Dartbrook Coal Mine - Modification 7 (DA 231-7-2000 MOD7)

IEEFA’s submission to the NSW Government, Department of Planning and Environment

Executive Summary

Thank you for the opportunity to make a submission to this proposal.

The Institute for Energy Economics and Financial Analysis (IEEFA) 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 economy within the limits of a liveable planet.

The Dartbrook Coal Mine is located in the Hunter Valley, New South Wales, Australia, approximately 4km west of Aberdeen and 10km north-west of Muswellbrook. The very high methane intensive mine was opened in 1995 but has been closed since 2006 ‘after three miners died in 12 years’ and ‘due to ongoing geological difficulties’ including ‘gas, water and safety problems’.

In this submission, IEEFA is responding to Modification 7 (DA 231-7-2000 MOD7), Australian Pacific Coal’s application to reopen the Dartbrook underground using “only bord-and-pillar mining methods”, with a “varied coal clearance system”. The proponent also seeks to extend the period of approval by another five years to December 2027.

IEEFA notes the company’s open intention for a future open cut mine at Dartbrook should not be ignored.

IEEFA notes as the Dartbrook Coal Mine ceased operation 13 years ago, any application should be reviewed and evaluated as a new mining development, as well as giving due consideration to the cumulative impact of adding yet another coal mine to the many already in operation in the Hunter Valley.

IEEFA objects to the re-opening and modification of the Dartbrook Coal Mine.

Our reasons include:

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1 “All coal seams in the Dartbrook mining lease contains a seam gas mixture of Methane (CH4) and Carbon Dioxide (CO2). In-situ gas contents range from 6.5 to 11 cubic metres per tonne in the Wynn seam. Gas contents for the upper seams are generally less. Carbon dioxide is the predominate gas with CO2/CH4 ratios ranging between 90:10 and 60:40.” Excerpt from J. Hayward, "Dartbrook Mine - a case study", University of Wollongong, 1998.
1. **FINANCIAL DISTRESS OF THE PROONENT**

The owner of the Dartbrook proposal is Australian Pacific Coal, an Australian listed company that continues to report annual operating losses, has negative shareholders equity and rapidly rising indebtedness. The Auditors have questioned the “going concern” assumption since last year, yet the financials continue to get worse as entirely debt funded losses stack up.

The proponent has not demonstrated any ability to fund the basic costs of, let alone future costs of project development and then safe operation, raising serious questions over likely capital and management shortcuts which could put mine worker safety and mine remediation at risk.

2. **FINANCIAL VIABILITY OF THE PROJECT IS QUESTIONABLE, AND THE COST-BENEFIT ANALYSIS Lacks CREDIBILITY**

The proponents and their economists have understated capital costs by a factor of more than 300%. In addition, they have overstated the quality of the coal which in turn overstates likely revenues significantly. This optimism means the the project is realistically unviable on current market conditions. Further, overstating likely revenues by 26% in turn overstates likely coal royalties to the NSW government.

Gillespie Economics uses questionable mathematical gymnastics to take a total global carbon emissions cost of A$682m and reducing it to “less than A$0.1m”. Gillespie Economics assumes corporate tax will be paid, a heroic assumption based on 100% equity financing, whereas the proponent in this case is 100% debt financed to-date.

An independent and impartial assessment would likely derive a negative net cost of the mine to the community of New South Wales and Australia.

3. **A HIGH PRICE DISCOUNT FOR LOW ENERGY, HIGH ASH, UNWASHED COAL**

Gillespie Economics have assumed a coal price that fails to take into account the structure decline of low energy, high ash coal markets internationally since the start of 2018. Gillespie Economics estimates a coal price of A$95/t (US$73), whereas IEEFA calculates A$70/t (US$50) is a likely best case estimate of unwashed coal from Dartbrook in today’s increasingly discerning market.

4. **THERMAL COAL’S STRUCTURAL DECLINE HAS ALREADY STARTED**

South Korea, Japan and other key Australian export markets are already in a state of volume decline.

Global forecasts show the seaborne thermal coal market will more than half within two decades as the world acts on the Paris Agreement.
5. **A COMMITMENT TO THE PARIS AGREEMENT MEANS NO NEW THERMAL COAL MINES**

We must limit coal extraction if we are to limit global temperature rises. As Professor Will Steffen stated in the NSW Land and Environment Court’s recent decision on the Rocky Hill Mine appeal: “step number 1, if you’re really serious about the Paris targets, is no new fossil fuel developments. I mean, it doesn’t take an Einstein to work that out—that you cannot reduce emissions by increasing them.”

6. **INCREASING GLOBAL DIVESTMENT FROM COAL**

Over 100 globally significant financial institutions have put in place increasingly strict coal divestment and/or coal lending restrictions. During 2018, every two weeks a globally significant financial institutions divested from coal and/or introduced an even more restrictive policy on thermal coal. Since the start of 2019, this has accelerated to one new announcement every week, including QBE Insurance and UBS just this past week.

7. **ACCELERATING GLOBAL PIVOT TO RENEWABLES**

Ever cheaper renewable energy technologies are making thermal coal increasingly uncompetitive in Australia’s key export markets.

8. **STRANDED ASSET RISK**

As Australia’s export markets transition away from coal, there is an increasing stranded asset risk. India is the world’s second largest producer, consumer and importer of thermal coal. India’s Prime Minister has committed to building 275 gigawatts (GW) of renewable energy by 2027, given it is now the low-cost source of electricity supply for India. As other Asian countries replicate India’s electricity system transformation, new thermal coal mines are likely stranded assets.

9. **INCREASED COLLATERAL DAMAGE**

Mining is likely to damage the local environment, NSW industries and local communities. IEEFA would highlight the cumulative impact risks of multiple new coal mines to NSW’s water has not been assessed.

IEEFA objects to the re-opening, modification and life extension of the Dartbrook Coal Mine.
Section 1. Financial viability of the proponent

Australian Pacific Coal’s 2017/18 annual report and the subsequent interim result announcement for the half year to December 2018 highlights the growing financial distress of the group.

Australian Pacific Coal reported a $15.9m net loss in 2017/18, nearly double the $8.9m loss reported in 2016/17. In the six months to December 2018, Australian Pacific Coal reported a further $7.9m net loss.

Australian Pacific Coal reported shareholders’ equity of negative $7.9m as at 30 June 2018, and that net debt had risen $15m or 46% over the last financial year to close at 30 June 2018 at $48.5m (excluding the $9m Financial Assurance deposit held by the NSW government to cover the mine rehabilitation provision). Shareholders’ equity deteriorated to negative $14.8m as at 31 December 2018, and net debt rose another $12m or 26% over the last six months to close at 31 December 2018 at $61.1m – Figure 1.1.

