



# Australian Thermal Coal Exports Outlook

## *Volumes Set to Fall Amid Accelerating Energy Transition*

### Executive Summary

The global energy transition away from fossil fuels is accelerating, unhindered by the COVID-19 pandemic. The long-term outlook for Australian thermal coal exports is only declining faster.

Following the Russian invasion of Ukraine in February 2022, European imports of coal from exporting nations such as Australia have risen in a bid to replace Russian coal and gas. However, this will not mark the start of a renaissance for coal-fired power. Key financial institutions such as JPMorgan Chase, BlackRock and Moody's have concluded that heightened energy security concerns and record fossil fuel prices will only accelerate the transition away from thermal coal.

Although Germany intends to extend the life of mothballed coal power capacity for two years, it has also recently approved a US\$180 billion funding package to accelerate its energy transition.

This will have significant implications for Australian thermal coal exports, most of which come from the state of New South Wales (NSW). In the longer term, the NSW Treasury has concluded that “global demand for coal is expected to weaken considerably” (see Figure 1), further noting that “declining global demand for coal will reduce New South Wales’ economic growth over the projection period and will have impacts both on employment and the fiscal outlook”.

Ultimately, demand for Australian thermal coal will be set by the policies and actions of governments and companies in coal-importing Asian nations. The current status and outlook for coal-fired power in these nations has far more impact on the future of Australian thermal coal than the policies and ambitions of the Australian coal industry and state and federal governments.

**Demand for Australian thermal coal will be set by the policies and actions of governments and companies in coal-importing Asian nations.**

## *Thermal Coal Exports: Long-term Outlook*

Under the NSW Treasury's low global coal demand scenario for its 2021 Intergenerational Report, coal production in Australia's main thermal coal producing state would reach zero by 2042 (Figure 1). The risk the thermal coal sector now faces is that the accelerating global energy transition, driven faster by increasing action on carbon emissions, is pushing the world towards such a low demand scenario.

Australia's traditional export coal markets—Japan, China, South Korea and Taiwan—are all shifting away from reliance on imported thermal coal in the long term.

**Japan:** As Australia's largest thermal coal export destination, Japan's pledge to achieve zero carbon emissions by 2050 is highly significant. Japan also increased its 2030 emissions reduction target from 26% to at least 46% at the April 2021 climate summit hosted by the U.S. As a result, Japan's new 2030 power plan increases its focus on renewables and will see reliance on coal- and LNG-fired power reduce significantly. It is also recommitting to nuclear power. Australia will be particularly impacted by this shift.

The new power plan will see the share of coal power generation drop from 32% in 2019–20 to 19% in 2030. As a result, Japan's consumption of coal will fall by almost 54 million tonnes per annum by 2030 according to calculations by Argus Media, a drop of 46%. To fill the gap, Japan is planning that renewable energy will make up 36–38% of the power mix by 2030, up from 18% in 2019–20.

**China:** In 2019, China was Australia's second-biggest thermal coal export destination. This changed significantly in the second half of 2020 when a diplomatic spat led to a ban on coal imports from Australia. However, the bigger risk to Australian thermal coal exporters is not diplomatic tensions but China's clear plan to become self-sufficient for thermal coal in the medium term. China is increasing domestic coal production and rail capacity with the intention of replacing imports. A 2022 study on Chinese coal demand found that its seaborne thermal coal imports are likely to fall substantially over the coming decade and are on course to drop 26% on 2019 levels by as soon as 2025.

The Chinese government surprised many in September 2020 when it announced that it was targeting zero carbon emissions by 2060. Increased emphasis on renewable energy will also squeeze out thermal coal imports. 2022 is set to be another record year for Chinese renewable energy installation with additions of 156 gigawatts (GW) of solar and wind power forecast, a 25% uplift from the 2021

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record. President Xi Jinping has stated that China's coal consumption will peak in 2025 and decline thereafter.

**South Korea:** South Korea is the fourth-largest coal importing country in the world. In October 2020, the South Korean government announced its target to reach zero carbon emissions by 2050, in line with Japan. One year later the South Korean government approved two roadmaps to reach carbon neutrality by 2050. Under both options, coal-fired power is completely phased out by 2050. Almost half the South Korean coal fleet is to be retired by 2034.

At the same time, South Korea's new 2030 emissions reduction target was approved by the government, which will see total carbon emissions reduce by 40% compared to 2018 levels. This new 2030 target means that coal's share in the South Korean power mix will almost halve by 2030 to 21%, down from 42% in 2018. Renewable's share in the power mix is targeted to increase to 22% by 2030, up from 6% in 2018.

**Taiwan:** In March 2022, Taiwan's National Development Council—the government's planning body—revealed its 2050 zero carbon emissions roadmap. Taiwan plans to fully decarbonise its power sector by 2050 with renewable energy providing 60–70% of power generation. The government and state-owned companies plan to invest US\$32 billion on renewables, energy storage and grid infrastructure between 2022 and 2030.

Over the last six years the pipeline of proposed coal-fired power plants has shrunk from 2.4GW to zero after a series of project cancellations. Coal-fired power's share of overall electricity generation is expected to decline from 45% to 30% by 2025. As a result, the Australian Government's Department of Industry, Science and Resources expects that thermal coal imports into Taiwan—along with those of Japan, China and South Korea—will start to go into decline this decade.

## *Other Markets*

A number of nations including India, Vietnam, Bangladesh, Pakistan and Malaysia have previously been identified as growth markets for Australian coal exporters. However, with the pace of the energy technology transition accelerating, and finance for coal power increasingly hard to come by, the opportunity for export growth into these markets has fallen away.

**India:** Like China, thermal coal imports into India make up only a fraction of total consumption with far more thermal coal mined domestically. India has an ambition to become self-reliant for thermal coal amid its rapid renewable energy roll-out.

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The increased energy security concerns following the invasion of Ukraine and the resultant high cost of fossil fuel imports is likely to see increased efforts to substitute imported coal with domestic product. Moody's Investor Services expects that "large coal-importing countries such as China and India will also seek to ramp up domestic coal production to enhance energy security and reduce reliance on coal imports". Indian Minister of Power and New & Renewable Energy R. K. Singh has made it clear he believes the energy crisis will hasten the energy transition from fossil fuels to renewable energy.

**Vietnam:** With many proposed coal-fired power projects languishing without finance and little prospect of construction, Vietnam has begun distancing itself from coal power. At the 2021 UN Climate Change Conference in Glasgow (COP26 summit), Vietnam pledged to reach zero carbon emissions by 2050 and committed to stop building new coal plants. Vietnam's coal-fired power pipeline—which was already looking increasingly unlikely to reach construction given a lack of financing—now looks even more uncertain.

**Bangladesh:** Prompted by the increasing difficulty of getting finance for coal-fired power as more banks withdraw lending for coal, the Bangladesh government cancelled 10 proposed coal-fired power projects in June 2021. In June 2022, the planned Matarbari 2 coal-fired power plant came to a halt after the Japan International Cooperation Agency withdrew finance for the project.

**Pakistan:** The Pakistan government announced at the December 2020 Climate Ambition Summit that it "will not have any more power based on coal". However, Pakistan had already turned away from power plants fuelled by imported thermal coal in favour of its own domestic coal reserves. Several proposed plants that were to be fuelled by coal imports have been cancelled. In the face of record seaborne thermal coal prices, the government is also considering converting existing plants from imported coal to domestic coal.

**Malaysia:** In August 2022, state-owned power utility Tenaga Nasional Berhad (TNB)—Malaysia's largest power provider—announced plans to accelerate the closure of some of its coal-fired power plants to speed up its transition to renewable energy. TNB is targeting a 50% reduction in coal-fired power capacity by 2035.

### *Impact on Coal Royalties and Jobs*

Under the NSW Treasury's lower global coal demand scenario for the 2021 Intergenerational Report—completed prior to the shorter-term impact of the Russian invasion of Ukraine—coal royalties decline

**Under the base case, NSW Treasury forecasts that employment in coal mining will decline by an average of 600 jobs per year over the next two decades.**

to zero by 2042. Even in the base case, annual coal royalties decline to around a third of current levels over the coming decades. Similarly, the NSW Treasury forecasts a major decline in coal mining jobs—between 75% and 100% fewer jobs in the sector by 2061. Under the base case, NSW Treasury forecasts that employment in coal mining will decline by an average of 600 jobs per year over the next two decades.

The accelerating pace of the energy technology transition has significant implications for the Australian coal industry. In the longer term, the shift of Asian nations towards more reliance on renewable energy and domestic coal will see volumes of Australian thermal coal exports fall significantly. This process is outside of the control of Australian state and federal governments.

Thermal coal imports will decline soonest in Australia's most established export destinations—Japan, South Korea and Taiwan.

A transition away from reliance on coal over the coming decades is now certain, the only question remaining is whether that transition will be planned and orderly or chaotic.

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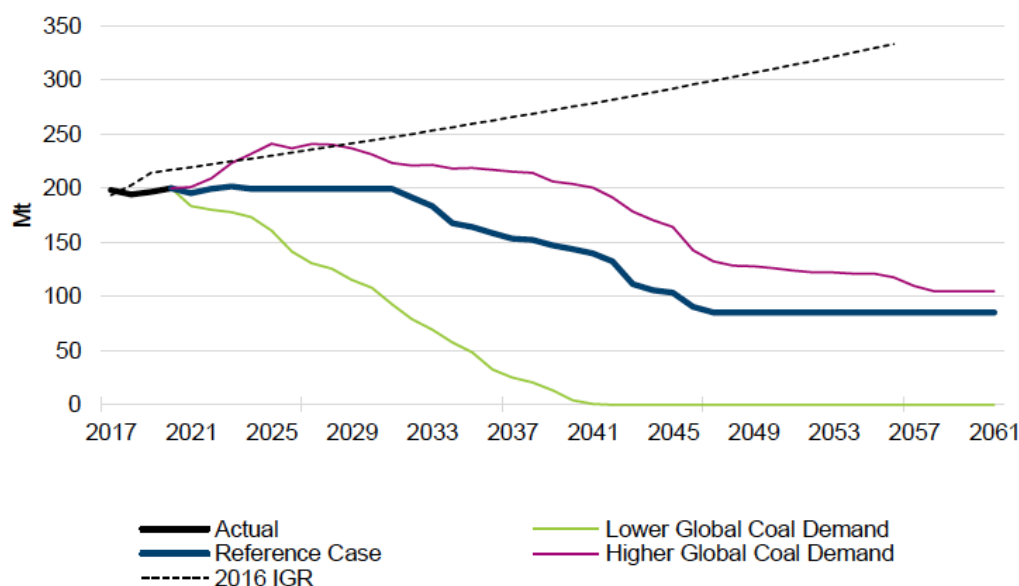
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## Long-term Thermal Coal Demand in Asia Is Drying Up

The global energy transition away from fossil fuels is accelerating, unhindered by the COVID-19 pandemic. Coal use globally is widely expected to peak in the mid-2020s.<sup>1</sup> The long-term outlook for Australian thermal coal exports is only declining faster.

New South Wales (NSW)—Australia’s main thermal coal exporting state—has begun to acknowledge that thermal coal exports have a declining future. The NSW Treasury has concluded that “global demand for coal is expected to weaken considerably” (Figure 1), further noting that “declining global demand for coal will reduce New South Wales’ economic growth over the projection period and will have impacts both on employment and the fiscal outlook”.<sup>2</sup>

**Figure 1: NSW Treasury and Department of Regional NSW Projected Coal Volumes (million tonnes), 2021 vs 2016**



Source: NSW Treasury, 2021 Intergenerational Report, p. 19

The NSW Treasury acknowledges that thermal coal’s worsening outlook “is being driven by a combination of policy measures at a global scale aimed at reducing greenhouse gas (GHG) emissions, and technological development which is lowering the cost of renewable generation. This will impact the New South Wales economy and budget, and because it is driven by global factors, is largely outside the control of the New South Wales Government.”<sup>3</sup>

<sup>1</sup> Sydney Morning Herald. [Coal use to peak in 2026 as renewables surge past forecasts](#). 1 December 2021.

<sup>2</sup> NSW Treasury. [The sensitivity of the NSW economic and fiscal outlook to global coal demand and the broader energy transition for the 2021 NSW Intergenerational Report](#). May 2021, pp. 6, 7.

<sup>3</sup> Ibid, p. 7.



Under the NSW Treasury's low global coal demand scenario for the 2021 Intergenerational Report, coal production in Australia's main thermal coal producing state reaches zero by 2042 (Figure 1). The risk the thermal coal sector now faces is that the accelerating global energy transition, driven faster by increasing global action to reduce carbon emissions, is pushing the world towards such a low demand scenario.

