



# South African Coal Exports Outlook

## *Approaching Long-Term Decline*

### Executive Summary

South Africa's thermal coal export industry is facing long-term, permanent decline.

Aside from the domestic issues that the South African coal industry faces, the sector will also need to come to terms with the prospect of fading demand from its major export destinations.

South Africa is more heavily dependent on one nation for its export volumes than other major thermal coal exporters like Indonesia and Australia. In 2018, 48% of all South African exports out of Richards Bay Coal Terminal (RBCT) went to India, a nation with a clearly stated policy of reducing reliance on coal imports. In the first half of 2019, that rose to 60%.

This export industry decline will not happen overnight or even in the next few years – there is time for policy makers to prepare for the coming transition in order to plan for the inevitable social and economic consequences.

**AT ITS HEART, THIS IS A TECHNOLOGY TRANSITION AND IS HENCE UNAVOIDABLE** – it will happen whether policy makers want it or not. A lack of planning will result in a chaotic transition with negative social and economic impacts of the type South Africa can ill-afford.

As tends to happen in technological transitions, new energy technology will replace coal-fired power faster than most predict. According to Bloomberg New Energy Finance (BNEF), two-thirds of the world's population already live in countries where wind or solar (or both) are the cheapest source of new power generation. By 2030, new wind and solar will be cheaper than running existing coal- or gas-fired plants virtually everywhere. This is already the case in India.

By 2032, BNEF foresees there will be more solar and wind power capacity installed globally than coal-fired power. Coal-fired power generation will decline 51% by 2050 by which time it will supply just 12% of the world's electricity.

Global mining giants such as Rio Tinto, BHP, Anglo American and South32 have either withdrawn from the seaborne thermal coal market already or are now considering it.

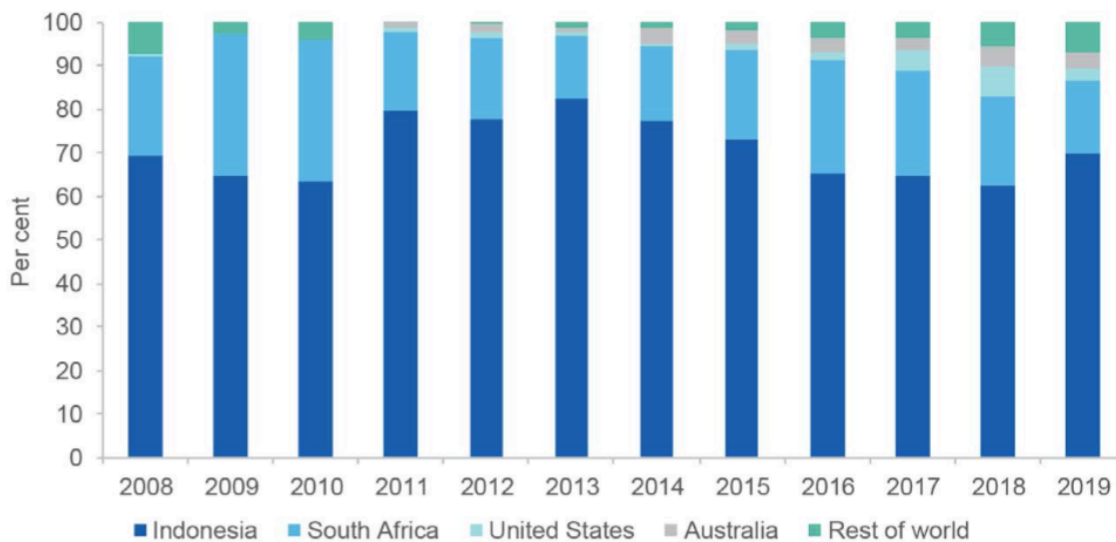
**FINANCIAL INSTITUTIONS ARE NOW ABANDONING THE THERMAL COAL INDUSTRY** at a significant and increasing rate. Since 2018, a financial institution has announced a restriction on coal financing every two weeks on average. In the first half of 2019, that rate increased to one per week and well over 100 financial institutions around the world, including South African banks, have formal coal

exclusion policies now in place. Access to coal debt and equity financing is becoming increasingly problematic.

South Africa’s major export markets are already showing signs of transition away from coal or limited growth potential which will disappoint the industry:

- The last fiscal year saw the expansion of thermal power capacity in India slow to the lowest level in a decade as a major renewable energy expansion continued. India’s coal ministry is now preparing a new plan to cut coal imports by one-third, or around 85 million tonnes (Mt), by 2024.

**Figure i: Indian Thermal Coal Imports by Source**



Note: 2019 data is up to May

Source: IHS (2019) India coal data tables, Office of the Chief Economist – Australian Government

- In January 2019, an imported coal-fired power project in Pakistan was cancelled over fears of over-capacity and the economic burden of coal imports. Newly built imported coal-fired plants in Pakistan are already reportedly under severe financial stress, in part due to the high cost of importing coal.
- Meanwhile, the Pakistan government has drafted a new renewable energy policy which will set national targets for renewables (excluding hydro) to reach 30% of installed capacity by 2030, up from the current level of 4%.
- In South Korea, driven by air pollution as well as carbon emissions concerns, the government has stated it will “drastically” cut power generation from coal by banning new coal-fired power plants and closing old ones. South Korea is now considering the progressive retirement of up to 20 coal-fired power plants and placing output caps on a number of others.

- The outlook for thermal coal demand in Europe is dire for exporters. The CEO of Cerrejón Coal projects that thermal coal demand from some nations within the Atlantic market may fall another 50% to 60% over the next five to seven years.
- Delays to coal power projects in the rest of Africa are allowing renewables to make substantial progress. Kenya's Lake Turkana wind farm, the largest in Africa, is already replacing diesel in the generation mix – beating the now delayed Lamu coal power project to it.

South African coal exporters are likely to seek alternative markets going forward as opportunities for growth in the main export destinations dry up. However, the long term outlook for coal exports to other destinations is also likely to disappoint.

**FURTHERMORE, WITH THE GLOBAL SEABORNE COAL TRADE SET TO GO INTO PERMANENT DECLINE**, South Africa will see increased competition in these markets from other major thermal coal exporters such as Indonesia, Australia and Russia.

Richards Bay Coal Terminal may have to get used to the idea that an increasing proportion of its annual capacity will become stranded. With a capacity of 91million tonnes per annum (Mtpa), Richards Bay operated with almost 20% spare capacity in 2018.

Richards Bay is not alone in this. The coal terminals at the Port of Newcastle in Australia – the world's largest coal export port – operated with 25% surplus capacity in 2018 and its proposed T4 expansion project has been cancelled. Concern over thermal coal's long-term sustainability has led the chairman of the Port of Newcastle to recognise an "urgent need" for the port to diversify away from a reliance on coal, further stating, "While the world's demand for our coal is beyond our control, our ability to invest in new sources of growth and innovation is not."

Part of that statement was echoed by RBCT chair Nosipho Siwisa-Damasane upon the release of lower 2018 export figures who stated, "The markets are a reality, they are outside RBCT's control".

**“The markets are a reality, they are outside RBCT’s control”**

As Richards Bay faces declining export volumes in the long run, it too will need to plan for an alternative future. That planning should have begun already.

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## Introduction

Aside from domestic issues that the South African coal industry faces, the sector will also need to come to terms with, and plan for, an inevitable technology driven long term decline in thermal coal exports.

The currently over-supplied global seaborne thermal coal market is faced with slowing demand in the longer term, even in the Asian market, as major coal producing nations like China and India seek to squeeze out coal imports. Nations such as Japan and South Korea that are currently dependent on thermal coal imports will increasingly turn towards renewable energy for reasons of cost, energy security, air pollution and carbon emissions.

Elsewhere, the growth of thermal coal demand in places like Pakistan and Vietnam is likely to disappoint thermal coal producers as the economic and energy security benefits of newer technology such as wind and solar power become ever more apparent.

Global mining giants have started to prepare themselves for the seaborne thermal coal market's permanent decline. Rio Tinto has already left the coal mining business altogether whilst BHP is now considering its final exit of thermal coal.<sup>1</sup> Glencore has made it clear its thermal coal production capacity will be limited going forward.

South32 is approaching the final stages of the sale of its South African thermal coal assets and has recognised an impairment of US\$502m based on Seriti Resources' offer and the outlook for thermal coal demand.<sup>2</sup> Having already sold its coal mines that supply Eskom, Anglo American is now considering the future of its remaining South African coal mines given thermal coal has a limited future.<sup>3</sup>

Exxaro Resources is planning "structural changes" in response to a climate-constrained future, including increasing investment in clean energy as it continues to diversify its business away from thermal coal. CEO Mxolisi Mgojo has already noted the increasing cost of insuring coal mines as climate concerns rise.<sup>4</sup>

Meanwhile, the Chief Executive Officer (CEO) of the 26 million tonnes per annum (Mtpa) Cerrejón export coal mine in Columbia, itself jointly owned by Anglo American, BHP and Glencore, has stated the industry is in terminal decline.<sup>5</sup> Anglo and BHP are both considering divestment plans for their shareholdings.

Although South Africa's coal exports to nations such as India and South Korea are not going to dry up overnight or even in the next few years, it will be important for the industry and government to think long-term in order to properly prepare for the coming decline. In explaining Anglo American's consideration of its future in thermal coal, CEO Mark Cutifani stated, "It's really important to work with

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<sup>1</sup> Bloomberg, [BHP is Latest Giant Miner to Plan Exit From Thermal Coal](#), 11 July 2019

<sup>2</sup> South32, [South Africa Energy Coal Divestment Update and Impairment](#), 22 August 2019

<sup>3</sup> Business Day, [Anglo plots SA coal exit and warns on latest Mining Charter](#), 29 July 2019

<sup>4</sup> Bloomberg, [South African Coal Miner Plans New Climate Change Strategy](#), 22 August 2019

<sup>5</sup> Bloomberg, [One Coal CEO Sees Writing on Wall, Says Make Money While You Can](#), 9 August 2019

employees, local communities, customers and government before you make those sort of calls". There's no rush but we are conscious about delivering a just transition."<sup>6</sup>

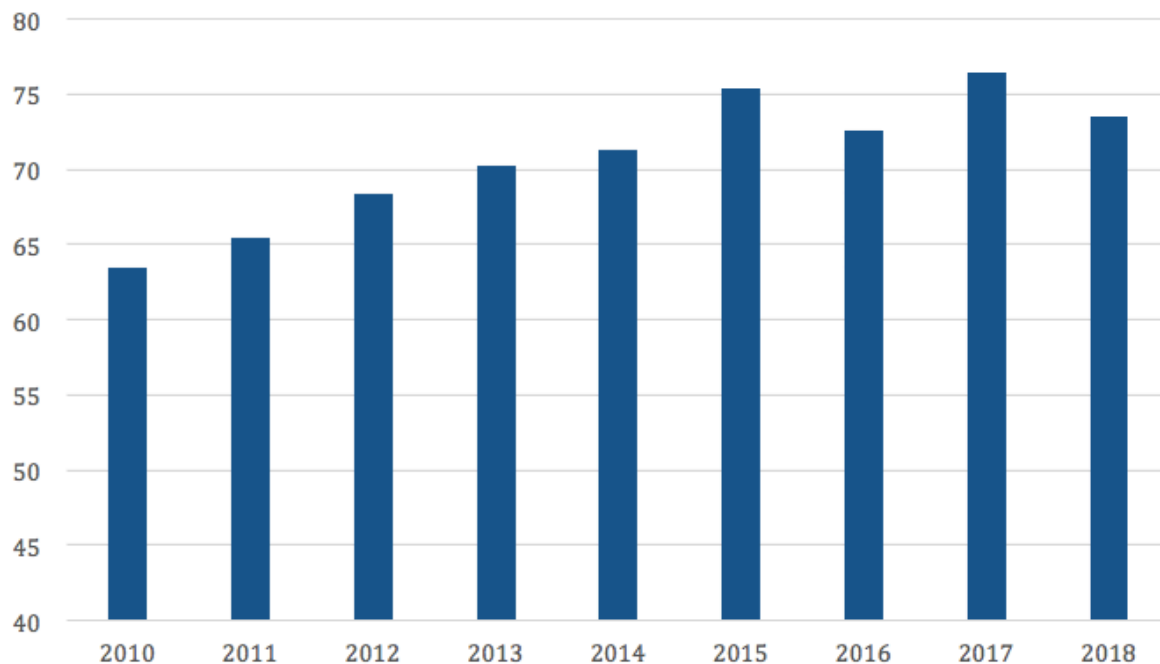
A just transition requires a planned transition. Failing to plan for the coming, longer-term decline in coal exports will only lead to a chaotic transition.

## Historical Exports

Aside from rail logistics improvements, the rise in South Africa's coal exports can to a large extent be explained by the rising imports of its largest export destination. Indian thermal coal imports rose up to 2015 as the nation sought to meet power demand in its fast-growing economy. South African exports levelled off after this as India saw two years of declining thermal coal imports.

