

# APAC coal divestments: debt investors hold the key

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The Asia-Pacific (APAC) region continues to be an engine of growth but a carbon-intensive one, as much of the region's power generation is based on coal. However, in the past few years, coal projects have started generating investor pushback with funding costs rising substantially, particularly when deals are in the public domain. This leads to two important effects that we seek to analyse here.

First, for those aiming to maintain coal assets rather than replace them with renewables, **the incentive for public-to-private transactions has increased substantially**. Private interests usually have fewer, if any, carbon restrictions in their investment policies, meaning they can still offer access to capital. We study several transaction structures in the region, illustrating the lack of long-term climate-related fiduciary duty in private capital provision.

Second, while private capital is financing coal assets in some areas, overall, **the economic opportunity for combined coal decommissioning/renewables replacement transactions has increased**. The improved relative cost-of-capital differential leads to attractive financial returns. This note provides an overview of several transactions where this type of pairing has been executed.

For investors, there are three main take-aways:

- **Debt investors are key actors in accelerating decommissioning of coal assets.** High cost-of-capital for coal projects has driven down use and will continue to influence renewable replacement strategies. **Engagement, both in terms of stick and carrot, is essential.**
- **Public-to-private sales reduce transparency and hide emissions from public scrutiny.** Such deals can create substantial economic as well as reputational risk,<sup>1</sup> by generating unwanted exposure to coal assets. **Private investors should ensure investments are consistent with their environmental objectives.**
- **Decommissioning coal generation, and replacing capacity with renewables, is an economically attractive option.** Outside capital is being and can be deployed in creative ways, such as sustainability-linked structures, that increase the pace of transition. **Investors should be open to new debt products that support this activity.**

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<sup>1</sup> "[Half world's fossil fuel assets could become worthless by 2036 in net zero transition](#)", The Guardian, 4 Nov 2021.

## Background on coal ownership in Asia Pacific

**ASEAN is experiencing high levels of economic growth;** in 2022 and 2023 alone, the Asian Development bank expects growth to be 4.2% and 4.8%, respectively.<sup>2</sup> The International Energy Agency (IEA) estimates that fossil fuel consumption is set to increase carbon emissions by two-thirds, or 2.4 million Gt by 2040.<sup>3</sup> ASEAN has drafted a [Plan of Action for Energy Cooperation](#) (2021-2025), which seeks to reduce energy intensity, encourage energy efficiency and conservation efforts, and develop renewable energy (RE) sources.

**The main contributor to carbon emissions in ASEAN is electricity generation,** relying mainly on coal (44%), natural gas (32%) and oil (2%).<sup>4</sup> Among the fossil fuels, coal is by far the most polluting. The carbon intensity of the various coal-related technologies in the region ranges from 813 to 1,253g-CO<sub>2</sub>/kWh, compared to an average of CO<sub>2</sub> emissions from electricity production of 579g/kWh for the region as a whole.

Several countries have committed to specific targets on RE: Singapore seeks to meet 4% of its energy demand with solar energy by 2030, while more ambitious goals have been set by Indonesia, Malaysia, the Philippines and Thailand.<sup>4</sup> These alone will be insufficient to achieve the reduction in greenhouse gas emissions needed to cope with the region's predicted growth and energy demands. ASEAN will transition from an 18% renewable energy share in 2018 to 65% by 2050, but it will only be able to reduce energy-related CO<sub>2</sub> emissions by 75% compared to current output.<sup>5</sup>

Unfortunately, coal projects have again become financially – in a cash flow sense - attractive in the context of the ongoing energy crisis resulting from the Ukraine-Russia conflict. Asian coal prices have also been the subject of rising demand.<sup>6</sup> The valuations of coal assets are potentially benefiting from these historically high levels in the international price for coal.<sup>7</sup> The decarbonisation of ASEAN will have to be achieved within this global context of contrarian forces.

**Given the price picture and provided that there is access to cheap funding, there is a financial incentive for private capital to seek these assets and prolong their life to maximise profit.** The incentive is made even stronger by the low valuation of the assets to public owners as they attempt to reduce their carbon footprints, driven by the need to develop more sustainable policies.

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<sup>2</sup> [“Asian Development Outlook \(ADO\) April 2023: Key Messages”](#), ADB, 30 Apr 2023.

