Royalty flush II

Risks to NSW coal royalties from Adani and Galilee Basin development

Coal industry analysts estimate the development of Queensland's Galilee Basin will reduce coal prices by 25% and reduce NSW coal exports by 80 million tonnes per year. This would reduce NSW coal royalty revenue by over $10 billion to 2035. The NSW government and coal industry should oppose the subsidisation of the Galilee Basin.

Discussion paper

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Summary

Resource analysts Wood Mackenzie were commissioned by the Port of Newcastle to estimate the impact of Galilee Basin mines on the coal price and volumes produced by mines in the Hunter Valley and parts of Queensland.

Based on Wood Mackenzie's analysis, the development of the Galilee Basin will reduce the value of NSW coal royalties by AUD$10.2 billion to 2035.

Without the development of the Galilee Basin, Wood Mackenzie estimate NSW coal exports would increase from 170 million tonnes per annum (Mtpa) to 230 Mtpa in 2035. By contrast, if the Galilee Basin produces 150 Mtpa, Wood Mackenzie estimate throughput at Port of Newcastle will decline to under 150 Mtpa in 2035.

Wood Mackenzie see the price of coal increasing from current levels to USD$89 per tonne by the late 2020s if Galilee Basin is not developed. With Galilee Basin development prices are forced to under USD$60 in the mid-2020s before recovering to USD$63 per tonne in 2035.

In present value terms this represents reductions in NSW royalty revenue of between AUD$2.8 and 7.7 billion depending on the discount rate:

Present value of NSW royalty revenue reduction with Galilee Basin development

Discount rate	Present value reduction in royalty revenue (AUD$millions)
2%	-7,783
4%	-5,977
7%	-4,085
10%	-2,842

The NSW government hopes that the higher coal quality of coal in NSW relative to that Adani hope to produce this substitution from occurring. This is contradicted by Wood Mackenzie's analysis and market data that shows that price changes in one grade of coal are almost immediately passed on to other grades.

The NSW Government and NSW coal industry should strongly oppose the development of the Galilee Basin, particularly with subsidy from federal and Queensland state governments.

Introduction

Basic economic theory suggests that an increase in supply reduces the price of a commodity. Lower prices can force some suppliers out of the market.

Given this basic economics, The Australia Institute has long argued that government assistance to the Queensland coal industry represents a threat to the New South Wales (NSW) coal industry.[1] Federal and Queensland State Government plans to subsidise large new thermal coal mines in the Galilee Basin, such as Adani's Carmichael proposal, would seem almost certain to affect NSW thermal coal producers in the Hunter Valley and beyond.

Despite this logic, the NSW Minister for resources says:

> *The New South Wales Government is comfortable and is not concerned about ongoing coal exports.*[2]

The Minister's reasoning echoes NSW Treasury's answer to a Question on Notice:

> *1. Will the Adani mining development in the Galilee Basin affect:*
> *a. New South Wales coal exports? If so, how?*
>
> *Answer -*
>
> *1. NSW produces high quality coal that is exported mainly to Japan, Korea, China and Taiwan. The NSW Government does not expect a significant impact on the traded coal prices or NSW coal production if the Adani project is approved.*[3]

NSW Treasury appears to have done no quantitative or other analysis to support this conclusion neither has the Federal Department of Industry's Office of the Chief

[1] See for example Campbell (2014) *NSW miners are fighting the cane toad factor*, http://www.dailytelegraph.com.au/news/opinion/nsw-miners-are-fighting-the-cane-toad-factor/news-story/897fbe098ef105c940a87d1011cfbc61; Campbell (2015) *A week of failure and opportunity for the NSW Minerals Council*, https://www.australianmining.com.au/features/a-week-of-failure-and-opportunity-for-the-nsw-minerals-council-opinion/

[2] Harwin (2017) Adani Carmichael coalmine proposal impact, https://www.parliament.nsw.gov.au/Hansard/Pages/HansardResult.aspx#/docid/HANSARD-1820781676-73138/HANSARD-1820781676-73150

[3] Answer to Question on Notice from Jeremy Buckingham MLC, provided by Buckingham's office via email dated 7 April 2017.