The year 2018 saw a bounce-back in Indian thermal coal imports as state-owned Coal India – the world's largest coal miner by volume – was unable to meet delivery targets due to coal transport bottlenecks and lower-than-targeted coal production. South Africa was unable to benefit from the uptick in Indian imports, with Richards Bay Coal Terminal (RBCT) reporting lower 2018 exports.

**Figure 1: Richards Bay Coal Terminal Coal Exports 2010-2018 (Mt)**



Source: Richards Bay Coal Terminal

<sup>6</sup> Business Day, [Anglo plots SA coal exit and warns on latest Mining Charter](#), 29 July 2019.

## Global Momentum Leaving Coal Behind

Financial institutions are now abandoning the coal industry at a significant and increasing rate. Since 2018, a bank, insurer or other financial institution has announced a restriction on coal financing on average every two weeks.<sup>7</sup>

In the first half of 2019, that rate increased to one per week and now over 100 financial institutions around the world, including South African banks, have made a move away from coal already.<sup>8</sup>

Major global investors are increasingly abandoning as ineffective the tactic of engaging with fossil fuel companies on climate risk, and instead are simply divesting their fossil fuel holdings.<sup>9</sup>

The coal industry is noticing the increased difficulty in finding finance for new projects both in South Africa and abroad.<sup>10</sup> Seriti Resources may turn to equipment suppliers for finance as traditional funding sources abandon thermal coal.<sup>11</sup>

### *Threat from Gas as well as Renewable Energy*

How relative thermal coal and LNG prices stack up into the future is hard to predict, however it is possible that LNG pricing could be highly competitive with thermal coal in the long run as LNG supply continues to expand.<sup>12</sup>

There have already been some indications of coal to LNG switching in the shorter term in Europe. Despite lower recent thermal coal prices due to market over-supply, LNG prices have also dipped enough to fall below thermal coal on an energy equivalent basis. This has convinced some Japanese utilities to consider opportunistic coal-to-LNG switching which could see LNG-fired plant utilisation increase and coal-fired power utilisation decline.<sup>13</sup> Japan is the world's largest LNG importer.

Coal to gas switching has been evident in Europe in 2019 due to a combination of lower gas prices and higher carbon prices. The European Union (EU) carbon price has doubled over the past year and quadrupled over the last two years. Increased LNG supply from Australia and the U.S. has helped push prices down and allowed the higher level of switching to gas. The head of generation at Italian utility Enel

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<sup>7</sup> IEEFA, [Over 100 Global Financial Institutions Are Exiting Coal, With More to Come](#), 26 February 2019.

<sup>8</sup> IEEFA, [Asian banks add to growing number of major financial institutions exiting coal – now 112 and counting](#), 14 May 2019.

<sup>9</sup> Bloomberg, [Big Money Starts to Dump Stocks That Pose Climate Risks](#), 7 August 2019.

<sup>10</sup> Reuters, [Future tense: Fastest-growing market Asia rethink's coal prospects](#), 4 July 2019.

<sup>11</sup> Bloomberg, [Seriti May Turn to Equipment Makers as Coal IPOs shunned](#), 27 August 2019.

<sup>12</sup> Reuters, [Asia's thermal coal trade faces threats, with LNG the silent assassin: Russell](#), 26 June 2019.

<sup>13</sup> Bloomberg, [Diving Gas Costs Spark Potential Rare Switch Away From Coal in Japan](#), 5 June 2019.

stated, “We have an alignment of economics, of saying switch to gas and most importantly switch to renewables because it’s cheaper, safer and easier.”<sup>14</sup>

In April 2019, Tokyo Gas signed a long-term LNG supply deal with Royal Dutch Shell which partly uses a coal-linked pricing formula – believed to be the first time this has been done by a Japanese LNG buyer. With LNG supply on the rise, more moves away from oil-linked pricing of LNG and greater influence of U.S. Henry Hub gas pricing could help it increase competition with thermal coal in the Asian market.

### *Renewable Energy Getting Ever Cheaper*

The dramatic decline in the cost of renewable energy technology has caught many, including the fossil fuel industries, by surprise. There is no sign these cost reductions are going to cease anytime into the future.

According to Bloomberg New Energy Finance (BNEF), two-thirds of the world’s population live in countries where wind or solar (or both) are the cheapest source of new power generation. By 2030, new wind and solar will be cheaper than running existing coal- or gas-fired plants virtually everywhere. In China, BNEF expects this tipping point to be reached as soon as 2027.<sup>15</sup> In India, this tipping point has already been passed.

In July 2019, the 1.18 gigawatt (GW) Sweihan solar plant in the United Arab Emirates began operations. In 2016, this project made headlines when it broke the world record for solar photovoltaic (PV) power tariffs with a new low of US\$24.20/megawatt-hour (MWh). The project is owned by a consortium of Abu Dhabi Power Corporation, Chinese solar PV manufacturer Jinko Solar and Japanese trading house Marubeni. The latter has historically been one of the most significant constructors of coal-fired power in Asia until it put distance between itself and further coal projects with a new coal policy announced in September 2018.<sup>16</sup>

In 2019, the US\$24.20 tariff for the Sweihan project has been well beaten. July 2019 saw the lowest bid in a Portuguese solar auction at US\$16.44/MWh.<sup>17</sup>

Even more significant are the most recent tariffs for solar with battery storage; installations that can not only push coal out of the supply mix during the middle of the day, but which can also supply power during peak evening periods as well.

In June 2019, Los Angeles Power and Water struck a deal on the largest solar and battery storage project in the world. As well as being the largest such project globally, it is also the cheapest with tariffs of US\$19.97/MWh for solar power with only an additional US\$13/MWh for firming from the batteries,<sup>18</sup> with the project expected to qualify for the U.S. federal solar investment tax credit.

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<sup>14</sup> Bloomberg, [Coal’s Demise Quickens in Europe as Market Shift Idles Plants](#), 22 July 2019.

<sup>15</sup> BNEF, [New Energy Outlook 2019](#).

<sup>16</sup> Marubeni, [Notification Regarding Business Policies Pertaining to Sustainability](#), 18 September 2018.

<sup>17</sup> PV-Tech, [Portugal claims spot in solar history with record-low auction prices](#), 30 July 2019.

<sup>18</sup> Forbes, [New Solar + Battery Price Crushes Fossil Fuels, Buries Nuclear](#), 1 July 2019.



## Thermal Coal Trade Forecasts

Long term forecasts for the seaborne thermal coal trade paint a grim outlook for any nations or regions where coal exports make up a significant part of their economy.

### *International Energy Agency*

The International Energy Agency (IEA), which publishes its influential World Energy Outlook (WEO) on a yearly basis, reports a declining long-term global thermal coal market in its latest projections.

Under the IEA's Sustainable Development Scenario (SDS) which assumes nations take a path toward achieving climate stabilisation, reduced air pollution, and universal access to modern energy,<sup>19</sup> global thermal coal trade volumes drop 65% by 2040.

Under the New Policies Scenario (NPS), which is based on current global announced policy settings, and hence is not aligned to the Paris Agreement target of limiting global warming to less 2 degrees, the global coal trade declines 6% by 2040.

To assume the NPS is the more accurate projection of the direction of energy markets going forward is to assume the world will not take significant action to act on climate change in line with limiting warming to below 2 degrees, even though most of the world has signed on to do just that. IEEFA expects the current reluctance by the U.S. to cooperate is likely to be temporary. International pressure to act on carbon emissions is growing<sup>20</sup> and will continue to do so into the future.

**“We see signs that the Sustainable Development Scenario is becoming increasingly likely”: Moody’s**

The NPS does not take into account future increases in climate policy ambition and further continued technology change that IEEFA sees as virtually certain to happen. IEEFA is not alone in believing the SDS is a more accurate reflection of the path the world will take going forward. Global credit rating agency Moody’s has stated that, “We see signs that the SDS is becoming increasingly likely”.<sup>21</sup>

According to Moody’s, the utilisation of Asia’s coal plants will decline, even under the NPS.<sup>22</sup> However the decline will be even greater under the SDS. Across Asia-Pacific, average coal power plant utilisation drops under the NPS from around 55% to around 37% by 2030 (Figure 2).

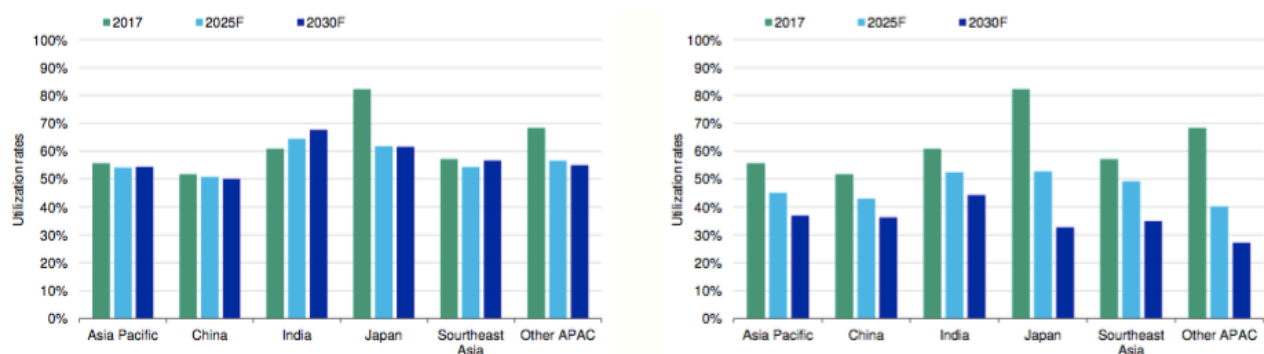
<sup>19</sup> IEA, “Commentary: A new approach to energy and sustainable development - the Sustainable Development Scenario”, 13 November 2017.

<sup>20</sup> Bloomberg, *Climate Crisis Spurs UN Call for \$2.4 Trillion Fossil Fuel Shift*, 8 October 2018.

<sup>21</sup> Moody’s, *Climate Goals, declining costs of renewables signal decreasing reliance on coal power*, 8 May 2019.

<sup>22</sup> Moody’s, *Climate Goals, declining costs of renewables signal decreasing reliance on coal power*, 8 May 2019.

**Figure 2: Asian Coal Plant Utilisation Rates Under IEA’s New Policies Scenario (NPS) (Left Chart) and Sustainable Development Scenario (SDS) (Right Chart)**



Sources: IEA, Moody's Investors Service

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## Bloomberg New Energy Finance

In its latest New Energy Outlook report, BNEF forecasts a dire future for coal-fired power globally.<sup>23</sup>

By 2032, BNEF foresees there will be more solar and wind power capacity installed globally than coal-fired power. Coal-fired power generation will decline 51% by 2050 by which time it will supply just 12% of the world's electricity.

China, the world's largest importer of thermal coal, will pass through peak coal-fired power generation as soon as 2027 according to BNEF's forecast. Meanwhile, in Japan, renewable energy will supply more than 75% of total electricity generation by 2050. South Korea's power generation mix moves from 68% coal and nuclear in 2018 to 71% gas and renewables by 2050.

Even the parts of Asia that are expected by the coal industry to replace lost demand elsewhere will undergo a transformation in the long term according to BNEF. In India, zero-carbon power technologies are forecast to supply 67% of power by 2050, whilst in Southeast Asia the power generation mix will have switched from 84% fossil fuels to 58% renewables by that time.

According to BNEF, Europe will transition away from coal the fastest. In its forecast, BNEF sees renewables making up 90% of the power generation mix as soon as 2040.

## South Africa's Major Coal Export Markets

In 2018, South African coal exports continued to be dominated by India which was the destination for 48% of all exports, leaving South Africa's export industry highly exposed to just one nation. In the first half of 2019, that figure went up to 60%.<sup>24</sup> By

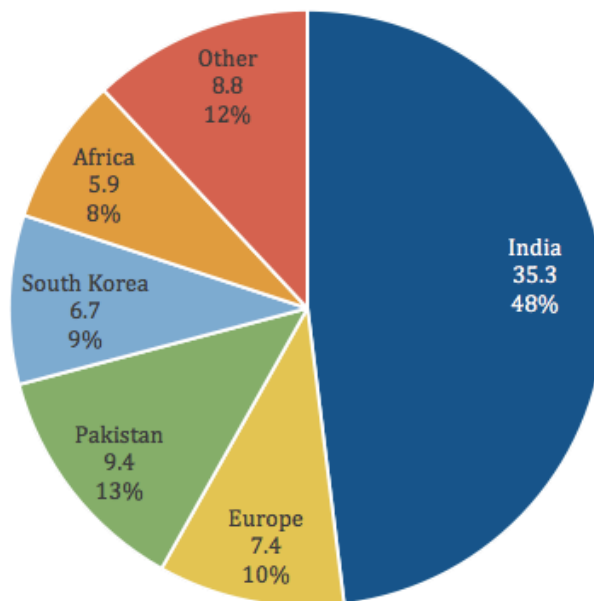
<sup>23</sup> BNEF, *New Energy Outlook 2019*.