Figure 1.1: Australian Pacific Coal is in Financial Distress

<table>
<thead>
<tr>
<th></th>
<th>2018 December</th>
<th>2018 June</th>
<th>2017 June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrowings</td>
<td>61.8</td>
<td>50.9</td>
<td>45.5</td>
</tr>
<tr>
<td>Less Cash</td>
<td>-0.7</td>
<td>-2.4</td>
<td>-12.3</td>
</tr>
<tr>
<td><strong>Net debt (A$m)</strong></td>
<td><strong>61.1</strong></td>
<td><strong>48.5</strong></td>
<td><strong>33.2</strong></td>
</tr>
</tbody>
</table>

| Increase (period-on-period) | 26% | 46% |
| Shareholders Equity (A$m)   | -14.8 | -7.8 | 8.0 |

Source: Australian Pacific Coal Annual Accounts 2017/18 and Interim Results to December 2018, as reported to the Australian Stock Exchange

In light of this, the Independent Auditors report of 27 September 2018 notes in light of the ongoing company losses:

“Material Uncertainty Related to Going Concern: We draw attention to Note 1 in the financial report, which indicates that the company incurred a net loss of $15,866,814 during the year ended 30 June 2018 and, as of that date; the company’s total liabilities exceeded its total assets by $7,878,458. As stated in Note 1 these conditions ... indicate that a material uncertainty exists that may cast significant doubt about the company’s ability to continue as a going concern and therefore, the company may be unable to realise its assets and discharge its liabilities in the normal course of business and at the amounts stated in the financial report.”
Australian Pacific Coal is listed on the Australian Stock Exchange. In the last five years the stock is down 76%, having massively underperformed the overall market (up 15% in the same period) – Figure 1.2. We note that the coal sector as a whole has seen near record profitability in the last two years, making this underperformance all the more pronounced.

**Figure 1.2: Australian Pacific Coal Share Price Performance – Five Years**

*Source: Yahoo Finance*
Limited Viability of the Project

The shuttered Dartbrook mine was owned solely by Australian Pacific Coal (AQC Dartbrook Management Pty Ltd), having finalised its purchase from Anglo American in 2015 for $25m.

AQC reported it had sold a 50% share of Dartbrook mine for $20m to Canadian company Stella Natural Resources (SNR) in 2018, with the resulting group Dartbrook Joint Venture reportedly required to lend AQC $10m to repay Anglo American.

AQC reportedly aims to eventually “run an open-cut mine on the lease”, with SNR responsible for developing and managing the Dartbrook mine, including the “procurement of all required funding for the life of the operation”. 3

IEEFA notes that at a recent hearing the AQC admitted their financial woes to the NSW Independent Planning Commission Panel, stating:

“We’re still in the process of completing [the joint venture] transaction [announced in 2018], and no doubt, as you can appreciate, the work that we are doing, our board, plus our joint venture partner in not only closing that deal but also I guess making an investment decision based on the latest and then current information, and the fact that we are ASX listed and therefore have certain continuous disclosure obligations, we haven’t yet reached that point.”

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3 Newcastle Herald, “The Upper Hunter’s Dartbrook coalmine gets a new half-owner”, 10 August 2018.
Section 2: The Cost-Benefits Analysis is Overstated

The proponent has had Gillespie Economics provide a cost-benefit analysis that in IEEFA’s view is entirely stacked to minimise / trivialise the calculated costs to the community and maximise the estimated benefits. This overstates the net benefits to NSW and Australia materially.

IEEFA would take this perspective even further. The dramatic market derating of low energy, high ash thermal coal since the start of 2018 entirely challenges the economic viability of this proposal, potentially fatally. As discussed in Section 3, applying current market parameters to this unwashed coal suggests a market price well below US$50/tonne, rather than the US$73/t assumed by Gillespie Economics.

There is a reason this mine was closed back in 2006 and has been left in “care & maintenance” for over a decade. Absent the massive environmental costs and capital investment of an open-cut mine, the capital constrained, high-graded underground mine proposal being evaluated here looks entirely unviable.

Australian Pacific Coal is already in financial distress, and its Director’s “going concern” assumption is questioned by its own auditors (as discussed in Section 1). Dartbrook’s approval is key to the Australian Pacific Coal’s ongoing existence. Australian Pacific Coal’s own JORC analysis of February 2017 concludes that on realistic modelling assumptions, the Dartbrook proposal is unviable.

The cost-benefit analysis overstates benefits and understates costs by:

I. Carbon emissions: Gillespie Economics takes creative accounting to the extreme to reduce A$682m of current carbon emissions values (scope 1,2&3) to “less than $0.1m”.

II. Gillespie Economics assumes the project to be entirely equity financed, ignoring the reality that the proponent is 100% debt financed to-date. By assuming a fictional capital structure, Gillespie creates $14m of corporate tax. Historic precedent suggests a number of zero is more realistic.

III. Given the project is proposed to be 50% owned by Stella Natural Resources US, the assumption that 90% of the “net producer benefits” of this project of A$187m would accrue to Australian shareholders is now obsolete.

IV. Gillespie Economics assumes a US$73/t coal price and an exchange rate of US$0.76, giving an A$95/t price. IEEFA would ascribe a 52% price discount to the Newcastle 6,000kcal, 13% ash benchmark. Rounding up to an optimistic US$50/t and a current exchange rate of US$0.715, this gives an A$70/t price. This is 26% lower, meaning the coal royalties to the NSW government would be correspondingly 26% lower.

V. Australian Pacific Coal has acknowledged their estimated capital cost of this new coal mine of A$15m is understated by $30m or more, possibly $100m.
Carbon Risk

The severe, multiple climate risks to NSW’s critically important agriculture and tourism sectors are in their own right significant enough to warrant the precautionary stance of leaving untapped low quality thermal coal/carbon reserves in the ground. Multiple economic experts have reported at length on this risk. 4

Gillespie Economics references the European Union’s Emissions Allowance Units (EAU) pricing as a guide to the cost of carbon and methane emissions from this project. EU EAU’s are currently trading above €21/t – Figure 2.1.

Figure 2.1: European Union’s Emissions Allowance Units (€/t)

![Source: https://markets.businessinsider.com/commodities/co2-emissionsrechte, 29 March 2019](image)

Australian Pacific Coal estimates that over the 10-year life of this new coal mine, emissions would be 3.69Mt CO2-e (scope 1 & scope 2). Scope 3 are exported emissions, released on burning of Australian Pacific Coal. Burning coal anywhere in the world will release carbon emissions that will impact Australia directly.

Using amazing accounting dexterity of exceptionally dubious validity, Gillespie Economics has come up with a NSW community cost of carbon emissions from this project proposal of just A$0.1m.

IEEFA estimates that the near 20Mt of carbon at today’s EU EUA pricing is a community cost of A$682m – 6,825 times that of Gillespie Economics (Figure 2.2). IEEFA would reference the Rocky Hill decision by Justice Preston as saying carbon emissions of scope 1,2 & 3 from a coal mine all count as they are all released into the shared atmosphere, regardless of which country they are released from.

4 The Australia Institute, “Great Barrier Bleached: Coral bleaching, the Great Barrier Reef and potential impacts on tourism”, June 2016.
In isolation, the market value of carbon emissions imposed on the global community is four times the “total net production benefits of $187m” that Gillespie calculates, even before the overestimate of benefits are removed.

While Australia’s current political landscape currently creates a policy disconnect between its international treaty obligations and its domestic climate policy, the financial, legal, and fiscal risks and costs of this have been well articulated by the RBA, APRA and in our legal system.

Figure 2.2: Total Value of Carbon Emissions – A$682m vs A$0.1m!