Economist.[4] Surprisingly, the NSW Minerals Council has not engaged at all on this topic, stating initially:

> *We support a strong Australian coal industry that can compete with other coal-producing countries in the global market for coal. We expect the strong and growing demand for our NSW coal to continue for decades.*[5]

More surprising still, the NSW Minerals Council seems to support the subsidised Adani project:

> *Mr Galilee said there were huge knock-on export opportunities for NSW coal producers if the mine went ahead, and the strength of the sector lay in "maintaining strong long-term trading relations around the world".*
>
> *"If the Adani project is blocked for spurious reasons, we risk damaging that emerging trading relationship with India. And that puts the export opportunities for our NSW producers at risk as well."*[6]

The positions of the NSW Minister for Resources, NSW Treasury and NSW Minerals Council are in stark contrast to others in the coal industry such as Glencore, which stated in 2015:

> *Bringing on additional tonnes with the aid of taxpayer money would materially increase the risk to existing coal operations.*[7]
>
> *We are strong believers that if a project can't get away on its own economic merits, it shouldn't be developed.*[8]

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[4] Department of Industry, Innovation and Science (2017) Economics Legislation Committee ANSWERS TO QUESTIONS ON NOTICE Industry, Innovation and Science Portfolio 2016 - 2017 Additional Estimates 2 March 2017 QUESTION No.: AI-88, http://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/economicsctte/estimates/add1617/Industry/index

[5] McCarthy (2017) *Stephen Galilee's anti-coal protest comments on a Queensland mine raise questions about silence over Hunter impacts, say critics*, http://www.theherald.com.au/story/4407729/nsw-minerals-council-criticised-over-selective-mine-comments/

[6] McKenna and Kelly (2017) *Adani collapse would hurt trading relationships: minerals council*, http://www.theaustralian.com.au/national-affairs/state-politics/adani-collapse-would-hurt-trading-relationships-minerals-council/news-story/fb26e0ae3b453343d0e25b0638dbf36b

[7] Robbins (2015) *Glencore warns on taxpayer support for new coal projects*, http://www.smh.com.au/business/mining-and-resources/glencore-warns-on-taxpayer-support-for-new-coal-projects-20151007-gk3h5y.html

[8] Loussikian (2015) Glencore exec Peter Freyberg in swipe at 'unprofitable' Adani, http://www.theaustralian.com.au/business/mining-energy/glencore-exec-peter-freyberg-in-swipe-at-unprofitable-adani/news-story/d80ab3be3a7b5b1a77b1e07aebc0e5ae

Similar sentiments have been expressed by Queensland coal miners outside of the Galilee Basin, with Queensland Resource Council chief Ian Macfarlane stating:

> *It's a competitive world and some of our members see [a subsidised loan to Adani] as giving an advantage to one of their competitors…*[9]

In May 2017 the ABC reported confidential industry analysis that estimated the Adani project would reduce coal prices by $3.80 per tonne and reduce output through the Port of Newcastle by 11 million tonnes per year.[10]

Possibly in response to the ABC report, the Port of Newcastle commissioned well-known resource analysts, Wood Mackenzie to estimate the impact of the development of Galilee Basin mines on the Hunter Valley and parts of Queensland. The Wood Mackenzie analysis expects far greater impacts on the NSW coal industry than the earlier analysis. Under a scenario where the Galilee Basin produces 150 million tonnes per annum (Mtpa):

> *Hunter Valley thermal coal output would fall by some 86 million tonnes, or 37 per cent.*[11]

The Wood Mackenzie analysis does not estimate the impact of Galilee Basin development on NSW coal royalties. However, based on their estimates of impacts on NSW coal volume and price an estimate can be easily derived.