<sup>24</sup> Argus, *Indonesia and India lift global thermal coal trade in 2019*, September 2019

comparison, Australia's largest thermal coal export destination is Japan which represented 39% of all exports in 2018. Indonesia, the world's largest thermal coal exporter, saw 31% of its 2018 exports head to China – its largest export destination – followed in second place by India with 27%.<sup>25</sup>

Following India, Pakistan and South Korea were the second and third largest export destinations for South African coal exports in 2018.

**Figure 3: 2018 Coal Exports Out of Richards Bay Coal Terminal (million tonnes)**



Source: Richards Bay Coal Terminal

## India

South Africa's largest coal export destination is transforming its national electricity system via a major roll-out of renewable energy. In doing so, it is improving energy security, reducing reliance on imported fossil fuels, addressing air and water pollution, and lowering emissions intensity.

There were large reductions in the cost of Indian solar PV and wind power in 2017, to the extent that renewables in India are now cheaper than existing domestic coal-fired power. The Indian fiscal year ending in March 2017 was the first year that

<sup>25</sup> S&P Platts, [Indonesia coal faces uphill struggle to diversify exports away from China](#), 7 March 2019.

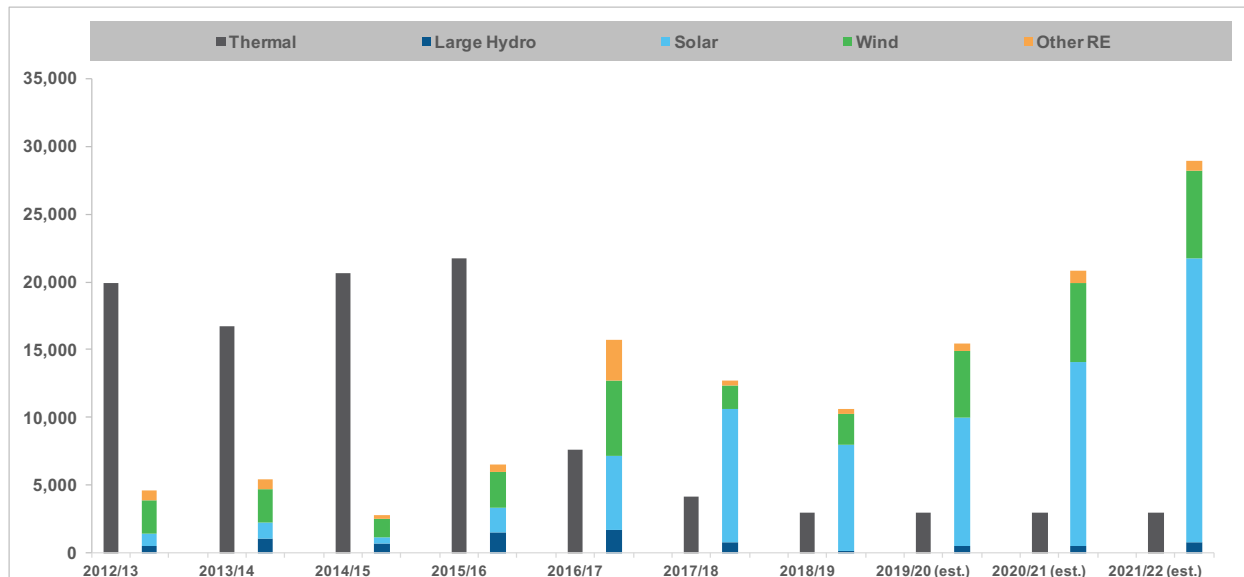
combined renewable installations outpaced coal-fired power construction (with net thermal installs falling 65% year-on-year to a decade low of 7.7GW) (Figure 4).

In the following fiscal year to March 2018, India installed a net 4.2GW of coal-fired power (down another 46% year-on-year) and more solar PV capacity than all other technologies combined, with a total of 10.4GW added.

The last fiscal year (to March 2019) saw India’s renewables ambition increase even further. The government is already looking beyond its initial target of installing 175GW of renewable energy by 2022, a target many thought highly ambitious at the time it was set, and which was followed by a further target of 275GW by 2027 and an even more ambitious 523GW by 2030 (this later target includes hydro). India’s Ministry of New and Renewable Energy (MNRE) is now targeting 40GW of renewable energy auctions each year until 2028, comprising 30GW of solar and 10GW of wind power.<sup>26</sup>

Since 2010, India has cancelled or shelved 510GW of planned coal-fired power plants.

**Figure 4: India Renewable and Thermal Power Capacity Additions (MW)**



Source: Central Electricity Authority of India (CEA), MNRE India, IEEFA estimates.

### National Electricity Plan

India’s electricity sector blueprint - National Electricity Plan (NEP) 2018 - released in January 2018, retained the core target of 275GW of renewables by 2027 from its draft in 2016.

<sup>26</sup> Economic Times Energyworld, [India to auction 40 GW renewables every year till 2028](#), 1 July 2018.

The NEP 2018 includes a target for closing 48.3GW of end-of-life coal plants. Specifically, the plan forecasts 22.7GW of coal power plant closures over five years from FY2017-FY2022. This would include 5.9GW of normal end-of-life retirements and 16.8GW of closures due to inadequate space for flue gas desulfurization (FGD) equipment. An additional 25.6GW of coal capacity is slated for retirement in the five years to FY2027.<sup>27</sup> Over the decade to FY2027, closures will average 4.8GW per annum.

Taking the retirements into account, and planned new construction totalling 94.3GW, the NEP 2018 sees India's coal power capacity reaching 238GW in 2027, 11GW lower than the 2016 draft forecast, with the great majority of future capacity additions based on wind and solar energy.

In reality, the expansion of India's thermal power capacity during FY2018-19 has slowed much faster than previously anticipated, suggesting peak coal capacity in India may be closer than many predicted. Net thermal power additions that year were just 3.4GW, the lowest level in a decade.<sup>28</sup>

The deep financial stress of India's thermal power sector is a major contributor to this slowdown, and with renewable energy tariffs sitting some 20% below domestic coal-fired power plant tariffs, IEEFA sees no sign of financing constraints for new thermal power capacity being resolved.

### *Indian Thermal Power Sector in Financial Stress*

Although the Global Energy Monitor (GEM) estimates 94GW of thermal power plants in the development pipeline in India (including 36GW under construction), the cancellation of 239GW of planned projects since January 2015 puts this into context. New, non-mine mouth and imported coal-fired power plants are both unbankable and unviable in India, and most new plans are stalled or long delayed.

India's thermal power sector is suffering clear stranded asset risk, making access to capital increasingly problematic.

Stranded assets commonly reflect a myriad of problems including outdated technologies, legal issues around land acquisition, promoter financial distress, a geographical mismatch between proposed plant locations and the distance coal supplies must travel, and unviable tariff requirements.

Thermal power proposals in India are generally requiring tariffs at increasingly high rates. As per India's CEA estimates, the tariff for a new emission controls-compliant pit-head supercritical coal-fired power plant should be Rs4.39/kilowatt hour (kWh) – around USc 6.2/kWh - for a plant load factor of 60%. With competitive renewable energy power purchase agreements (PPAs) now regularly priced in the Rs2.50-

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<sup>27</sup> India's National Electricity Plan Annexure 5.4, 5.5, 5.6.

<sup>28</sup> IEEFA, [India's electricity sector transition still on track despite a weak FY2018/19](#), 25 April 2019.

3.00/kWh (USc 3.5 to 4.2 /kWh) range, new non-mine mouth coal power plants are struggling for viability across India.

The impact of stalled projects is far reaching. Right now, US\$100bn of distressed power sector loans are clogging the Indian banking system. The government estimates there are about 40.1GW of stranded coal-fired power projects of which 15.7GW are yet to be commissioned,<sup>29</sup> and 25GW of gas-fired power projects that are likewise stranded.<sup>30</sup>

### *India to Overachieve Paris Agreement Renewables Target by Almost 60%*

India is now on course to significantly exceed the renewable energy target that made up its Nationally Determined Contribution under the Paris Agreement as a result of its policy commitment to renewable energy and the dramatic slowdown in coal-fired power build-out across the country.

According to the CEA, India is on course for renewables to reach 63% of installed power capacity by 2029-30. The committed Paris Agreement target was 40%. Renewable energy is expected to provide 44% of all power generated by the same date.<sup>31</sup>

Although renewable energy capacity is expanding rapidly, coal-fired power in India is not going to be disappearing in the near future. In the longer term, India's power demand will be met largely by a combination of renewable energy and coal-fired power, with some hydro and nuclear power. However, financial and energy security concerns mean that India's coal power demand will increasingly be met by domestic Indian coal.

### *Energy Security and Fossil Fuel Imports*

India is highly dependent on fossil fuel imports, a clear energy security issue for the nation.<sup>32</sup>

The concern is clearly demonstrated by India's determination to roll out electric vehicles (EVs) despite being in an early phase of economic advancement relative to developed nations and with a pressing need to alleviate poverty. India is a major oil importer, with import dependence reaching 84% in June 2019,<sup>33</sup> and the government sees EVs as an opportunity to reduce this strategic vulnerability. In the

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<sup>29</sup> Ministry of Power/Standing Committee on Energy, [Stressed/Non-performing Assets in Electricity Sector](#), March 2018.

<sup>30</sup> Economic Times: Energyworld, [SBI Chairman says no future for gas-based power plants in the country](#), 4 January 2019.

<sup>31</sup> IEEFA, [India Energy Transition Fuels Growth Path for Sustainable Development](#), 19 July 2019.

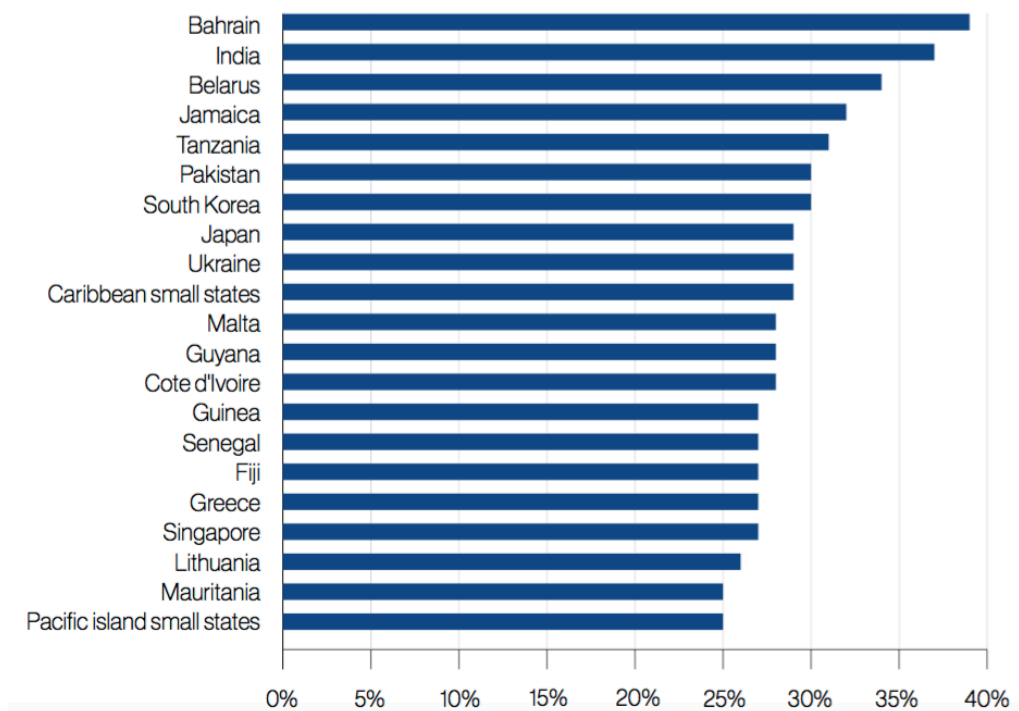
<sup>32</sup> IRENA, [A New World: The Geopolitics of the Energy Transformation](#), January 2019.

<sup>33</sup> Economic Times: Energyworld, [India's crude oil production falls 7%; pushes import dependence to 85% in June](#), 24 July 2019.

latest national budget, the Indian government offered a number of incentives designed to increase the uptake of EVs.<sup>34</sup>

Reducing thermal coal imports has long been a stated aim of the Indian government. Reliance on imports of thermal coal adds to energy security issues and places additional burden on Indian power plant operators that are already under financial stress. In July 2019 the Indian coal minister stated, "Reduction in import of coal in the country is always a priority area of the Government".<sup>35</sup>

**Figure 5: Share of Fossil Fuel Imports in All Merchandise Imports (Average 2007-16)**



Source: World Bank, IRENA

Recently, India's imports of thermal coal have risen as state-owned Coal India Limited has been unable to increase domestic coal production in line with demand growth, whilst also dealing with coal transport logistics issues.

