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Briefing Note: South Korea Shifting Further Away from Coal

Significant Implications for Australian Coal Exports

Summary

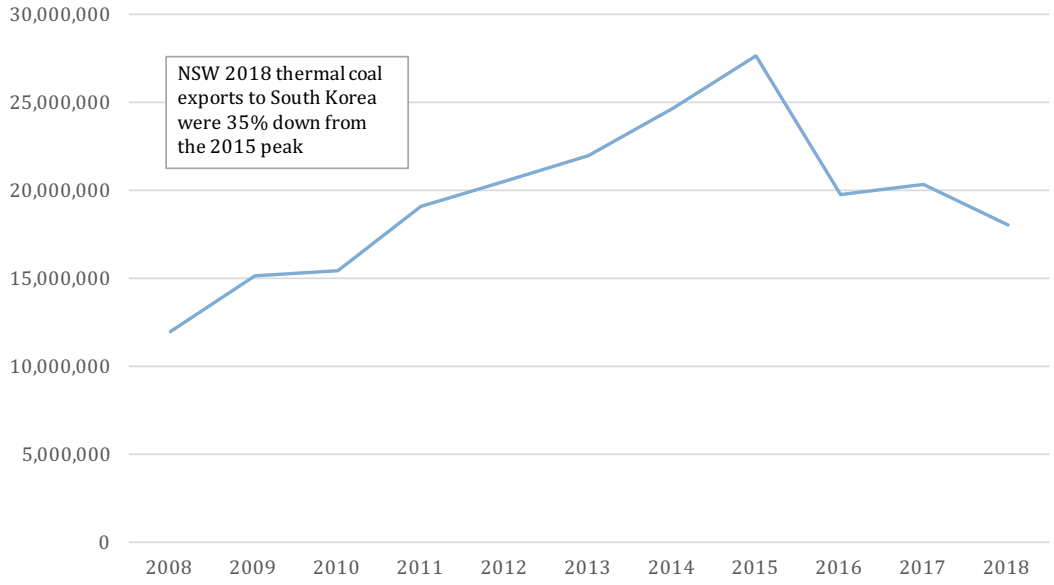
- The South Korean Ministry of Trade, Industry and Energy has proposed to increase the country's renewable energy ambition. The country is likely to now target 30-35% renewable energy by 2040, up from 8% now. The Ministry also stated it will "drastically" reduce coal-fired power generation by banning new coal plants and retiring old ones.

- Also this month, the government is raising the coal import tax a further 28% and cutting LNG import tax 75% in an effort to reduce reliance on coal. The coal tax will now be US$40/t. These moves come on top of those already taken in 2017-18 to shift South Korea away from coal.

- These new government moves further undermine the rationale for the Bylong thermal coal project in NSW. The Bylong project proponent is KEPCO, a South Korean government-owned entity.

- South Korea is one of NSW's four major thermal coal export destinations. The South Korean government's announcement further clouds the future of the NSW thermal coal sector. Exports from NSW to South Korea peaked in 2015 (Fig. 1).

Figure 1: NSW Thermal Coal Exports to South Korea (tonnes)



Source: DFAT STARS Database, based on ABS Cat No 5368.0, December 2018 data.

New Energy Master Plan

During a public hearing for South Korea's new energy master plan on 19th April, the Ministry of Trade, Industry and Energy announced that it would seek to significantly cut reliance on coal-fired power generation whilst shifting even more towards renewable energy. South Korea's energy master plan sets long-term energy policy and is renewed every five years.

Under the new draft plan, the government intends to increase the share of power output from renewable energy sources by up to 35% by 2040, up from around 8% currently.[1] The previous renewable energy target, set in 2017, was to reach 20% by 2030.

Park Jae-young, Director of the Ministry of Trade, Industry and Energy, stated that the role of coal-fired power is to be cut further. Driven by air pollution concerns as well as carbon emissions, the government will "drastically" cut power generation from coal by banning new coal-fired power plants and closing old ones.[2]

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In addition, the government will favour the use of Liquefied Natural Gas (LNG) and stop the construction of nuclear power reactors.

In 2018, coal accounted for 41.9% of South Korea's power generation, followed by LNG with 26.8% and nuclear energy with 23.4%.

The draft energy master plan will take feedback from the public hearing into account before being finalised by government.