<sup>3</sup> [“3 New IEA reports provide fresh insights into Southeast Asia's energy future, International Energy Agency”](#), 30 Oct 2019. AFII commented on these auctions in [“Hard coal auction”](#), 20 Aug 2020.

<sup>4</sup> [“Moving beyond the NDCs: ASEAN pathways to a net-zero emissions power sector in 2050”](#), Applied Energy 311 (2022) 118580, accessed 23 May 2023.

<sup>5</sup> [“Renewable energy outlook for ASEAN”](#), IRENA, 30 Sep 2022

<sup>6</sup> [“Indonesia sees record coal exports of more than 500 million in 2023”](#), Business Times, 30 Jan 2023.

<sup>7</sup> [“Coal price renaissance: how long can it last?”](#), Mining.com, 26 Sep 2022.

As illustrated in Figure 1, decommissioning pathways need to be more aggressive than stated policies to achieve net zero, as current policies are not yet aligned with a sustainable development scenario.

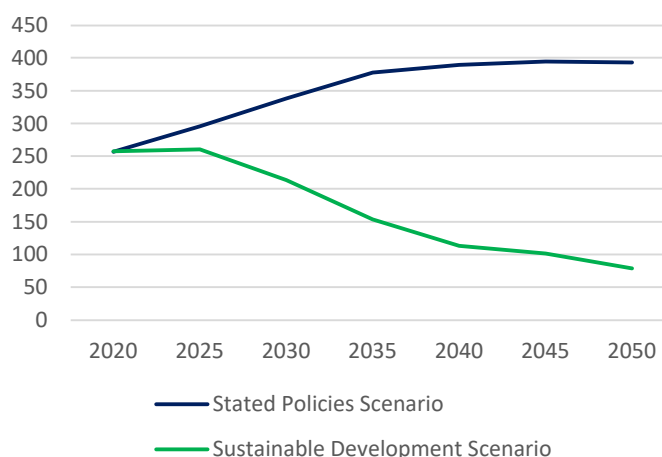
Another potential perspective on this, from a public investor point of view, is to consider the valuation of future rights to decommission certain assets.

An example of how such processes could work has happened in

Germany, with its reverse decommissioning auctions conducted in 2020/21.<sup>8</sup> Calculating the cost of an

early decommissioning has allowed investors to factor in these costs into the valuation of the assets. A recent analysis by Transition Zero puts the price of retiring Indonesia’s coal thermal assets early at USD1.2m/MW.<sup>9</sup> Between the interest in keeping coal mines operating, private funding seeing a revenue opportunity and the cost of decommissioning, it is difficult to see coal asset owners curtailing their revenues.

Figure 1. Coal demand in Southeast Asia: current policies vs sustainable development scenario. Source: IEA.



## Observations

There are conflicting forces at play for coal powered assets within the ASEAN energy mix.

Due to economic growth-led demand, electricity generation is key for the region and private capital is providing a means to maintain coal as a power source. For the carbon transition however, coal assets need to be retired as quickly as possible.

Investments in alternatives need to be accelerated alongside decommissioning.

## Coal transactions are finding it harder to raise capital

*“Market watchers polled by The Business Times reckon the impact of banks ceasing funding for coal projects is likely to be severe, and financing for coal is becoming increasingly difficult.”* The Business Times, 8 Nov 2022.

**The trend to exclude coal financing by major financial institutions in the Asia Pacific region is having an impact on the ability of buyers to finance these divestments.**

In a recent article, an analyst from Wood Mackenzie observed that some coal projects are being financed at interest rates as high as 20%.<sup>10</sup>

<sup>8</sup> [“Coal Phase-out in Germany: the role of coal exit auctions”](#), Aurora, 30 Jun 2022.

<sup>9</sup> [“Financing Indonesia’s coal phase-out: Coal Asset Transition Tool”](#), TransitionZero, 13 Oct 2022.

<sup>10</sup> [“Coal market in danger of more company exits, stranded assets as challenges rise”](#), The Business Times, 8 Nov 2022.