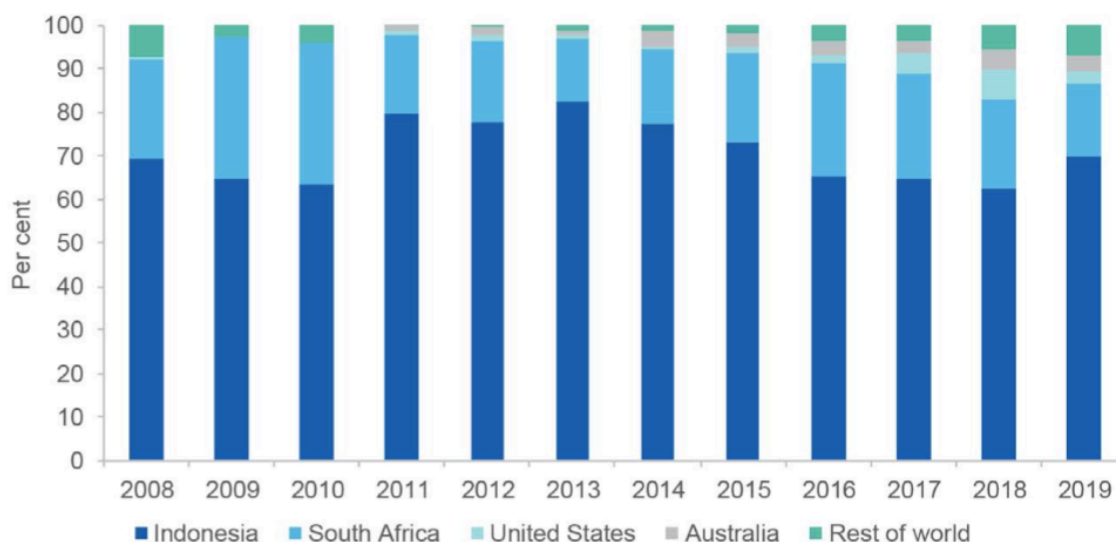
However, India is now taking steps to further boost production and improve transport logistics for domestic coal. Reforms that will allow private companies to commercially mine coal, (currently about 94% of coal in India is mined by state-owned companies, mainly Coal India, Singareni Collieries and NLC India), may be the biggest reform to the Indian coal sector since nationalisation in 1973. This game-changing move will increase competition and drive efficiency in the domestic

<sup>34</sup> LiveMint, [Govt steps on the gas to put India's EV mission in fast lane](#), 5 July 2019.

<sup>35</sup> Economic Times: Energyworld, [India's coking coal imports at 51.84MT in 2018-19](#), 16 July 2019.

coal sector and is expected to lead to a reduced need to import thermal coal.<sup>36</sup> Indian credit rating agency CRISIL, owned by Standard and Poor's, expects this reform alone will cut India's current account deficit by US\$4.4bn annually due to reduced coal imports.<sup>37</sup>

**Figure 6: Indian Thermal Coal Imports by Source**



Note: 2019 data is up to May

Source: IHS (2019) India coal data tables, Office of the Chief Economist – Australian Government

In addition, new dedicated railways are being built to transport coal while Coal India is investing in its own coal rakes to get around the shortages holding up delivery. A recently approved new railway in Chhattisgarh could increase coal production by 100 Mtpa in that state alone.<sup>38</sup> Coal supply reform has already reduced the average rail trip and hence rail costs for coal deliveries by 25% since 2012. The Adani Group, India's largest coal importer, has stated that it expects coal imports to stagnate from the Indian fiscal year 2022 as the logistical issues with domestic coal are resolved.<sup>39</sup>

To increase self-sufficiency, the coal minister has also noted that state-run enterprises NTPC and Bharat Heavy Electricals will convert coal-fired power stations designed for imported coal to ensure they can use domestic supply.<sup>40</sup>

<sup>36</sup> Economic Times: Energyworld, [Approval for auction methodology for commercial coal mining a game changer: Experts](#), 20 February 2018.

<sup>37</sup> CRISIL, [Commercial coal mining can cut import bill by Rs 30,000 cr](#), 6 March 2018.

<sup>38</sup> Economic Times: Energyworld, [Cabinet approves new broad-gauge rail line in Chhattisgarh](#), 26 September 2018.

<sup>39</sup> Reuters, [India's Adani sees six-fold rise in coal mining volume despite challenges in Australia](#), 24 July 2018.

<sup>40</sup> Economic Times: Energyworld, [BHEL-NTPC recalibrating turbines to reduce dependence on imported coal](#): Piyush Goyal, 4 April 2018.



As such, the recent increase in Indian thermal coal imports is likely to prove short-lived. The Australian government's Office of the Chief Economist (OCE) sees India's thermal coal imports peaking in 2020 in its most recent medium-term projection. The OCE projects that Indian thermal coal imports will decline at an average rate of 1.5% per annum out to 2024.<sup>41</sup>

**India's coal ministry is now preparing a new plan to cut coal imports by one-third, or about 85mt, by 2024**

India's coal ministry is now preparing a new plan to go well beyond this forecast, by cutting coal imports by one-third, or about 85mt, by 2024.<sup>42</sup> In August 2019, the government also approved foreign investment in domestic coal mining in order to improve supply.<sup>43</sup>

## Pakistan

With a fleet of new coal plants on the drawing board supported by Chinese finance under the China-Pakistan Economic Corridor (CPEC) program, coal exporters have hopes that Pakistan will be a major growth destination as more established markets sag. Pakistan is already South Africa's second biggest coal export destination.

Unfortunately for coal exporters, there are already signs the Pakistan opportunity will be more limited than hoped.

In January 2019, the 1,320 megawatt (MW) Rahim Yar Khan imported coal-fired power project, a CPEC proposal, was cancelled. The reasons given for this was that Pakistan already has enough power capacity on the drawing board, as well as the growing burden of fossil fuel imports, given the major depreciation of the rupee over the last 12-18 months.<sup>44</sup>

Concerns about the burden that fossil fuel imports place on Pakistan have grown substantially as the nation's economy has deteriorated. The country's economy has recently been characterised by declining gross domestic product (GDP) growth, falling foreign currency reserves, an increasing current account deficit, and a significant depreciation of the rupee (Figure 7). The weakness of the rupee makes imports traded in U.S. dollars, such as coal, increasingly expensive.

The scale of the economy's problems led to the need for another bailout by the International Monetary Fund (IMF), on the condition that Pakistan take steps to address its large debts. Pakistan's biggest creditor is China, thanks in large part to Chinese financing of the CPEC programme. Although unclear at the moment, it is

<sup>41</sup> Office of the Chief Economist, [Resources and Energy Quarterly March 2019](#).

<sup>42</sup> Bloomberg, [India, World's No. 2 Coal Buyer, Plans to Cut Imports by a Third](#), 1 August 2019.

<sup>43</sup> Economic Times Energyworld, [Cabinet approves foreign investment in coal mining; Eases FDI rules for single brand retail](#), 28 August 2019.

<sup>44</sup> Dawn, [Govt puts major CPEC power project on hold](#), 14 January 2019.

possible that IMF conditions may impact the scale of further CPEC power project lending and construction.<sup>45</sup>

**Figure 7: The Pakistan Rupee's Significant Devaluation Has Made Coal Imports More Expensive**



The weakened rupee and consequent cost of coal imports is already impacting the CPEC coal-fired power plants that are already operational. The Port Qasim coal plant near Karachi is reportedly having financial difficulties partly caused by the expense of coal imports.<sup>46</sup> Meanwhile, the Sahiwal coal plant in Punjab province is also apparently having severe financial difficulties.<sup>47</sup> This plant is using imported coal despite the fact it is many hundreds of kilometres from the nearest port, leading to major coal logistics issues.

With the recent completion of the 1,320MW Hub coal power station, the majority of the planned capacity that will use imported coal has already been completed suggesting there is limited upside to come for South Africa. Around 7GW of imported coal-fired power stations are planned in total with 4GW now operational.

Lower-than-expected power demand growth may also impact coal plants that are both planned or already operating. Stagnating economic growth could slow the rate of electricity demand growth going forward and increase the chance of excess power capacity standing idle.

<sup>45</sup> Dawn, [Will CPEC survive the IMF bailout](#), 15 July 2019.

<sup>46</sup> Express Tribune, [CPEC's first power project mired in financial difficulties](#), 10 May 2019.

<sup>47</sup> The News, [Sahiwal coal-fired power plants feared closure on non-payment of dues](#), 3 April 2018.

## Renewable Energy to Grow Significantly

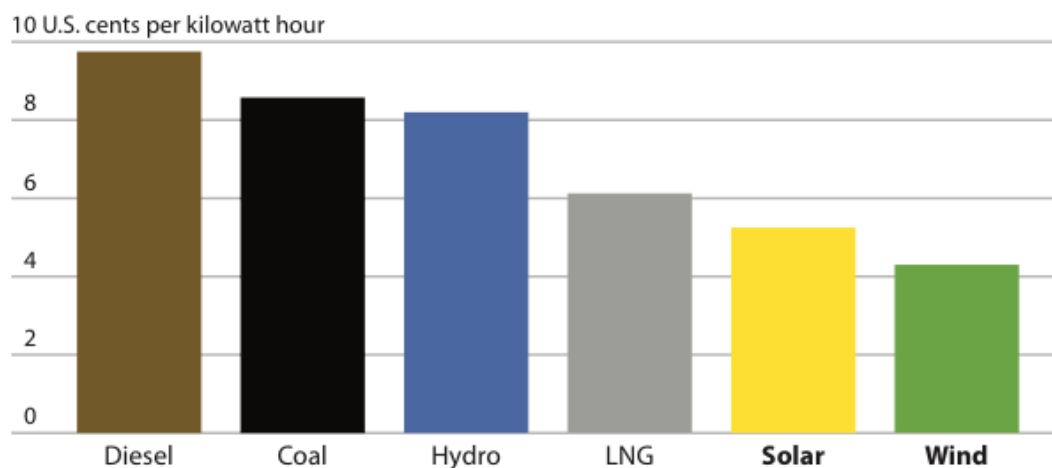
Pakistan's inauspicious start to its coal-fired power development comes within the context of the rapidly declining cost of renewable energy in the country. Power tariffs approved by Pakistan's National Electric Power Regulatory Authority (NEPRA) across all generation sources in 2018 showed that wind and solar are now the cheapest forms of new power (Figure 8).

This tariff decline has occurred despite limited policy support for renewables to date. Some solar has been installed, as well as some wind power within Sindh province's identified wind resource corridors.

However, policy support for renewables in Pakistan looks like it is about to receive a significant boost. The national government has drafted a new renewable energy policy which sets national targets for renewables capacity (excluding hydro) to reach 20% of capacity by 2025<sup>48</sup>, and 30% by 2030, up from the current level of 4%.<sup>49</sup>

### Figure 8: Wind and Solar Are Now the Cheapest Sources of Power in Pakistan

Average levelised tariffs, determined by NEPRA for recent projects in the country, show the renewables' advantage over fossil fuels, with costs expected to continue to decline.



Source: National Electric Power Regulatory Authority (NEPRA), IEEFA calculations

Furthermore, China, the major enabler of coal-fired power in Pakistan, appears to be on board with the power ministry's plan. The Chinese ambassador to Pakistan has stated, "Chinese investors are closely following Pakistan's power-sector policies and are keen to invest in renewable energy".<sup>50</sup>

<sup>48</sup> Bloomberg, [Pakistan Plans Clean Energy Wave to Make Up 20% of Its Capacity](#), 23 July 2019.

<sup>49</sup> Alternative Energy Development Board, [Draft ARE Policy 2019 version 2](#), 21 July 2019.

<sup>50</sup> Express Tribune, [Power ministry strives to raise renewable energy share to 30%](#), 18 January 2019.

Pakistan's significantly increased enthusiasm for renewable energy is likely driven not only by the declining cost of the technology, but also because wind and solar do not require the expensive fossil fuel imports that are placing its economy under such pressure.

**“Chinese investors are closely following Pakistan’s power-sector policies and are keen to invest in renewable energy”**

Import pressure also helps explain Pakistan's continued belief in the need for it to exploit its domestic lignite resources; domestic coal-fired power plants are also favoured for improved energy security outcomes. In addition, Pakistan continues to develop further nuclear power stations and hydro power, despite the huge cost and delays, because they enhance energy security and, in the latter case, potentially help to alleviate water security and flooding.

As such, with hydro, nuclear, and domestic coal-fired power development continuing, and an intention now to significantly increase wind and solar power, it seems that imported coal and LNG projects are the most likely to lose out. Such an approach would appear to make the most sense given Pakistan's economic situation and the usual energy security concerns that any nation state has.

Although there will be some growth in Pakistan's thermal coal imports going forward, this growth is likely to prove disappointing to many coal exporters including those in South Africa.

## South Korea

South Africa's third largest export destination has recently turned a corner which will see its dependence on coal imports begin to decline.

During a public hearing for South Korea's new energy master plan on 19<sup>th</sup> April 2019, the South Korean 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. 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.<sup>51</sup>

South Korea's energy master plan sets long-term energy policy and is renewed every five years.