South Korea Was Already Moving Away from Coal

The announcement of the new draft energy master plan comes on top of previous announcements that saw South Korea already making its move away from coal-fired and nuclear power and towards renewable energy and LNG. There has been a significant change in the long-term thermal coal demand outlook in South Korea since President Moon Jae-in was elected in 2017.

The government's 2017 plan for the South Korean electricity system called for dramatically reduced reliance on coal and nuclear and a boost to renewable energy and LNG-fired power generation, which the Australian government's Export Finance

[1] Reuters, South Korea steps up shift to cleaner energy, sets long-term renewable power targets, 19 April 2019.
[2] The Korea Bizwire, S. Korea to Cut Dependency on Fossil Fuel, Shift to Renewable Energy, 19 April 2019.

and Insurance Corporation (EFIC) noted was good for the Australian LNG industry but bad for Australian thermal coal.[3]

Under the plan, renewables were to provide 20% of the nation's electricity by 2030 and renewable energy capacity is to be expanded from 11.3 GW to 58.5 GW by that date.[4] Over the same period, coal's share of the power mix was expected to fall from 45.3% in 2017 to 36.1%.

The outlook now, signalled in the new draft, is even more negative for South Korean coal imports however. April 2019 has seen South Korea's coal tax increased by another 28% to KRW46/kg (US$40/t). At the same time the tax on LNG imports has been cut by 75%.[5] This follows a 20% increase in the coal tax in April 2018. The South Korean government is clearly attempting to prompt a shift away from coal use in power generation.

The coal tax is in addition to South Korea's carbon price, which was introduced in 2015 via a cap-and-trade system that currently prices carbon at around US$20/t.

Bloomberg New Energy Finance (BNEF) sees the South Korean electricity generation mix moving from 72% coal and nuclear in 2017 to 71% gas and renewables by 2050.[6] As the nation's coal and nuclear plants retire, BNEF foresees the electricity system becoming increasingly based on renewables, supported by South Korea's battery storage manufacturing capacity as well as gas peaking plants.

In addition to the national government, provincial governments in South Korea are also taking measures to reduce reliance on coal. South Chungcheong province, also known as Chungnam, is home to around half of South Korea's coal-fired power plants, yet the province has declared a vision to cut reliance on coal to zero by 2050 while rapidly scaling up renewable energy capacity. The province joined the global Powering Past Coal Alliance in October 2018.[7]

As well as concerns about carbon emissions, South Korea's increasing efforts to reduce coal consumption are driven by air pollution concerns. In April 2018, the Organisation for Economic Cooperation and Development (OECD) reported that South Korea has the worst air quality of any economically advanced nation.[8]

South Korea's build-out of renewable energy capacity is under way. The year 2017 saw annual solar PV capacity additions in South Korea cross 1 GW.[9] With its long coastline, offshore wind will also play an important role in South Korea's energy

[3] EFIC, South Korea – New energy policy good for Australian LNG but not coal, July 2017.
[4] Reuters, South Korea finalizes energy plan to boost renewable power generation, 29th December 2017.
[5] S&P Platts, South Korea to cut LNG taxes by 74% in April, raise thermal coal tax by 27%, 1 February 2019.
[6] BNEF, New Energy Outlook 2018"
[7] Powering Past Coal Alliance, Ten new Powering Past Coal Alliance members announced at Global Climate Action Summit, 13th September 2018.
[8] The Korea Times, Korea has the worst air of advanced economies, report shows, 19th September 2017.
[9] IRENA, Renewable Capacity Statistics 2018, March 2018.

future. As offshore wind costs continue to drop, South Korea has inaugurated its first offshore wind farm off the coast of Jeju Island.[10] In June 2018, the Energy Ministry announced plans to build 12 GW of offshore wind by 2030.[11] South Korea already has 4 GW of offshore wind in the pipeline.[12]

Korea Electric Power Corp. (KEPCO), the state-owned power utility, has historically based its power generation on nuclear and fossil fuel technology. However, it is now ramping up investment in renewables both in South Korea and overseas.[13] The size of its renewable infrastructure investment supports IEEFA's view of a step-change in ambition and strategic shift.