There have been other indications of the rising cost of the financing of coal power: researchers from Oxford analysed 2,072 energy deals in 118 countries between 2000 and 2020 and found that the loan spread charged on coal mining and coal power plants has risen by 54% and 38%, respectively, while biofuels have fallen by 43%, offshore wind by 24%, solar by 20% and onshore wind by 12%.<sup>11</sup>

Examples across the region point to the difficulties for coal financing:

In Australia, BHP has been unable to find a buyer for its stake in the New South Wales Energy Coal thermal coal unit. It has therefore decided to run it until 2030 and rehabilitate it over 10-15 years. It has booked a provision of \$700m as of Dec-2021.<sup>12</sup> Separately, Aquila put its Walton and Talwood coal mines up for sale in November 2021.<sup>13</sup>

In South Korea, Kepco said in May 2022 that it would sell all its overseas coal assets by 2030, including a 200MW coal plant in the Philippines, 1.2GW plants in Vietnam (one in development) and a 2GW plant in Indonesia (in development).<sup>14</sup> Facing large losses, it may have to delay its shift to green investments.<sup>15</sup> The credit risk of Kepco is exposed to the growing reluctance by international investors to finance fossil fuel-dependent utilities.<sup>16</sup>

In Indonesia, coal mining company (and large bond issuer in the on- and off-shore markets) Adaro Energy is struggling to get financing from banks for an aluminium project due to the use of coal-power generation until a hydropower plant is ready to provide the necessary energy from 2029. DBS of Singapore is said to have already stopped funding the group and other international banks have reportedly been approached but have not accepted.<sup>17</sup> Furthermore, PT Adaro Power, the power generation unit of the country's largest coal miner PT Adaro Energy, has found it challenging to find financing for its business.<sup>18</sup>

In Singapore, Sembcorp disclosed that it had decided to offer financing to potential buyers of its coal assets, as there was no financing available to fund the transaction.<sup>19</sup> In another example, Development Bank of Singapore (DBS) has announced its commitment to zero thermal coal exposure (encompassing loans to mining and power generation) by 2039, to include: i) no more onboarding of customers deriving more than 25% of their revenues from thermal coal, ii) from January 2026, no more financing of customers with more than 50% of revenues from thermal coal (the threshold will be lowered over time).<sup>20</sup>

## Observations

Financing costs are rising for carbon intensive assets, making it increasingly difficult to complete transactions.

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<sup>11</sup> [“It’s never been this expensive to finance a new coal power plant”](#), *World Economic Forum*, 27 Apr 2021.

<sup>12</sup> [“BHP fails to find buyer for Australian coal project, to retain and close”](#), 16 Jun 2022.

<sup>13</sup> [“Aquila Resources to sell Australian coal assets”](#), *Argus*, 16 Nov 2021.

<sup>14</sup> [“KEPCO will sell all its coal-fired power plants outside of South Korea”](#), *Enerdata*, 19 May 2022.

<sup>15</sup> [“Losses may force Japanese, South Korean utilities to delay green investment”](#), *Financial Times*, 7 Dec 2022.

<sup>16</sup> [“Credit risks loom for Korean Utility hooked on Coal, Study Says”](#), *Bloomberg*, 13 Oct 2022.

<sup>17</sup> [“Indonesia’s Adaro struggles to secure funding for \\$2bn aluminium project”](#), *Financial Times*, 6 Feb 2023.

<sup>18</sup> [“Asia’s coal developers feeling left out by cold shoulder from banks”](#), *Reuters*, 25 Jun 2019.

<sup>19</sup> [“Sembcorp industries announces sale of Sembcorp Energy India Limited”](#), *Sembcorp*, 5 Sep 2022.

<sup>20</sup> [“Our approach to phase out thermal coal financing”](#), *DBS*, accessed 23 May 2023.

This creates incentives for asset owners to become creative in their approach to decarbonising. Asset owners can sell into private ownership with less scrutiny, and there are risks of creative accounting treatment of such transactions.

Debt investors are the key enabler of this behaviour but can use their influence positively to promote best practice through financing structures that reduce the cost-of-capital, such as sustainability-linked bonds.

## Overview: Public-to-private coal asset transactions in APAC

**A natural effect of a decreasing supply of (cheap) public capital is to seek alternative routes, such as private markets.** Private markets are normally a more expensive source of capital than public markets but offer opacity in a way that may be attractive to certain investors.

Going into detailed transactions, Figure 1 highlights recent and pending deals that illustrate various dimensions of the coal divestments involving private capital in the region. In terms of investment exposure, there are several touch points in such transactions. Naturally, investors can have exposure to the seller of the asset as well as the buyer of the asset but, from an engagement point of view, they also need consider the ultimate owner of the buyer, as well as potential funders of a transaction (the final column of the table).