Under the new 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.<sup>52</sup> The previous renewable energy target, set in 2017, was to reach 20% by

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<sup>51</sup> The Korea Bizwire, [S. Korea to Cut Dependency on Fossil Fuel, Shift to Renewable Energy](#), 19 April 2019.

<sup>52</sup> Reuters, [South Korea steps up shift to cleaner energy, sets long-term renewable power targets](#), 19 April 2019.

2030. 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%.

South Korea is now considering retiring 20 coal-fired power plants and placing output caps on a number of others as it prepares to increase its rate of energy transition yet again.<sup>53</sup>

**The government will “drastically” cut power generation from coal by banning new coal-fired power plants and closing old ones.**

### *South Korea Was Already Moving Away From Coal*

The announcement of the new 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 a dramatically reduced reliance on coal and nuclear and a boost to renewable energy and LNG-fired power generation.

This move has been driven by air pollution concerns in addition to the need to reduce carbon emissions. 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.<sup>54</sup>

In April 2019, 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%.<sup>55</sup> This follows a 20% increase in the coal tax in April 2018. The South Korean government is clearly attempting to drive 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.

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.<sup>56</sup>

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<sup>53</sup> Reuters, [South Korea fires up on renewables, to close more coal plants](#), 18 June 2019.

<sup>54</sup> The Korea Times, [Korea has the worst air of advanced economies, report shows](#), 19 September 2017.

<sup>55</sup> S&P Platts, [South Korea to cut LNG taxes by 74% in April, raise thermal coal tax by 27%](#), 1 February 2019.

<sup>56</sup> Powering Past Coal Alliance, [Ten new Powering Past Coal Alliance members announced at Global Climate Action Summit](#), 13 September 2018.

South Korea's build-out of renewable energy capacity is under way. The country's solar power build-out is set for another record year in 2019 after reaching a new record in 2018 with over 2GW installed. For the first seven months of 2019, 1.64GW of solar has already been installed according to the Ministry of Trade, Industry and Energy, surpassing the government target for the whole year. Cumulative solar installations are approaching 10GW.<sup>57</sup>

With its long coastline, offshore wind will also play an important role in South Korea's energy future. As offshore wind costs continue to drop, South Korea has inaugurated its first offshore wind farm off the coast of Jeju Island.<sup>58</sup> In June 2018, the Energy Ministry announced plans to build 12GW of offshore wind by 2030.<sup>59</sup> South Korea already has 16GW of offshore wind in the pipeline.<sup>60</sup>

The state-owned power utility Korea Electric Power Corp. (KEPCO), 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.<sup>61</sup> 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.<sup>62</sup>

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 by companies such as LG Chem and Samsung SDI.<sup>63</sup>

In February 2018 it was announced that KEPCO had commissioned GE to build a new 4GW high-voltage transmission link between Seoul and the east of the country.<sup>64</sup> Enhanced transmission links are required to connect renewable generation hotspots with load centres in major cities.

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<sup>57</sup> PV Magazine, [South Korea has added 1.64 GW of solar so far this year](#), 9 August 2019.

<sup>58</sup> Offshorewindbiz, [South Korea's First Commercial Offshore Wind Farm Goes Live](#), 17 November 2017.

<sup>59</sup> Yonhap News, [S. Korea to add 12 GW of wind capacity by 2030](#), 26 June 2018.

<sup>60</sup> S&P Platts, [Europe's offshore wind industry expanding into Asia: event](#), 25 June 2019.

<sup>61</sup> Yonhap News, [KEPCO buys interests in 3 solar projects in U.S.](#), 30 March 2018.

<sup>62</sup> Pulse News, [Korea's 6 power firms under KEPCO to invest total \\$3bn in renewable energy over next 2 years](#), 27 December 2016.

<sup>63</sup> Energy Storage News, [IHS Markit: 40% of energy storage pipeline is co-located with solar PV](#), 18 April 2018.

<sup>64</sup> Greentech Media, [South Korea Strengthens Grid to Take On More Renewables](#), 20 February 2018.

## IEA Foresees Plummeting South Korean Coal Imports

Even before the latest announcement from the Ministry of Trade, Industry and Energy, the 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”.<sup>65</sup>

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

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

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.

## Europe

Thermal coal’s outlook in Europe looks poor, even in the short term. Current low gas prices, continuing renewable energy investment, and the higher European carbon price has seen European nations reduce coal-fired power generation beyond expectations this year. Coal power output across Britain, Germany, France, Spain, Portugal and Italy in the second quarter of 2019 was 40% lower than the same period in 2018.<sup>66</sup>

Even Turkey, which at one point was expected to be one of the bright spots of the Atlantic thermal coal market, is going to disappoint the coal mining industry. Like Pakistan, Turkey has seen significant depreciation of its currency and is consequently scaling back plans for plants that run on imported coal. Since 2009, 70GW of planned coal plants in Turkey have been shelved.<sup>67</sup>

In May 2019, thermal coal imports into the EU hit a landmark low. Net thermal coal imports were just 6.6Mt – the lowest net import figure since August 2002.<sup>68</sup>

Increased LNG supply from the U.S. and Australia is partly responsible for the increased abundance and reduced price of gas, resulting in more competition for coal. Meanwhile, increased renewable energy generation could see German coal

<sup>65</sup> IEA: World Energy Outlook 2017, p. 226.

<sup>66</sup> Bloomberg, [Coal’s Demise Quickens in Europe as Market Shift Idles Plants](#), 22 July 2019.

<sup>67</sup> S&P Platts, [Turkish coal-fired plant expansion stalls, with 70 GW shelved since 2009](#), 23 August 2019.

<sup>68</sup> Argus, [EU thermal coal imports at a landmark low](#), 16 July 2019.

imports drop by around 10% in 2019. That would make 2019 the fourth year in a row that Europe's largest coal importer has seen lower volumes arrive.<sup>69</sup>

A sustained increase in the carbon price within the EU emissions trading system (EU ETS) has allowed gas-fired power to compete on cost with coal (Figure 9). The EU carbon price has been on the rise since mid-2017 when the number of available carbon credits was reduced significantly. The price has been in the €25-30 per tonne of carbon emitted range to-date in 2019.

Analysts predict the carbon price will rise further, to coal's disadvantage, as the supply of carbon credits is further restricted going forward.<sup>70</sup> On top of this, there are indications of increased policy support for further carbon emissions reductions with the newly elected President of the European Commission promising further environmental action.<sup>71</sup>

**Figure 9: EU Carbon Emissions Allowances Are Near an All-Time High**



Source: ICE Futures Europe, Wall Street Journal

In the longer term, the outlook for thermal coal demand in Europe is even more dire for exporters. Guillermo Fonseca, the CEO of Cerrejón Coal which is owned by BHP, Anglo American and Glencore, projects that thermal coal demand from some nations within the Atlantic market may fall another 50% to 60% over the next five to seven years. Cerrejón exports a large proportion of its coal production to Europe and is now considering reducing coal production.

<sup>69</sup> Reuters, [German coal imports could fall 10% in 2019 in face of rising renewable power](#), 18 July 2019.

<sup>70</sup> Wall Street Journal, [Once-Unpopular Carbon Credits Emerge as One of the World's Best Investments](#), 11 August 2019.

<sup>71</sup> Financial Times, [Carbon credit costs soar as EU toughens stance on environment](#), 18 July 2019.



Fonseca has stated, “The large impact we foresaw from the market disappearing, we always saw as out there in the future. Well, the future is now.”<sup>72</sup>

It has been reported that BHP has hired JP Morgan to find a buyer for its stake in Cerrejón as it considers leaving the thermal coal sector altogether.

**“The large impact we foresaw from the market disappearing, we always saw as out there in the future. Well, the future is now”**

## Africa

Any expectation that the rest of Africa will provide a major coal export opportunity for South Africa as the continent develops are likely to meet disappointment. With renewable energy increasingly the technology that is replacing expensive diesel-fired generation, or bringing power to off-grid areas, the opportunity for a major coal capacity expansion across Africa seems to have gone. Planned coal-fired power build-outs in nations such as Kenya and Egypt are behind schedule and likely to be increasingly limited.

### Kenya

The one coal-fired power proposal that has made significant progress in Kenya is the 1,050MW Lamu project. This proposal received a setback in June 2019 when a tribunal cancelled the environmental licence for the project.<sup>73</sup> The developers will need to complete a new environmental impact study with community involvement if they wish to proceed.

In the meantime, renewable energy is starting to make substantial progress in Kenya and is already outclassing fossil fuel power generation. Already Africa’s geothermal power leader, Kenya is continuing to expand its geothermal power capacity. However, the nation’s excellent wind and solar resources means it has the potential to become an African renewables leader across other technologies.

Kenya saw its renewable power capacity increase by 22% in 2018, led by a wind power expansion that has made it an African wind energy leader. Kenya’s Lake Turkana wind farm is the largest in Africa at 310MW. Since coming into operation, it has been replacing ageing and expensive diesel generation.

Replacement of diesel has been cited as a key reason determining the need for the Lamu project. However, newer and ever-cheaper technology has beaten coal to it. A recent IEEFA report found the proposed Lamu coal plant will hinder Kenya’s economic growth, not support it.<sup>74</sup>

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<sup>72</sup> Bloomberg, [One Coal CEO Sees Writing on Wall, Says Make Money While You Can](#), 9 August 2019.

<sup>73</sup> Bloomberg, [Kenya Cancels Environmental License of \\$2 Billion Coal-Power Plant](#), 27 June 2019.

<sup>74</sup> IEEFA, [The Lamu Coal Plant will hinder, not spur, economic growth in Kenya](#), 10 June 2019.

IEEFA found that, under the 25-year power purchase agreement, Kenya would be required to pay US\$360m in annual capacity charges even if the plant generated no electricity. Furthermore, the plant proponent's claims over the cost of electricity produced are unrealistically low, and the actual cost could be up to ten times higher.

Another 100MW wind farm in Kenya has recently reached financial close. In addition, a succession of new utility-scale solar plants is under development in Kenya following the implementation of the Garissa solar plant, and as the cost of solar power drops across Africa.

The further delay to the Lamu project on top of the long development times such proposals require, means that the rapid development pace of renewable technology has overtaken coal and is undermining the rationale for coal projects. As such, the prospect of finding markets in Kenya for South African coal exports is limited.

## Egypt

Under Egypt's 'all of the above' approach to its power generation capacity build out, which also includes plans for nuclear, gas, wind and solar power, the nation intends to install a number of coal-fired power stations. These plans, however, are increasingly at risk of being left behind by Egypt's renewable energy progress.

Indeed, a recent analysis by GEM found that despite substantial planned and proposed GWs, Egypt has not implemented any of the proposed projects and has an effective conversion rate of planned to commissioned coal plants of zero.<sup>75</sup>

Until recently, Egypt had plans for four large coal-fired power stations. However, there appears to have been no recent progress with the 2GW Safaga proposal and it is considered shelved. The 4GW Marsa Matruh also appears to have stalled, especially since the huge 6.6GW Hamarawein coal power proposal became apparent. The latter is in the early stages of development with no guarantee that it will proceed in its present form.

The other Egyptian coal project in the pipeline is the 2.6GW Ayoun Moussa proposal which now appears to have been delayed. The project has been pushed back due to overcapacity concerns, especially since new wind and solar projects have come online. There are also concerns the project may cost more than originally envisaged.<sup>76</sup>

Meanwhile, Egypt's renewable energy progress is continuing. Its latest wind power development, a 250MW project being built by a consortium of Orascom, Engie and Toyota Tsusho, is nearing completion.<sup>77</sup> Financiers of the project include the Japan Bank for International Cooperation, historically a major supporter of coal-fired power development in emerging economies.

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<sup>75</sup> Carbon Brief, [How plans for new coal are changing around the world](#), 13 August 2019.

<sup>76</sup> Daily News Egypt, [EEHC delays coal-fired plant due to production surplus](#), 15 July 2019.

<sup>77</sup> Daily News Egypt, [Toyota-Orascom-GDF alliance to complete Gulf of Suez wind farm by October](#), 16 July 2019.

In August 2019, World Bank Group members - the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA), agreed to finance the 252MW West Bakr Wind project at Egypt's Gulf of Suez. The project is expected to produce electricity at well below the average cost of generation in Egypt.<sup>78</sup>

Seeking to capitalise on its excellent renewable energy resources, Egypt is targeting 20% of electricity from renewables by 2022 and 42% by 2035.<sup>79</sup> Solar power development is now continuing via competitive bidding to discover ever lower tariffs.

Given the speed of renewable energy technology development and cost reductions, as well as increasing global concern about carbon emissions, the power contribution from renewables is more likely to out-perform expectations going forward. Conversely, despite Egypt's current technology neutral approach, technologies such as coal-fired and nuclear power are likely to underperform expectations of future contribution to power generation due to increasing concerns over cost, build time, carbon emissions and air pollution.