<table>
<thead>
<tr>
<th>Scope 1 &amp; 2 carbon emissions</th>
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<tbody>
<tr>
<td>EU EUA</td>
<td>21.5 €/t</td>
<td></td>
</tr>
<tr>
<td>Euro to A$ exchange rate</td>
<td>1.58</td>
<td></td>
</tr>
<tr>
<td>A$ equivalent EUA price</td>
<td>33.97 A$/t</td>
<td></td>
</tr>
<tr>
<td>Carbon emissions</td>
<td>3.69 Mt</td>
<td></td>
</tr>
<tr>
<td>Carbon emissions value (1 &amp; 2)</td>
<td>125 A$m</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Scope 3 carbon emissions</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Run-of-mine coal</td>
<td>10 Mt</td>
<td></td>
</tr>
<tr>
<td>Yield</td>
<td>82%</td>
<td></td>
</tr>
<tr>
<td>Product coal</td>
<td>8.2 Mt</td>
<td></td>
</tr>
<tr>
<td>Carbon emissions on burning coal in a power plant</td>
<td>2 t per t of coal</td>
<td></td>
</tr>
<tr>
<td>Scope 3 carbon emissions</td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>Carbon emissions value (3)</td>
<td>557 A$m</td>
<td></td>
</tr>
</tbody>
</table>

**Total carbon emissions (1-3)** | **682 A$m**

Dartbrook NSW share - Gillespie Economics | **0.1 A$m**

*Source: Gillespie Economics, June 2018, IEEFA calculations, 29 March 2019*

**Corporate Tax Leakage Risks**

New investment in regional Australia is important but where coal mining is concerned, the benefits are short lived, illusory and mostly foreign / privately gained and invariably almost corporate tax free. Various planning approvals are predicated on the reported benefits that will accrue to the Australian Government from increased corporate taxes. Many approvals rely on proponent-created “models” that assume 100% equity financing of every coal project, including Dartbrook, yet in IEEFA’s experience the standard industry practice is for maximum debt leverage at all times, particularly where the proponent is a foreign corporation.

We note that Australian Pacific Coal’s financial structure is more than 100% debt funded, given negative shareholders’ funds (refer Figure 1.1 above).
It has been well documented that Australia’s largest coal mining and coal-fired power plant owners pay little if any corporate tax in Australia.\(^5\) Yet Gillespie Economics assumes this project is 100% equity financed, without even citing how this “decision” was reached. This provides a A$14m company tax benefit for Australia that in IEEFA’s view is dubious, at best.

Foreign companies operating in the Australian coal sector are masters at leveraging the gaping loop-holes in the thin-capitalisation, related party transactions and transfer pricing rules of the Australian tax system. BHP paid the Australian Taxation Office (ATO) A$529m in November 2018 in settlement of its Singapore tax haven marketing hub practice,\(^6\) yet the 2018 Senate Inquiry into Multinational Tax Avoidance by mining companies highlighted BHP’s offshore actions as likely just the “tip of the iceberg”.\(^7\)

We reference this, because on 6 August 2018 Australian Pacific Coal announced it had sold a 50% share in the Dartbrook project to Stella Natural Resources, a US minnow. Combined with foreign shareholders in Australian Pacific Coal, that makes this project proposal majority foreign owned.

**Foreign Ownership Halves the Australian Benefit Assumed**

Given the project is proposed to be 50% owned by Stella Natural Resources US, the assumption that 90% of the “net producer benefits” of this project of A$187m would accrue to Australian shareholders is now obsolete. The new percentage should be 90% of 50% - so A$84m – less than half the $176m used by Gillespie Economics.

**Coal Royalties to the NSW Government Overstated 26%**

As we detail in Section 3 below, the very high 26% ash and relatively low 5,500kcal energy content of this unwashed coal has dire implications for the likely revenues and hence the overall viability of the project.

Gillespie Economics assumes a US$73/t coal price and an exchange rate of US$0.76, giving an A$95/t price.

As per Section 3 – IEEFA would ascribe a 52% price discount to the Newcastle 6,000kcal, 13% ash benchmark. Even being optimistic that this international market discount is currently overstated, using an optimistic US$50/t and a current exchange rate of US$0.715, this gives an A$70/t price. This is 26% below Gillespie Economics’ optimistic assumption that makes no reference to the massive quality differential that emerged at the start of 2018 in international coal markets.

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\(^6\) The Australian Financial Review, “BHP to pay ATO $529m in tax settlement over Singapore marketing hub”, 19 November 2018.

IEEFA calculates the net present value of royalties to the NSW government on this updated price assumption are A$29m rather than Gillespie Economics’ A$39m - another $10m leakage of estimated benefits.

Using what IEEFA considers is a more realistic coal price assumption for this very high ash, relatively low energy thermal coal would see “net producer benefits” evaporate entirely.

**Understatement of Capital Costs – by a Factor of 300%**

Gillespie Economics and/or Australian Pacific Coal estimated the capital cost of this new coal mine at an entirely unrealistic A$15m. Given the dire financial state of Australian Pacific Coal, capital investments are going to be hard to finance, and given the old mine was shut in 2006, the site has been left in disarray.

This is effectively a new mine proposal. When questioned by experts, the proponent, in their response to submissions, acknowledged they were out by a factor of three hundred percent – admitting a capital cost of A$45m. Even this figure looks to be way too low, and the likely cost is likely to be double or more again.

Gillespie Economics assumes “total net production benefits of $187m”. Understating the capital cost by $30m - $100m brings into question the entire viability of this project proposal, particularly when combined with a more realistic estimate of likely project revenues to reflect the very poor coal quality.

It is worth recognising that JORC analysis prepared by an independent expert on behalf of Australian Pacific Coal and released to the Australian Stock Exchange on 27 March 2017 concluded that this project is not economic.
Section 3. Coal Quality Issues

Dartbrook is of Inferior Coal Quality

As per Figure 3.1, the Newcastle benchmark 6,000kcal 12-14% ash content thermal coal export price ended the 2018 year at US$100/t/free on board (fob) at Newcastle. This was a dramatic improvement, double the 2016 lows of US$50/t. As of the end of March 2019, this price has fallen back to US$90/t.

The Newcastle 6,000kcal benchmark coal is higher energy content than Indonesian export coal which has a 4,000-5,500kcal range, 10-30% below this top grade.

Coal quality is measured in terms of a number of attributes. After energy content, ash content is the second most important determinant of pricing. Indonesian thermal coal has an average ash content of 5-6%, half the Australian top benchmark.

Figure 3.1: The 6,000kcal Newcastle Benchmark Thermal Coal Price (US$/t)

Some coal lobbyists talk about Australian thermal coal being higher quality than domestic inland thermal coal in India, which is generally very low energy and high ash content. While the statement is correct, it is IEEFA’s view that it is also entirely misleading. Indian coal is located inland and is largely unconnected to any distant coal ports. As such, the vast majority of Indian coal power plants are unable to use imported coal, even if they could afford the significant premium price (mine-mouth coal in India wholesales for ~US$20/t). Further, the inland Indian coal plants are designed and engineered to use low energy, high ash thermal coal.

Low Grade Thermal Coal (5,500 kcal) at a 2018 Low

An important divergence has emerged in the seaborne thermal coal market over 2018. The price discount of lower quality 5,500kcal coal to 6,000kcal coal reached a record differential. This was also evident in European coal pricing and has continued into 2019.

