapples with its long-term future, the incentive is for each project proponent to get as much new capacity approved as quickly as possible and either into production, or sold to another owner. The race is on to maximise the value of these mines before global climate policy and renewable energy technology render them stranded assets.

Many communities are being affected by the coal industry's rush for project approval and the Department's reluctance or inability to scrutinize proponents' claims. Examples of communities opposing new coal mines with dubious financial and economic claims include:

- The Bylong Coal Project, proposed by Korean company Kepco. Located in the Bylong Valley and affecting prime agricultural land, this project has been long opposed by many in the local community who object to a new mine in currently unmined valley.[26]
- The Hume Coal Project in the NSW Southern Highlands, proposed by Korean company Posco. Straddling the Hume, the project proposes to use extremely high cost and untested methods of mining in order to appease concerns around impacts on groundwater resources crucial to local industries. The project is either very high cost, and therefore likely unviable, or will impact severely on these groundwater resources.[27]
- The Wallarah 2 project near Wyong on the Central Coast, proposed by Korean company Kores. Also risking local water resources, the net benefits of this project were revised down by over $1 billion following submissions pointing out the overestimates in commissioned analysis.[28]
- The Watermark mine, proposed by Chinese coal giant Shenhua on the Liverpool Plains. This project is strongly opposed by irrigators, who fear impacts on the

[26] Campbell (2018) *Submission to the NSW Independent Planning Commission: Bylong Coal Project,* https://www.tai.org.au/content/submission-nsw-independent-planning-commission-bylong-coal-project

[27] Campbell and Shields (2017) *Hume Coal Project: Submission on Environmental Impact Statement,* https://www.tai.org.au/content/hume-coal-project-submission-environmental-impact-statement; Campbell and McKeon (2017) *For Hume the bell tolls: Local economic impacts of the Hume Coal project*, https://www.tai.org.au/sites/default/files/P226%20For%20Hume%20the%20bell%20tolls%20-%20Southern%20Highlands%20business%20case%20studies%20FINAL.pdf

[28] Campbell and Shields (2017) *Wallarah 2 Coal Project: Submission to Planning Assessment Commission*, https://www.tai.org.au/content/wallarah-2-coal-project-submission-planning-assessment-commission-0

area's very productive agriculture based on groundwater resources and black soils. A Department officials noted "supportively" in correspondence that "approval of the Project will firmly establish the Proponent (a subsidiary of the world's largest coal producer), into the fabric of the NSW coal industry."[29]

To summarise, parts of the NSW community are being disrupted and divided by export coal projects that are undesirable from a climate perspective and of dubious economic merit. The NSW policy of ever-expanding coal exports is adding to this disruption. Instead, a coordinated approach to coal production in NSW is required. A policy of no new coal mines would provide more certainty both to communities opposed to new coal projects and to communities that work in existing mines that would then be more likely to operate consistently to the end of their approvals.

NSW can learn from the experience of other coal regions to transition to a lower carbon economy. Germany's Ruhr region and Limburg in the Netherlands have both managed relatively successful transitions from coal to other industries.[30] Victoria's Latrobe Valley Authority may also have valuable insights for this inquiry.[31]

NSW COAL EXPORTS AND NATIONAL CONSIDERATIONS

Coal exports have become a major political issue in Australia, with debate over the Adani Carmichael project and the Galilee Basin featuring prominently in recent federal and state elections. While these mines are proposed for Queensland, they would have significant impacts on the NSW export coal industry.

The Adani project is approved to produce up to 60 Mtpa. Other projects in the Galilee Basin could see total supply to the traded thermal coal market of over 200 Mtpa. Such an expansion would represent 20% of existing market supply, reducing prices substantially. Price impacts could be particularly severe if world coal demand declines as modelled by the IEA under the Paris Agreement.

[29] Correspondence between Director Mining and Industry Projects David Kitto and Deputy Secretary of then Division of Resources and Energy Kylie Hargreaves.

[30] Sheldon et al (2018) *The Ruhr or Appalachia? Deciding the future of Australia's coal power workers and communities*, https://me.cfmeu.org.au/sites/me.cfmeu.org.au/files/uploads/Campaign%20Materials/RuhrorAppalachia_Report_final.pdf

[31] Latrobe Valley Authority (2019) Latrobe Valley Authority, https://lva.vic.gov.au/

This would have a serious impact on the viability of existing NSW coal mines. Mines such as the smaller mines around Lithgow would face major challenges in such circumstances.