Following the Russian invasion of Ukraine in February 2022, the seaborne thermal coal market entered a period of record prices and large profits for mining companies. However, higher coal prices are now a double-edged sword for thermal coal miners. From this point of the energy transition onwards, high thermal coal prices will kill long-term demand faster as it makes coal-fired power even more expensive compared to ever-cheaper renewable energy.<sup>4</sup>

In April 2022, Moody's Investor Services warned that a prolonged period of high coal prices would make renewable energy an even cheaper option and accelerate the decline of thermal coal demand.<sup>5</sup> August 2022 saw Fitch Solutions "substantially" lift its Asian thermal coal prices forecast out to 2026, expecting the impact of the invasion of Ukraine and the subsequent European ban on Russian coal to affect prices for years.<sup>6</sup>

BlackRock—the world's largest investor with US\$10 trillion of assets under management—has made it clear that recent high fossil fuel prices will only accelerate the energy transition. In highlighting the fragile status of oil, gas and coal amid heightened energy security concerns, BlackRock Investment Institute's chief regional strategist stated in March 2022 that "it's not only a green issue, but also a broader supply issue now. We would see this as an accelerant to the transition towards energy sources of the future because the energy sources of the past have shown to be fraught with challenges in the last few weeks."<sup>7</sup>

**In July 2022, former Governor of the Bank of England Mark Carney called on Australia to accept that there is no future in coal.**

In July 2022, former Governor of the Bank of England Mark Carney called on Australia to accept that there is no future in coal.<sup>8</sup>

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<sup>4</sup> Moody's Investor Services. Coal Mining – Global: High prices drive earnings but would hit affordability and demand if sustained. 11 April 2022.

<sup>5</sup> Ibid.

<sup>6</sup> Bloomberg. [Coal's Skyrocketing Prices Could Last Years on Russian Disruption](#). 10 August 2022.

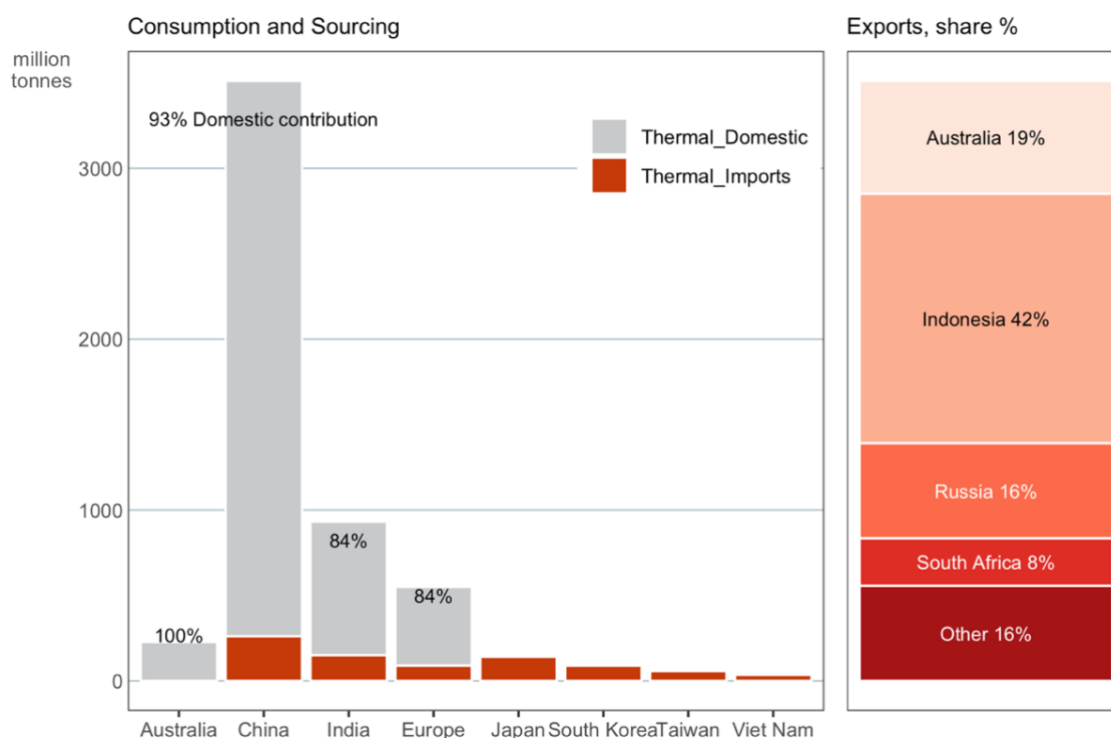
<sup>7</sup> Australian Financial Review. [BlackRock: soaring energy prices underline the need for transition](#). 2 March 2022.

<sup>8</sup> Bloomberg. [Australia Needs More Realism on Coal's Future, Carney Warns](#). 28 July 2022.

## World Thermal Coal Trade

The world thermal coal market for imported coal is dominated by Asian countries, which accounted for 82% of the world trade in 2021 according to the Australian Department of Industry, Science and Resources. Australia’s coal exports comprise 19% of the global thermal coal trade in 2021, with Indonesian exports at 42% (Figure 2).<sup>9</sup>

**Figure 2: World Trade in Thermal Coal and Domestic Production (million tonnes), Key Countries, 2021**



Source: International Energy Agency, *Coal 2021*. Department of Industry, Science and Resources, *Resources and Energy Quarterly*, June 2022

China and India consume vast quantities of coal for their electricity generation. They produce most of their coal domestically, at 93% and 84%, respectively (Figure 2). The outlook for traded thermal coal depends on continual demand from these countries. The current global energy crisis is causing the largest consumers to rethink any dependency on imported coal.

<sup>9</sup> Department of Industry, Science and Resources. [Resources and Energy Quarterly](#). June 2022.

## *Investors and Financiers Shifting Away from Coal*

Public finance from Japan, South Korea and China has been the key enabler of coal-fired power construction across developing Asia—the markets that the Australian coal industry has long stated will be growth areas that maintain exports. However, South Korea announced an end to funding overseas coal projects in April 2021.<sup>10</sup> China followed in September 2021<sup>11</sup> and in May 2022 Japan fell into line with the rest of the G7 nations and agreed to end public financing of unabated fossil fuel projects overseas by the end of 2022.<sup>12</sup>

Nations such as Vietnam and Bangladesh have increasingly found it difficult to finance their coal power plans as more and more financiers shift away from coal funding. This is driving them to cancel planned coal power plants. The list of banks that have new coal policies distancing themselves from further coal financing is growing and numbers well over 100 major financial institutions.<sup>13</sup>

COVID-19 did not slow down the rate at which banks continue to turn away from coal finance. As the list of banks that have abandoned coal expands, further coal-fired power development around the world will become increasingly unlikely.

**The list of banks that have new coal policies distancing themselves from further coal financing is growing.**

## **Thermal Coal Exports Long-term Outlook— Australia’s Big Four Markets**

As the NSW Treasury has accepted, demand for Australian thermal coal will be set by the policies and actions of governments and companies in coal-importing Asian nations.<sup>14</sup> The current status and outlook for coal-fired power in these nations has far more impact on the future of Australian thermal coal than the policies and ambitions of the Australian coal industry and state and federal governments.

<sup>10</sup> Reuters. *S.Korea’s Moon vows to end new funding for overseas coal projects*. 23 April 2021.

<sup>11</sup> Reuters. *China’s overseas coal power retreat could wipe out \$50 bln of investment*. 22 September 2021.

<sup>12</sup> The Japan Times. *Japan joins G7 peers with vow to stop fossil-fuel financing abroad by end of 2022*. 27 May 2022.

<sup>13</sup> Institute for Energy Economics and Financial Analysis (IEEFA). *Financial institutions are restricting thermal coal funding*. n.d.

<sup>14</sup> NSW Treasury. *The sensitivity of the NSW economic and fiscal outlook to global coal demand and the broader energy transition for the 2021 NSW Intergenerational Report*. May 2021.

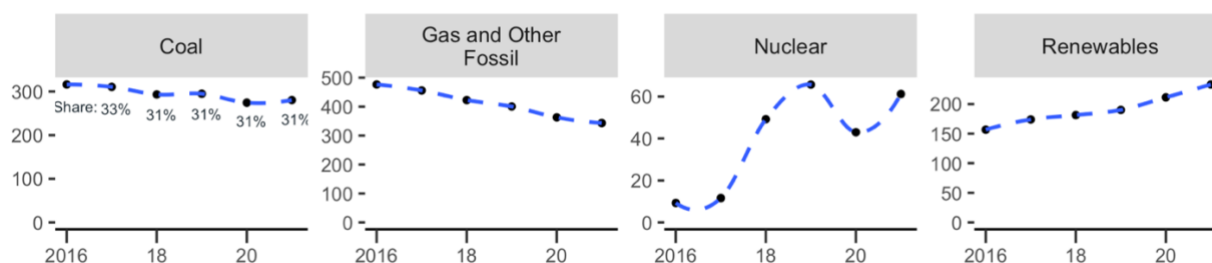
Australian thermal coal exports have historically been dominated by four key markets—Japan, China, Taiwan and South Korea. As we show below, all are shifting away from reliance on imported thermal coal in the long term.

## Japan

Japan is Australia’s largest thermal coal export destination, which makes its pledge to achieve zero carbon emissions by 2050 highly significant.<sup>15</sup> At the April 2021 Earth Day climate summit hosted by the U.S., Japan increased its 2030 emissions reduction target from 26% to at least 46%<sup>16</sup>—a move that will necessitate a further acceleration in Japan’s shift away from coal-fired power. This target was adopted by Japan’s cabinet in October 2021.

The age profile of its operating coal power fleet means Japan was on track for a significant reduction in coal-fired power capacity in the long term even before the zero-carbon emissions announcement. This has now been confirmed by Japan’s latest power plan, which increases the focus on renewables and will see reliance on coal- and LNG-fired power reduce significantly. Australia will be particularly impacted by this shift.<sup>17</sup>

**Figure 3: Coal and Other Electricity Generation (terawatt-hour), Japan (2016–2021)**



Source: Ember

Japan’s power plan will see coal power’s share of the generation mix drop from 32% in 2019–20 to 19% in 2030 (Figure 4). This suggests that Japan’s consumption of coal will fall by almost 54 million tonnes per annum by 2030 according to calculations by Argus Media, a drop of 46%. To fill the gap, renewable energy will make up 36–38% of the power mix by 2030, up from 18% in 2019–20.<sup>18</sup>

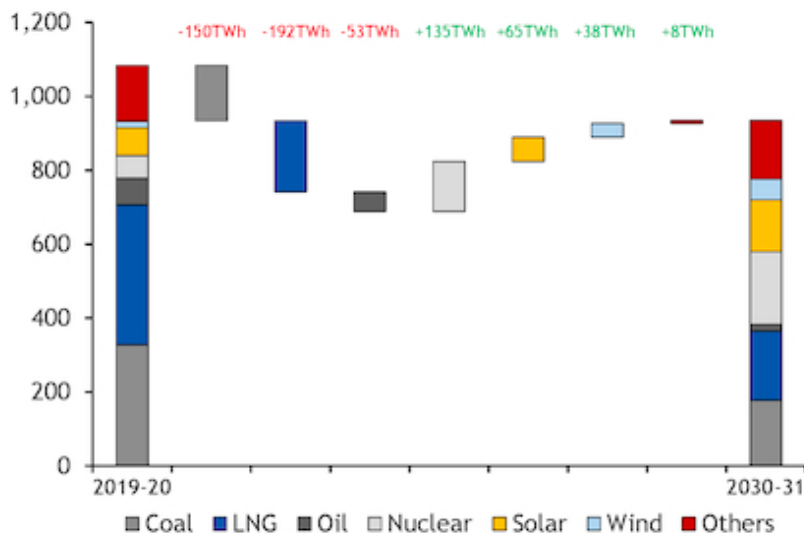
<sup>15</sup> The Guardian. [Japan’s net zero by 2050 pledge another warning to Australia on fossil fuels, analysts say](#). 27 October 2020.

<sup>16</sup> Reuters. [Key takeaways from the Biden Earth Day summit](#). 23 April 2021.

<sup>17</sup> Reuters. [Japan’s power plan will rattle coal, LNG exporters, especially Australia: Russell](#). 22 July 2021.

<sup>18</sup> Argus Media. [Japan cuts 2030 coal/gas power share targets](#). 21 July 2021.

**Figure 4: Changing Power Mix in Japan’s New Power Plan (terawatt-hour)**



Source: Argus Media

Japan jointly committed with G7 nations in May 2022 to make “concrete and timely steps” towards the phase-out of unabated coal-fired power in its electricity sector.<sup>19</sup> With Japanese power demand expected to fall by 2030–31,<sup>20</sup> coal-fired power in Japan will also face increased competition from other sources.