Figure 3.2: The 5,500kcal Newcastle Benchmark Thermal Coal Price (US$/t)

![Coal Price Chart]

Source: Argus Consulting, December 2018

The Newcastle benchmark for 5,500kcal coal with 20% ash declined over 2018 and exited the year at US$57/t (See Figure 3.2 green), a 43% discount to the 6,000kcal benchmark. As at end March 2019, this price was US$56/t, a discount of 38%.

IEEFA views this as reflective of the ongoing push to deal with critically dangerous air pollution and lower emissions. China joined Japan, Taiwan and South Korea in paying a record high price for lower ash, higher energy coal (See Figure 3.3).

Argus has normalised coal pricing to calculate that on an equivalent energy content basis, high ash coal is now trading at a 30-40% discount to equivalent energy content coal of lower ash. This is double the discount that applied in previous years.
IEEFA concludes that unwashed, the Dartbrook 5,500kcal, 26% ash raw thermal coal would sell internationally at a likely 50% discount to the 6,000kcal Newcastle benchmark price (currently US$90/t, free on board) – Figure 3.4.

**Figure 3.4: Dartbrook’s High Ash Coal Price Discount likely 50%**

<table>
<thead>
<tr>
<th>kcal NAR</th>
<th>US$/t</th>
<th>Ash average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle Benchmark (12-14%)</td>
<td>6,000</td>
<td>$90.00  13%</td>
</tr>
<tr>
<td>Newcastle Benchmark</td>
<td>5,500</td>
<td>$56.00  20%</td>
</tr>
<tr>
<td>Price discount (%)</td>
<td>-8%</td>
<td>-38%</td>
</tr>
<tr>
<td>Dartbrook thermal</td>
<td>5,500</td>
<td>26%</td>
</tr>
<tr>
<td>Discount 5,500kcal vs 6,000kcal</td>
<td></td>
<td>-38%</td>
</tr>
<tr>
<td>Discount 26% vs 20% ash</td>
<td></td>
<td>-15%</td>
</tr>
<tr>
<td>Total Discount</td>
<td></td>
<td>-52%</td>
</tr>
<tr>
<td>Implied Dartbrook Price (US$/t)</td>
<td>$42.93</td>
<td></td>
</tr>
<tr>
<td>Dartbrook Price - rounded up (US$/t)</td>
<td>$50.00</td>
<td></td>
</tr>
<tr>
<td>AUD to USD</td>
<td></td>
<td>$0.715</td>
</tr>
<tr>
<td>Dartbrook Price - rounded up (A$/t)</td>
<td>$70.00</td>
<td></td>
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</tbody>
</table>

Sources: [Argus Consulting, December 2018](#)

[Platts, IEEFA calculations as at 29 March 2019](#)
If the proponents had the capital, a A$5-6m refurbishment of the long idle coal handing and preparation plant could potentially provide the capacity for the low energy, high ash Dartbrook raw coal to be washed, consistent with the previous owner’s methods prior to the site being put into care and maintenance in 2006. This could materially reduce the ash content down to 15-20% while boosting the energy content of product coal for sale, subject to water availability. However, this would also significantly increase production costs (by some A$5-6/t) and reduce the volume of saleable coal by 10-20%, both of which would materially reduce the project’s already tenuous viability.

We note than any discussion of relative coal deposit merits ignores the obvious point that even if electricity is generated from a higher energy lower ash coal, it is still almost 100% more emissions intensive and 100% more polluting than a zero emissions, zero air / water / particulate pollution renewable energy project.

A thermal coal export industry in Australia will cease to exist if customers decide that zero emissions, zero pollution, cheap and deflationary domestic-sourced renewable energy is their preferred source of electricity going forward. The argument that if Australia does not supply the coal, some other country will, is irrelevant if the International Energy Agency’s (IEA) Sustainable Development Scenario (SDS) analysis is correct: the thermal seaborne coal market must go into terminal decline if we are to have a habitable planet. (See Section 4)

Rather than risking substantial capital developing the Dartbrook Mine in a vain attempt to prop up a dying industry of the past, Australia would be far better served directing new regional investment into growth industries of the future including wind, solar, pumped hydro storage or zero emissions hydrogen.

Senator Matt Canavan said in December 2018:

“A new strategy commissioned by the Liberal-National Government will help to maximise Australia’s potential as a world powerhouse in lithium-ion battery manufacturing.”

New markets like lithium mining and downstream manufacturing opportunities are growing exponentially, and Australia is set to be a world leader.

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9 Senator Matt Canavan, “Unlocking Australia’s potential in lithium-ion battery manufacturing”, 11 December 2018.
Section 4. Forecasts Foretell Coal’s Structural Decline

Each year, the International Energy Agency (IEA) releases the World Energy Outlook (WEO) which, among other things, models global energy demand using various scenarios. The scenarios are not predictions, rather tools to assess risks. The scenarios respond to global Paris Agreement targets aimed at keeping temperature rises to well below 2°C while collectively pursuing efforts to limit increases to 1.5°C.

Should the world successfully limit climate change to well below 2°C of warming, fossil fuel extraction must rapidly decrease towards zero net emissions, starting immediately. Thermal coal demand is the most negatively exposed commodity in this scenario. All countries must instead accelerate reliance on sustainable, affordable and renewable non-fossil sources of energy to avoid catastrophic climate change.

IEEFA sees the IEA’s Sustainable Development Scenario (SDS) as the most likely reflection of the world’s energy future. Global financial institutions exiting coal are generally committing to the IEA’s SDS or an even more ambitious transformation as outlined in the Beyond 2°C Scenario when they set Paris Agreement compliant targets.

Figure 4.1: Possible Carbon Emissions Pathways Reflecting IEA Scenarios

The Sustainable Development Scenario (SDS) presents a realistic, desirable scenario in terms of human safety whereby nations work together to successfully limit climate change by transforming the energy market. Under the SDS, the planet’s ‘carbon budget’ will be exhausted as early as 2023 under a 1.5°C target and by 2040 under a 2°C objective. The SDS projects a significant decline in thermal coal demand, with global trade plummeting 59% by 2040. The SDS falls short of meeting the Paris Agreement’s target with any certainty, given

10 See IEEFA, Over 100 Global Financial Institutions Are Exiting Coal, With More to Come Every Two Weeks a Bank, Insurer or Lender Announces New Restrictions on Coal, 27 February 2019.
11 Centre for International Climate Research (CICERO), Beyond Carbon Budgets and Back to Emissions Scenarios, Glen Peters, September 2018.
the presumption that coal carbon capture and storage (CCS) is commercialised at scale by 2030. IEEFA sees this as an improbable assumption absent a high price on carbon emissions.

**Figure 4.2: Global Energy-Related CO2 Emissions Abatement and Key Contributions in the SDS**

![Graph showing CO2 emissions abatement and key contributions in the SDS](image)

*Source: International Energy Agency.¹²*

The **Beyond 2°C Scenario** (B2DS) sets out a rapid decarbonisation pathway aligned with international goals. To achieve net-zero emissions by 2060, technological innovation is heavily invested in and deployed across the energy system consistent with a 50% chance of limiting average future temperature increases to 1.75°C. The B2DS falls within the Paris Agreement range of ambition.