Realising the implications of the Galilee Basin, NSW industry players have voiced opposition to its development, and particularly to the subsidies on offer to Adani. Glencore, one of the largest operators in the Hunter Valley has warned that Galilee Basin development would come at the expense of existing operations.[32]

The Port of Newcastle has criticized plans for Galilee Basin development, commissioning well-known coal analysts Wood Mackenzie to model the impacts on its client mines. Key findings include:

- Ten new mining projects or mine expansions in the NSW Hunter Valley would be displaced by the Galilee Basin output and shelved or delayed
- Hunter Valley thermal coal output would fall by some 86 million tonnes, or 37 per cent.[33]

Glencore, the Port of Newcastle and Wood Mackenzie's concerns have been echoed by coal region MPs such as now Shadow Minister for Resources Joel Fitzgibbon, who described the Port' concerns as "absolutely correct", adding:

> "Adani should be able to stand on its own two feet and any government subsidisation of the project will be a blow to the Hunter region."[34]

Australia Institute research has estimated some of the potential economic impacts on NSW from Galilee Basin development:

- Decline in royalty revenue of over $10 billion to 2035.[35]
- Employment reduction of 9,100 in the Hunter Valley.[36]

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[32] Robins (2015) *Glencore warns on taxpayer upport for new coal projects*, https://www.smh.com.au/business/companies/glencore-warns-on-taxpayer-support-for-new-coal-projects-20151007-gk3h5y.html

[33] Long (2017) *Galilee Basin mines will slash coal output, jobs elsewhere, Wood Mackenzie says*, https://www.abc.net.au/news/2017-07-06/galilee-basin-mining-project-will-reduce-coal-output:-research/8682164

[34] McCarthy (2017) *Port of Newcastle executive under fire for breaking ranks with mining industry over Adani*, https://www.newcastleherald.com.au/story/4626993/adani-threatens-hunter-jobs/

[35] Campbell (2017) *Royalty flush II: Risks to NSW coal royalties from Adani and Galilee Basin development* ,https://www.tai.org.au/sites/default/files/P425%20Royalty%20Flush%20II%20FINAL.1.pdf

[36] Murray et al (2018) *The impact of Galilee Basin development on employment in existing coal regions*, https://www.tai.org.au/content/impact-galilee-basin-development-employment-existing-coal-regions

Despite the range of commentators suggesting that the Galilee Basin represents a risk to the NSW industry, former Minister for Resources Don Harwin is "comfortable and is not concerned about ongoing coal exports." Mr Harwin's confidence is based on the relative qualities of NSW and Queensland coal:

> The coal within the Adani Carmichael coalmine has targeted production of approximately 25 per cent ash content, representing a much lower value coal than that of New South Wales export quality thermal coal, with less than 15 per cent ash content. The quality of coal from the Adani Carmichael coalmine represents a market segment that generally constitutes less than 3 to 5 per cent of exports of coal from New South Wales.

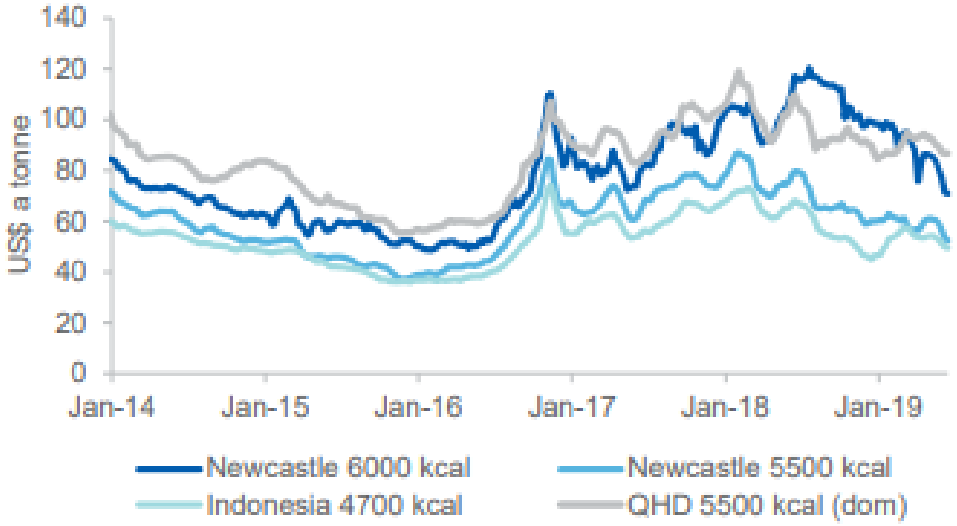
While Mr Harwin's estimates of coal specifications are in line with industry estimates, his 'comfort' is misplaced. Most grades of thermal coal can be substituted for one another, and the widespread practice of blending coal from different mines to produce desired final specifications deepens the substitutability of different coal grades. The Oxford Handbook of Energy and Society states:

> Different coals are differentially efficient in generating heat and electricity, but all types of coal can be burned to generate electricity. The easy substitutability of thermal coals has fostered competition between firms and coal-extracting countries.[37]

The substitutability of coal types means that although lower grade coal receives a lower price than higher grades, the prices for various coal grades move together over time as shown in Figure 8 below:

[37] Davidson and Gross (2018) *The Oxford Handbook of Energy and Society, p119.* Oxford University Press.

Figure 8: Prices for different thermal coal products



Source: Department of Industry, Innovation and Science (2019) *Resources and Energy Quarterly*, p44, June 2019,

Figure 8 shows different coal in different locations and of different grades measured in terms of energy content per kilogram (kcal/kg). While differences sometimes open up between these commodities, they largely move in unison. An increase in lower grade coal production (such as Adani coal) will not only push down lower grade coal prices but also drag down prices for higher grade coal produced by NSW mines.

Expansions in thermal coal supply are not in the interests of NSW and will exacerbate the existing tensions at a community level. The NSW Government should be opposing new coal developments in Queensland on climate and economic grounds. While most discussion is of new coal projects in Queensland, proposals exist in other states such as Western Australia and Tasmania.[38]

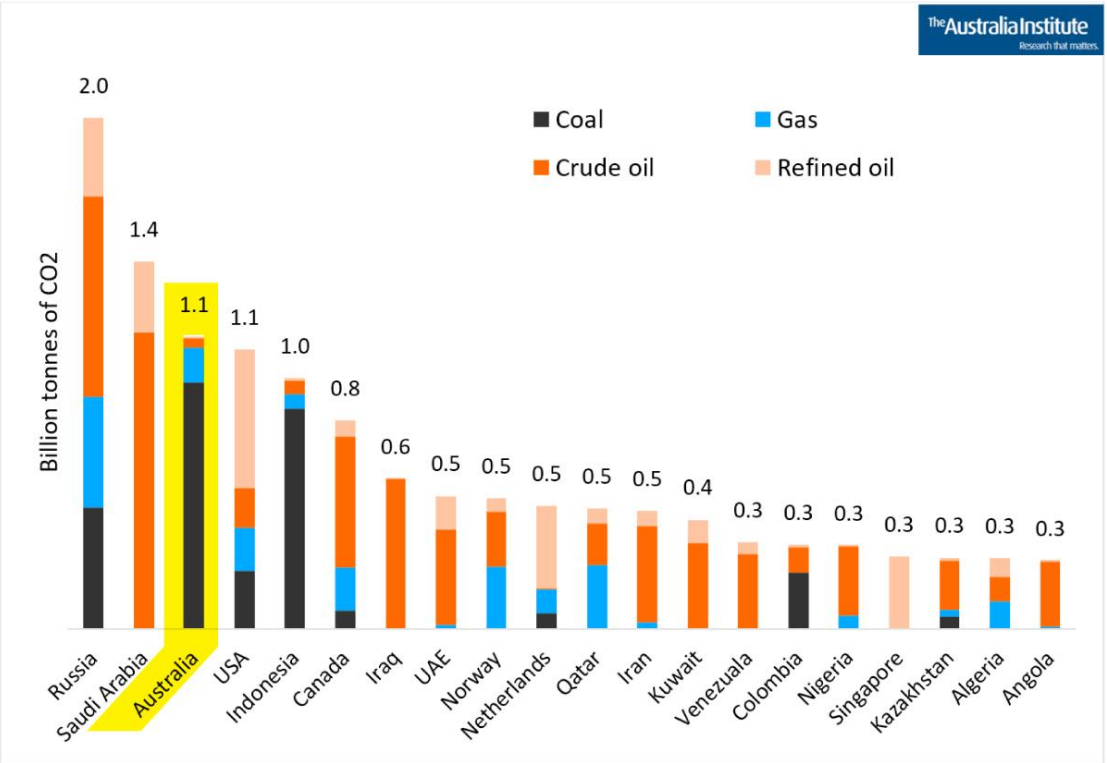
A moratorium on new coal mines would position NSW well to influence the policies of other states and international exporters such as Indonesia.