Japan is planning a hugely ambitious scale-up of offshore wind, batteries, hydrogen technology and solar to help meet its 2050 zero carbon emissions goal. It has ramped up its 2030 solar installation target to 108GW<sup>21</sup> and is aiming for 10GW of offshore wind by the same date.<sup>22</sup>

Following the global energy crisis after the Russian invasion of Ukraine, coal-fired power in Japan may also face increased competition from nuclear power as the Japanese government considers an enhanced role for nuclear as a way to improve energy security and further reduce exposure to expensive fossil fuel prices.<sup>23</sup> Japan wants to restart seven nuclear reactors that were idled after the Fukushima disaster from 2023 onwards. The government will also explore the development of new reactors to reduce reliance in fossil fuel imports.<sup>24</sup>

Japanese corporations are already following the government’s lead on emissions. In addition to stating that it will shut down all of its older, inefficient coal power stations by 2030,<sup>25</sup> JERA—the nation’s biggest power generator—is targeting offshore wind and the conversion of all remaining coal power plants to run on

<sup>19</sup> S&P Global. [G7 nations agree to decarbonize power sectors by 2035](#). 27 May 2022.

<sup>20</sup> Argus Media. [Japan’s power demand forecast to fall towards 2031-32](#). 21 January 2022.

<sup>21</sup> Bloomberg. [Every Roof in Japan Could Have Solar Panels in the Future](#). 6 July 2021.

<sup>22</sup> Bloomberg. [Japan’s Tepco Honing Offshore Wind Bid as Competition Heats Up](#). 22 April 2022.

<sup>23</sup> The Japan Times. [Kishida eyes nuclear plant restart in green transformation push](#). 28 July 2022.

<sup>24</sup> Bloomberg. [Threats of Blackouts Drive Japan to Embrace Nuclear Again](#). 24 August 2022.

<sup>25</sup> Reuters. [Japan’s JERA to shut inefficient coal-fired power plants by 2030](#). 13 October 2020.

ammonia in a bid to meet its own zero carbon emissions by 2050 goal.<sup>26</sup> JERA is aiming to expand its renewable energy capacity from 1.5GW to 5GW by 2025.<sup>27</sup> Tokyo Electric Power Company (TEPCO) announced in June 2020 an investment of up to US\$18 billion on clean energy projects including offshore wind.<sup>28</sup>

Meanwhile, the major Japanese trading houses are continuing to reposition their energy businesses by abandoning thermal coal mining—including their Australian mine investments—as well as coal-fired power.<sup>29</sup> Most recently, Mitsubishi Corporation withdrew from a coal power proposal in Vietnam as the latter reduces its emphasis on coal-fired power development.<sup>30</sup>

Japan is planning to invest US\$19 billion to help make hydrogen a major power source for the country by 2030.<sup>31</sup> Transportation of hydrogen over long distances is likely to take place in the form of ammonia, which has a higher volumetric energy density than hydrogen. The Japanese government is planning a role for ammonia in its thermal power fleet, replacing coal. Originally aiming for a 20% ammonia co-firing rate at the nation's coal-fired power plants by 2030 and expanding beyond 50% thereafter, the government has now brought forward its target and wants to see a 50% co-firing rate by 2030.<sup>32</sup> Australia's Fortescue Future Industries has signed a Memorandum of Understanding with Japan's IHI Corporation to examine potential imports of green ammonia from Tasmania.<sup>33</sup>

JERA is currently testing ammonia co-firing at its 1,000MW Hekinan coal-fired power plant with the intention to reach a 20% ammonia co-firing rate by 2024.<sup>34</sup> It is working with Norwegian fertiliser producer Yara International on increased blue and green ammonia supply for power generation.<sup>35</sup> A full 100% ammonia-fired power generation is then planned to be developed to help achieve zero carbon emissions by 2050.<sup>36</sup> Mitsubishi Power has commenced development of the world's first 100% ammonia-fired power turbines, with commercialisation expected around 2025.<sup>37</sup>

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<sup>26</sup> Bloomberg. [Japan to Use Wind, Batteries to Meet Lofty 2050 Carbon Goal](#). 22 October 2020.

<sup>27</sup> Reuters. [JERA aims to develop 1 GW solar power in Japan over 5 years](#). 2 February 2022.

<sup>28</sup> Reuters. [TEPCO Renewable to spend \\$9-18 billion by 2035 on green power](#). 9 June 2020.

<sup>29</sup> Reuters. [Japan traders speed up coal asset cuts amid global decarbonisation push](#). 5 February 2021.

<sup>30</sup> Reuters. [Mitsubishi pulls out of Vinh Tan 3 coal project in Vietnam – sources](#). 26 February 2021.

<sup>31</sup> Reuters. [Japan to make hydrogen major power source by 2030: Nikkei](#). 8 December 2020.

<sup>32</sup> Argus Media. [Japan to advance ammonia co-firing technology](#). 24 June 2021.

<sup>33</sup> PV Magazine. [Fortescue Future Industries investigating green ammonia supply chain between Australia and Japan](#). 21 May 2021.

<sup>34</sup> Reuters. [Japan's JERA aims to use 20% ammonia at coal power plant in 2024](#). 24 May 2021.

<sup>35</sup> Argus Media. [Jera, Yara explore creating clean ammonia partnership](#). 11 May 2021.

<sup>36</sup> Argus Media. [Japan targets 3mn t/yr of ammonia fuel use by 2030](#). 8 February 2021.

<sup>37</sup> Mitsubishi Power. [Mitsubishi Power Commences Development of World's First Ammonia-fired 40MW Class Gas Turbine System](#). 1 March 2021.

## China

China was Australia's second-biggest thermal coal export destination in 2019. This changed suddenly in the second half of 2020 when a diplomatic spat led to an unofficial ban on coal imports from Australia.

However, the bigger threat to Australian thermal coal exports comes from China's move to become self-reliant for thermal coal in the medium term. The move threatens the balance of the entire Asian seaborne thermal coal market given China is the world's largest coal importer. The Australian thermal coal industry will be heavily impacted even if it is not exporting to China—a significant drop in China's thermal coal imports would mean a lot of Indonesian coal would be seeking other destinations in competition with Australian coal.

The Chinese government surprised many in September 2020 when it announced that it was targeting net zero carbon emissions by 2060.<sup>38</sup> At the April 2021 climate summit hosted by the U.S., President Xi Jinping announced that China would “strictly control coal-fired power generation projects”<sup>39</sup> and that China's coal consumption would peak in 2025 and decline thereafter.<sup>40</sup>

Significantly, 93% of thermal coal consumed in China is mined domestically with imports making up only a small percentage of total consumption (see Figure 2). Improvements to domestic coal mining efficiency and output, coal rail logistics and power transmission infrastructure are underway to increase reliance on domestic coal and reduce imports. China produced a record 4.07 billion tonnes of coal domestically in 2021,<sup>41</sup> while coal imports totalled 323 million tonnes.<sup>42</sup>

**The bigger threat to Australian thermal coal exports comes from China's move to become self-reliant for thermal coal in the medium term.**

<sup>38</sup> S&P Platts. [China's long march to zero carbon](#). 10 December 2020.

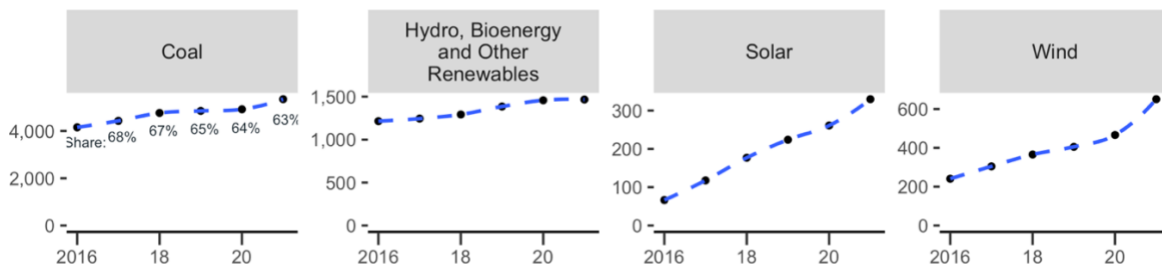
<sup>39</sup> Reuters. [Key takeaways from the Biden Earth Day summit](#). 23 April 2021.

<sup>40</sup> S&P Platts. [China to curb coal demand growth in economic plans as part of climate targets](#). 23 April 2021.

<sup>41</sup> Reuters. [China coal output hits record in Dec and in 2021 – stats bureau](#). 17 January 2022.

<sup>42</sup> Reuters. [China Dec coal imports fall, 2021 imports highest since 2013](#). 14 January 2022.

**Figure 5: Coal and Renewables Electricity Generation (terawatt-hour), China (2016–2021)**



Source: Ember

Significantly, 93% of thermal coal consumed in China is mined domestically with imports making up only a small percentage of total consumption (see Figure 2). Improvements to domestic coal mining efficiency and output, coal rail logistics and power transmission infrastructure are underway to increase reliance on domestic coal and reduce imports. China produced a record 4.07 billion tonnes of coal domestically in 2021,<sup>43</sup> while coal imports totalled 323 million tonnes.<sup>44</sup>

A 2022 study on Chinese coal demand finds that its seaborne thermal coal imports are likely to fall substantially over the coming decade and are on course to drop 26% on 2019 levels by as soon as 2025.<sup>45</sup> This decline is driven in part by coal transport infrastructure development, which is enabling greater reliance on domestic coal, as well as China’s strategies to accelerate decarbonisation.

China is seeking to increase domestic coal production by 300 million tonnes in 2022 and S&P Global forecasts that imports will drop 17% in an early indication that China is targeting self-reliance for coal.<sup>46</sup> In the first half of 2022, China Energy Investment Corp—the nation’s largest coal miner—boosted coal production by 6.2% to 300 million tonnes and gained approval for a further 58 million tonnes of coal mine capacity.<sup>47</sup> Over the first seven months of 2022, China imported 138.5 million tonnes of coal, down 18% over the same period in 2021.<sup>48</sup>

In addition, increased emphasis on renewable energy will also squeeze out thermal coal imports. China is aiming for more than 80% of energy consumption to be

<sup>43</sup> Reuters. [China coal output hits record in Dec and in 2021 – stats bureau](#). 17 January 2022.

<sup>44</sup> Reuters. [China Dec coal imports fall, 2021 imports highest since 2013](#). 14 January 2022.

<sup>45</sup> The Conversation. [China’s demand for coal is set to drop fast. Australia should take note](#). 21 April 2022.

<sup>46</sup> S&P Global. [China’s sabbatical from seaborne coal market hints at emphasis on self-reliance](#). 24 May 2022.

<sup>47</sup> Bloomberg. [China’s Top Coal Miner Boosts First-Half Investment, Production](#). 26 July 2022.

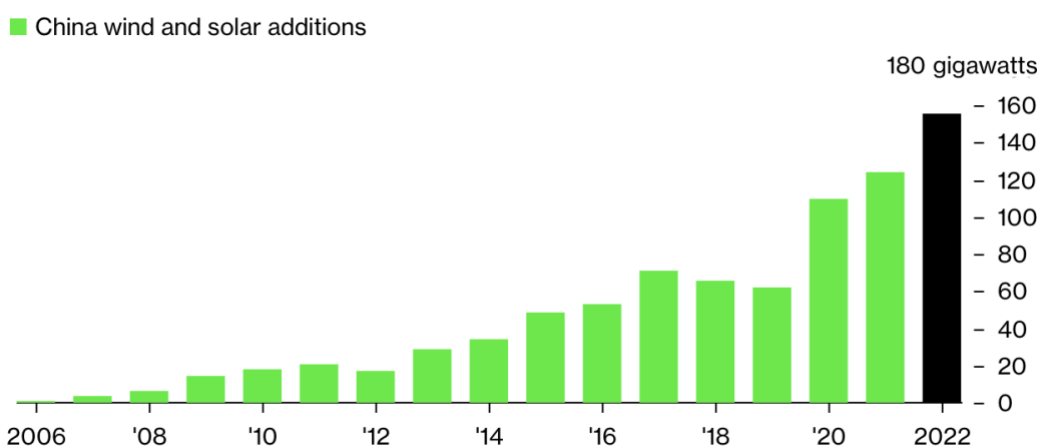
<sup>48</sup> Reuters. [China’s July coal imports surge 24% to meet peak power load](#). 7 August 2022.



non-fossil fuel-based by 2060.<sup>49</sup> By 2025, the aim is for non-fossil fuels to contribute 39% of total electricity supply, up from 29% currently.<sup>50</sup>

At the end of 2021, China had combined wind and solar power capacity totalling 634GW and aims to increase this to at least 1,200GW by 2030.<sup>51</sup> Wood Mackenzie has forecast that China will add 619GW of solar by 2030.<sup>52</sup> 2022 is set to be another record year for Chinese renewable energy installation with additions of 156GW of solar and wind power forecast, a 25% uplift from the previous year's record (Figure 6).<sup>53</sup>

**Figure 6: China's Wind and Solar Power Additions (gigawatts), 2006–2022**



Source: Bloomberg<sup>54</sup>

Following the Chinese government's lead, State Grid Corporation—the world's largest utility—revealed its own plan to reach carbon neutrality. State Grid is planning a major upgrade to its power grid over the next few years—including ultra-high voltage (UHV) transmission lines and power storage—in order to enable a move away from coal-fired power and reach peak carbon emissions as soon as possible.<sup>55</sup> In the second half of 2022, State Grid plans to invest more than US\$22 billion in UHV power transmission lines to connect solar, wind and hydro installations in China's western regions to east coast cities. The eight new UHV lines will add to State Grid's existing 11 UHV projects.<sup>56</sup>

China's major power generation utilities are also supporting the government's renewable energy drive. Huaneng is planning to add 80GW of wind and solar in

<sup>49</sup> Bloomberg. [China Targets More Than 80% Non-Fossil Energy Use by 2060](#). 24 October 2021.