The **New Policies Scenario** (NPS) models emissions continuing to rise until 2040 with global temperatures likely increasing more than 2.7°C by mid-century. The NPS assumes countries collectively will *not* take significant action to act on carbon emissions in line with ‘ratchet-up’ commitments in the Paris Agreement. Under the NPS, global coal trade declines 5% by 2040.

The **Current Policies Scenario** (CPS) assumes no effective concerted action on climate with the globe’s carbon dioxide levels continuing to increase and the global warming target of 1.5°C exceeded by 2022. By definition, the CPS is consistently out-of-date as policies and measures since mid-2018 are not included.

Reviewing IEA’s thermal coal forecasts to 2040

The IEA acknowledges that global coal use likely peaked five years back in 2014 while modelling a stagnant near-term outlook to 2022 (See Figure 4.3). The global seaborne thermal coal market is a sub-section of the global coal market. The IEA also estimates seaborne thermal coal exports to have likely peaked in 2015.

Figure 4.3: IEA Global Coal Demand Actual and Estimates 2018 vs 2017 (Mtce)

Despite coal’s peak back in 2014, coal lobbyists claim that Southeast Asia will provide significant thermal coal demand into the future.

In IEEFA’s view, Southeast Asia represents a small subset of the global seaborne thermal coal market. The idea that this region will remain isolated and an untouched growth market to the benefit of Australian coal exporters is rather optimistic or even false hope.

IEEFA notes the global seaborne thermal coal market is not likely to reverse the inevitable technology, cost and policy driven direction of a slow, steady and ultimately terminal decline in volumes by 2050.

IEEFA makes this point relatively categorically given the rate of decline in the cost of renewable energy and on the premise the world collectively makes further efforts to implement the Paris Agreement, and absent the long touted but increasingly unlikely development of ultra-low cost, CCS for coal-fired power plants.

Rather than sinking more capital into expanding redundant thermal coal mining capacity, Australia would be better placed optimising existing ventures and investing in new low emissions industries of the future while best transitioning the Australian economy and limiting our collective exposure to stranded assets.
A decade-long global over-investment in new coal

Coal supporters often justify a positive outlook for thermal coal by referencing the continued commissioning of new coal-fired power plants globally over the last decade – a trend confirmed in Figure 4.4.

Figure 4.4: Global Coal-fired Power Plant Capacity and Utilisation Rate

This outlook however only tells the optimistic half of the story, with the narrative missing several key globally entrenched developments:

• **As coal plant capacity has risen, coal plant utilisation has declined.**
  Coal consumption is *not* linked to increased coal-fired power plant capacity but to the use of a coal plant. An idle new coal plant does *not* use any coal; it simply represents a stranded asset. The capacity utilisation rate of the global coal-fired power plant fleet hit a new record low in 2018, exceeding the record low set in 2017, and that set previously in 2016, and in fact every year this past decade. (See Figure 3.4 (RHS in blue)).

• **Many coal lobbyists often cite new coal plant development pipelines while failing to mention the rate of coal plant retirements.**
  Globally, coal-fired power plant retirements are accelerating and by 2022 are forecast to exceed new plant completions. For example, in January 2019 Germany announced it would close 12 gigawatts (GW) of coal-fired power plants by 2022 as part of its accelerated 100% coal phaseout of its remaining 42GW by 2038.  

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13 Carbon Brief, Global Coal Plant Tracker, “Guest post: ‘Peak coal’ is getting closer, latest figures show”, July 2018
14 Financial Times, “Germany plans to phase out coal-fired power stations by 2038”, 28 Jan 2019
coal plant closures over 2015-2018 averaged 32GW annually, a 50% increase vs the previous four years – Figure 3.5.

- **The global coal plant pipeline has shrunk by two-thirds.**  
The pipeline has shrunk by a cumulative US$1 trillion or 744GW in a small timeframe (the 30 months to July 2018). Stranded asset losses are rapidly rising as renewable energy competition gets increasingly competitive.

- **New coal plant proposals moving to final investment decisions are slowing.**  
The IEA identifies 2017 as having a record low level of new coal-fired power plant proposals moving to final investment decision, due to investors reassessing coal’s future (Refer Figure 3.5).

- **Coal-fired power plants are becoming, on average, more efficient.**  
Coal plants are generating 0.5-1.0% more electricity per tonne of coal used each year.

**Figure 4.5: Net Global Coal-fired Power Plant Capacity Expansion**

IEEFA notes there has been a decade-long over-investment in new coal-fired power generation capacity, in excess of demand. By 2020, IEEFA expects global coal plant capacity to reach a peak, and steadily decline thereafter, with thermal coal having already peaked back in 2014.

The commercial viability of the global coal-fired power fleet on aggregate is technically challenged by collapsing utilisation rates which are sitting near 55%, suggesting the plants sit idle every second day on average. This is a long way below the optimal 75-85%
assumption erroneously factored into optimistic projections made upwards of a decade ago.

Investors have responded by dramatically curtailing coal-fired power plant expansion plans (Figure 4.6). The momentum away from thermal coal is building.

**Figure 4.6: IEA Global Coal Power Plants Reaching Final Investment Decision Sign-off**

![Figure 4.6: IEA Global Coal Power Plants Reaching Final Investment Decision Sign-off](image)

*Source: IEA, 2018*

As per the IEA, if the world takes an SDS path consistent with limiting average warming to 2°C, global coal demand will drop by more than half to 2040 (-57%). The consequences for thermal coal would be even more dire with thermal coal consumption dropping in the realms of 61%\(^{15}\) (Figure 4.7).

**Figure 4.7: IEA Global Coal Use 2014-16 vs Forecast 2040: NPS vs SDS (Mtce)**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>NPS</th>
<th>NPS</th>
<th>SDS</th>
<th>SDS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2040</td>
<td>Chg vs 2017</td>
<td>2040</td>
<td>Chg vs 2017</td>
<td>2040</td>
<td>Chg vs 2017</td>
<td>2040</td>
<td>Chg vs 2017</td>
</tr>
<tr>
<td>Total Coal (Mtce)</td>
<td>5,680</td>
<td>5,531</td>
<td>5,225</td>
<td>5,360</td>
<td>5,441</td>
<td>1.5%</td>
<td>2,282</td>
<td>-57.4%</td>
</tr>
<tr>
<td>Coking Coal (Mtce)</td>
<td>1,016</td>
<td>994</td>
<td>956</td>
<td>960</td>
<td>806</td>
<td>-16.0%</td>
<td>579</td>
<td>-39.7%</td>
</tr>
<tr>
<td>Thermal Coal (Mtce)</td>
<td>4,374</td>
<td>4,254</td>
<td>3,979</td>
<td>4,134</td>
<td>4,142</td>
<td>6.7%</td>
<td>1,609</td>
<td>-61.1%</td>
</tr>
<tr>
<td>Coking Coal % of total Vol.</td>
<td>17.9%</td>
<td>18.0%</td>
<td>18.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Source: IEA WEO 2017 page 644-645, WEO 2018 pages 520-521, IEEFA calculations*

Under the SDS, which is a possible 2°C outcome, traded seaborne demand declines 65.1% against 2017 levels (Figure 3.8). Under the NPS, the IEA models an even worse

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\(^{15}\) As measured in millions of tonnes of coal equivalent (Mtce), an adjustment to standardise coal use by energy content.
Dartbrook Coal Mine - Modification 7
IEEFA’s submission to the NSW Independent Planning Commission

outlook for seaborne traded thermal coal. Demand by 2040 drops a relatively benign - 5.6% in volume terms.