[38] Rey Resources (2017) *Coal*, https://reyresources.com/coal/; HRCM (2017) *Operations*, https://hardrockcoal.com/operations/

INTERNATIONAL IMPACTS

Australia is the third largest exporter of greenhouse gases in the world, due to coal and gas exports.[39] Only Russia and Saudi Arabia export more pollution, shown in Figure 9 below:

Figure 9: World's biggest fossil fuel exporters, CO_2 Gt potential of exports



Source: Swann (2019) High carbon from a land downunder

NSW coal exports are a significant part of this dubious distinction. As discussed above, NSW coal exports make up a significant share of the world traded coal market, and an even greater share of thermal coal trade in the Asia-Pacific region. The actions of major exporters like NSW and Queensland have an influence on international energy markets, as shown by the study by Wood Mackenzie for the Port of Newcastle.

The current coal price and expectations of future prices influence energy investment decisions. Investments in new coal fired power stations, which would lock in emissions for decades, are being made in our region, influenced by NSW coal policy, or lack thereof. A NSW coal export policy that acknowledges the need for transition to a

[39] Swann (2019) *High carbon from a land downunder*: *Quantifying CO2 from Australia's fossil fuel mining and exports*, https://www.tai.org.au/content/high-carbon-land-down-under-quantifying-co2-australia-s-fossil-fuel-mining-and-exports

lower-coal future would provide useful information about future coal supply for these investors.

A move in this direction has already been made by the NSW Independent Planning Commission, which has imposed a condition on the approval of the United Wambo coal project around scope 3 emissions – the emissions from combustion of the produced coal. The Commission requires the project to:

> The Applicant must prepare an Export Management Plan for the development to the satisfaction of the Planning Secretary. This plan must set out protocols that require the Applicant to use all reasonable and feasible measures to ensure that any coal extracted from the development that is to be exported from Australia, is only exported to countries that are:
>
> > a) parties to the Paris Agreement within the United Nations Framework Convention on Climate Change; or
> > b) countries that the Planning Secretary considers have policies for reducing greenhouse gas emissions that would otherwise be similar to policies that would be required of that country if it were a party to the Agreement at (a) above;
>
> as at the date of sale. The purpose of the Export Management Plan is to ensure that all reasonable and feasible measures are adopted by the Applicant to minimise greenhouse gas emissions identified as Scope 3 emissions in the EIS to the greatest extent practicable.[40]

This condition alone will have little impact on emissions, as any buyers of United Wambo coal will almost certainly meet these conditions. However, it does provide a beginning to NSW taking responsibility for the global impacts of the coal it exports to the world. The condition could easily be strengthened to consider not just whether customers are a party to the Paris Agreement, but whether they have policies in place that are consistent or aligned with the global goals of it. Alternative wording could restrict exports to countries that are:

- Signatories to the Paris Agreement with an existing Nationally Determined Contributions (NDC) consistent with the goal of the Paris Agreement, of keeping global warming well below 2 degrees; or
- has policies in place to phase out use of thermal coal and/or achieve net zero carbon emissions by 2050.

[40] IPC (2019) United Wambo Statement of reasons for decision, https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2018/11/united-wambo-open-cut-coal-mine-project-ssd-7142/determination/uwjv--sor--final.pdf

While restrictions on which countries NSW coal can be sold to may have some impact reducing emissions, a far more effective solution would be a moratorium on new coal mines. As discussed in previous sections, this would allow existing mines to continue operating, minimising community impacts, and put upward pressure on coal prices. This both discourages use of coal and assists with the financial viability of existing coal mines to assist with transition in affected communities.