<sup>50</sup> S&P Global. [China to raise share of non-fossil fuels in electricity supply to 39% by 2025](#). 23 March 2022.

<sup>51</sup> Reuters. [China aims to build 450 GW of solar, wind power on Gobi Desert](#). 6 March 2022.

<sup>52</sup> PV Magazine. [China to add 619 GW of solar this decade](#). 14 July 2021.

<sup>53</sup> Bloomberg. [China's Clean Energy Growth Outlook for 2022 Keeps Getting Bigger](#). 24 June 2022.

<sup>54</sup> Bloomberg. [China Is Planning Record Wind and Solar Power Additions This Year](#). 15 April 2022.

<sup>55</sup> Bloomberg. [China Power Giant Wants to Get Ahead on Xi's Emissions Goals](#). 2 March 2021.

<sup>56</sup> Reuters. [China's State Grid to invest \\$22bln in ultra-high voltage power lines - report](#). 3 August 2022.

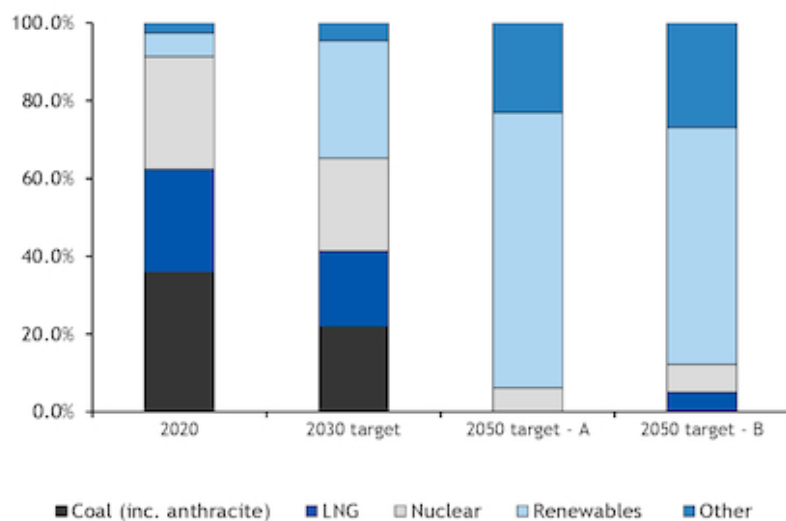
order to reach 50% renewable energy capacity by 2025. State Power Investment Corporation is aiming for 60% renewable energy capacity by 2025. China Energy Investment and Datang have similar 2025 renewable energy addition and total capacity targets.<sup>57</sup> Huadian plans to add 75GW of renewables over the next five years while closing 3GW of coal-fired power with the intention of bringing its carbon emissions to a peak by 2025.<sup>58</sup>

## South Korea

In October 2020, the South Korean government announced its target to reach net zero carbon emissions by 2050,<sup>59</sup> in line with Japan. At the April 2021 climate summit hosted by the U.S., South Korea committed to end public finance for coal-fired power overseas and to set a more ambitious schedule for reducing domestic emissions.

Then in October 2021, the government approved two roadmaps to reach carbon neutrality by 2050.<sup>60</sup> Under both options, coal-fired power is completely phased out by 2050 (Figure 7). At the same time, South Korea’s new 2030 emissions reduction target was approved by the government, which will see total carbon emissions reduce by 40% compared to 2018 levels. This compares to the previous 2030 emissions reduction target of 26%.

**Figure 7: South Korean 2020 Power Generation vs Targets (%)**



Source: Argus Media

In December 2021, South Korea unveiled the first detailed plan for how it will reach its coal phase-out target. The nation will shut down 24 coal-fired power plants—

<sup>57</sup> Argus Media. [China’s State Grid sets peak emissions plan](#). 2 March 2021.

<sup>58</sup> Reuters. Exclusive: [China Huadian to shut 3 GW of coal-fired power capacity by 2025 – chairman](#). 8 March 2021.

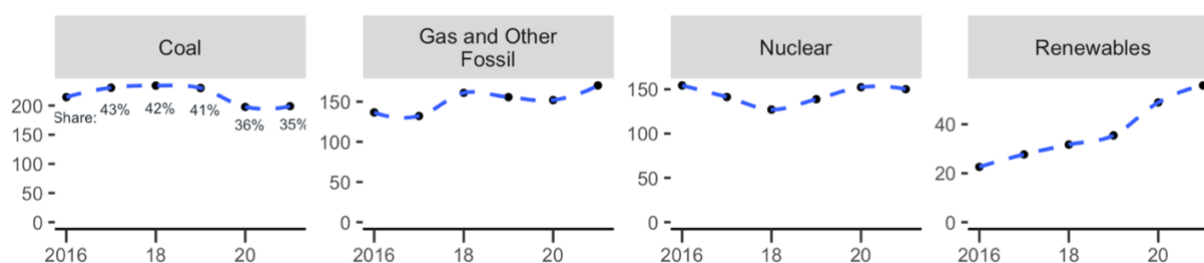
<sup>59</sup> Reuters. [South Korea’s Moon targets carbon neutrality by 2050](#). 28 October 2020.

<sup>60</sup> Argus Media. [South Korea approves coal phase-out by 2050](#). 27 October 2021.

almost half the South Korean fleet—by 2034 while the operation of the remaining plants will be restricted.<sup>61</sup>

In the most recent draft of South Korea’s long-term power plan released in August 2022, coal’s share in the South Korean power generation mix will halve by 2030 to 21%, down from 42% in 2018. In 2021, coal’s share was already down to 35%. Renewable’s share in the power mix is targeted to increase to reach 22% by 2030, up from 6% in 2018.<sup>62</sup>

**Figure 8: Coal and Other Electricity Generation (terawatt-hour), South Korea (2016–2021)**



Source: Ember

Following the raised global energy security concerns after the Russian invasion of Ukraine and the subsequent spikes in fossil fuel prices, in July 2022 the newly elected South Korean government revealed plans to further reduce reliance on fossil fuel imports.<sup>63</sup> According to the latest draft long-term power plan, nuclear power’s share of the electricity generation mix will rise from 27% to 33% by 2030 in a policy shift away from the phasing down of nuclear power in South Korea.<sup>64</sup>

As a result of this shift away from coal-fired power, the Australian Department of Industry, Science and Resources expects South Korea’s thermal coal imports to go into decline this decade. Imports into Australia’s third-largest thermal coal export destination are forecast to decline from 90 million tonnes in 2021 to 74 million tonnes by 2027, declining 3.2% per annum.<sup>65</sup>

Offshore wind will play a major role in South Korea’s shift to renewable energy and the country’s plans to build the world’s largest offshore plant by 2030. At 8.2GW, the plant will be almost seven times larger than the UK’s Hornsea project, which is currently the largest in the world.<sup>66</sup> There are also plans for a 6GW floating offshore

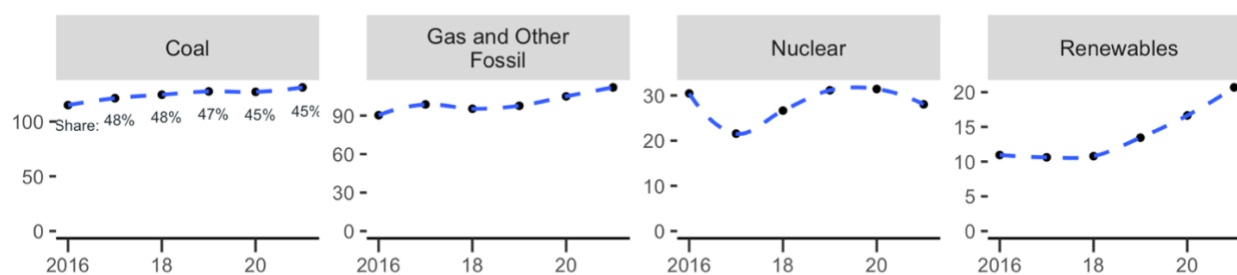
<sup>61</sup> S&P Global. [S.Korea unveils its first action plans for carbon neutrality](#). 10 December 2021.  
<sup>62</sup> Bloomberg. [Korea Pares Back Renewables as It Taps Nuclear for Climate Goal](#). 30 August 2022.  
<sup>63</sup> S&P Global. [South Korean president unveils energy plan focussed on cutting fossil fuel reliance](#). 5 July 2022.  
<sup>64</sup> Bloomberg. [Korea Pares Back Renewables as It Taps Nuclear for Climate Goal](#). 30 August 2022.  
<sup>65</sup> Department of Industry, Science and Resources. [Resources and Energy Quarterly](#). March 2022.  
<sup>66</sup> Offshore Wind. [World’s largest Offshore Wind Project Powers Ahead](#). 14 January 2022.

wind plant, which would also be the world’s largest of its type.<sup>67</sup> In November 2021, Equinor and Korea East-West Power signed a Memorandum of Understanding for a 3GW floating offshore wind farm in South Korea using Equinor’s new floating wind technology.<sup>68</sup> Equinor is considering an expansion of its offshore wind plans in South Korea and looking at building a 4–6GW portfolio of projects.<sup>69</sup>

## Taiwan

In March 2022, Taiwan’s National Development Council (NDC)—the government’s planning body—revealed its 2050 net zero carbon emissions roadmap. Taiwan plans to fully decarbonise its power sector by 2050 with renewable energy providing 60–70% of power generation. The government and state-owned companies plan to invest US\$32 billion on renewables, energy storage and grid infrastructure between 2022 and 2030.<sup>70</sup>

**Figure 9: Coal and Renewables Electricity Generation (terawatt-hour), Taiwan (2016–2021)**



Source: Ember

Offshore wind will be a key part of this renewable energy expansion. Taiwan has excellent offshore wind resources and the potential for almost 500GW of offshore wind power according to the Global Wind Energy Council.<sup>71</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. In September 2021 Spanish power major Iberdrola announced a 6GW offshore wind project pipeline in Taiwan.<sup>72</sup> Taiwan looks like becoming a major hub for offshore wind as the industry builds its Asia focus in the next stage of global offshore wind development beyond Europe. Floating offshore wind will play a role

<sup>67</sup> Yonhap News. [Moon vows support for floating offshore wind farm in Ulsan](#). 6 May 2021.  
<sup>68</sup> Equinor. [Stepping up Korean offshore wind plans, 3 GW collaboration with EWP](#). 17 November 2021.  
<sup>69</sup> Reuters. [Equinor to decide on South Korea offshore wind farm as soon as 2024](#). 27 May 2022.  
<sup>70</sup> Bloomberg. [Taiwan Vows \\$32 Billion Clean Energy Spree as it Lags on Targets](#). 30 March 2022.  
<sup>71</sup> IHS Markit. [Taiwan’s net-zero roadmap promises \\$170 billion in spending, renewable expansion; more could be required](#). 8 April 2022.  
<sup>72</sup> Iberdrola. [Iberdrola expands in Asia-Pacific with development of 6 GW pipeline in Taiwan](#). 9 September 2021.

with a 1GW project now under development.<sup>73</sup> Taiwan's 2035 offshore wind capacity target was raised in 2021 from 15.5GW to 20.5GW.<sup>74</sup>

Even before the NDC's new roadmap was released, the future of coal-fired power in Taiwan was one of decline. Like South Korea, Taiwan is dealing with air pollution issues. State-owned power generator Taipower has initiated winter coal power generation restrictions to address air pollution as South Korea has done. At the beginning of 2021, the 5.5GW Taichung coal-fired power plant was running at less than 40% capacity amid air pollution concerns. In January 2021, the Taiwanese parliament passed a resolution that will see the 5.5GW Taichung coal power plant decommissioned by 2035 at the latest, and possibly two years earlier. The plant consumed more than 12 million tonnes of thermal coal in 2020.<sup>75</sup>

In addition, over the last five years the pipeline of proposed coal-fired power plants has shrunk from 2.4GW to zero after a series of project cancellations. Most recently, the 1,200MW Shenao power proposal was cancelled in October 2018.<sup>76</sup> This was the last major coal-fired power plant in Taiwan's pipeline.