**Figure 4.8: IEA Global Seaborne Coal 2014-17 vs 2040: NPS vs SDS (Million Tonnes coal equivalent)**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Thermal</td>
<td>801</td>
<td>761</td>
<td>756</td>
<td>805</td>
<td>736</td>
<td>760</td>
<td>-5.6%</td>
<td>281</td>
<td>-65.1%</td>
</tr>
<tr>
<td>Coking</td>
<td>284</td>
<td>293</td>
<td>292</td>
<td>302</td>
<td>320</td>
<td>346</td>
<td>14.6%</td>
<td>250</td>
<td>-17.2%</td>
</tr>
</tbody>
</table>


The SDS models electricity generation from zero emissions technologies more than doubling through to 2040 relative to the record high set in 2017 (Figure 4.9).

**Figure 4.9: The IEA SDS Forecasts Renewable Energy will supply 150% of net growth in electricity demand globally over 2017-2040**

Source: IEA WEO2018

India is already talking about a quadrupling of renewable energy installs annually in the next two years relative to the record high installs recorded in 2017/18. Similar to the IEA, IEEFA sees India’s shift to the lowest cost sources of electricity generation, wind and solar, as indicative of the likely shift across the greater Asian market over the coming decade. Whether motivated by any or all of the energy security, economics, financial flows and/or policies to deal with rising fossil fuel pollution and other pressures, this trend is accelerating.

The implications are clear – the demand for seaborne thermal coal is past its peak and potentially entering terminal decline.¹⁶

¹⁶ IEEFA, “Past their peak, NSW coal export volumes head toward terminal decline as markets transition”, November 2018.
Section 5. Commitment to Paris Agreement

Australia is a legal signatory to the Paris Agreement and are committed as part of a global effort to limit temperature rise to 1.5-2°C above pre-industrial era levels.

Climate change experts like Professor Will Steffen have long testified in court and in the public domain\(^1\) as to the challenges of delivering on this target while fossil fuels continue to burn:

“There is no way you will meet any of these targets if you continue to increase emissions and I think that’s a clear and very robust outcome of applying a carbon budget approach to the Paris targets ... So step number 1, if you’re really serious about the Paris targets, is no new fossil fuel developments. I mean, it doesn’t take an Einstein to work that out-that you cannot reduce emissions by increasing them.”

Opening a new thermal coal mine is clearly moving in diametrically the opposite direction to Australia’s Paris Agreement commitments.

In terms of exported emissions, Australia is already in the top three countries globally. In November 2018 Australia overtook Qatar to become the world’s largest exporter of liquid natural gas (LNG). Australia is already the world’s largest exporter of coking coal (with a 60% global share of seaborne coking coal) and the world’s second largest exporter of thermal coal with a seaborne share of 20% behind only Indonesia at 37%.\(^2\)

As a nation we continue to expand our export capacity of LNG, coking and thermal coal – all in direct contradiction to our Paris commitment.

Australia is likely to come under increasing international pressure to do more to reduce carbon emissions going forward. This will include calls for action to reduce Australia’s major global role in the export of fossil fuels to other countries.

Sovereign Risk?

Coal lobbyists occasionally give the unsubstantiated opinion that banning new thermal coal developments would have a material adverse impact on Australia’s global financial standing. This is the “Sovereign Risk” argument. In IEEFA’s view, this argument is a hollow claim that has no standing.

At a time when our key global trading partners have already been discussing climate risks for many decades, any modernisation of the government approval process that takes into account the growing global financial market consensus on the need for a high price on carbon and the clear and rapid exit from the use of unabated coal within the 2030-2050 timeframe will be accepted as belated and entirely justified.

\(^1\) The Climate Council, “Unburnable Carbon: Why we need to leave fossil fuels in the ground”, 2015.

Back in 2017, the US$6.3 trillion asset manager BlackRock’s global head of infrastructure, Jim Barry, made it very clear:\textsuperscript{19}

"It's been amusing sitting back and watching Australia from afar because in effect it's been denying gravity... Coal is dead. That's not to say all the coal plants are going to shut tomorrow. But anyone who's looking to take beyond a 10-year view on coal is gambling very significantly."

IEEFA would elaborate and say that allowing the re-opening and modification of the Dartbrook Mine actually raises a sovereign risk for Australia.

Australia is a signatory to the Paris Agreement, a global treaty ratified and entered into back in November 2016 with almost universal agreement.

Should Australia continue to approve the development of new coal mines, this clearly marks Australia as a hypocrite, a country that signs global treaties with no intent of adhering to them. It would identify Australia as heading in the wrong direction at a canter, out of step with the rest of the world. That is the definition of “Sovereign Risk”.

IEEFA speaks with global financial institutions on a very regular basis and not once has any of the world’s largest investors, corporates or banks ever suggested the controversial discussion over new thermal coal plants would have any impact on Australia’s credit rating.

Banning the development of an entirely new coal plant is entirely consistent with both the majority of Australians views on the subject, and also increasingly consistent with the stance of global financial institutions.

\textsuperscript{19} The Australian Financial Review, “BlackRock says coal is dead as it eyes renewable power splurge”, 26 May 2017.
**Section 6. Increasing Global Divestment from Coal**

*Financial Institutions Pivot Away from Coal*

There is an ongoing and accelerating global shift away from financing thermal coal and coal-fired power plants, matched with the rapid cost declines of renewable energy technology and the very clear message of the *United Nation’s Intergovernmental Panel on Climate Change* (UN IPCC) highlighting the need to virtually cease global coal use by 2050.

Global investors managing US$32 trillion released a policy statement in December 2018 calling for a global price on carbon and an accelerated coal phase-out:

> “Expert analysis shows that to meet the Paris Agreement goals of limiting the increase in global temperatures by 2°C, while striving to limit the increase to 1.5°C, a coal phase-out is needed by 2030, in the OECD countries and in the European Union; by 2040, in China; and by 2050, in the rest of the world.”

Australian banks have all moved to recognise the global financial risks of climate change, making strong commitments to reduce funding for thermal coal mining and coal-fired power plants.

Westpac ruled out financing new thermal coal basins in April 2017.

Commonwealth Bank (CBA) reported in August 2018, as part of its 2017/18 financial results, substantial progress in measuring, reporting and acting on their commitment, with a substantial decarbonisation shift well underway. This includes “carbon foot-printing” its equity portfolio of Colonial First State, one of Australia’s largest fund managers. CBA has also shifted its lending programs towards funding low emissions technologies. Direct exposure to coal mining was down 7% year on year (yoy) to $270m and coal infrastructure was down 30% yoy to $1,000m, while lending to renewable energy was +32% year-on-year to $3,700m.

In contrast, Macquarie Group has flown under the radar to-date and made no public commitment to exit coal. Yet its actions speak louder than words and Macquarie has made renewable infrastructure investing one of its four global pillars of growth. Landmark renewable energy and storage deals across Europe and Asia show the momentum of global infrastructure investing towards decarbonisation.

Global coal divestment has also been progressing, with global financial institutions pivoting to boost lending to renewable energy infrastructure and other low emissions alternatives.

Today, over 100 globally significant financial institutions have divested from thermal coal, including 40% of the top 40 global banks and 22 globally significant insurers.