*Table 1. List of recent APAC transactions involving coal assets (2019-2022). Hyperlinks lead to further explanations in the individual deals. Source: AFII.*

Country	Seller	Seller's shareholders	Asset	Buyer	Buyer's owners	Buyer's lenders
Thailand	<a href="#">PTT pcl</a>	Thai govt, publicly listed	Coal mine	PT Astrindo	Listed in Indonesia	Domestic banks
Japan	<a href="#">Sojitz Corp</a>	Publicly listed in Japan	Coal mine	PT Bara Alam	Privately-held	Unknown
Singapore	Sembcorp	Temasek, publicly listed	Coal power	Tanweer Infrastructure	Privately-held	Sembcorp
Australia	Ontario Teachers	Pension Fund	Power business	Sev.en	Privately-held	Unknown
Australia	BHP	Publicly listed in Australia	Coal mine	Stanmore	Privately-held	Hedge Funds
Philippines	ACEN	Listed power company	Coal power	ETM Philippines Hldgs	Privately-held	Domestic banks

### From public to (opaque) ownership: a view from Thailand

Thai PTT Group (Corporate ticker PTTTB) sold off its coal mining business, PTT Mining, in Indonesia, with a capacity of 8-9m tons per year, to PT Astrindo Nusantara Infrastruktur (“Astrindo”, Ticker: BIPI IJ) for \$471m in August 2022, with an expected completion by the end of the year.<sup>21</sup> PTT established a climate strategy in 2018, which aims for a 15% GHG emissions (scope 1 and 2) reductions by 2030, with two phases including a limit on actual emissions over the 2022-26 and the 2027-30 periods. Majority-owned by the Thai government, PTT is a listed stock on the Thai SET and a regular issuer of bonds in Thai domestic markets, as well as internationally. It has issued a CBI-certified green bond, PTTB 2.25 07/23 (ISIN TH0646033702), under the Forestry Criteria of the Climate Bond Standard.

In contrast, the buyer Astrindo does not have any targets for reducing emissions at this point and does not have the same disclosure and ESG track record as a Thai listed, government-owned stock.

<sup>21</sup> [“PTT sells coal mine business in Indonesia as part of shift to renewables”](#), IEEFA, 2 Aug 2022.

It should be noted that the company is not completely insensitive to the carbon emissions issue. According to press releases, the “company is considering proposals to help it operate coal mines on a carbon neutral basis.”<sup>22</sup> The company is acknowledging that there are problems with emissions from coal, even if its claimed objective of carbon-neutral coal mining is difficult to achieve on a Scope 1+2 basis,<sup>23</sup> and arguably impossible when considering Scope 3 emissions. Either way, accountability on emissions is likely to be less stringent in the hands of Astrindo, compared to PTT.

Astrindo is listed on the Jakarta Stock Exchange. On the debt side, it is funded with long-term loans by domestic banks (Bank Negara Indonesia, Bank Mandiri, Bank Pan)<sup>24</sup>, as well as several private lenders<sup>25</sup> and is not issuing bonds in public markets to our knowledge. Going further in the debt financing chain, both Bank Negara (BBNIIJ) as well as Bank Mandiri (BMRIJ) have exposure to USD funding as well as labelled debt. Bank Negara has two IDR bonds outstanding, BBNIIJ 6.85 06/27 (IDA0001244B3, USD64mn outstanding) and BBNIIJ .635 06/25 (IDA0001244A5, USD270mn outstanding). Bank Mandiri in 2021 issued a \$300m 5-year Sustainability bond (BMRIJ \$2 04/26, XS2314639761).<sup>26</sup>

Pressure can be used on banks to reduce their lending to coal-power assets: investors should not be holding bonds issued by banks which have not yet committed to “no coal”.

## From public into private ownership: cases from Japan and Australia

In Japan, Sojitz Corporation (NCHNSI, approx. USD2bn debt outstanding in JPY) sold its 30% stake in the Bara Alam Utama (BAU) mine in Indonesia to an undisclosed partner in March 2019.<sup>27</sup> BAU has a capacity of 3Mtpa and a mine life of 20 years. Sojitz has a commitment to reduce its emissions by 60% (Scope 1 and 2) by 2030 and achieve net-zero emissions by 2030 (Scope 2) and 2050 (Scope 1), while having zero interest in thermal coal or oil assets by 2030 and coking coal by 2050.<sup>28,29</sup> By contrast, the operating company of the mine, PT Bara Alam Utam does not disclose any information with regards to owners or team on its homepage.<sup>30</sup> The shift to private hands leads to less disclosure on actual carbon emissions and lessens the pressure to reduce them.