As a result, the Australian Department of Industry, Science and Resources expects coal-fired power's share of overall electricity generation in Taiwan to decline from 45% to 30% by 2025. Coal imports into Taiwan—along with those of Japan, China and South Korea—will now go into decline this decade.<sup>77</sup>

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## Europe

The long distance to Europe means that it has not been a major destination for Australian thermal coal. That changed somewhat in 2022 after the Russian invasion of Ukraine and the subsequent European ban on Russian coal imports, which took effect in August 2022. Previously, Russia supplied 70% of Europe's thermal coal imports.<sup>78</sup>

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<sup>73</sup> Wind Power Monthly. [BlueFloat Energy eyes Taiwan offshore wind entry with 1GW-plus project](#). 24 May 2022.

<sup>74</sup> Offshore Wind. [Taiwan Drafts Plan for Further 5GW of Offshore Wind](#). 11 May 2021.

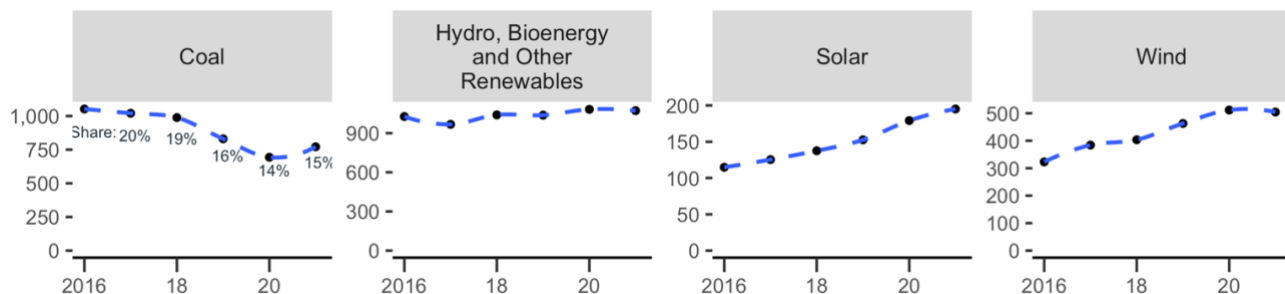
<sup>75</sup> Argus Media. [Taichung coal plant to be moved to grid reserve](#). 8 February 2021.

<sup>76</sup> Taiwan News. [Government to scrap Shenao power plant project: Taiwan premier](#). 12 October 2018.

<sup>77</sup> Department of Industry, Science and Resources. [Resources and Energy Quarterly](#). March 2022.

<sup>78</sup> Reuters. [Factbox: Europe ramps up coal imports as energy supply fears grow](#). 27 July 2022.

**Figure 10: Coal and Renewables Electricity Generation (terawatt-hour), Europe (2016–2021)**



Source: Ember

In the run-up to the ban, European importers sought to replace Russian coal imports—and also to replace expensive gas—with greater coal imports from other nations including Columbia, the U.S., South Africa and Australia. As a result, European coal imports and coal-fired power generation will be higher in the near term.

However, this will not mark the start of a renaissance for coal-fired power in Europe. The heightened energy security concerns and record fossil fuel prices will only accelerate Europe’s transition away from thermal coal. JP Morgan Chase reportedly believes the war and the resultant energy crisis will speed up the shift away from fossil fuels towards renewables.<sup>79</sup>

Although Germany is intending to extend the life of mothballed coal power capacity for two years, it has also approved a US\$180 billion funding package to accelerate its energy transition to make it less reliant on Russian gas. Investment will be made in energy efficiency, expansion of renewable energy and hydrogen among other areas.<sup>80</sup> The UK’s climate envoy has also stated that the war in Ukraine will support renewable energy, not coal, in the long run.<sup>81</sup>

## Other Export Markets

India, Vietnam, Bangladesh, Pakistan, the Philippines and Malaysia have previously been identified as growth markets for Australian coal exporters, nations that will fill the gap left by declining imports by Australia’s big four thermal coal export destinations. However, with the pace of the energy technology transition accelerating, and finance for coal power increasingly hard to come by, the opportunity for long-term export growth into these markets has fallen away.

<sup>79</sup> Bloomberg. [JPMorgan ESG Head Sees War Speeding Up Shift to Renewable Energy](#). 4 May 2022.

<sup>80</sup> Federal Ministry for Economic Affairs and Climate Change. [177.5 billion Euros for climate action, energy security and help with energy costs](#). 27 July 2022.

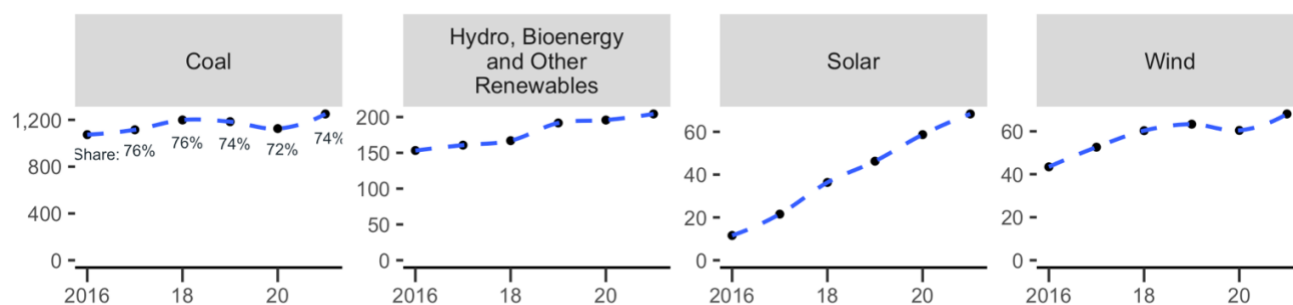
<sup>81</sup> Reuters. [Russia’s war spurs renewables, not coal in the long run, UK climate envoy says](#). 21 July 2022.

## India

India is the world’s second-largest thermal coal importer but, until recently, was not a major destination for Australian thermal coal. Indonesia and South Africa are India’s principal sources of thermal coal imports. However, the Chinese ban on Australian coal imports saw more Australian thermal coal exported to India in 2020, 2021 and 2022.

Like China, thermal coal imports make up only a fraction of India’s total consumption with far more thermal coal mined domestically by state-owned Coal India—the world’s largest coal miner by volume. India has long had an ambition to become self-reliant for thermal coal amid its rapid renewable energy roll-out.

**Figure 11: Coal and Renewables Electricity Generation (terawatt-hour), India (2016–2021)**



Source: Ember

Coal India is investing in its rail infrastructure to support the transportation of increased domestic coal volumes in the future.<sup>82</sup> In March 2021, state-owned Coal India announced an investment of US\$6.4 billion on further coal mining projects to boost output and replace imports. The 32 projects will have a combined output of almost 200 million tonnes per year.

In an effort to free up the coal sector dominated by state-owned Coal India and to reduce thermal coal imports, the government has auctioned off large coal blocks for commercial mining. The 2021 amendment to legislation was aimed at promoting competition, increasing exploration and providing opportunities to smaller players. India’s Coal Minister has claimed the move could save India US\$5 billion of coal imports annually.<sup>83</sup> Electricity generator Jindal Power has stated that its move into commercial coal mining in India will mean that it will soon no longer need to import thermal coal.<sup>84</sup>

<sup>82</sup> ET Energyworld. [Coal India to infuse Rs 19,6590 cr to strengthen rail infra](#). 30 November 2021.

<sup>83</sup> ET Energyworld. [Commercial mining likely to save Rs 30,000 crore annually on thermal coal import bill: Pralhad Joshi](#). 18 June 2020.

<sup>84</sup> Argus Media. [India’s Jindal Power looks to end coal imports](#). 5 November 2020.

The global energy crisis following the 2022 Russian invasion of Ukraine has sent the cost of India's coal imports soaring. At the same time, increased power demand amid domestic coal planning and logistics issues led the Indian government to seek increased thermal imports in the short term. However, some Indian power utilities were unwilling to increase imports in the short term due to record coal prices. Independent coal power stations that run on imported coal have been idle amid such high fuel prices and local banks are unwilling to fund the working capital requirements of 13 plants that are categorised as non-performing assets on the bank's books.<sup>85</sup> By August 2022, the Indian government had eased its short-term coal import targets as coal stocks improved.<sup>86</sup>

The increased energy security concerns following the invasion of Ukraine and the resultant high cost of fossil fuel imports is likely to see increased efforts to substitute imported coal with domestic product. Moody's Investor Services expects that "large coal-importing countries such as China and India will also seek to ramp up domestic coal production to enhance energy security and reduce reliance on coal imports".<sup>87</sup> Indian Minister of Power and New & Renewable Energy R. K. Singh has made it clear he believes the energy crisis will hasten the energy transition from fossil fuels to renewable energy.<sup>88</sup>

Any significant decline in Indian imports would send a major wave of knock-on impacts throughout the Asian seaborne thermal coal market, particularly for South Africa and Indonesia, but also for Australia as both Indonesia and South Africa would need to compete with Australia in other markets such as Vietnam.

Meanwhile, the major Indian renewable energy rollout continues. The plummeting cost of wind and solar is bringing forward the date of peak thermal coal consumption in India as it is around the world. Non-fossil fuel-based power generation is targeted to make up 50% of total capacity by 2030. India's Central

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<sup>85</sup> The Indian Express. [Ministry seeks funds for coal-fired power plants, but banks set to say no.](#) 10 June 2022.

<sup>86</sup> Reuters. [India eases coal import targets as inventories improve in some states.](#) 2 August 2022.

<sup>87</sup> Moody's Investor Services. [Metals and Mining – Global: Outlook stable as prices and EBITDA retreat from peaks but remain elevated.](#) 6 June 2022.

<sup>88</sup> Bloomberg. [Energy Crisis is Hastening End of Fossil Fuel Era, India Says.](#) 13 July 2022.



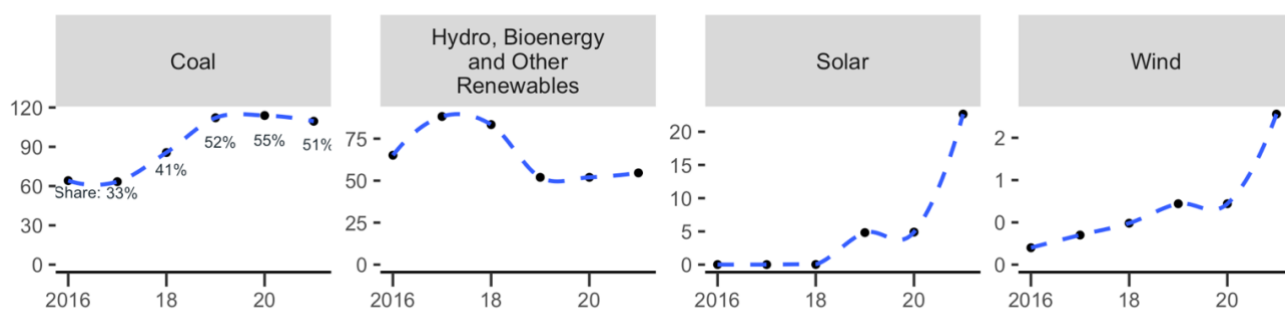
Electricity Authority has forecast that this will see coal power’s share of overall power capacity drop from 53% in 2021 to 33% in 2030.<sup>89</sup>

In June 2021, state-owned NTPC—India’s largest power generator—doubled its renewable energy target and is now planning to reach 60GW of renewables by 2032.<sup>90</sup> Another key Indian power producer—Tata Power—is aiming to reach 25GW of renewables by 2030, up from 4GW currently. Tata will not invest in any further coal-fired power projects and intends to be out of coal-fired power generation by 2050, in line with its 2050 zero carbon emissions target.<sup>91</sup> JSW Energy announced in July 2021 that it is targeting carbon neutrality by 2050 and will invest US\$10 billion to add more than 15GW of renewables by 2030.<sup>92</sup>

## Vietnam

Vietnam has been cited as a key growth market for Australian coal exports; however, while volumes have recently been increasing, the potential for Vietnam to replace export volumes lost to the four biggest markets as they transition away from coal imports is starting to look increasingly limited.

**Figure 12: Coal and Renewables Electricity Generation (terawatt-hour), Vietnam (2016–2021)**



Source: Ember

Most of the coal-fired power projects in Vietnam’s project pipeline have not reached financial close and the government is finding it increasingly difficult to secure finance for coal-fired power projects as banks abandon coal lending.<sup>93</sup> The long development times for coal projects—often running significantly over schedule—has also raised concerns that such projects will not be built quickly enough to meet Vietnam’s growing power demand. In the meantime, the rapid deployment of solar and wind power in the country since 2019, which has now amounted to almost

<sup>89</sup> ET Energyworld. [India keeps renewables target flexible, goal of 500 GW green energy by 2030 dropped](#). 5 August 2022.