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[9] Probyn (2017) *Bill Shorten in bind over Adani coal mine*, http://www.abc.net.au/7.30/content/2017/s4652955.htm

[10] Long (2017) *Adani's Carmichael mine will overload coal market, cause global prices to fall, report shows*, http://www.abc.net.au/news/2017-05-09/adanis-carmichael-mine-will-cause-global-coal-price-drop-report/8505564

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

Wood Mackenzie scenarios

Without the development of the Galilee Basin, Wood Mackenzie estimate coal exports through the Port of Newcastle would increase from current levels of around 170 million tonnes per annum (Mtpa) to around 230 Mtpa in 2035. By contrast, if the Galilee Basin is subsidised into producing up to 150 Mtpa, Wood Mackenzie estimate throughput at Port of Newcastle will decline to under 150 Mtpa in 2035.

Wood Mackenzie see the price of coal from Newcastle increasing from current levels to USD$89 per tonne by the late 2020s if Galilee Basin is not developed. With Galilee Basin development prices are forced to under USD$60 in the mid-2020s before recovering to USD$63 per tonne in 2035.

To estimate the impact on NSW royalties, we assume that the current exchange rate of $1 USD = $1.31 AUD continues indefinitely.[12]

We also assume a royalty rate of 8%. In NSW royalty rates vary depending on the type of mine. Open cut mines attract an 8.2% rate, while underground is 7.2% and “deep underground” is 6.2%. As the bulk of NSW production is from open cut mines, with deep underground mines producing very little, the average rate is likely to be closer to 8.2% than 7.2%.

[12] www.xe.com, accessed 12 July 2017. Inverse 1 AUD = 0.76 USD.

Table 1: Impact on NSW royalties under Wood Mackenzie Galilee Basin modelling scenarios

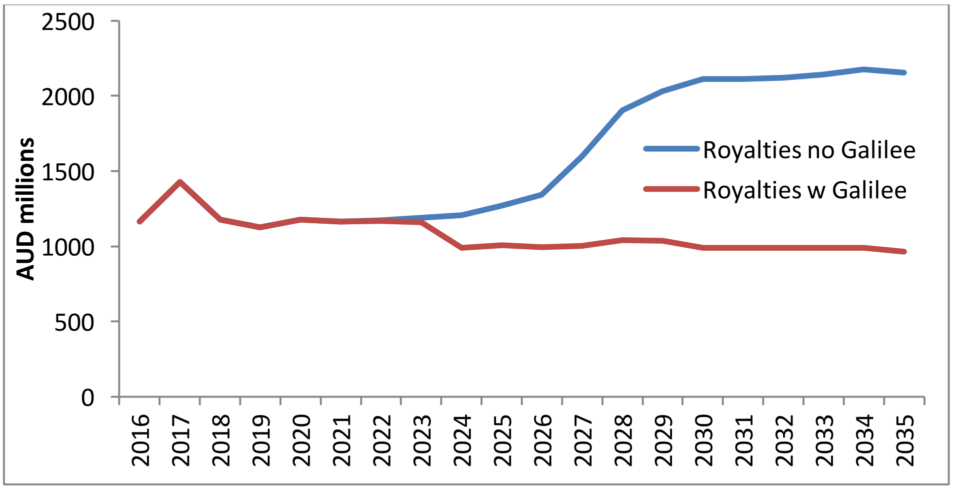
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Volume no Galilee (million tonnes	167	174	171	172	178	183	183	183	179	185	190	193	205	219	227	227	228	230	234	232
Price (USD/tonne)	66	79	66	63	63	61	61	62	65	65	67	79	89	89	89	89	89	89	89	89
Total coal revenue ($USD million)	11,107	13,638	11,236	10,742	11,229	11,087	11,170	11,334	11,518	12,111	12,810	15,250	18,152	19,402	20,161	20,170	20,253	20,440	20,775	20,553
Royalties at 8% (USD millions)	889	1,091	899	859	898	887	894	907	921	969	1,025	1,220	1,452	1,552	1,613	1,614	1,620	1,635	1,662	1,644
Volume w Galilee (million tonnes)	167	174	171	172	178	183	183	182	162	164	162	158	157	157	150	150	150	150	150	146
Price (USD/tonne)	66	79	66	63	63	61	61	61	58	58	58	60	63	63	63	63	63	63	63	63
Total coal revenue ($USD million)	11,107	13,638	11,236	10,742	11,229	11,087	11,152	11,056	9,429	9,597	9,497	9,546	9,922	9,881	9,451	9,458	9,458	9,458	9,458	9,182
Royalties at 8% (USD millions)	889	1,091	899	859	898	887	892	884	754	768	760	764	794	790	756	757	757	757	757	735
Royalty difference	-	-	-	-	-	-	-1	-22	-167	-201	-265	-456	-658	-762	-857	-857	-864	-879	-905	-910
AUD Royalty difference at current USD Exchange rate	-	-	-	-	-	-	-2	-29	-219	-264	-347	-598	-862	-998	- 1,122	- 1,123	- 1,131	- 1,151	- 1,186	- 1,192