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Since the beginning of 2018, 39 coal restriction policies have been announced, with 27 being new and 12 building on earlier coal-related commitments, including:

- **February 2018** - Generali of Italy announced it would cease coal investments.

- **March 2018** - BBVA of Spain committed to US$100bn of renewables lending by 2025 as well as ceasing financing any new coal mines and coal-fired power stations or extensions to existing ones.

- **April 2018** - HSBC committed to stop financing new coal-fired power stations in all countries except for Indonesia, Bangladesh and Vietnam.

- **June 2018** - the world’s third largest reinsurer Hannover Re (US$64bn AUM) introduced a 25% coal revenue maximum for its investment universe.

- **July 2018** - Swiss Re announced it would no longer provide insurance or reinsurance to businesses with more than 30% exposure to thermal coal.

- **August 2018** - Munich Re, the world’s second largest reinsurer, committed to cease offering insurance for new coal-fired power plants and mines in industrialised countries. In addition, Munich Re will no longer invest in shares and bonds of firms that generate more than 30% of their sales in the coal sector.

- **September 2018** - the Chairman of Standard CharteredJosé Viñals announced the bank’s coal exit strategy entitled “Here for good means saying no to coal: Why we’re stopping our financing of new coal-fired power plants”.

- **September 2018** - the Netherlands’ ING Bank announced it would assess its US$600bn lending book against alignment with a less than 2.0°C global temperature change, consistent with the Paris Agreement. The bank had previously announced a phase-out of lending to coal and expects to have zero coal lending exposure by 2025.  

- **September 2018** - Standard Bank of South Africa announced a withdrawal from new coal power plant financing.

- **October 2018** - the World Bank exited underwriting of the Kosovo coal power plant, its last coal finance proposal.

- **October 2018** - the International Finance Corporation (IFC) announced it would shift its indirect partner financing away from coal.

- **October 2018** - the Asia Development Bank (ADB) acknowledged coal plants were becoming unviable investments. The ADB incorporates a US$36/t price on carbon

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21 Financial Times, “ING will steer portfolio towards two-degree goal to help combat climate change”, 16 September 2018.
on all lending decisions, has a strong bias to renewable energy, and last approved funding for a lignite plant back in February 2014 in Pakistan.

• November 2018 - the biggest public life insurer in Norway, the US$85bn Storebrand ASA announced a progress coal exit to be completed by 2026.22

• November 2018 – Spain’s Banco Santander announced its coal exclusion policy.

• November 2018 - Generali of Italy (US$581bn AUM) limited its coal insurance, having divested from coal in February 2018.

• December 2018 - The European Bank for Reconstruction and Development (EBRD) announced its even tighter policies under its Energy Strategy away from coal in “The Switch from Coal”.

• December 2018 - Citi, the #1 U.S. banker of coal power in 2017, updated its coal policy excluding project financing of new coal-fired power plants.

• January 2019 - Export Development Canada revealed its new Climate Change Policy: “No new financing for coal power plants, thermal coal mines or dedicated thermal coal-related infrastructure – regardless of geographic location.”

• January 2019 - Barclays Bank UK expanded on its April 2018 exclusion of project finance for coal mining to also exclude coal plants.

• January 2019 – Varma of Finland announced cessation from investing in coal.

• January 2019 - Nedbank of South Africa withdrew financing for two major coal-fired power plant projects in South Africa.

• February 2019 - VIG of Austria ceased coal insurance.

• February 2019 - FirstRand Bank withdrew from funding commitments for two coal-fired power plant projects in South Africa.

• March 2019 – MAPFRE of Spain and UNIQA of Austria excluded coal insurance.

• March 2019 – State Development & Investment Corporation is the first leading Chinese financial institution to completely exit the coal industry.

• March 2019 - BNP Paribas Asset Management (€537bn AuM) announced a new coal exclusion policy.

• March 2019 – QBE Insurance announces its progressive exit from coal.

While initial measures vary in effectiveness, IEEFA has found the trend is for financial institutions to ratchet up the strength of policies once they are in place. With environmental and reputational concerns certainly driving factors for capital fleeing coal, investors are also increasingly aware that coal industry forecasts are increasingly dour.

**Japan**

The progressive coal-fired power divestment announcements from Japan (Australia’s largest thermal coal export destination) since the start of 2018 have been nothing short of staggering.

New thermal coal exits were announced by Dai-ichi Life in May 2018 and Nippon Life in July 2018. Japanese banks have also changed their lending standards to exclude all lending to out-dated coal-fired power plant technologies, as reported in October 2018 for Sumitomo Mitsui Banking Corporation. IEEFA has written extensively about this emerging trend, particularly with respect to Marubeni Corp.23

In September 2018 Marubeni Corp announced a radical pivot, one reinforced by the opinion piece by Prime Minister of Japan Shinzo Abe acknowledging the rise of extreme weather events and the need to act decisively to deal with global warming, noting “climate change can be life-threatening to all generations”.

More recently, several of Marubeni’s fellow sōgō shōsha (Mitsubishi Corp,24 Mitsui & Co,25 ITOCHU and Sojitz) have also divested their last remaining thermal coal mine holdings.

In December 2018 saw another domestic coal-fired power proposal had been cancelled — JFE Steel and Chugoku Electric Power’s 1GW project near Tokyo.26

In January 2019 Tokyo Gas decided not to push ahead with the proposed but long delayed 2,000 megawatt (MW) Chiba imported coal-fired power plant27. In a separate development, a proposed 112MW Able Company plant in Iwaki which was to be fuelled by coal with up to 30% biomass has been revised to operate as a biomass-only plant. The change represents the ninth proposed coal unit cancellation or modification in Japan since 2012.

In January 2019 Tokyo Electric Power Company (TEPCO) announced it would begin construction of its first commercial offshore wind plant in Japan.28 TEPCO’s aim is to achieve 2-3GW of offshore wind as part of its strategic move away from thermal and nuclear power, announcing a US$9bn Japanese offshore wind project.

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25 Reuters, “Japan’s Mitsui may sell stake in Australia thermal coal mine”, 31 October 2018.
In March 2019 Japan’s Environment Minister Yoshiaki Harada said that in principle it will not sanction construction of new large coal-fired power plants nor boilers to existing facilities in line with Japan’s international pledges to tackle global warming.

March 2019 also saw Kansai Electric announce a 6GW renewables target for 2030.
For more details on Japan, please refer to IEEFA’s recent briefing note.29

29 IEEFA, “Early days, but momentum away from coal is building”, 21 December 2018.
Section 7. Accelerating Global Pivot to Renewables

Global Financiers Are Pivoting to Clean Energy

IEEFA tracks zero emissions lending targets as the flip-side of global banks exiting thermal coal. Many of the same financial institutions that have historically financed coal are rapidly awakening to the enormous opportunities and growth in financing renewables.

To date, nine of the largest global banks have each committed to financing at least US$100bn of clean energy investments, a staggering US$1,388bn total (Figure 7.1).

The largest commitment to low carbon solutions globally to-date has been from Morgan Stanley in April 2018 at US$250bn by 2030, having to-date already funded US$84bn since 2006. This is closely followed by Wells Fargo with US$200bn by 2030, building upon JPMorgan Chase’s August 2017 commitment to lend US$200bn by 2025, in particular backing the development of the global green bond market.