## Other Markets

South African coal exporters are likely to seek alternative markets going forward as opportunities for growth in the main export destinations dry up. However, the long term outlook for coal exports to these other destinations is also likely to disappoint South African exporters. Furthermore, with the global seaborne coal trade set to go into permanent decline, South Africa will see increased competition from other major thermal coal exporters such as Indonesia and Australia, especially in markets where these exporters are dominant.

### China

China is likely to move away from thermal coal imports in the longer term as domestic coal, renewables, gas, hydro and nuclear power fulfil growing power demand. The government seems determined to become more self-reliant on coal and to reduce the need for coal imports as much as possible in the long run.<sup>80</sup>

The Australian government's Office of the Chief Economist sees China's thermal coal imports declining at an average annual rate of 5.2% per year out to 2024 in its most recent medium term projection.<sup>81</sup>

Significantly, imports of thermal coal make up only a small proportion of overall Chinese thermal coal consumption, which is dominated by domestic supply. China is in the process of rationalising its domestic coal market and improving mining

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<sup>78</sup> IFC, [IFC and MIGA To Support Landmark Wind Farm on Egypt's Gulf of Suez](#), 8 August 2019.

<sup>79</sup> IRENA, [Renewable Energy Outlook: Egypt](#), 2018.

<sup>80</sup> Bloomberg, [China's Slumping, So What's Up With Coal?](#) 14 August 2019.

<sup>81</sup> Office of the Chief Economist, [Resources and Energy Quarterly](#), March 2019.

efficiency which is likely to see replacement of imported coal with domestic coal in the long run.

China added 194Mt of new domestic coal mining capacity in 2018,<sup>82</sup> not far off the total thermal coal imported into China in 2018 (216Mt). New domestic coal mine approvals have continued into 2019 with 141Mt of annual capacity given the go-ahead in the first six months of the year.<sup>83</sup> As it expands domestic production, China is also increasing coal rail transport connectivity with the aim of increasing capacity by 650Mt, or 30%, by 2020.<sup>84</sup>

China is also building power transmission capacity to better utilise domestic coal. The world's longest ultra-high voltage transmission line is under construction to link coal-rich Xinjiang province in the west to the country's highly populated east. Coal transportation out of Xinjiang has proved difficult and the new transmission line is expected to reduce thermal coal imports into eastern China by about 30Mt per annum.<sup>85</sup>

**The Australian government's  
Office of the Chief Economist  
sees China's thermal coal  
imports declining at an  
average annual rate of 5.2%  
per year out to 2024**

### Air Pollution Concerns in China

Although overall coal consumption in the power system is increasing as electricity demand continues to rise, the proportion of power generated by coal is declining. In 2018, coal's share in China's power mix dropped to 59% from the 2012 peak of 68.5%.

This shift is driven in part by the technological transition that increasingly means renewables are the more economic option, in addition to the need to act on carbon emissions. However, much of the driving force behind Chinese plans to increase its reliance on renewables, nuclear and gas is linked to its ongoing commitment to reduce air pollution.

China is now in its sixth year of its "war on pollution" and in July 2018 released its 2018-20 air pollution action plan. The plan aims to take measures to reduce smog, including cutting coal consumption.<sup>86</sup> The expanded plan now applies to 82 Chinese cities and the major coal producing provinces of Shanxi and Shaanxi.

Renewable energy and coal-to-gas switching is being prioritised as China grapples with its air pollution crisis. China recently increased its renewable energy consumption targets from 20% to 35% by 2030.<sup>87</sup> China has been rolling out renewable energy at a rapid pace, with 2017 a landmark year for clean energy

<sup>82</sup> Reuters, [China boosts coal mining capacity despite climate pledges](#), 26 March 2019.

<sup>83</sup> Reuters, [China coal mine approvals surge despite climate pledges](#), 6 August 2019.

<sup>84</sup> Bloomberg, [China's Mammoth Coal Industry Gets Bigger, Crowding Out Imports](#), 9 April 2019.

<sup>85</sup> S&P Platts, [Chinese thermal coal demand to fall with launch of new power transmission line](#), 4 July 2019.

<sup>86</sup> Reuters, [China to cut coal use, curb steel in 2018-2020 pollution plan](#), 4 July 2018.

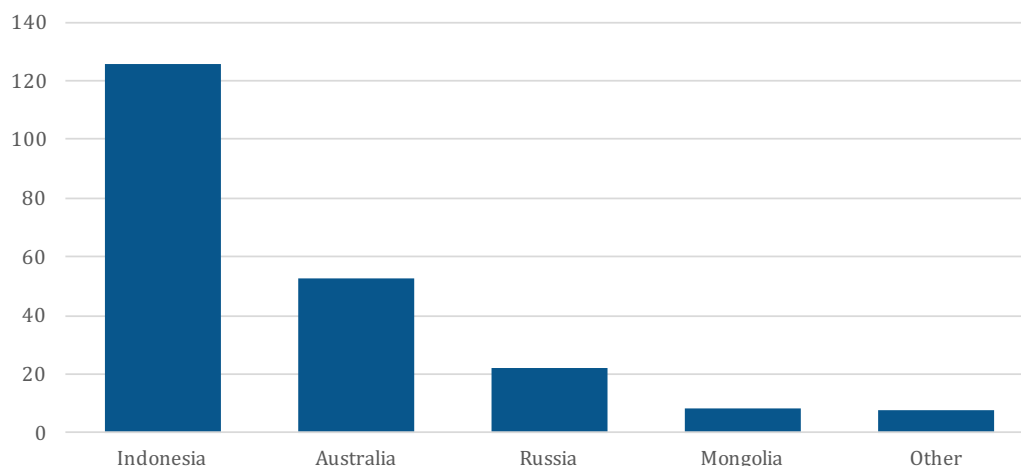
<sup>87</sup> Bloomberg, [China Steps Up Its Push Into Clean Energy](#), 26 September 2018.

including a world-leading 53GW of solar power installed. Although 2018's 45GW did not match that world record rate of installs, China continues to add to its enormous renewable energy capacity.

For the six months to June 2019, China's renewable power capacity was up 9.5% year-on-year after adding 9GW of wind capacity and more than 11GW of solar capacity. Renewable capacity increases and continuing action to prevent curtailment of wind and solar led to a 14% increase in renewable power generation in the first half of 2019 compared to the prior year.<sup>88</sup>

The government is aiming for 210GW of wind power by 2020, per its five-year plan for wind power, and is on track to beat this target according to a 2018 report from Wood Mackenzie. Cumulative Chinese wind capacity will exceed 400GW by 2027, including a significant uptake of offshore wind, according to the report.<sup>89</sup>

**Figure 10: China's 2018 Thermal Coal Imports by Source (Mt)**



Source: Office of the Chief Economist, Australian Government

The IEA projects a significant increase in China's gas imports going forward under its "Blue Skies" anti-pollution policy. By 2023, China is expected to be importing 171 billion cubic metres (bcm) of natural gas, up 82% from 94bcm in 2017. This will include 93bcm of LNG in 2023, up from 51bcm in 2017. China's overall gas demand is expected to increase 59% to 376bcm by 2023.<sup>90</sup>

With domestic coal, renewables and gas combining with hydro and nuclear power all set to squeeze out China's thermal coal imports going forward, Indonesia and Australia will be the coal exporters most impacted (Figure 10).

<sup>88</sup> Reuters, [China's renewable power capacity up 9.5% year-on-year in June](#), 25 July 2019.

<sup>89</sup> Asian Power, [China's wind power capacity could reach 400GW after 2027: report](#), 3 August 2018.

<sup>90</sup> IEA, Gas Market Report 2018.

However, given that China is the world's largest thermal coal export destination, the decline will have major knock-on effects on the global market. Indonesian and Australian coal exporters to China will need to find other markets to replace it going forward and are likely to have their eyes on countries in South and Southeast Asia.

As the Asian seaborne coal market shrinks, competition to supply the remaining demand will intensify.

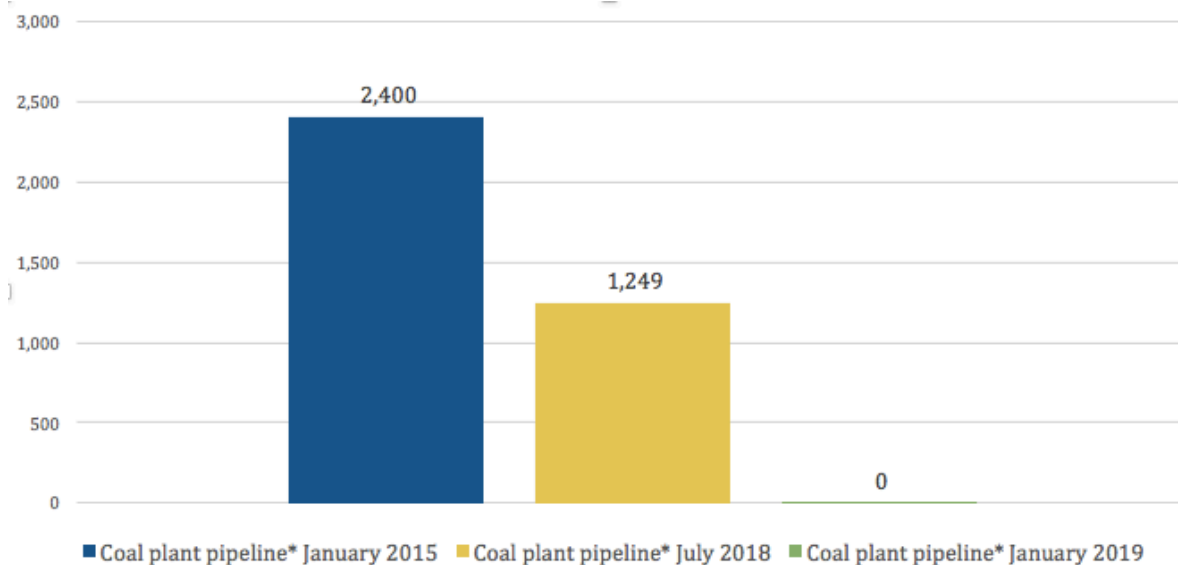
## Taiwan

Over the last four years the pipeline of proposed coal-fired power plants in Taiwan has shrunk from 2.4GW to zero after a series of project cancellations (Figure 11). Most recently, the 1,200MW Shenao power proposal was cancelled in October 2018.<sup>91</sup> This was the last major coal-fired power plant in Taiwan's pipeline.

Taiwan's electricity generation from coal peaked in 2007 according to BP data.<sup>92</sup> Coal's share of generation is expected to drop from 46% to 30% by 2025 as renewable energy is increased from 6% to 20% of generation over the same timeframe.

Taiwan's renewable energy target requires a roll-out of 25GW of renewables by 2025 and solar will be a major contributor. A solar development zone was declared in Changhua in July 2018—fast becoming a renewables hub within Taiwan—for the development of Taiwan's largest solar farm (320MW).<sup>93</sup>

**Figure 11: Taiwan's Coal-Fired Power Pipeline Has Shrunk to Zero (MW)**



Source: Global Energy Monitor

\*Plants announced or in the pre-permit or permitted stages of development

<sup>91</sup> Taiwan News, [Government to scrap Shenao power plant project: Taiwan premier](#), 12 October 2018.

<sup>92</sup> BP - [Statistical Review of World Energy 2019](#).

<sup>93</sup> Taipei Times, [Special zone for solar power set up in Changhua](#), 18 July 2018.

## Offshore Wind

Much of Taiwan's renewables development will be driven by offshore wind. This sector has been spearheaded by northern Europe, but now other countries around the world are set to benefit from the experience and cost reductions discovered, including China, Japan, India, Vietnam and South Korea. The Taiwanese government is accelerating plans for offshore wind deployment, aiming to install a total capacity of 5.5GW by 2025.<sup>94</sup> Major global offshore wind players are already present in the Taiwan market including Danish power utility Ørsted, and offshore wind turbine manufacturers MHI Vestas and Siemens Gamesa.

Taiwan looks like becoming a major hub for offshore wind, as the industry builds its Asia focus as part of the next stage of global offshore wind development beyond Europe.

Offshore wind across Asia has the potential to displace a significant proportion of global seaborne thermal coal volumes. The IEA expects global offshore wind installations to more than triple to over 60GW by 2025<sup>95</sup> and Asian nations have the potential to build a combined 100GW of offshore wind by 2030. China has a target of 10GW by 2020 and Wood Mackenzie Power & Renewables suggests China could reach 30GW by 2030. India has an initial target of 5GW by 2022 and then 30GW by 2030. India is currently preparing its first 1GW offshore wind tender for projects off the coast of Gujarat state. South Korea has an 18GW target by 2030 while Japan and Taiwan have targets of 10GW and 5.5GW, respectively.

These targets are ambitious given that Asia is in the early stages of its offshore build-out. However, with utilisation rates of offshore wind having the potential to reach 55%, if only 70% of this 100GW target is installed, this still could displace 300m-350m tonnes of thermal coal annually—about 35%-40% of the global seaborne thermal coal trade.<sup>96</sup>

With no more coal-fired power plants in the planning phase and Taiwan increasingly turning towards alternatives including renewable energy, it would appear there is little hope of Taiwan providing any long-term growth for thermal coal exporters in the long run.