Source: Wood Mackenzie (2017) Port of Newcastle throughput scenarios, TAI calculations.

Table 1 shows that under the Wood Mackenzie no Galilee scenario NSW coal export volumes increase from current levels to over 230 million tonnes per year. Prices are also expected to increase (in nominal terms) to nearly $USD90 per tonne. Accordingly, royalty revenue from exports will increase to over $USD1.6 billion (approx. $AUD2 billion) per year by 2030.

By contrast Wood Mackenzie's Galilee Basin development scenario sees exports through the Port of Newcastle decline to 150 million tonnes per year as NSW suppliers are forced out of (or prevented from entering) the market through the 2020s following the beginning of Galilee Basin production in 2023. This also forces prices down by around 25%, to approximately $USD60/t. This sees NSW royalty revenue fall to under $USD800 million (approx. $AUD1 billion) per year after 2023. The difference in royalty revenue between the two scenarios increases gradually as Galilee Basin production ramps up and NSW production is displaced. In difference reaches $1 billion per year in 2030 increasing to almost $1.2 billion per year in 2035 in nominal Australian dollar terms at current exchange rates. The different estimates of royalty revenue are graphed in Figure 1 below:

Figure 1 NSW coal export royalty revenue with and without Galilee Basin



Source: Wood Mackenzie, TAI calculations, exchange rate from xe.com 12 July

The total reduction in royalty revenue in the period modelled by Wood Mackenzie is $AUD10,224 million. In present value terms the reduction in royalty revenue varies with the discount rate, as shown in Table 2 below:

Table 2: Present value of NSW royalty revenue reduction with Galilee Basin

Discount rate	Present value reduction in royalty revenue (AUD$millions)
2%	-7,783
4%	-5,977
7%	-4,085
10%	-2,842

Discussion

COAL QUALITY

Some supporters of the NSW coal industry have claimed that NSW exports will not be affected by the Galilee Basin due to NSW coal being of higher quality:

> *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.*[13]