Canada’s Ontario Teachers’ Pension Plan (OTPP) sold a 50% stake in InterGen N.V. to Sev.en Energy in Feb 2019, with the remainder owned by state-owned China Huaneng Group and Guandong Yudean Group.<sup>31</sup> InterGen operates gas-fired plants in the UK and has stakes in two coal plants in Australia.<sup>32</sup> This case illustrates the conundrum for many investors: to divest or engage?

<sup>22</sup> “[Astrindo Nusantara acquires PTT Mining of HK for \\$471 Million](#) [sic]”, Bloomberg, 2 Aug 2022.

<sup>23</sup> In particular, fugitive methane emissions from coal mining are extremely hard to control for. See “[Fugitive emissions: a blind spot in the fight against climate change](#)”, Climate Chance, accessed on 23 May 2023.

<sup>24</sup> PT Bank Mandiri had a USD10.5m loan to PT Astrindo, as per PT Astrindo’s Annual Report, 31 Dec 2021.

<sup>25</sup> Watiga Trust, Kingswood Union Corporation, Spectrum Finance Ltd, Nusa Tambang Pratama and Dwikarya Prima Abadi.

<sup>26</sup> [Sustainability Bond Report](#), Bank Mandiri, 30 Apr 2022.

<sup>27</sup> “[Sojitz to sell out stake in BAU thermal coal mine in Indonesia](#)”, NS Energy, 14 Mar 2019.

<sup>28</sup> Other thermal coal interests of the NCHNSI include the [Meteor Down South](#) projects (~1.5Mtpa) that started producing coal in 2018, which has been overlapping with the closure of the [Minerva](#) thermal coal mine project. The projects are in proximity of each other in Queensland, Australia.

<sup>29</sup> “[Sojitz Group Policies for Realizing a Decarbonized Society](#)”, Sojitz, 5 Mar 2021.

<sup>30</sup> Webpage: [www.baracoal.com](http://www.baracoal.com), accessed on 23 May 2023.

<sup>31</sup> “[InterGen N.V.](#)”, Sev.en Global Investment webpage, accessed 20 Jan 2023.

<sup>32</sup> Total generation capacity in Australia is 1.8MW across two plants: Callide C and Milmerran, both in Queensland. We are unable to find reference to total carbon emissions from that but would estimate it at 7-10MTpa CO2e. The company does however [disclose](#) that it in total can power 150m LED lightbulbs per year.

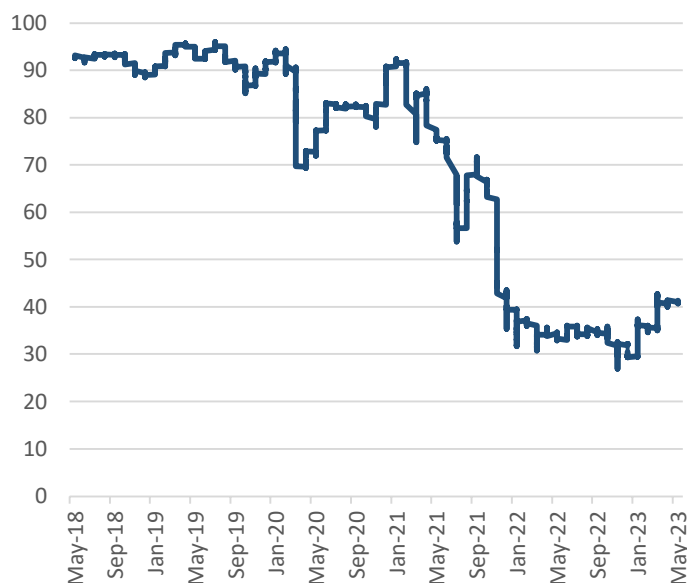
OTTP’s CEO stated in September 2022 that “the best way to accelerate the energy transition is by engaging high emitters rather than passively divesting”.<sup>33</sup>

Sev.en, the buyer of the Intergen assets, has been mired in controversy around its climate policy and has clear exposure to coal.<sup>34</sup> It has mined 135Mt of thermal coal since 2010, while planting 4200 trees.<sup>35</sup> Sev.en is a privately held company that does not disclose its financials, making it difficult to follow its contribution to carbon emissions.