## Bangladesh

Like Pakistan, Bangladesh is a nation receiving significant construction and financing support from China to build coal-fired power plants as it seeks to move away from reliance on declining reserves of domestic gas and expensive oil- and diesel-fired generation. Chinese support amounts to around 14GW of coal plants and some US\$7bn of proposed finance, but the majority of these proposals are delayed with

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<sup>94</sup> Reuters, [Offshore wind power firms see Taiwan as a battleground to expand in Asia](#), 1 May 2018.

<sup>95</sup> IEEFA, ["IEA: Offshore wind capacity could top 200GW by 2040"](#), 26 September 2018.

<sup>96</sup> IEEFA, ["Offshore wind power: the underexplored opportunity to replace coal in Asia"](#), 30 August 2018.

funding yet to be committed.<sup>97</sup> Bangladesh has a coal power plant implementation success rate - the percentage of planned coal power capacity that has been completed or begun construction versus the amount that has been cancelled or shelved – of just 22%.<sup>98</sup>

The one coal-fired power plant that is nearing completion has recently signed a coal supply agreement with Indonesia in a move that seems to signal limited upside for South African and Australian thermal coal exporters in Bangladesh. PT Bayan Resources of Indonesia will supply lower-energy content coal to the first unit of the Payra coal-fired power plant expected to come on line in late 2019.<sup>99</sup>

This appears to be another move suggesting that coal price is a more important factor in determining coal supply than energy content. With Asian coal power tariffs under pressure from the rise of renewables and LNG, securing lower cost coal is taking precedence over coal with a higher energy content that can slightly reduce emissions (see ‘[Increasing Competition in a Declining Market](#)’ section).

Meanwhile, as coal-fired projects languish, LNG-fuelled power plants have been gaining momentum in Bangladesh. In July 2018, agreements valued at US\$7.4bn to build 6GW of LNG-based power generation and related infrastructure were announced.<sup>100</sup> In June 2018, the Asian Development Bank approved a US\$500m loan for an 800MW gas-fired plant in Khulna<sup>101</sup> and in September 2018 an agreement was signed with Siemens to develop a 3.6GW LNG-fired plant.<sup>102</sup> In June 2019 it was revealed that multiple international companies have expressed an interest in building Bangladesh’s first onshore LNG terminal.<sup>103</sup>

In addition, renewable energy is now gaining momentum in Bangladesh after having previously fallen behind the progress achieved across the rest of Asia. In October 2018 the nation’s first truly utility-scale solar plant was commissioned. The impetus has continued since then with multiple agreements signed for the building of further solar power capacity.

Wind power is also making some progress in Bangladesh following a 2018 U.S. National Renewable Energy Lab study that demonstrated significantly more wind power potential than previously thought. Bangladesh’s Power Development Board has consequently invited bidders for wind power projects totalling around 150MW.

The long development times of coal proposals and the rise of renewables and LNG are likely to limit opportunities for coal exporters in Bangladesh below expectations. Furthermore, there is already evidence that cheaper Indonesian coal will be

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<sup>97</sup> IEEFA, [China at a Crossroads: Continued Support for Coal Power Erodes China’s Clean Energy Leadership](#), 22 January 2019.

<sup>98</sup> Carbon Brief, [How plans for new coal are changing around the world](#), 13 August 2019.

<sup>99</sup> Jakarta Post, [Indonesian firm to export coal to Bangladesh](#), 19 June 2019.

<sup>100</sup> Daily Star, [\\$7.4b deals inked to produce 6,000MW](#), 12 July 2018.

<sup>101</sup> Daily Star, [ADB gives \\$500m for 800MW plant](#), 27 June 2018.

<sup>102</sup> Dhaka Tribune, [Bangladesh seals deal for another 3,600 MW power plant](#), 8 September 2018.

<sup>103</sup> Reuters, [Bangladesh receives interest from 12 companies to build LNG terminal](#), 20 June 2019.



favoured, especially given Indonesia faces the prospect declining exports to China, its biggest market.

## Vietnam

Like other emerging Asian nations, plans to build expensive coal-fired power stations in Vietnam are reliant on heavily concessional government finance from the export credit agencies (ECAs) of Japan, China and South Korea. But with increasing international pressure on these ECAs to cease international coal financing on climate grounds, and the agencies instead starting to finance renewable energy projects, there is a serious likelihood that this concessional coal finance will dry up in the future.

Without financial subsidises, the high cost of new imported coal-fired power plants will then mean that the expected build-out of such plants in places like Vietnam, Bangladesh and the Philippines will never happen to the extent predicted by major coal exporters.

Japanese and South Korean coal plant builders appear to be moving away from new coal projects beyond those they are already committed to. A succession of Japanese trading houses have announced new policies that move them away from coal-fired power and coal mining.<sup>104</sup>

Korean involvement in Vietnam's coal build-out may also be slowing. At a 2018 Korean National Assembly hearing, the CEO of Korean Western Power, a subsidiary of Korean electricity utility KEPCO, disclosed that it was considering turning its Quang Tri 3 coal-fired power project in Vietnam into a renewable energy project.<sup>105</sup>

Difficulties in financing power projects have been identified as an issue in a June 2019 report from Vietnam's Ministry of Industry and Trade. The report also notes the significant development delays being experienced at many of the nation's coal-fired power projects.<sup>106</sup> With Vietnam's power demand rising fast, these delays risk leaving the country short of power in the near future.<sup>107</sup>

Meanwhile, coal is facing increasing competition from LNG<sup>108</sup> and renewables in Vietnam. In June 2018, Vietnam announced a significantly increased ambition for renewable energy, aiming to triple electricity output from renewable sources and for 26% of households to use solar by 2030.<sup>109</sup>

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<sup>104</sup> IEEFA, [Japanese Thermal Coal Consumption Approaching Long Term Decline: Australia's Biggest Export Destination to Transition Away From Coal](#), 9 July 2019.

<sup>105</sup> SFOC, [중부발전 사장, 국감에서 씨레본 3호기 중단하였다고 밝혀 - 중부발전/서부발전 국정감사 질의 응답](#), 19 October 2018.

<sup>106</sup> Ministry of Industry and Trade, [On the Implementation Progress of Power Projects in the Revised Power Development Plan 7](#), 4 June 2019.

<sup>107</sup> Reuters, [Vietnam will face severe power shortages from 2021: ministry](#), 31 July 2019.

<sup>108</sup> VN Express, [PM talks up Mekong Delta potential for gas-fired power plants](#), 27 July 2018.

<sup>109</sup> Reuters, [Vietnam sets out green ambitions with bold targets for solar, rare earth](#), 4 June 2018.

The rate of solar installations in particular has exploded in recent months as projects rushed to finish in time to qualify for 20-year feed-in-tariffs. Vietnam's solar power capacity has increased over 400 times within 12 months – from 10MW in June 2018 to 4.5GW by June 2019. The rate of installation was such that Vietnam has now overtaken Australia in total utility-scale solar capacity.<sup>110</sup>

In contrast to the delays being experienced by Vietnamese coal power projects, the average build time for Vietnam's solar power projects completed over the last 12 months was just 275 days.

Although the rate of Vietnam's solar installation cannot be maintained at this extraordinary level, future cost declines will support continued installation. In addition, Vietnam is looking to exploit its long coastline which makes it an ideal place to develop offshore wind.<sup>111</sup>

**Vietnam's solar power capacity has increased 400 times within 12 months – from 10MW in June 2018 to 4.5GW by June 2019**

Although renewable energy will continue to make significant inroads into the Vietnamese power system as it will all over Asia, it will remain a coal growth market, although the growth may end up disappointing coal exporters. In addition, South African exporters hoping to capitalise on rising Vietnamese imports will find increasing competition from Indonesia and Australia, as their biggest export destinations – China, India, Japan and South Korea– reduce imports in the longer term.

## Thailand

Thailand looks like it will also disappoint thermal coal producers seeking to replace lost export markets with growth in South-East Asia.

In April 2019 the Thai government approved a new national energy plan that will see Thailand's power generation capacity reach 77GW by 2037, up from 40GW currently. Coal-fired power is planned to contribute 12% to overall capacity, down from 25% in the previous energy plan.<sup>112</sup>

Reduced reliance on coal will be compensated for with increased emphasis on LNG and renewables. The new energy plan calls for Thailand to achieve 20% power capacity from renewable energy by 2037. However, a July 2019 amendment to Thailand's Alternative Energy Development Plan suggests the nation could target 33% renewable energy capacity by 2037.<sup>113</sup> The capacity of the grid to integrate such a rapid expansion of intermittent variable renewable energy capacity is a constraining factor, but in August 2019 Thailand referenced its ambition to be a

<sup>110</sup> PV Magazine, [Vietnam overtakes Australia for commissioned utility scale solar following June FIT rush](#), 5 July 2019.

<sup>111</sup> IEEFA, [Vietnam looks to tap huge offshore wind potential](#), 16 April 2019.

<sup>112</sup> Reuters, [Thailand approves power plan, expects capacity to reach 77 GW by 2037](#), 30 April 2019.

<sup>113</sup> National News Bureau of Thailand, [Energy Ministry increases Renewable Energy ratio](#), 4 July 2019.

regional hub for international electricity grid connectivity, providing significant renewable and hydroelectricity export revenue potential, a major threat to regional imports of thermal coal.

Large Thai companies are embracing renewables. Thailand's largest company, the energy conglomerate PTT is boosting investment in electricity generation with an emphasis on renewables, citing a subdued oil outlook, energy security and climate change as justification.<sup>114</sup> Meanwhile Gulf Energy Development is seeking to electrify South East Asia without the use of coal-fired power.<sup>115</sup>

## Philippines

A July 2019 directive from the President of the Philippines requires the nation to reduce dependence on coal.<sup>116</sup>

In the Philippines, high electricity prices, partly driven by reliance on expensive coal, diesel and oil imports, means that renewable energy alternatives can already outcompete fossil-fuel based generation across many islands of the Philippines archipelago.<sup>117</sup> Meanwhile, an over-commitment to coal-fired power has led to declining utilisation rates and the prospect of stranded assets.

**A July 2019 directive from the President of the Philippines requires the nation to reduce dependence on coal**

Coal-fired power plant owners in the Philippines are already acting to avoid this stranded asset risk. In May 2018, Ayala Group, one of the Philippines largest listed companies, announced that its AC Energy power generation arm will seek to sell 50% of its coal-fired power assets.<sup>118</sup> Coal-fired power currently accounts for about 80% of Ayala's power portfolio with the rest coming from wind, solar and geothermal sources. The company is now seeking to change directions by moving away from coal with its clouded outlook, while raising capital to invest in more sustainable power projects.

Ayala is investing in renewable energy projects in Australia and Vietnam and, along with other companies, will increasingly invest in renewables in the Philippines as the technological and economic advantages of clean energy become ever more apparent. In August 2018, Philippine utility Meralco received bids in a solar power

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<sup>114</sup> Bloomberg, [Thai Oil Giant Boosts Renewables Funding Over 'Uncertain' Crude Outlook](#), 2 July 2019.

<sup>115</sup> Bloomberg, [Tycoon Declares Coal Doomed in Last Bastion of Big Bank Aid](#), 18 May 2019.

<sup>116</sup> Reuters, [Philippines readies new renewable energy policies to curb coal dependence](#), 25 July 2019.

<sup>117</sup> Eco Business, [Electricity in the Philippines does not to be so expensive – or dirty](#), 16 May 2018.

<sup>118</sup> Manila Standard, [Ayala selling \\$1-billion coal plants](#), 20 May 2018.

tender as low as US\$44/MWh – the lowest bid for large scale solar in Southeast Asia at that date.<sup>119</sup>

The Philippines is now preparing two new renewable energy policies to comply with the President's July 2019 coal directive. One policy will mandate a minimum proportion of renewable energy that power distributors will have to source, with the minimum to increase each year. The other is believed to be aimed at making it easier for retail power customers to demand more renewable energy.

As an archipelago dependent on fossil fuel imports, energy security is a major concern for the Philippines. Motivation to reduce coal dependence is likely to be as much about energy security as it is about economic or climate concerns.

## Malaysia

Following project cancellations, Malaysia does not have any new coal-fired power plants under development beyond what is already operating or under construction. It seems likely that the opportunity for a major build-out of new coal-fired power capacity is now in the past and that newer, renewable energy technology will dominate capacity additions in the coming decades.