The previous government announced in late 2016 that KEPCO would invest US$3bn in domestic renewable energy across 2017 and 2018 as part of a plan to boost renewable energy generation, a plan that has since been replaced with an even more ambitious one by the current government.[14]

KEPCO is already investing in the rapidly growing energy storage sector, and South Korea is set to be a key growth market in this segment, with policies mandating that certain commercial and industrial companies install energy storage capacity. This move suits South Korea, given it is a major manufacturer of batteries for energy storage from companies such as LG Chem and Samsung SDI.[15] Australia's Macquarie Bank has recently invested in the largest energy storage system in South Korea.[16]

In February 2018 it was announced that KEPCO had commissioned GE to build a new 4 GW high-voltage transmission link between Seoul and the east of the country.[17] Enhanced transmission links are required to connect renewable generation hotspots with load centres in major cities.

IEA Foresees Plummeting South Korean Coal Imports

Even before the latest announcement from the Ministry of Trade, Industry and Energy, the International Energy Agency (IEA) had seen enough moves from the South Korean government for it to foresee South Korean coal imports collapsing by 2040.

In its 2017 World Energy Outlook, the IEA stated, "We see Korean coal imports dropping by nearly 50% to less than 60 Mtce in 2040".[18] Importantly, this was

[10] Offshorewindbiz, South Korea's First Commercial Offshore Wind Farm Goes Live, 17th November 2017.
[11] Yonhap News, S. Korea to add 12 GW of wind capacity by 2030, 26th June 2018.
[12] IEEFA, South Korea moving forward with offshore wind projects, 20th June 2018.
[13] Yonhap News, KEPCO buys interests in 3 solar projects in U.S., 30th March 2018.
[14] Pulse News, Korea's 6 power firms under KEPCO to invest total $3bn in renewable energy over next 2 yrs, 27th December 2016.
[15] Energy Storage News, IHS Markit: 40% of energy storage pipeline is co-located with solar PV, 18th April 2018.
[16] PV-Tech, Macquarie to finance solar hybrid and 'largest' energy storage project in South Korea, 6th September 2018.
[17] Greentech Media, South Korea Stengthens Grid to Take On More Renewables, 20th February 2018.
[18] IEA: World Energy Outlook 2017, p. 226.

under the IEA's central, New Policies Scenario – a scenario in which the world fails to limit global warming below dangerous levels (+2°C or below).

Under a scenario in which the world takes further attempts to limit climate change—a scenario that IEEFA believes represents the future more accurately than the New Policies Scenario—the decline in South Korean coal imports will happen even faster.

"We see Korean coal imports dropping by nearly 50% to less than 60 Mtce in 2040."

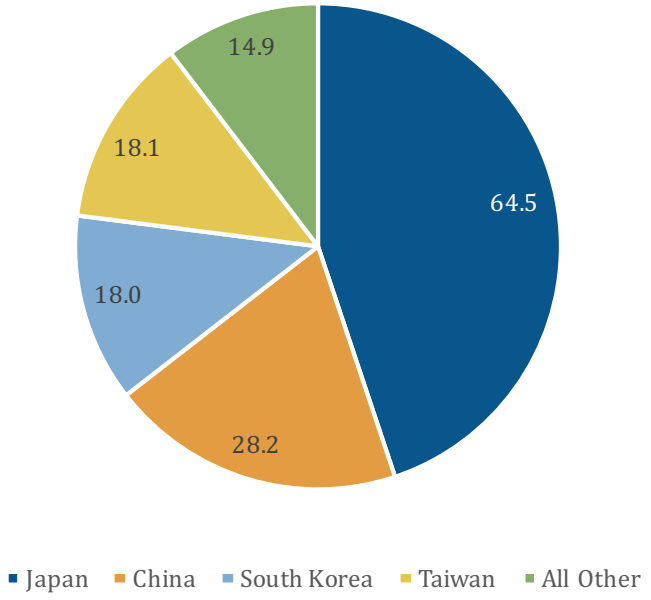
NSW Thermal Coal Exports to South Korea

The long-term collapse of South Korea's thermal coal imports will have significant implications for the state of New South Wales (NSW)—Australia's primary thermal coal export state.

South Korea is one of NSW four main thermal coal export markets along with Japan, China and Taiwan (Figure 2). All other export destinations are far behind the big four in terms of significance to the industry—the sum of all other export destinations is smaller than any of the big four.

NSW thermal coal exports to South Korea were 18 million tonnes (Mt) in 2018, down 11.6% from the prior year and 35% down from peak exports to South Korea in 2015.

Figure 2: NSW Thermal Coal Exports 2018 (million tonnes)



Source: DFAT STARS Database, based on ABS Cat No 5368.0, December 2018 data.