Another international benefit of a moratorium on new mines in NSW would be improving Australia's diplomatic relations in the Pacific. Pacific leaders have been calling for Australia and other countries to stop approving new coal mines since at least the 2015 Suva Declaration.[41] The recent Pacific Island Forum meeting saw considerable tension on this issue, with Australia described as an "abusive relative".[42]

[41] PIDF (2015) Suva declaration on climate change, http://pacificidf.org/wp-content/uploads/2013/06/PACIFIC-ISLAND-DEVELOPMENT-FORUM-SUVA-DECLARATION-ON-CLIMATE-CHANGE.v2.pdf

[42] Hannaford (2019) Australia acting like an 'abusive relative' in the Pacific: former Kiribati president, https://www.canberratimes.com.au/story/6343028/australia-acting-like-an-abusive-relative-in-the-pacific/

Coal-fired power in NSW

The NSW thermal generation fleet is old and unreliable. In 2018 they suffered 27 major breakdowns, each one of them removing hundreds of megawatts of capacity suddenly and unexpectedly from the system. With 27 breakdowns in 2018 that is equivalent to more than one breakdown every fortnight throughout the year. This information has been collect by the Australia Institute's Gas and Coal Watch.[43]

Gas and coal plants are more vulnerable in the heat and this becomes worse as they age. Hot days also increase demand for power. Compounding this problem is climate change bringing more extremely hot days. The result is that a grid dominated by aging fossil fuel generators that will become increasingly vulnerable to major breakdowns. It is not just old coal plants that are breaking down, but also the "state-of-the-art" Tallawarra gas plant that is less than 10 years old. It broke down three times in 2018.

Electricity generation is dominated by fossil fuels in NSW. In 2018 it made up 74 per cent of generation with black coal making up 60 per cent and gas making up 14 per cent. NSW reliance on coal, at 60 per cent, is higher than the NEM average of 48 per cent. As the world warms and coal power plants age, this will make NSW coal generated electricity even more unreliable in the future.

Table 1 below shows the five coal power plants in NSW and their number of breakdowns in 2018, their capacity and their breakdowns per gigawatt (GW) of capacity. The two oldest power plants, Liddell and Vales Point, had far more breakdowns per GW of capacity than the other three coal power plants. They are also the two power plants that federal politicians have proposed extending beyond their normal operating life.

Table 1 – Coal power station breakdowns, NSW 2018

Name	Breakdowns	Capacity (MW)	Breakdowns per GW capacity
Bayswater	3	2,640	1.1
Eraring	4	2,880	1.4
Liddell	11	2,000	5.5
Mt Piper	1	1,320	0.8
Vales Point	5	1,320	3.8
Total	**21**	**10,160**	

[43] Information about the 2018 NSW breakdowns can be found in Ogge M & Browne B (2019) *The heat goes on: Breakdowns at gas and coal plants in NSW, 2018*, The Australia Institute, available at <https://www.tai.org.au/content/heat-goes-breakdowns-gas-and-coal-plants-nsw-2018>

In late 2017, then Prime Minister Malcolm Turnbull called on AGL to keep the aging Liddell Power Station open.[44] Then Treasurer Scott Morrison, now Prime Minister, had said earlier that it was "very important" to keep Liddell open.[45] Former Prime Minister Tony Abbott said that the government should compulsorily acquire Liddell as part of plans to keep it open.[46] After the change in Prime Minister to Scott Morrison, new Energy Minister Angus Taylor warned that the Federal Government might force AGL to sell Liddell to prevent its closure.[47] Despite changes in its executive, AGL has consistently said that it will close Liddell in 2022.[48]

Owner Delta Electricity is considering extending the life of Vales Point by 20 years, from its current closure date of 2029 to the early 2030s or even 2049.[49] Energy insiders speculate that it would be the likely target of a government underwriting proposal.[50]

A focus on extending NSW's oldest as most unreliable coal fired power stations are unlikely to make the grid more reliable. Given a future warmer world with more extreme hot days, the Government should focus on other more reliable, renewable forms of generation.