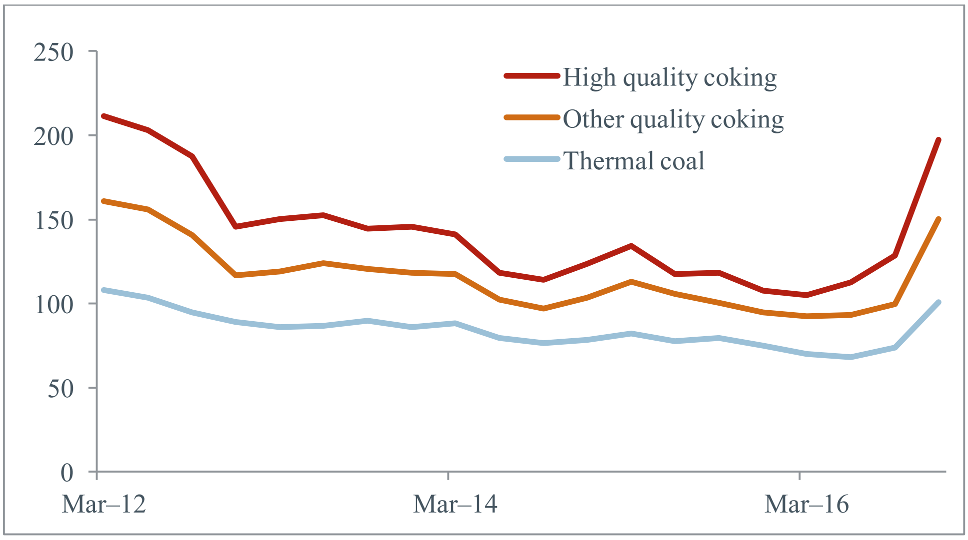
The Adani proposal and most Galilee Basin coal would generally produce lower quality coal than NSW benchmarks. However, it is important to note that Wood Mackenzie's analysis is "energy adjusted", taking into account the differences in energy value, although perhaps not all different aspects of coal specifications.

In the short term coal quality is likely to be an important determinant of who buys what types of coal. However, beyond short run considerations, coal buyers and sellers often blend different grades of coal depending on what is available and what is required. Buyers can adjust the quality of coal they use in the medium term and over the longer term, power stations are built or refitted to use wider grades of coal.

All types of coal are to some extent substitutes for each other. This can be seen from the way prices for different grades of coal move in very similar patterns, as shown in Figure 2 below:

[13] Harwin (2017) *Adani Carmichael Coalmine proposal impact*, https://www.parliament.nsw.gov.au/Hansard/Pages/HansardResult.aspx#/docid/HANSARD-1820781676-73138/HANSARD-1820781676-73150

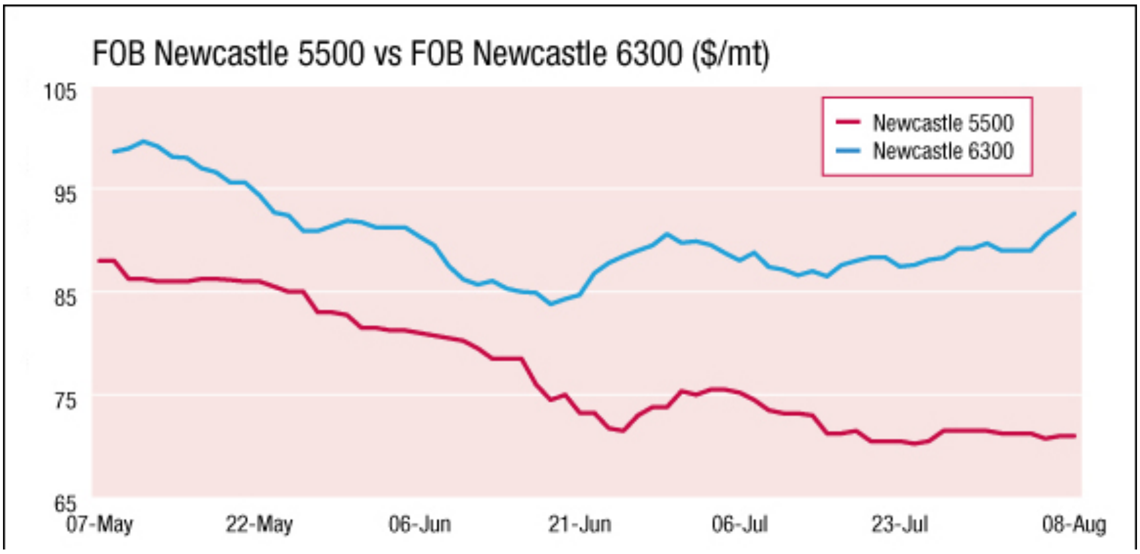
Figure 2: High quality coking, other quality coking and thermal coal prices