In Chile, in July 2021, AES Gener, the country’s second-largest energy generator, sold its stake in Guacolda Energia SpA, a 764MW thermoelectric plant, to Capital Advisors for \$34m.<sup>36</sup> On the announcement of this transaction, the bonds GUAENE 4.56% 04/2025 (ISIN: USP3711HAF66)

saw their value drop from a cash price of \$85 to \$35,<sup>37</sup> as shown in Figure 2. This example shows that public securities do react to new developments, creating an incentive to shift assets to private hands, in order to avoid the public scrutiny and adverse impact on asset prices.

Figure 2. Guacolda Energia SPA's bond performance. Source: AFII, Bloomberg



### From operational to financed assets: a view from Singapore

In November 2022, Singaporean Sembcorp sold its Indian coal thermal plant to a private fund owned by the Oman Sovereign wealth fund at book value, while financing the deal through a deferred payment note, therefore maintaining a substantial financial exposure to coal until the maturity of the note.<sup>38</sup> Sembcorp’s majority shareholder is Temasek, the Singaporean state holding company. The buyer, Tanweer Infrastructure, a private fund, has no stated commitment to decarbonise. Sembcorp is a prime example of shifting a coal asset from operational emissions to “financed” emissions, using a private investor as the ‘scapegoat’ for the carbon burden.<sup>39</sup>

In another example, Golden Energy and Resources (GEAR, Ticker: GERSP), a Singaporean mining group focused on gold and met coal in Australia as well as thermal coal in Indonesia, offered to exchange its senior secured notes due 2026 with new notes with looser covenants to allow it to

<sup>33</sup> “[Teachers’ pension plan targets high carbon-emitting companies](#)”, The Globe and Mail, 8 Sep 2022.

<sup>34</sup> “[How is Sev.en Energy becoming a climate change villain at an accelerated speed](#)”, Greenpeace, 22 Oct 2020.

<sup>35</sup> Sev.en is often compared to another Czech energy player, EPH, which AFII has covered in earlier work, see “[A lignite revolver? New EPH loan deal comment](#)”, AFII, 5 April 2021.

<sup>36</sup> “[AES Andes completes the sale process of its stake in Guacolda](#)”, AES Andes, 20 Jul 2021.

<sup>37</sup> “[Chile coal plant debt falls to distressed on AES stake sale](#)”, Bloomberg, 5 Mar 2021.

<sup>38</sup> “[Sembcorp: carbon arbitrage of a lifetime](#)”, AFII, 6 Nov 2022.

<sup>39</sup> “[Sembcorp coal deal raises concerns about distortions in green bonds](#)”, Financial Times, 8 Nov 2022.

“either restructure or exit – or both – all or substantially all of its energy coal business”<sup>40</sup> demonstrating how the drive to divest thermal coal assets may lead to the restructuring of security agreements in both loans and bonds.

## Observations

There is ample evidence, within the ASEAN region, showing that owners of generation assets are looking for exit strategies. They are finding it difficult to fully realise the book value of their assets, due to growing reluctance to finance these transactions.

Private buyers are stepping in, often on opaque terms, to provide an exit for willing sellers. While this may create a decreased footprint for the sellers themselves, longer term plans for the assets are often unclear, and a risk remains that transition objectives will not be met.

## Coal transactions in APAC with decommissioning

Positively, a few transactions in the Asia Pacific region are looking to implement a decommissioning strategy.

*Table 2. List of recent APAC coal asset decommissioning (2022-2023). Source: AFII, various*

Country	Sponsor	Transaction	Type	Year
SE Asia	ADB	Coal > RE	Blended finance	2022
Indonesia	PLN / ADB	Coal > Hydro	Blended finance	2023
Philippines	ACEN Corp	Retirement	Private	2022
India	Various	Solar, storage	TBD	Not yet
Australia	AGL Energy	Utility storage	Private	2023
South Africa	Eskom	Solar, Wind, Storage	Private	2022
Chile	AES Andes	Coal > RE	Private	Not yet