NSW Thermal Coal Exports Already in Decline

The ongoing decline in exports to South Korea would not be so significant for the NSW thermal coal mining industry if it wasn't for the fact that the outlook for the other large destinations is also for long-term decline.

Pipelines of coal-fired power station developments across Asia are shrinking and a recent medium-term forecast from the Australian Government forecasts that NSW major coal export destinations will be importing less thermal coal going forward:

- Japan is by far NSW largest thermal coal export destination. NSW exports in 2018 were down 0.4% on the prior year and were down 1.5% from the peak of coal exports to Japan in 2015. The Australian Government's Office of the Chief Economist forecasts that Japan's thermal coal imports will decline at an average annual rate of 1.1% per year out to 2024.[19]

- Japan's development pipeline of new coal plants has collapsed by almost two-thirds since as recently as 2015. Although, Japan has 8.7 GW of new coal plants under construction, it also has 8.2 GW of old plants due for retirement over the next five years. The new plants, being more efficient, will burn less coal than the old ones so replacing old plants with new ones will contribute to declining coal consumption in Japan.

- China was NSW second largest thermal coal export destination in 2018 following a recovery in exports to that nation – 2018 exports were almost 20% higher than in 2017. However, this recovery is likely to be short-lived. The Office of the Chief Economist forecasts that China's thermal coal imports will decline at an average annual rate of 5.2% per year out to 2024.[20] The peak of NSW thermal coal exports to China was in 2014.

- China added 194Mt of new domestic coal mining capacity in 2018[21], not far off the total thermal coal imported into China in 2018 (216Mt). In addition, China is prioritising renewable energy and coal to gas switching as it grapples with its air pollution crisis. China recently increased its renewable energy consumption targets from 20% to 35% by 2030.[22] The emphasis on alternatives to coal and the continuing addition of new domestic mining capacity will likely see coal imports squeezed out in the future.

- Taiwan is the last of NSW big four thermal coal export destinations. NSW thermal coal exports to Taiwan in 2018 were 3.7% down on the prior year total and almost 14% down on the peak of exports to Taiwan in 2016. After project cancellations, Taiwan no longer has any new coal-fired power plants in development.

[19] Office of the Chief Economist, Resources and Energy Quarterly, March 2019..
[20] Office of the Chief Economist, Resources and Energy Quarterly, March 2019
[21] Reuters, China boosts coal mining capacity despite climate pledges, 26 March 2019.
[22] Bloomberg, China Steps Up Its Push Into Clean Energy, 26 September 2018.

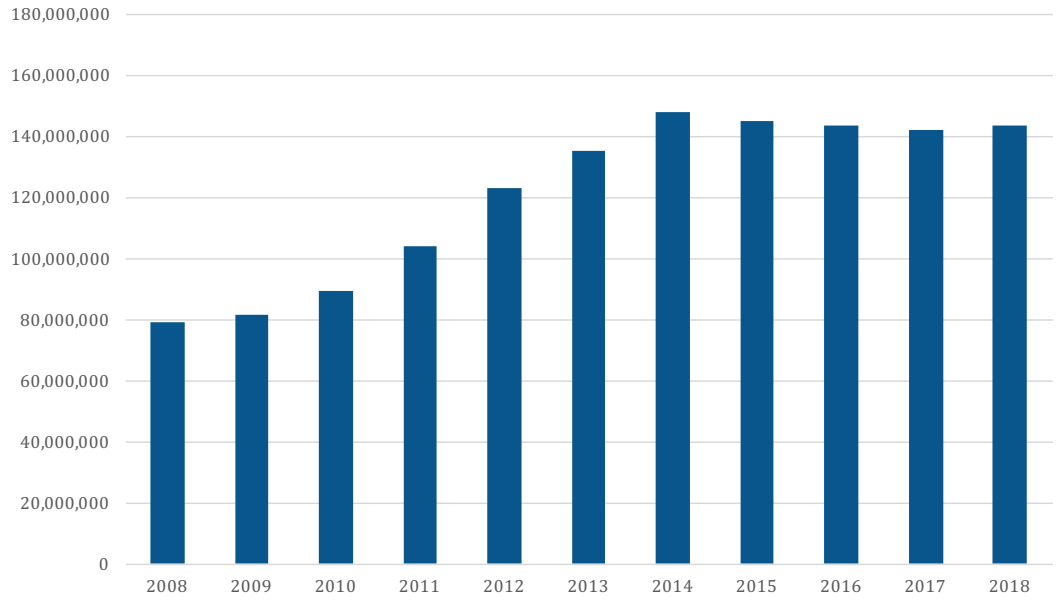
Although there will be some growth in thermal coal demand from some smaller Asian economies such as Vietnam and the Philippines, this will not be enough to make up for the decline in demand from the big four export destinations.