The energy minister stated in a 2018 speech that renewables are the key to Malaysian energy security and affordability. The Minister specifically called out the nation's reliance on imported coal as an energy security risk and stated that more renewables will help address this issue.<sup>120</sup> The government has committed to raise Malaysia's renewable energy capacity (excluding large hydro) from 2% to 20% by 2025.<sup>121</sup>

## Japan

Although not a major market for South Africa, Japan is the fourth largest importer of thermal coal globally behind China, the EU and India. There is likely to be little opportunity for South Africa to boost exports to Japan as other markets decline as Japan's coal-fired power capacity is also set to decline in the long term even if the Japanese government makes no further effort to reduce carbon emissions.<sup>122</sup>

The pipeline of coal-fired power plants under development in Japan is shrinking precipitously as projects get cancelled. The pipeline has collapsed 64% in the last four years. From almost 12.7GW of projects in the pipeline at January 2015, the latest figures put the pipeline at under 4.6GW. Of the remaining capacity, 2.5GW is now in doubt; the 1.3GW Akita coal power proposal of Marubeni and Kansai Electric Power Corp. was supposed to begin construction in August 2019 but has now been pushed back. It has been reported that Marubeni and Kansai Electric have given up

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<sup>119</sup> PV Magazine, [Philippine utility Meralco receives Southeast Asia's lowest solar bid](#), 13 August 2018.

<sup>120</sup> The Star, [Ministry to review IPP contracts, four cancelled](#), 12 July 2018.

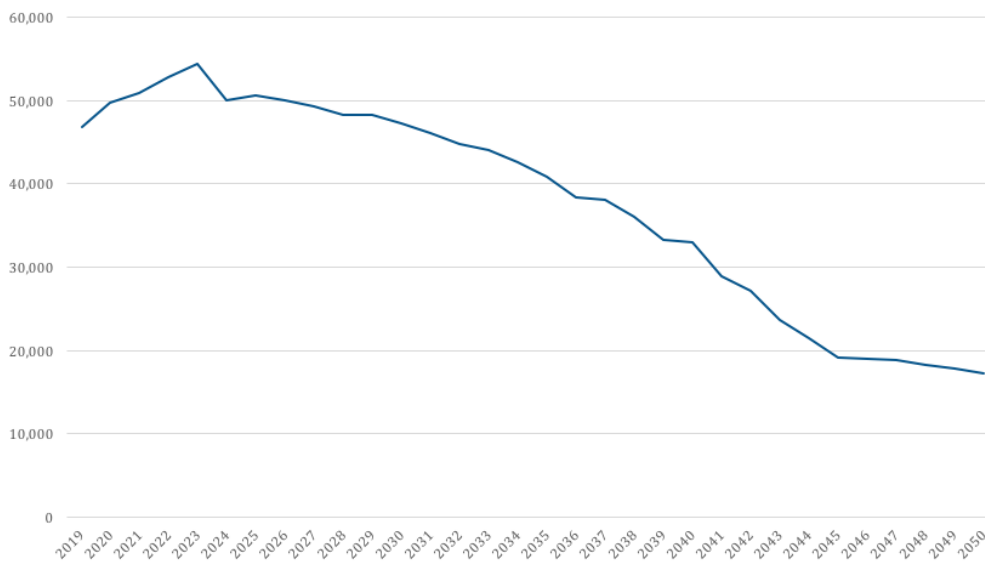
<sup>121</sup> Malay Mail, [Yeo: Malaysia aiming for 20pc renewable energy use by 2025](#), 3 September 2019

<sup>122</sup> IEEFA, [Japanese Thermal Coal Consumption Approaching Long Term Decline](#), 9 July 2019.

grid access rights for the project – possibly indicating the proponents have effectively cancelled the project.<sup>123</sup>

It now seems clear that no new coal plant proposals will be made in Japan.

**Figure 12: Japan’s Business-As-Usual Coal-Fire Power Capacity (MW)**



Source: Global Energy Monitor, IEEFA calculations

The 8.7GW of plants already under construction in Japan will quickly be offset by closures of existing plants as they reach the end of their operating life, assuming they do not have their operating lives extended. By 2024, 8.2GW of coal-fired power capacity is due for retirement according to Global Energy Monitor data.

With no new coal plants scheduled to come online after 2025, coal-fired power capacity will peak in 2023 and then progressively decline out to 2050 as existing plants reach the end of their operating life (Figure 12).

## Increasing Competition in a Declining Market

As long term demand in the Asian seaborne thermal coal market fades, South Africa will not be the only exporter impacted. The other major exporters in Asia will also need to seek alternatives as their primary markets decline.

As the world’s largest thermal coal importer, the future of China’s thermal coal imports will have major knock-on effects around the Asian market. A decline in China’s thermal coal exporters will impact Indonesia above all as it is China’s major overseas supplier. Indonesia will seek other markets to fill the gap, very possibly at

<sup>123</sup> Reuters, [Kansai Electric, Marubeni delay construction of coal-fired power plant](#), 15 August 2019.

the expense of Australia and South Africa. The impact could be compounded if Indonesia’s number two export destination – India – also begins to reduce imports.

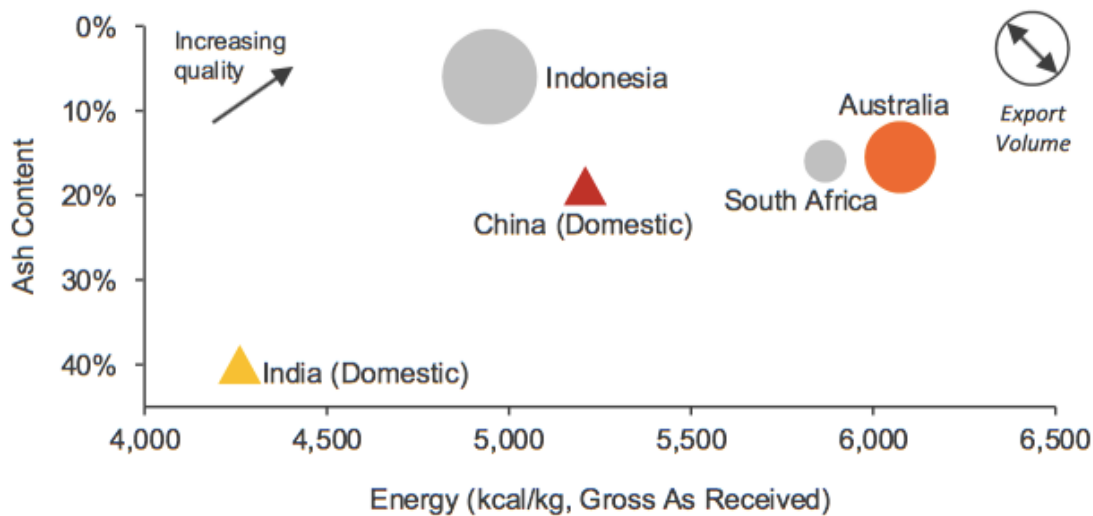
Meanwhile, as well as being one of South Africa’s largest export destinations, South Korea is also a major destination for both Indonesian and Australian thermal coal. In addition, Australia is also set to see declining demand from its biggest off-taker – Japan – in the long run.

The loss of the major destinations is likely to see significantly increased competition between South Africa, Australia and Indonesia for Asian growth markets such as Vietnam. Other exporters into the Asian market, such as Russia and the U.S., will also be eyeing such markets. Vietnam is already considering thermal coal imports from the U.S. as American domestic coal demand continues to decline.<sup>124</sup>

South Africa will have a geographical disadvantage in Southeast Asian markets as both Indonesia and the Australian east coast are closer, offering lower freight costs. Conversely, South Africa may have an advantage in South Asia for the same reason, particularly over Australian coal where Indian importers import some higher energy coal to blend with higher quantities of lower quality product.

South Africa and Australia may be hoping that the higher energy content of their exported coal may give them an advantage over lower energy Indonesian coal. However, there is little evidence that nations will favour higher energy coal in the long term unless the energy-adjusted price is favourable.

**Figure 13: Relative Energy and Ash Content of Coal by Source**



Source: Aurizon Holdings Ltd

<sup>124</sup> Reuters, [Vietnam mulls importing U.S. coal for power generation](#), 6 August 2019.

Now that renewable energy is increasingly cheaper than new coal-fired power plants across an increasing share of the Asian market (China is set to reach grid parity for both solar and wind by 2020 with zero subsidy support<sup>125</sup>, while Indian renewables are well below grid parity, which was reached back in 2017), any nation concerned with lowering carbon emissions and stranded asset risk will simply turn away from new coal plants altogether and use cheaper, zero-emission technology.

Furthermore, any nation that is less concerned about lowering emissions will likely stick with cheaper, lower energy coal.

Even Japan, which has historically favoured high-energy thermal coal, is now beginning to turn more towards the cheaper, lower energy 5,500kcal/kg NAR benchmark. A number of Japanese power utilities have reportedly been experimenting with a blend of higher and lower grade coals in order to benefit from the lower price of the 5,500kcal product.<sup>126</sup>

Meanwhile, new entrants to imported coal-fired power are unlikely to want to become dependent on higher priced, higher energy coal. Bangladesh signed an agreement in June 2019 for the supply of Indonesian coal for its nearly complete, Chinese-funded Payra coal power plant.<sup>127</sup>

Coal price appears to have a higher priority for Asian coal power plant operators than energy content. With ever-cheaper renewable energy on the rise around Asia and effectively pulling down power purchase agreement (PPA) tariffs, some coal-fired power generators that use imported coal are finding it difficult to operate profitably.

At Mundra in the state of Gujarat, India, almost 10GW of relatively new coal-fired power generation has operated at a significant loss over the last decade due to the higher-than-expected cost of imported coal. These three power stations, owned by Tata Power, Adani Power and Essar Power, are now hoping that a state government bailout will help reduce their losses, while placing additional burden on consumers via an increased tariff. Tata Power's Managing Director Praveer Sinha has stated the PPA uplifts would only halve its Mundra plant's losses from the current level of US\$-225m to US\$-240m per year.<sup>128</sup>

Tata Power's loss-making Mundra plant reported that its average coal cost for the 2017-18 fiscal year rose 24% to US\$61.50/t. This increase in fuel cost caused the power plant to make an after-tax loss of US\$-241m, higher than the US\$-119m loss from the prior year.<sup>129</sup> As a result, Tata Power has increased the consumption of

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<sup>125</sup> Bloomberg, [China Unveils First Batch of Solar, Wind Farms That Won't Be Supported by Subsidies](#), 22 May 2019.

<sup>126</sup> Platts, [Japanese thermal coal buyers try out Newcastle HA blend in power plants](#), 27 June 2019.

<sup>127</sup> Jakarta Post, [Indonesian firm to export coal to Bangladesh](#), 19 June 2019.

<sup>128</sup> Economic Times, [After tariff relief, our Mundra losses would come down by 50%: Praveer Sinha, Tata Power](#), 6 December 2018.

<sup>129</sup> Tata Power, [Analyst Presentation Q4 FY18](#), 2 May 2018.

cheaper, lower energy coal in order to address its growing fuel cost. The proportion of lower energy coal blended in at its Mundra plant rose from 20% to 42% in fiscal year 2018-19, although the plant still made a substantial loss.<sup>130</sup>

It seems unlikely that coal plant operators in Asia can be convinced to switch to higher energy, more expensive coal. This may be especially true where Indonesia needs to find new markets for its lower energy coal if its biggest export destination - China - reduces thermal coal imports relatively quickly as it is threatening to do.

## Stranded Asset Risk

With opportunities for South African exports set to dwindle in the long term, mines currently shipping to overseas markets may be able to reorient to the domestic market to some extent as reserves at existing Eskom-supplying operations are mined out.

Meanwhile, Richards Bay Coal Terminal may have to get used to the idea that an increasing proportion of its annual capacity will become stranded. With a capacity of 91Mtpa, Richards Bay operated with almost 20% spare capacity in 2018, a long term structural under-utilisation driven by limited rail capacity and transport inefficiencies. Increasingly lower supply as investment dries up, combined with approaching long term overseas demand decline, will exacerbate this.

Richards Bay is not alone in this. The coal terminals at the Port of Newcastle in Australia - the world's largest coal export terminal - operated at 25% spare capacity in 2018 and its proposed T4 expansion project has been cancelled. Concern over coal's long-term sustainability has led the chairman of the Port of Newcastle to recognise an "urgent need" for the port to diversify away from a reliance on coal.<sup>131</sup>

The Port of Newcastle chairman further stated, "Clearly the long-term outlook for coal is a threat to the port and Hunter region, but it is also a huge opportunity. While the world's demand for our coal is beyond our control, our ability to invest in new sources of growth and innovation is not."

Part of that statement was echoed by Richards Bay Coal Terminal chair Nosipho Siwisa-Damasane upon the release of lower 2018 export figures who stated, "The markets are a reality, they are outside RBCT's control",<sup>132</sup>

**"The markets are a reality, they are outside RBCT's control"**

As Richards Bay faces declining export volumes in the long run, it too will need to plan for the coming transition. That planning should have begun already.

<sup>130</sup> Tata Power, [Analyst Presentation Q4 FY19](#), 2 May 2019.

<sup>131</sup> Sydney Morning Herald, ["World's largest coal export port Newcastle has 'urgent need' to diversify"](#), 17 December 2017.

<sup>132</sup> Reuters, [South Africa's RBCT says 2018 coal exports fall](#), 24 January 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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