In Southeast Asia, the Asia Development Bank (ADB) has launched the Energy Transition Mechanism Partnership Trust Fund in June 2022 to catalyse public and private capital toward the transition from carbon-intensive coal power plants to clean energy, with Japan as the first financing partner of the fund.<sup>41</sup> In November 2022, ADB signed a memorandum of understanding with Cirebon Electric Power, PLN and the Indonesian Investment Authority (INA) to start discussions about the early retirement of Cirebon-1, a 660-MW plant in West Java, Indonesia.<sup>42</sup>

In Indonesia, three transactions are in the works. PT PLN is exploring with PT Bukit Asam Tbk the early termination of one of the steam power plants in West Java.<sup>43</sup> The Ministry of Energy and Mineral Resources is in talks with the Japan Bank for International Cooperation (JBIC) to decommission the unit 1-4 of the Tanjung Jati B coal-fired power plant and replace it with hydropower.<sup>44</sup>

In the Philippines, ACEN Corporation (ACEN) announced the launch of a program to retire 246MW of a 6-year-old coal fired power plant owned and operated by South Luzon Thermal Energy

<sup>40</sup> The exchanged notes (XS2342227597) were almost fully replaced by GERSP USD8.5 11/27 (XS2551811651). “[Coal market in danger of more company exits, stranded assets as challenges rise](#)”, The Business Times, 8 Nov 2022.

<sup>41</sup> “[Energy Transition Mechanism Partnership Trust Fund](#)”, ADB, accessed 23 May 2023.

<sup>42</sup> “[ADB and Indonesia Partners Sign Landmark MOU on Early Retirement Plan for First Coal Power Plant Under Energy Transition Mechanism](#)”, ADB, 14 Nov 2022.

<sup>43</sup> “[A value of IDR12.37trn PLTU Pelabuhan Ratu officially switched from PLN to PT Bukit Asam](#)”, Voi, 19 Oct 2022.

<sup>44</sup> [Govt and JBIC to prepare Tanjung Jati B Plant Decommissioning](#), Dinsights, 28 Nov 2022.

Corporation (SLTED) in Batangas, Philippines, with a retirement in 2040, 15 years ahead of its expected end of technical life.<sup>45</sup>

In India, the cost of decommissioning 15 selected units at five coal plants has been found to be 2-4 times less than the benefits of repurposing the plants to produce solar with battery storage and a synchronous condenser.<sup>46</sup>

In Australia, AGL Energy has started to shut down its coal-fired Liddell Power Station in New South Wales Hunter Valley, with the objective to completely shut down the four units by April 2023 and transform the site into a grid-connected utility scale battery. From the announcement in 2015 to the start of the decommissioning, it took seven years to put the plan in motion.<sup>47</sup> AGL Energy is a bond issuer with a \$135m 5-year bond due Sep-2025.

In South Africa, the Komati coal-fired power plant was shut down in October 2022, while in operation since 1961. It will be converted into a renewable generation site powering 150MW of solar, 70MW of wind and 150MW of storage batteries.<sup>48</sup>

In Chile, AES Andes launched the Alba project to replace a coal-fired power plant at Angamos Thermolectric Power Plant, in Mejillones, Antofagasta region, with a solar molten salt system, using electrical energy from renewable sources.<sup>49</sup>

**New transactions are emerging that decommission coal assets**, with a combination of public support and market mechanisms. Several models have been proposed, from keeping the asset within the owner's perimeter, selling the asset for the purpose of decommissioning or retaining ownership while working with third parties to oversee the decommissioning work. The funding can be obtained from the customers of utility firms, from the owner's own cost of doing business or from public funding sources.<sup>50</sup>

## Observations

There are encouraging developments of early phase-out of coal generation assets, funded by engaged investors. Debt investors can support this activity by providing attractive capital to credible transition stories involving the early retirement of economically viable coal generation assets and their replacement with renewable energy capacity.

New instruments, like sustainability-linked bonds, can be used to significantly lower the cost of capital in exchange for ambitious decarbonisation plans. Investors should support product innovations that encourage going much further than a 'business-as-usual' scenario.

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<sup>45</sup> ACEN PSE disclosure, Philippines Stock Exchange, 26 Jul 2022.

<sup>46</sup> [Financial benefits of repurposing Maharashtra's old cold plants](#), Climate Risk Horizons, 30 Nov 2022.

<sup>47</sup> [AGL commences shutdown of coal-fired Liddell power plant](#), PV magazine, 1 Apr 2022.