The fifth biggest export destination for NSW thermal coal in 2018 was Malaysia with 3.6% of NSW total exports. Malaysia does not have any new coal-fired power plants under development.

Vietnam will be a growth market for thermal coal exporters but this is starting from a very low base for NSW. The share of NSW thermal coal exports that went to Vietnam was only 0.3% in 2018.

Similarly, the Philippines represented just 0.8% of NSW exports and India only 1.2% in 2018.

Figure 3: NSW Thermal Coal Exports Peaked in 2014 (tonnes)



Source: DFAT STARS Database, based on ABS Cat No 5368.0, December 2018 data.

Bylong Coal Project Now Makes Even Less Sense

The Bylong Coal Project is owned by KEPCO Bylong Australia Pty Ltd, a subsidiary of KEPCO—the South Korean state-owned electricity utility. This long delayed project proposal involves open cut and underground mining at a site 55 kilometres northeast of Mudgee, NSW. The mine proposes producing an average of 3.9Mt of saleable thermal coal per year for the export market.

IEEFA has previously detailed why the development of this project by a subsidiary of a South Korean government-owned company makes no sense in a thermal coal market set for long-term decline and over-supply.[23]

KEPCO have previously defended the project saying that long term demand for thermal coal in South Korea makes the Bylong mine proposal strategically important.

The new draft energy master plan from the South Korean government now calls the strategic sense of the project into even further question. The South Korean government is now clearly planning a more ambitious move away from thermal coal-based power generation in the long term that it had indicated previously. With a 25-year mine life, the proposed Bylong mine is planned to be operating beyond the South Korean government's long term energy planning outlook and beyond the point where the IEA foresees South Korean coal imports will have collapsed almost 50% (2040).

Adding new thermal coal mine capacity makes no sense for the NSW government—it will lead to further long-term oversupply, contributing to depressed prices and reduced royalty income.

It is now even more clear that the Bylong Coal proposal makes no sense for the South Korean government either.

That's because KEPCO's own credibility is in question. The company's awkward governance structure, legacy of deep links to fossil fuel industries, and history of wayward investments have undermined the company's credibility with the public and parts of the government.[24] The company's depressed share price and financial performance reinforce this point.

Wider Implications for Seaborne Thermal Coal Market

Australian thermal coal exporters won't be the only ones impacted by declining South Korean coal imports. South Korea is the third largest thermal coal export destination for both South Africa[25] and Indonesia[26] – the world's largest thermal coal exporter.

As South Korean coal imports decline, Australia, South Africa and Indonesia will be heavily competing with each other over potential new export markets. Depressed market conditions will be significantly exacerbated by the forecast decline in demand for thermal coal imports by both China (Indonesia's biggest export market) and India (South Africa's biggest export market and Indonesia's second biggest). The

[23] IEEFA, Bylong Coal Project: Expert Review, June 2018.
[24] IEEFA, Korea's Clean Energy Challenge: Time for a Check Up, 6 September 2018
[25] IEEFA, South African coal exports face long-term decline, 29 January 2019.
[26] S&P Platts, Indonesian coal faces uphill struggle to diversity exports away from China, 7 March 2019.

Office of the Chief Economist forecasts that Indian thermal coal imports will decline at an average rate of 1.5% per year out to 2024.[27]

With NSW key thermal coal export markets all set to decline in the long term, Australian thermal coal miners will be hoping to find new markets in potential growth markets such as Vietnam, the Philippines, Pakistan and Bangladesh. Unfortunately for them, South African, Indonesian and Russian exporters will be targeting the same markets.

For the NSW government, such rational steps should include the cessation of new thermal coal mine approvals.

With all the main exporters within the Asian seaborne thermal coal market expected to be looking to replace lost export destinations, the market seems set to enter a period of oversupply and reduced prices and royalties unless rational steps are taken.

For the NSW government, such rational steps should include the cessation of new thermal coal mine approvals.

[27] Office of the Chief Economist, Resources and Energy Quarterly, March 2019.

About IEEFA

The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy. http://ieefa.org

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