Source: Department of Industry (2017) Resource and Energy Quarterly

The qualities of coal in Figure 2 differ far more than NSW thermal coal differs from Galilee Basin coal, yet it is clear that all three are affected by the same trends and that a major change in the market for one affects the others. This can be further seen in Figure 3 below, which plots the price of Newcastle's lower grade and higher grade benchmark coals:

Figure 3: Price of lower and higher grade thermal coal



Source: Cooper (2012) Newcastle 5500 coal versus FOB Newcastle 6300: May 7 - August 8, 2012, https://www.platts.com/news-feature/2012/coal/coaldata/index

Note that Figure 3 plots these two prices on a much narrower range of prices and over months rather than years as in Figure 2. Between similar grades of thermal coal any difference in price movements is a topic of immediate interest for the coal industry due to the closeness of the substitution. Much of the source article for Figure Y discusses the increase in price for Newcastle 6300 at the end of the time series while Newcastle 5500 stays flat.

Based on the data shown in Figures 2 and 3 above, it is unlikely that the different specifications of NSW thermal coal from Galilee Basin coal will prevent significant impact on the prices received by NSW coal producers.

COMPARISON WITH ORIGINAL *ROYALTY FLUSH*

In April 2017 The Australia Institute published estimates of the impact of Galilee Basin development on NSW coal royalties.[14] Our methodology was different to that of Wood Mackenzie, being based on estimates of the relationships between the price, supply and demand of coal. We compared scenarios of no Galilee Basin development with scenarios involving development of:

- Only the Adani Carmichael project
- Adani's and GVK's projects
- Full development of Galilee Basin proposals, in total 300 Mtpa.

Our Adani and GVK scenario totals 120 Mtpa of new capacity. Our central estimate was that this new capacity would reduce coal prices by 7.5%, reducing NSW royalty revenue by AUD $96 million per year. With full Galilee Basin development, we estimated NSW royalty revenue would reduce by AUD$240 million per year. By contrast, Wood Mackenzie's modelling suggests 150 Mtpa would reduce NSW royalties by over $1 billion per year.

The key reason for this difference is Wood Mackenzie's model incorporates the effect of NSW production being forced out of the market due to lower prices, while our estimates assumed NSW mines would be able to continue to compete:

> *A key assumption in these estimates is that NSW continues to produce 200 million tonnes of coal each year, regardless of the change in price. In reality, some NSW mines will respond to lower prices by reducing production, going into 'care and maintenance' or closing permanently. This reduction in production would further reduce NSW coal royalty revenue.*

[14] Campbell (2017) Royalty flush: *Risks to NSW coal royalties from Adani and Galilee Basin development,* http://www.tai.org.au/sites/defualt/files/P384%20Royalty%20Flush%20-%20Risks%20to%20NSW%20coal%20from%20Adani.pdf

Wood Mackenzie's modelling anticipates that the impact of lowering coal price on royalties would be far less important than the reduced volume of coal that NSW producers would be able to provide at the prevailing coal price.

Conclusion

Basic economics shows that the development of the Galilee Basin represents a major threat for the NSW coal industry. Parts of the industry are starting to realise this threat, commissioning detailed analysis from well-known analysts such as Wood Mackenzie.

Other industry supporters are ignoring this logic and analysis. The NSW Resource Minister hopes that marginal differences in coal quality will protect NSW, while the NSW Minerals Council hopes that undefined "knock-on effects" will help NSW miners.

Hope is not a strategy. Unless they engage in this debate the minister and the Minerals Council will hurt the industry they claim to represent. While it will be politically difficult these parties need to oppose the subsidisation of the Galilee Basin to serve the interests of the NSW coal industry.