<sup>48</sup> [As Komati coal-fired power station reaches end of life, renewable energy project takes shape](#), Eskom, 31 Oct 2022.

<sup>49</sup> [AES Andes exploring first-of-its-kind coal-fired power plant to emission-free storage system conversion](#), AES Andes, 17 Oct 2022.

<sup>50</sup> [Business models for coal plant decommissioning](#), Pacific Northwest National Laboratory, 31 Aug 2021.

## Conclusion

Phase-out of coal generation and replacement with renewables is an essential part of reducing emissions in the high-growth area of ASEAN.

**It is encouraging to see increasing challenges in funding coal assets, and debt investors continue to be the key actor in the region.**

This has however led to undesirable divestment activity; a bifurcation between coal decommissioning and divestment going on in the APAC region, which is not aligned with the level of coal plant retirements needed to achieve decarbonisation targets.

It will be important for investors to monitor the development of these types of transactions to avoid carbon exposures just moving from one asset class to another. **Private investors must ensure transactions are consistent with their sustainability objectives.**

There is also an important role to play for new types of fixed income solutions to incentivise decommissioning transactions rather than divest-and-forget. A summary of the three main routes: sustainability-linked bonds, climate convertible notes, and blended finance instruments is provided in the appendix. **Investors should support innovations in these products** as potentially powerful sources of transition finance.

*Afii will continue to monitor the space and attempt to increase transparency in public-to-private transactions. We will focus on carbon footprint transmissions in divestment transactions (such as in the Sembcorp case), and ways to implement lookback provisions.<sup>51</sup>*

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<sup>51</sup> Lookback provisions refer to including carbon footprints of divested assets for a certain period of time even after divestment, creating incentives to structure deals that include decommissioning.

## Appendix: fixed income instruments can help carbon asset decommissioning

There are several market instruments that can help accelerate the actual reduction in carbon emission from carbon intensive assets in Asia Pacific:

1. **Sustainability-linked Bonds (SLBs):** by choosing Key Performance Indicators (KPIs) and Sustainability Performance Targets (SPTs) that are linked to the actual reduction of carbon emissions from existing carbon intensive assets, borrowers can achieve lower costs of capital to support their decarbonisation. It is also possible, instead of adjusting the coupon on an SLB, to reduce the capital due at the term of the instrument, thus rewarding the borrower with a reduction in the amount borrowed. The reward can be financed from public sources of capital (e.g. DFIs, philanthropies, etc.), like the examples proposed by the Brookings Institution.<sup>52</sup> In that case, it is also possible to incorporate the social outcomes of the energy transition, by incorporating some social KPIs that will align with the concept of a “just transition”.<sup>53</sup>
2. **Climate convertible notes:** the owner of a carbon intensive assets is exposed to the risk of a write-down in the future, when the electricity generation from fossil fuel is banned, or regulatory changes forces the stoppage of the operations. By decommissioning early, the owner will protect the value of its business. That value attached to the reduction of its carbon footprint can be used to help finance the capital expenditures linked to these efforts. By structuring convertible notes with conversion linked to decarbonisation, the borrower can achieve a lower cost of capital and gain greater access to capital. An example is the sustainability-linked green convertible bonds issued by Schneider Electric in November 2020, linked to three KPIs based on climate and social goals.<sup>54</sup>
3. **Blended finance instruments** to scale up the energy transition: public capital can be used to crowd in private investors into a fund structure, whose goal is to fund the decarbonisation efforts of the owners of carbon intensive assets in Asia Pacific. The ETM model from the ADB, which is mostly focusing on state-owned assets at this stage, can be used as a model, but the scaling up through additional private funds will help to accelerate the process and reach owners outside of public utilities. Another example is a rural electrification and renewable energy development project in Bangladesh, where the World Bank and other organisations have provided outcome-based financing.<sup>55</sup>

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<sup>52</sup> [What happens in an outcome-based financing model when a major crisis hits?](#), Brookings Institution, 29 May 2020.

<sup>53</sup> [Just transition for all: the World Bank Group’s support to countries transitioning away from coal](#), World Bank, accessed 23 May 2023.

<sup>54</sup> [Schneider Electric launches its first sustainability-linked bonds convertible into new shares](#), 17 Nov 2020.

<sup>55</sup> [Bangladesh: rural electrification and renewable energy development II \(RERED II\) Project](#), Asia Pacific Energy, 16 Aug 2012.

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