<sup>90</sup> NTPC. [Power Generation – Renewable Energy](#).

<sup>91</sup> PV Magazine. [Tata Power vows to exit coal by 2050](#). 7 July 2021.

<sup>92</sup> Bloomberg. [JSW Energy Plans to Spend \\$10 Billion on Clean Power by 2030](#). 14 July 2021.

<sup>93</sup> Bloomberg. [Banks Shunning Coal Financing Bodes Badly for New Plants in Asia](#). 25 February 2020.

21GW, has further put into full context the endemic delays and overall role of coal-fired power in the country's future energy mix.

Vietnam surprised many at the COP26 summit held in Glasgow in 2021 when it pledged to reach zero carbon emissions by 2050 and also committed to stop building new coal plants.<sup>94</sup> Vietnam's coal-fired power pipeline—which was already looking increasingly unlikely to reach construction given a lack of financing—now looks even more uncertain.

As a result, Vietnam has already cut back on plans to rely on coal-fired power. The most recent draft of its new long-term power plan (known as PDP8) has seen the 2030 coal power capacity targeted reduced to 37.5GW,<sup>95</sup> down from 46.4GW in the March 2021 draft.<sup>96</sup> The country currently has 23GW of coal-fired power operational.

Even if Australian exporters could capture all of this potential additional demand, it would not be enough to counter declining demand around the rest of Asia. In reality, Australian coal miners can only hope to capture part of this increased demand as they will face increasing competition from countries such as Indonesia, Russia and South Africa amid falling global coal demand. In 2021, Vietnam imported 15.6 million tonnes of coal from Australia, accounting for 43% of total imports.<sup>97</sup>

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Looking ahead, Australian coal exporters are likely to face increasing competition from Indonesia—the world's largest thermal coal exporter—as it loses demand from its own key market of China. Indonesia's energy ministry stated in June 2020 that it is targeting increased exports to Vietnam, Pakistan and Bangladesh.<sup>98</sup> South African exporters have also been supplying Vietnam with 7.5 million tonnes of coal in 2021.

With coal-fired power unable to meet power demand growth expectations in a timely, affordable manner, Vietnam will likely increase focus on quicker-to-build and cheaper renewable energy.

<sup>94</sup> Bloomberg. [Vietnam Spurs Coal as Southeast Asia Aims to Kick Dirty Habit](#). 5 November 2021.

<sup>95</sup> Dau Tu Online. [PDP8 not yet finalized](#). 18 June 2022.

<sup>96</sup> S&P Platts. [Vietnam cuts back on LNG, coal-fired power projects after net zero pledge](#). 24 November 2021.

<sup>97</sup> Reuters. [Vietnam seeks to import more coal from Australia to avert power shortage](#). 2 April 2022.

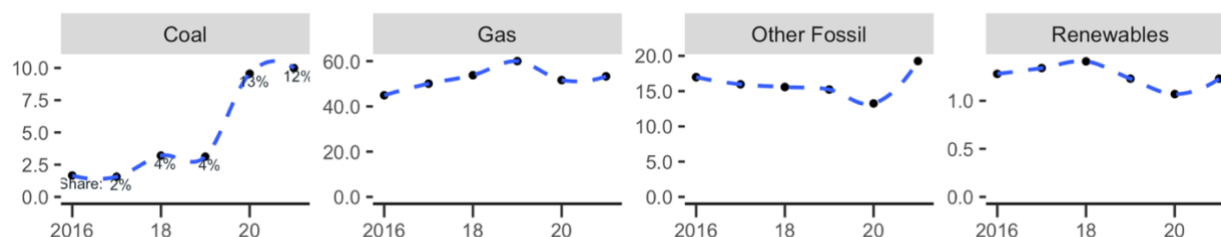
<sup>98</sup> Reuters. [Indonesia eyes Vietnam as it seeks to diversify thermal coal exports](#). 31 July 2020.

Vietnam added more than 4GW of solar power within a 12-month period up to the end of June 2019. The average construction period for those solar plants was just 275 days.<sup>99</sup> The nation followed up this extraordinary growth in solar development with an even more astonishing figure, adding 9GW of rooftop solar during 2020.<sup>100</sup> Vietnam is also developing wind energy—3.9GW of onshore and intertidal wind came online in 2021—and the government is also targeting 7GW of offshore wind development by 2030. Renewable energy, not coal, will take centre stage in Vietnam’s power landscape this decade.

## Bangladesh

There has been growing realisation in Bangladesh that its plan to expand power generation through imported coal-fired power plants was setting it on course for significant overcapacity, financially unsustainable capacity payments and increased cost of power generation. Bangladesh already has more power capacity than it needs with up to two-thirds of total power capacity lying idle at a time.<sup>101</sup> Overall utilisation of the nation’s total power generation capacity was just 42% in fiscal year 2020–21 and is set to drop even lower as more capacity is added in excess of power demand growth.<sup>102</sup>

**Figure 13: Coal and Other Electricity Generation (terawatt-hour), Bangladesh (2016–2021)**



Source: *Ember*

Prompted by the increasing difficulty in getting finance for coal-fired power as more banks withdraw lending for coal, Bangladesh’s power minister revealed in late June 2020 that the government is reassessing its plans for coal-fired power development. Even China—which has increasingly looked like the last lender to coal projects globally—has now stated that it will no longer consider financing coal proposals in

<sup>99</sup> Rystad Energy. [Vietnam overtakes Australia in commissioned utility PV](#). 4 July 2019.

<sup>100</sup> IEEFA. [Vietnam’s extraordinary rooftop solar success deals another blow to the remaining coal pipeline](#). 12 January 2021.

<sup>101</sup> IEEFA. [Bangladesh’s power system headed for financial disaster due to overcapacity in coal, LNG power](#). 18 May 2020.

<sup>102</sup> IEEFA. [Bangladesh Power Development Board Financial Results FY2020-21](#). February 2022.

Bangladesh.<sup>103</sup> In June 2021 it was confirmed that the government had decided to cancel 10 proposed coal-fired power projects.<sup>104</sup>

With Bangladesh's 8th five-year plan (2020–2025) acknowledging that increased dependence on imported coal and LNG will increase the cost of power generation and worsen the financial position of the power system,<sup>105</sup> renewable energy is also expected to become a higher priority for Bangladesh. The plan acknowledges that subsidies for fossil fuels have held back the development of solar and wind power in Bangladesh and that such subsidies will need to be wound back to facilitate an increase in renewable energy ambition.

In 2022, Bangladesh's coal-fired power pipeline shrank even further. In March, Japan's Sumitomo Corporation withdrew from the Matarbari 2 coal-fired power plant project as part of its global shift away from coal.<sup>106</sup> Following this, the Japan International Cooperation Agency (JICA) withdrew finance for the Matarbari 2 project.<sup>107</sup> JICA has already provided finance for the under-construction Matarbari 1 project, which is running significantly over budget and behind schedule.<sup>108</sup>

It is now becoming clear that beyond the handful of coal-fired power projects already under construction in Bangladesh, no more will be built. The first new project to be completed was the Payra coal-fired power plant, which is fuelled by Indonesian coal.<sup>109</sup>

Bangladesh, along with Pakistan and Vietnam, has been earmarked by thermal coal exporters as a growth market that could replace declining demand in traditional export markets. The end of Bangladesh's coal-fired power project pipeline will disappoint exporters across the Asian seaborne thermal coal market.

**The end of Bangladesh's coal-fired power project pipeline will disappoint exporters across the Asian seaborne thermal coal market.**

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<sup>103</sup> Daily Star. [\\$3.6b Chinese loan uncertain after Dhaka drops projects from agreed list](#). 4 March 2021.

<sup>104</sup> Daily Sun. [Govt scraps 10 coal power projects](#). 23 June 2021.

<sup>105</sup> Bangladesh Planning Commission. [8th Five-year Plan \(English\)](#). December 2020.

<sup>106</sup> Argus Media. [Sumitomo exits Bangladesh coal plant expansion plan](#). 3 March 2022.

<sup>107</sup> The Business Standard. [Japan cancels financing Matarbari coal project phase 2](#). 22 June 2022.

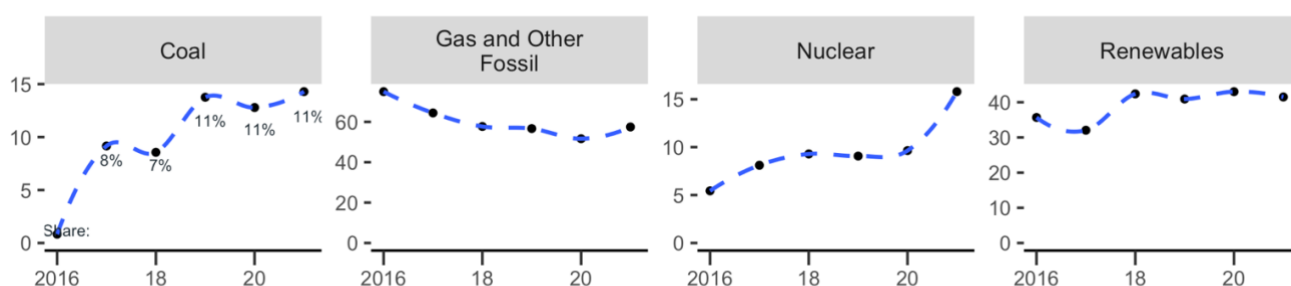
<sup>108</sup> The Financial Express. [Matarbari fast-track power project in need of more fund and more time](#). 22 April 2021.

<sup>109</sup> The Daily Star. [Indonesian firm to supply coal to Payra power plant](#). 19 June 2019.

## Pakistan

Like Bangladesh, Pakistan is similarly burdened by overcapacity and capacity payments within its power system.<sup>110</sup> Capacity payments to power generators are on course to reach Rs1.5 trillion (US\$6.4 billion) per annum by 2023. The expense of overcapacity is making the build-up of debt within Pakistan’s power system (known as circular debt) even worse. The inevitable consequence of expensive power generation and unsustainable debt is a rise in consumer power tariffs.

**Figure 14: Coal and Other Electricity Generation (terawatt-hour), Pakistan (2016–2021)**



Source: Ember

The unaffordable nature of surplus coal-fired power built under the China-Pakistan Economic Corridor program has also led the Pakistan government to seek debt relief from China. The request is likely to take the form of longer loan repayment terms in order to reduce capacity payments to the coal power generators.

With thermal power increasingly making the nation’s power system financially unsustainable, the Prime Minister of Pakistan announced at the December 2020 Climate Ambition Summit that Pakistan “will not have any more power based on coal”.<sup>111</sup> This was a highly significant statement for a nation that until then had been planning to add 27GW of coal-fired power between 2030 and 2047.

Significantly for Australian thermal coal exporters, all of that planned capacity was to have been fuelled by domestic coal. Pakistan has long since moved away from further reliance on imported thermal coal and has cancelled several plants that were intended to have been fuelled by imports.<sup>112, 113</sup> Other coal-fired power proposals have had their plans changed to use domestic rather than imported coal.

This planned shift away from thermal coal imports has now received new impetus from the global energy crisis that followed the 2022 Russian invasion of Ukraine.

<sup>110</sup> Bloomberg. [Nation Plagued by Power Shortages Suddenly Has Too Much Electricity](#). 27 January 2021.

<sup>111</sup> IEEFA. [Pakistan announces ‘no new coal-fired power’](#). 14 December 2020.

<sup>112</sup> Dawn. [Govt puts major CPEC power project on hold](#). 14 January 2019.

<sup>113</sup> Express Tribune. [PTI government abandons K-Electric’s coal project](#). 25 June 2020.

High seaborne coal prices have been too expensive for Pakistan,<sup>114</sup> leading to a drop in coal imports and the imposition of power cuts.<sup>115</sup> In June 2022, the cost of fossil fuel imports surged almost 150% compared to the same month in 2021 and made up about half of the nation's total imports of US\$7.9 billion. The cost of fossil fuel imports including coal is now pushing the Pakistan economy to the brink of collapse.<sup>116</sup>

As a result, energy security and replacement of fossil fuels imports are now an even higher necessity for Pakistan than before the invasion of Ukraine. In July 2022, it was reported that the 300MW Gwadar coal-fired power project—which was to be fuelled by imported coal—has been cancelled and will be replaced with a solar power project. In addition, the government has reportedly decided to press ahead with the conversion of the existing 4GW of operational power plants fuelled by imported coal to use domestic coal instead.<sup>117</sup>

**Far from being a seaborne thermal coal growth market, Pakistan's imports may soon begin to start falling.**

Far from being a seaborne thermal coal growth market, Pakistan's imports may soon begin to start falling.