In 2015 Citigroup announced a new US$100bn 2025 target, having already delivered on its US$50bn target by 2015 two years ahead of schedule. Goldman Sachs, Bank of America, Credit Agricol e of France, BBVA of Spain and HSBC UK have all made similar pledges.

Figure 7.1: Global Private Financial Investing in Clean Energy Commitments (US$bn)

<table>
<thead>
<tr>
<th>Bank</th>
<th>Pledged</th>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morgan Stanley</td>
<td>Pledged US$250bn by 2030</td>
<td>Apr-18</td>
<td>250</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>Pledged US$200bn by 2030</td>
<td>Apr-18</td>
<td>200</td>
</tr>
<tr>
<td>JPM Chase</td>
<td>Pledged US$200bn by 2025</td>
<td>Aug-17</td>
<td>200</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>Pledged US$150bn by 2025</td>
<td>Nov-15</td>
<td>150</td>
</tr>
<tr>
<td>Citigroup</td>
<td>Pledged US$100bn by 2025, US$50bn done by 2013</td>
<td>Feb-15</td>
<td>150</td>
</tr>
<tr>
<td>Bank of America</td>
<td>Pledged US$125bn by 2025</td>
<td>Jul-15</td>
<td>125</td>
</tr>
<tr>
<td>Credit Agricole SA</td>
<td>Euro100bn in green investments by 2020</td>
<td>May-18</td>
<td>113</td>
</tr>
<tr>
<td>BBVA</td>
<td>Pledged US$100bn by 2025</td>
<td>Mar-18</td>
<td>100</td>
</tr>
<tr>
<td>HSBC</td>
<td>Pledged US$100bn by 2025</td>
<td>Nov-17</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total (US$ billion)</strong></td>
<td></td>
<td></td>
<td><strong>1,388</strong></td>
</tr>
</tbody>
</table>

Source: Corporate websites, IEEFA Calculations
Section 8. Stranded Asset Risk

*India’s Pivot to Renewables*

Under Prime Minister Narendra Modi, India has accelerated its national pivot to lower cost, zero emissions renewable energy. October 2018 saw Modi reconfirm India’s 2030 target to generate 40% of its total electricity from non-fossil fuels.

India’s Power Minister R. K. Singh has repeatedly talked up opportunities for India to lift the development of renewables to a massive 40GW annually, nearly triple the current run-rate. In January 2019 R. K. Singh yet again lifted the level of renewables ambition, calling for India to install 500GW of renewables by 2028.  

The Indian Coal and Railways Minister Piyush Goyal has repeatedly stated his target for India to cease thermal coal imports, recognising the threat to India’s energy security of India’s excessive and unsustainable reliance on fossil fuel imports.

India’s progress has been astonishing. With wind and solar tariffs regularly being tendered for Rs2.40-3.00/kilowatt hour (kWh) and averaging Rs2.61-2.92/kWh in 2018 (Figure 8.1), existing domestic thermal power is struggling to compete.

NTPC, India’s largest power generator, had an average 2018/19 (year-to-date to December 2018) tariff of Rs3.47/kWh for existing domestic coal-fired power, up 6% year-on-year. Non-mine mouth coal requires tariffs of Rs4.00-5.00/kWh and new imported coal-fired power generation requires a tariff of Rs5.00-6.00/kWh.

Figure 8.1: Solar Tariff Declines Continue to Drive Deflation for India’s Electricity Sector

![Solar Tariff Declines Continue to Drive Deflation for India’s Electricity Sector](source)

*Source: Bridge to India, January 2019*

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30 ETEnergyWorld, *"India to bid out 500 GW renewable energy capacity by 2028"*, 7 January 2019.
In September 2018 Gujarat completed a 500MW solar tender at a record low of Rs2.44/kWh with zero indexation for 25 years. And this trend is set to accelerate, given global solar module prices fell by over 30% over 2018.

New coal cannot compete with the current deflationary tariffs that are contractually set to decline in real terms every year for the next 25 years.

Major private power generator Tata Power has suspended all new coal-fired power plant developments. They instead are preferring to acquire financially distressed existing power plants which are selling at 40% of the face-value of debt, valuing completed projects at 30% of total investment value. Newly appointed CEO Praveer Sinha announced a US$5bn renewable energy investment plan in May 2018.

NPTC Ltd has likewise commenced a pivot into renewables with a plan to facilitate or build upwards of 10-20GW over the coming decade. NTPC has also announced it has cancelled 10GW of proposed new coal power plants to-date in 2018.

The Adani Group has expanded into renewable energy development, floating its renewable energy business (Adani Green) on the Bombay Stock Exchange in June 2018. With 3GW of renewables infrastructure in operation and another 3GW in planning, it is one of the top corporate investors in Indian renewables. In Australia, Adani announced a 1,500MW solar investment program.

As a result, India’s renewable energy installs have more than doubled to 12-15GW annually, while thermal power installs (net of closures) have dropped 80% to just 4GW annually vs the 20GW annual installs evidenced up to 2015/16 (Figure 8.2).

Figure 8.2: Indian Thermal and Renewable Power Capacity Adds (MW)

Source: Central Electricity Authority, MNRE, IEEFA Estimates

IEEFA references this to highlight the severity of the problem of stranded asset risk for fossil fuel projects in India. India is grappling with upwards of US$100bn of non-performing loans to the thermal power sector alone as a result of under-estimating the
rate of technology change and renewable energy deflation. In light of the developments in India, the Dartbrook proposal also looks like a stranded asset.
Section 9. Increased Collateral Damage to our Water

IEEFA would mention that the likely collateral damage to water suggests to us that the financial risks for Australia on numerous fronts far outweigh any short-term promise of gains from yet more thermal coal mine developments at a time of increasingly frequent, extreme weather events and record temperatures across Australia.\(^{31}\)

The severe water draw-down risks of additional new coal mining activity are large and largely uncosted, particularly when the cumulative risk is concerned. Further, the financial risks of gaps in Australia’s environmental approval analysis are clear. Any corporate funded water modelling of an individual coal mine proposal in isolation ought to be treated with significant scepticism. The vested interests in downplaying irreversible community risks are obvious.

This was well illustrated by the NSW Department of Planning and Environment’s rejection of the Hume Coal mine proposal on groundwater fears.\(^{32}\) Concurrently, the NSW government’s expert panel concluded that water loss from coal mining in a water catchment area was clearly evident, despite the corporate’s extensive modelling suggesting this would not happen. The impacts of mining on water often turn out to be much greater than expected.\(^{33}\)

\(^{32}\) ABC, Hume Coal mine gets damning assessment from NSW Government department over groundwater fears, 12 December 2018.  
\(^{33}\) The Sydney Morning Herald, ‘No place for mining’: coal mines drain water from dams, 7 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 economy. www.ieefa.org

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Tim Buckley, IEEFA’s director of energy finance research, Australasia, has over 30 years of financial market experience covering the Australian, Asian and global equity markets from both a buy and sell side perspective. Tim was a top-rated Equity Research Analyst and has covered most sectors of the Australian economy. Tim was a Managing Director, Head of Equity Research at Citigroup for many years, as well as co-Managing Director of Arx Investment Management P/L, a global listed clean energy investment company that was jointly owned by management and Westpac Banking Group.