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[44] Yaxley and Lowrey (2017) *Malcolm Turnbull in talks with AGL to keep Liddell coal power station operating beyond 2022,* https://www.abc.net.au/news/2017-09-05/turnbull-in-talks-with-agl-keep-liddell-coal-power-station-open/8874874

[45] Slezak and Knaus (2017) *Liddell power station: five extra years could give government $1bn rehab bill,* https://www.theguardian.com/australia-news/2017/sep/08/liddell-power-station-five-extra-years-could-give-government-1bn-rehab-bill; Grattan (2017) *Government leans on AGL over Liddell ahead of meeting,* https://theconversation.com/government-leans-on-agl-over-liddell-ahead-of-meeting-83778

[46] Murphy (2018) *AGL rejects Alinta's bid for Liddell power plant, confirming its closure,* https://www.theguardian.com/australia-news/2018/may/21/agl-rejects-alintas-bid-for-liddell-power-plant-confirming-its-closure

[47] McCarthy (2018) *The power station offloaded by the NSW Government for $1 million suddenly has a future,* https://www.theherald.com.au/story/5632203/powering-on-delta-electricitys-plan-for-a-70-year-old-vales-point-power-station/

[48] Latimer (2018) *AGL says it remains committed to closing Liddell power plant in 2022,* https://www.smh.com.au/business/companies/agl-tells-shareholders-it-will-close-liddell-power-plant-in-2022-20180926-p50633.html

[49] McCarthy (2018) *The power station offloaded by the NSW Government for $1 million suddenly has a future,* https://www.theherald.com.au/story/5632203/powering-on-delta-electricitys-plan-for-a-70-year-old-vales-point-power-station/; Latimer (2018) *Power grab: Rich lister eyes partner's share in coal power station,* https://www.smh.com.au/business/companies/power-grab-rich-lister-eyes-partner-s-share-in-coal-power-station-20180703-p4zp7r.html

[50] Murphy (2018) *Underwriting coal power exposes taxpayers to billions, industry group says,* https://www.theguardian.com/australia-news/2018/nov/16/underwriting-coal-power-exposes-taxpayers-to-billions-industry-group-says

COAL INNOVATION NSW FUND

The Government has committed significant funds to further develop coal generation. Coal Innovation NSW Fund has been given $100 million to reduce NSW's carbon emissions by supporting "research, development and the demonstration of low emissions coal technologies for future commercial application." It also aims to "increase public awareness of the importance of low emissions coal technologies".[51]

This has included carbon capture and storage (CCS) projects and a grant program for low emissions coal technology research. It has also included funding of the Future of NSW Coal Fired Electricity Generation Industry Study which "aims to determine the options to provide a sustainable, safe, reliable and competitive form of electricity generation for NSW, whilst reducing carbon dioxide emissions."[52]

This study, which is yet to be released, has cost $788,332 of taxpayer money over the three years from 2015-16 to 2017-18.[53] With all the current evidence pointing to coal being an unreliable and expensive form of power it will be interesting to see what, if any, recommendations the study makes. The inquiry should encourage the Government to release the study immediately.

Despite operating for a decade, the Coal Innovation NSW Fund has a current balance of over $80 million. It earns more than $1 million each year in interest revenue. Given its inability to complete projects such as the Future of NSW Coal Fired Electricity Generation Industry Study, consideration should be given to winding up the fund and redirecting its resources towards projects that will assist with a transition to renewable energy in NSW.

[51] NSW Government, *Future of NSW coal fired power generation*, available at <https://www.resourcesandgeoscience.nsw.gov.au/investors/coal-innovation-nsw/future-of-nsw-coal-fired-power-generation>

[52] NSW Government, *Future of NSW coal fired power generation*, available at <https://www.resourcesandgeoscience.nsw.gov.au/investors/coal-innovation-nsw/future-of-nsw-coal-fired-power-generation>

[53] Coal innovation fund NSW annual reports https://www.resourcesandgeoscience.nsw.gov.au/investors/coal-innovation-nsw/about-coal-innovation-nsw

Conclusion

As bushfires rage in September and Murray Darling Basin towns prepare to go without drinking water supplies, it is clear that NSW needs to prepare for a future with a different climate. The state also needs to consider how it can reduce its emissions and those it can influence globally.

Fortunately, there is much the state can do. NSW is poised to become the largest generator of renewable energy in the country in absolute terms.[54] A policy to guide coal production, such as a moratorium on new mines, would provide certainty to local communities and project proponents. This would also place upward pressure on coal prices, reducing coal use overseas and assisting the state's existing mines with an orderly transition to a low-coal future.

This inquiry has an opportunity to assist with these urgent changes.

[54] Saddler (2019) National Energy Emissions Audit Electricity Update July 2019, https://www.tai.org.au/content/national-energy-emissions-audit-july-2019