## *Philippines*

In October 2020, the Philippines Department of Energy called a moratorium on further coal-fired power development.<sup>118</sup> This followed the Department of Energy's earlier caution against an overreliance on inflexible technologies such as coal that cause grid instability.<sup>119</sup> The new Ferdinand Marcos-led government has stated that it will keep the moratorium on new coal plants.<sup>120</sup>

The Philippines clearly sees the need to modernise its power system by shifting away from coal-fired power and towards renewables. The government is aiming for renewables to account for 35% of power generation by 2030 and 50% by 2040. Renewables accounted for 22% of power generation in 2021.

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<sup>114</sup> S&P Global. [Pakistan's coal crisis prompts industries to shut plants, reduce capacities](#). 23 May 2022.

<sup>115</sup> Bloomberg. [Cash-Strapped Pakistan Cuts Power to Households on Fuel Shortage](#). 18 April 2022.

<sup>116</sup> Bloomberg. [Crippling Energy Crisis Set to Worsen for Debt-Ridden South Asia](#). 28 July 2022.

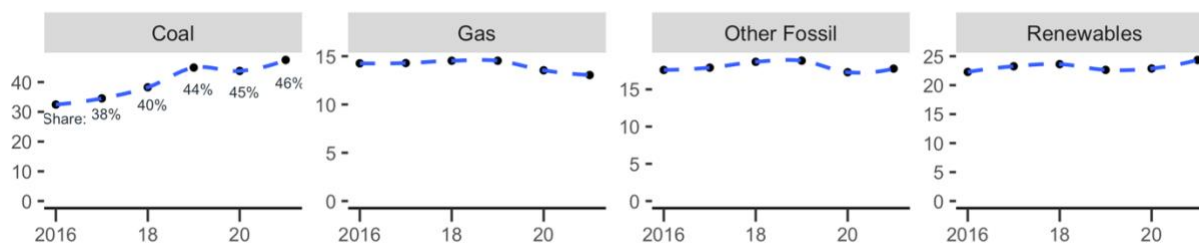
<sup>117</sup> The News. [Solar plant to replace 300MW Gwadar coal power project](#). 25 July 2022.

<sup>118</sup> Department of Energy. [DoE Sec. Cusi declares moratorium on endorsements for greenfield coal power plants](#). 27 October 2020.

<sup>119</sup> IEEFA. [The Philippines considers a power sector future without new coal](#). 9 June 2020.

<sup>120</sup> Argus Media. [Marcos govt keeps ban on new Philippine coal plants](#). 17 August 2022.

**Figure 15: Coal and Other Electricity Generation (terawatt-hour), Philippines (2016–2021)**



Source: Ember

This move by the government followed actions taken by the Philippines’ largest conglomerates, which are also the major power generators. In July 2022, AC Energy—a subsidiary of Ayala Corporation—divested from the South Luzon coal-fired power plant, the only such plant in AC Energy’s portfolio. The company will reinvest the proceeds into renewable energy.<sup>121</sup> San Miguel Corporation has also confirmed that it will stop developing new coal plants and switch its focus to renewable energy.<sup>122</sup> A run of coal-fired power project cancellations in recent years has limited the Philippines as a seaborne thermal coal growth market while opening up the opportunity for renewable energy.

Following the Department of Energy’s moratorium announcement, the nation’s banks have also been distancing themselves from coal. In December 2020, the CEO of Rizal Commercial Banking Corporation stated: “No more coal, no more coal. I’ll say that slowly—NO MORE COAL.”<sup>123</sup>

## Malaysia

Malaysia currently has eight coal-fired power plants with a total capacity of 12GW and none currently under development.

In March 2021, Malaysia launched a new long-term power plan intended to see more than half (7GW) of the country’s existing coal-fired power plants closed by 2039.<sup>124</sup> According to the plan 1.4GW of new coal-fired power plants will be added in both 2031 and 2037. Given the significant trend of banks and other financial institutions moving away from funding coal, this objective seems highly unlikely to be achieved. To replace shrinking reliance on coal-fired power, the new plan increases Malaysia’s renewable energy target from 20% of capacity to 31% by 2025.

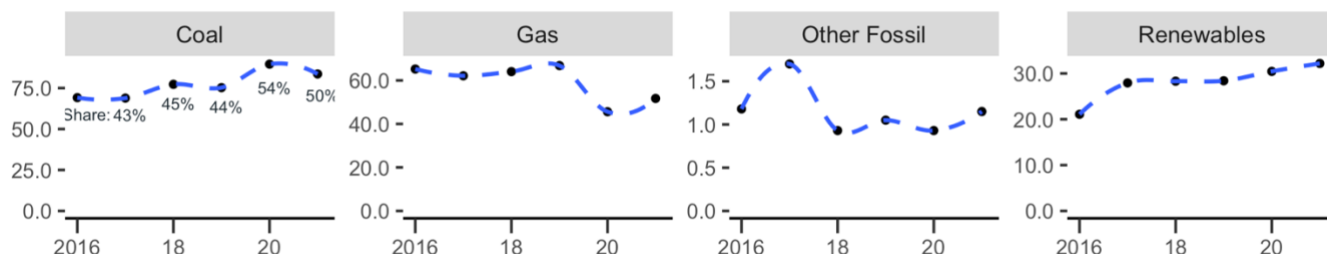
<sup>121</sup> Power Philippines. [ACEN to sell shares in SLTEC coal plant](#). 27 July 2022.

<sup>122</sup> Manila Standard. [San Miguel drops more coal projects, favors renewables](#). 21 July 2021.

<sup>123</sup> Manila Bulletin. [RCBC to stop funding coal power projects](#). 10 December 2020.

<sup>124</sup> Argus Media. [Malaysia to reduce coal capacity by 4.2GW by 2039](#). 24 March 2021.

**Figure 16: Coal and Other Electricity Generation (terawatt-hour), Malaysia (2016–2021)**



Source: Ember

Then in August 2022, state-owned power utility TNB—Malaysia’s largest power provider—announced plans to accelerate the closure of some of its coal-fired power plants to speed up its energy transition towards renewable energy.<sup>125</sup> TNB is targeting a 50% reduction in coal-fired power capacity by 2035 and zero carbon emissions by 2050, by which time it plans to install more than 14GW of renewable energy.

The first plant to be closed early is planned to be the 1.4GW Kapar Energy Ventures coal-fired power station in 2028–29, one year prior to the expiration of its power purchase agreement.

## Increasing Competition in a Declining Market

The energy transition away from fossil fuels is continuing at such pace that, not only are Australia’s traditional thermal coal export markets turning away from coal power, but the so-called potential growth markets are shifting too. Some export markets will potentially start phasing out imports in the medium term rather than in the longer term.

China and India in particular—with their huge domestic coal mining industries—are threatening to squeeze out thermal coal imports in the medium term through domestic coal production increases and an accelerating roll-out of renewable energy.

As demand in the Asian seaborne thermal coal market fades, Australia will not be the only exporter impacted. The other major exporters into the Asian market will also need to seek alternatives as their primary markets decline. The loss of the major export destinations is likely to see significantly increased competition between Australia, Indonesia, Russia and South Africa for alternative Asian markets.

<sup>125</sup> PV Magazine Australia. [Malaysia energy major targets early closure of coal plants](#). 4 August 2022.



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—the world's largest exporter of thermal coal—will seek other markets to fill the gap, at the expense of Australia, Russia and South Africa. The impact could be compounded if Indonesia's number two export destination—India—also begins to reduce imports.

Indonesia has already made it clear that it will be targeting Vietnam, Bangladesh and Pakistan to replace lower demand in China and India.<sup>126</sup> Recent moves by Vietnam, Bangladesh and Pakistan to significantly reduce emphasis on coal-fired power development will disappoint Indonesian thermal coal exporters.

In addition, the idea that there will be less Indonesian coal in the seaborne market as more is needed to fuel Indonesia's fleet of new coal-fired power plants is starting to crumble. The Indonesia government has stated that the country will not approve any more coal-fired power plants.<sup>127</sup> PLN, Indonesia's coal-dependent power utility—is also planning to retire existing coal power plants. By 2035, 9GW is planned to be retired as the company pushes towards its ambition of exiting all coal-fired power by 2056.<sup>128</sup>

Russia is also intending to increase competition in the Asian coal market. The nation is spending US\$10 billion on rail capacity expansion as part of a plan to increase coal output and sell coal to Asian buyers while it still can.<sup>129</sup> Russia will be hoping that its land border and good relationship with China will allow it to fill the gap left by the Chinese ban on Australian coal. Despite restrictions on Russian coal imports into Europe and Japan, any price advantage over Australian thermal coal (see Figure 17) will see continued imports into markets such as China<sup>130</sup> and India.<sup>131</sup>

Australian and South African coal miners may be hoping that the higher energy content of their exported coal may give them an advantage over lower energy Indonesian coal going forward. However,

**There is little evidence that importers will favour higher energy coal in the long term unless the energy-adjusted price is favourable.**

<sup>126</sup> Reuters. [Indonesia eyes Vietnam as it seeks to diversify thermal coal exports](#). 31 July 2020.

<sup>127</sup> Bloomberg. [No New Coal Plants in Indonesia in Another Bid to Cut Emissions](#). 27 May 2021.

<sup>128</sup> Reuters. [Indonesia state utility to retire coal power plants gradually](#). 27 May 2021.

<sup>129</sup> Bloomberg. [Putin Is Betting Coal Still Has a Future](#). 30 May 2021.

<sup>130</sup> CNBC. [China continues to snap up Russian coal at steep discounts](#). 29 June 2022.

<sup>131</sup> S&P Global. [Lower price, currency flexibility drive more Russian thermal coal to India](#). 1 August 2022.

there is little evidence that importers will favour higher energy coal in the long term unless the energy-adjusted price is favourable.

### *Will the Asian Seaborne Market Shift Towards High Calorific Value Coal?*

Some thermal coal industry incumbents maintain that Australian coal—with a higher calorific value (CV) on average than that typical of Indonesia—will continue to find buyers amid an overall global decline in thermal coal demand because the remaining demand will shift towards higher energy coal. A 2022 report written by CRU Consulting (CRU) for Mach Energy’s Mount Pleasant Optimisation Project in NSW stated:

*“CRU has observed a strong shift towards the use of higher pressure, supercritical and ultra-supercritical coal-fired power plants in key markets in Asia. These plants are typically capable of taking greater proportions of higher-grade coal. Coal-fired power plant retirements are generally targeted at the older subcritical boiler units, which have higher emissions due to lower efficiency. As such, CRU expects most demand destruction in lower grade coal.”<sup>132</sup>*

In our opinion, this view is too simplistic.

First, although older, sub-critical coal power plants are likely to be retired earlier as coal-fired power declines globally, it does not follow that this will lead to a shift in demand from lower CV coal towards higher CV products. CRU notes only that supercritical and ultra-supercritical coal-fired power plants are “capable” of using higher proportions of higher-grade coal, not that they are dependent on such coal. Supercritical and ultra-supercritical coal power plants can, and do, run on low CV coal. Second, there are other important factors in play when thermal coal importers consider their fuel sources. Energy security, shipping distance/cost and, most significantly, coal price will see importers continue to seek cheaper low CV coal in the long term.

There are many examples from around Asia where new supercritical and ultra-supercritical coal-fired power plants use lower-CV coal, including:

- Payra in Bangladesh: the new ultra-supercritical coal-fired power plant is known to be fuelled by Indonesian coal, which produces coal with a significantly lower CV on average.<sup>133</sup> The plant is reportedly to use sub-bituminous coal with a CV of 4,700–5,500 kcal/kg<sup>134</sup>— below that of benchmark Australian thermal coal.

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<sup>132</sup> Ashurst/CRU. [Coal market Substitution Study](#). 5 July 2022.

<sup>133</sup> Minerals Council of Australia. [Australian Export Thermal Coal: The Comparative Quality Advantages](#). 2021.

<sup>134</sup> Daily Star. [Indonesian firm to supply coal to Payra power plant](#). 19 June 2019.

- San Buenaventura in the Philippines: the first ultra-supercritical coal-fired power unit built in the Philippines uses sub-bituminous coal imported from Indonesia<sup>135</sup>—the world’s largest thermal coal exporter.
- Mae Moh in Thailand: the new ultra-supercritical units of the Mae Moh coal-fired power plant will use sub-bituminous, low CV lignite (or brown coal) from a local coal mine.

In addition, Vietnam has long been considered a growth market for seaborne thermal coal. Although the planned roll-out of coal power plants has now been scaled back, Vietnam still has a number of supercritical plants operating and under construction. According to the Australian Government’s Department of Industry, Science and Resources, the resulting increase in Vietnam’s coal imports in recent years has chiefly been supplied by Indonesia (which supplies coal of lower grade on average than Australia). In the June 2022 *Resources and Energy Quarterly*, the department forecasts that, although Vietnamese imports of Australian coal may increase going forward, the main beneficiary will continue to be Indonesia.<sup>136</sup>

As a result, a greater proportion of supercritical and ultra-supercritical coal power plants among the remaining Asian fleet does not necessarily mean demand preference for higher CV coal. As well as shipping distances/cost, a key factor that will determine demand for particular grades of coal will be price. The current global energy crisis that has resulted in record coal prices is making this very clear—thermal coal importers are often highly price sensitive.

**A greater proportion of supercritical and ultra-supercritical coal power plants among the remaining Asian fleet does not necessarily mean demand preference for higher CV coal.**

The Department of Industry, Science and Resources clearly highlights the price sensitivity of some Asian thermal coal importers, stating in the June 2022 *Resources and Energy Quarterly* that:

*“India may gain some relief by increasing imports of displaced Russian coal. However, Russian coal is of a generally higher calorific quality (and price) than the coal typically imported — which may restrain its utility given India’s price sensitivity ... At present, India appears to be more interested in drawing greater supply from Indonesia, in growing competition with China.”<sup>137</sup>*

India imported 1.9 million tonnes of Australian thermal coal in June 2022, down 44% from the 3.39 million tonnes it imported in June 2021. At the same time, it

<sup>135</sup> Mitsubishi Power. [MHPS receives order for boiler, steam turbine and generator for the Philippines first ultra-supercritical-pressure coal-fired power unit](#). 9 December 2015.

<sup>136</sup> Department of Industry, Science and Resources. [Resources and Energy Quarterly](#). June 2022.

<sup>137</sup> *Ibid*, p. 64.

increased June 2022 imports of cheaper, lower CV coal from Indonesia to 14.25 million tonnes, more than three times higher than the 4.37 million tonnes it imported in June 2021.<sup>138</sup>

India's clear preference for cheaper, lower CV coal would appear to undermine the assertion that thermal coal importers will shift towards higher CV coal. Other factors clearly play a role, most importantly price but also shipping distances, potential for weather disruptions (which Australian coal supply is prone to) and a need to diversify sources for energy security reasons. The June 2022 *Resources and Energy Quarterly* highlights:

*"The Indian Government has stated it remains committed to diversifying its coal supply and reducing its dependency on Australian supply, which is relatively expensive and vulnerable to weather disruptions."<sup>139</sup>*

S&P Global recently noted that the surge in Australian coal prices following the invasion of Ukraine was largely prompted by demand from the European Union and Japan, which have pledged to ban coal imports from Russia.<sup>140</sup> The Department of Industry, Science and Resources also made clear in June 2022 that "a larger share of Australian coal will be directed to Europe" and that Japan and South Korea will also seek to import more Australian coal.<sup>141</sup> These territories are less price sensitive than developing Asian nations. However, in its Coal Market Substitution Study, CRU forecasts that Europe, Japan and South Korea are among the territories that will see a very significant fall in thermal coal demand as their power systems transition away from fossil fuels.

Meanwhile price-sensitive buyers in developing Asian nations will look for cheaper alternatives. Across the Asian seaborne thermal coal market, buyers have recently been turning towards cheaper Russian and Indonesian coal at the expense of Australian coal (Figure 17).<sup>142</sup> According to CRU's study, remaining long-term demand for thermal coal will be centred on India and Southeast Asia but these are the territories that are most price sensitive and least likely to shift towards high CV coal in the long term.

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<sup>138</sup> Reuters. [Asia imports of thermal coal, LNG hold up despite record prices](#). 12 July 2022.

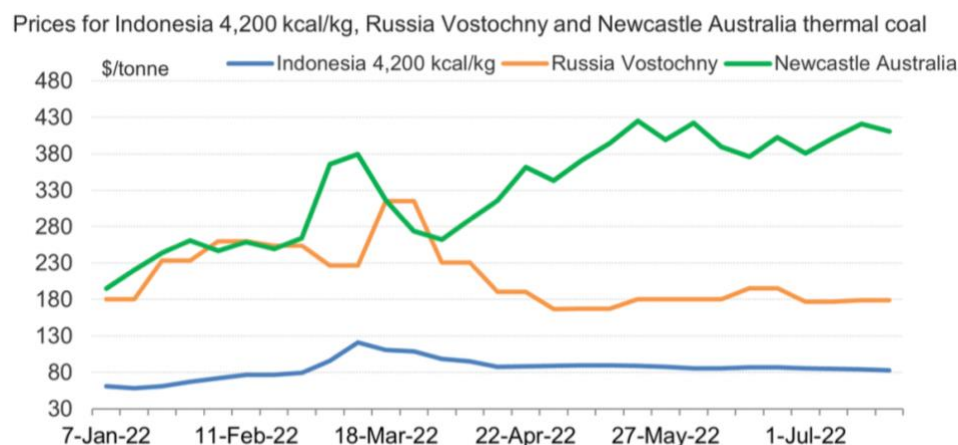
<sup>139</sup> Department of Industry, Science and Resources. [Resources and Energy Quarterly](#). June 2022, p. 64.

<sup>140</sup> S&P Global. [Australian coal prices slump in June as cheaper Russian, Indonesian cargoes lure away buyers](#). 15 June 2022.

<sup>141</sup> Department of Industry, Science and Resources. [Resources and Energy Quarterly](#). June 2022, p. 70.

<sup>142</sup> S&P Global. [Australian coal prices slump in June as cheaper Russian, Indonesian cargoes lure away buyers](#). 15 June 2022.

**Figure 17: Australian, Russian and Indonesian 2022 Thermal Coal Prices**



Source: Reuters<sup>143</sup>

Even as global demand for thermal coal starts to decline significantly, it cannot be expected that coal prices will decline and remain low. Instead, they are likely to remain volatile due to recurring mismatches in demand and supply as the industry declines. As a result, price will remain a key factor determining where importers will source their coal into the long term, especially as renewable energy will continue to get cheaper.

In April 2022, Moody's noted that an extended period of high coal prices will make renewable energy an even more attractive alternative and lead to an acceleration in the long-term decline of coal.<sup>144</sup> In July 2022, India's Power Minister R. K. Singh stated that the current energy crisis resulting from the Russian invasion of Ukraine will hasten the end of the fossil fuel era.<sup>145</sup> Nations and power generators seeking to meaningfully reduce their carbon emissions will not turn from low CV coal to high CV coal, not least because such a switch would not significantly alter carbon emissions.<sup>146</sup> Instead, they will transition from low CV coal to ever-cheaper renewable energy.

<sup>143</sup> Reuters. [Column: China's mooted end to Australian coal ban will have zero market impact](#). 25 July 2022

<sup>144</sup> Moody's Investor Services. [Coal Mining – Global: High prices drive earnings but would hit affordability and demand if sustained](#). 11 April 2022.

<sup>145</sup> Bloomberg. [Energy Crisis Is Hastening End of Fossil Fuel Era, India Says](#). 13 July 2022.

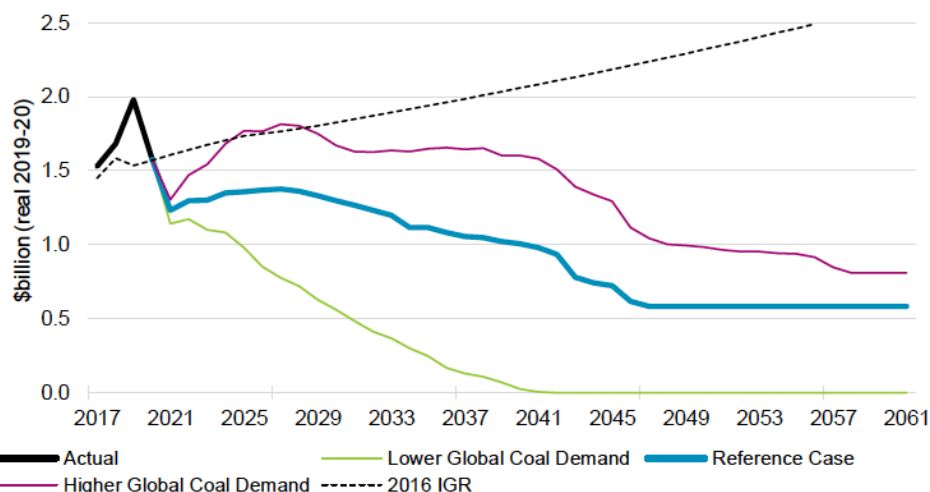
<sup>146</sup> AAP. [PM's claim Australian coal produces much lower emissions is 'nonsense'](#). 19 February 2021.

## Impact on Coal Royalties and Jobs

Under the NSW Treasury’s lower global coal demand scenario for the 2021 Intergenerational Report—completed prior to the shorter-term impact of the Russian invasion of Ukraine—coal royalties decline to zero by 2042. Even in the base case, annual coal royalties decline to around one-third of current levels over the coming decades (Figure 18).<sup>147</sup>

These projections are significantly below the royalty projections in the previous Intergenerational Report (2016), reflecting the dramatic shift in the NSW government’s outlook for coal since then. The 2016 Intergenerational Report projected A\$73 billion of cumulative coal royalties between 2020–21 and 2055–56. This has now been revised down to A\$35 billion in the 2021 base case and A\$11 billion in the low coal demand scenario.

**Figure 18: NSW Treasury Coal Royalties Revenue Projections, 2021 vs 2016 (real 2019–20 A\$, billions)**



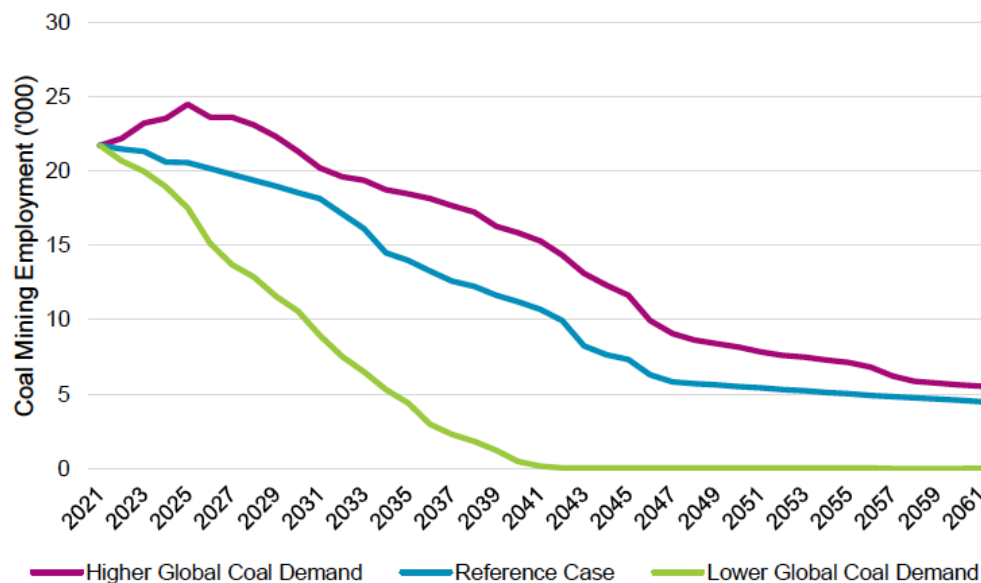
Source: NSW Treasury, 2021 Intergenerational Report, p. 21

Similarly, the NSW Treasury projects a major decline in coal mining jobs—between 75% and 100% fewer jobs in the sector by 2061 (Figure 19). Under the base case, NSW Treasury projects that employment in coal mining will decline by an average of 600 jobs per year over the next two decades.<sup>148</sup>

<sup>147</sup> NSW Treasury. *The Sensitivity of the NSW Economic and Fiscal Outlook to Global Coal Demand and the Broader Energy Transition for the 2021 NSW Intergenerational Report*. May 2021.

<sup>148</sup> Ibid.

Figure 19: NSW Government 2021 Employment in Coal Mining Forecasts



Source: NSW Treasury, 2021 Intergenerational Report, p. 20

The accelerating pace of the energy technology transition has significant implications for the Australian coal industry.

In the longer term, the shift of Asian nations towards more reliance on renewable energy and domestic coal will see volumes of Australian thermal coal exports fall significantly. This process is outside of the control of Australian state and federal governments.

Thermal coal imports will decline soonest in Australia's most established export destinations—Japan, South Korea and Taiwan. The Department of Industry, Science and Resources forecasts that Australian thermal coal exports to these destinations will go into permanent decline this decade.

A transition away from reliance on coal over the coming decades is certain, the only question remaining is whether that transition will be planned and orderly or chaotic.

## About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. [www.ieefa.org](http://www.ieefa.org)

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