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ADB Backs Coal Power Retirement In Southeast Asia

New Program Targets the Right Issues, But More Solutions May Be Needed

The Asian Development Bank's (ADB's) recent promotion of funding for early retirement of high emissions coal-fired power plants in Southeast Asia sets the stage for a transformation of the Asian multilateral development bank's (MDB's) role in guiding power infrastructure development in the region. Until very recently, the Manila-based ADB has struggled to persuade funders to direct capital away from the fossil fuel power development plans favored by regional energy ministries and North Asia's equipment suppliers.

The ADB's advocacy of an energy transition mechanism (ETM) focused on coal retirement has the potential to be an innovative effort to match new sources of blended finance with high priority steps that Southeast Asian countries could take to decarbonize. The stakes are high for all concerned because implementation challenges could rob the ADB of credibility and block funding for other, high impact clean energy funding strategies. To analyse the prospects for this proposal, the ADB and regional stakeholders will need to think carefully about the details of the program and its ability to catalyse new funding flows that meet local needs. The following issues deserve careful attention:

Investors could be exposed to complex reputational risks via the ETM.

- Is the ADB well-positioned to provide the right technical inputs and stewardship for the ETM?
- Can Southeast Asian markets meet the pre-conditions for success of an ETM: competitive pressure from stranding risk, transparent price discovery, and strong governance mechanism?
- How will the ETM address the challenge of coal lock-in Southeast Asia and the reliance on opaque power purchase agreements that have been a barrier to rapid transition?
- Are there other market-based strategies that would more efficiently unlock blended capital?

- Investors could be exposed to complex reputational risks via the ETM. Has the proposed program been stress-tested to address the challenges?

ADB's ETM Work Program

The United Nations Climate Change Conference COP26, scheduled from October 31st in Glasgow, is finally driving a new round of policy work by the MDB's, and ADB is running hard to have a compelling solution on the table for donor nations to support. The ADB has an important role to play because donor nations have struggled to find fundable initiatives in Southeast Asia's strategically important energy growth markets including the Philippines, Vietnam, Indonesia, and, in South Asia, Bangladesh.

In a potential sea change for ADB, a technical assistance program (TA) has been launched to accelerate the clean energy transition in Southeast Asia. This document signals a new pathway by candidly addressing the complexity of the region's reliance on fossil fuels and the barriers to scaling up renewables. The USD 4.05 mn TA, launched in April, will fund four solutions building on sectoral and country assessments, technical studies to identify new business models, more policy dialogue and training, and "the development of project investment pipelines to be financed by the Asian Development Bank."[1]

Figure 1: Consultant's Scope of Work

1	Building off the work in the pre-feasibility study, identify (a) an initial tranche of coal fired Power Plants (CFPPs) for retirement in each country, and (b) which CFPPs would be selected in order to meet the goal of retiring 50% of the existing fleet within a 5-10-year timeframe.
2	Carry out a technical assessment of the effects that retiring both the initial tranche of assets and 50% of each country's CFPPs would have on the energy system. Based on this, identify the key grid improvements and investments required to support the integration of significantly scaled up renewable energy generation assets.
3	Assess the country's capacity to accelerate the deployment of renewable energy, considering existing renewable energy resources, the strength of the grid, local supply chain, etc.
4	Identify the key barriers that would need to be addressed in order to support a higher percentage of renewables in delivering accessible, reliable and affordable power, and identify a range of interventions that are needed to address these barriers.
5	Identify suitable metrics to assess the impact of the ETM such as employment by sector, grid emission factors (tCO_2/MWh); carbon dioxide (CO_2), sulphur dioxide (SO_2) and nitrogen oxides (NOx) emissions from coal-fired power plants; social and gender equality indicators.
6	Carry out an assessment using the identified metrics of the costs and benefits of multiple scenarios of CFPP retirement, and identify key "just transition" activities that will be required to address any negative impacts experienced by specific stakeholder groups.

Source: Accelerating the Clean Energy Transition in Southeast Asia TA Terms of Reference.

The element of the program that has captured the market's attention is a proposal to develop a public-private funding vehicle that would finance early decommissioning for some of Southeast Asia's most carbon-intensive fossil fuel power plants to kick start transition and create more space for the scale-up of

[1] ADB Technical Assistance Concept Paper. Accelerating the Clean Energy Transition in Southeast Asia. April 2021.

renewables.[2] The ETM proposal builds on prior work on early decommissioning mechanisms explored by the Rocky Mountain Institute[3] and Carbon Tracker as well as Donald Kanak, Chairman of Prudential Insurance Growth Markets,[4] who has actively promoted the concept in the investment community.

This is a proposal that has, in the past, attracted attention from funders and market participants who have been wrestling with the many barriers to energy transition in a region with a young and still growing baseload fossil-fuel power fleet. It correctly asks whether there is a role for blended public and private capital to catalyse the sale of high-emitting diesel and coal units to investors who, for a reasonable financial return, will agree to decommission these units on an accelerated time frame.

Creating market mechanisms to encourage early decommissioning is a natural fit for commercial markets where project sponsors already face asset stranding risks. Attractive refinancing strategies can encourage sellers to decommission and pivot to renewables for better returns. The question now is whether the ADB and potential donors can adapt this concept for the complicated realities of Southeast Asia's growing power markets, and whether they can meet the higher standards of governance and transparency required by stakeholders as markets navigate the transition to net zero.

Creating market mechanisms to encourage early decommissioning is a natural fit for commercial markets where project sponsors already face asset stranding risks.

As a result, any proposal with broad-reaching implications that will affect ratepayers, taxpayers, and communities over the next 30 years should be reviewed based on the implicit assumptions that have driven the design of the ETM and the pre-conditions required for this type of financial solution to be effective. To ensure that there is an informed debate about possible policy pathways, stakeholders should be prepared to address critical questions about five key issues:

1) The **desired outcomes** from the facility and how the proposed facility drives the achievement of those goals

2) The **design criteria and incentive structures** for any proposed ETM

[2] Reuters. ADB, Citi, HSBC, Prudential hatch plan for Asian coal-fired closures. 3 August 2021.
[3] Rocky Mountain Institute. How to Retire Early: Making Accelerated Coal Phaseout Feasible and Just.
[4] PFIS. For Health and Climate: Retiring Coal-Fired Electricity and Promoting Sustainable Energy Transition in Developing Countries. Donald Kanak. Accessed August 2021.

3) How the facility should be adapted to meet the needs of Southeast Asia's **heterogeneous power and energy markets**

4) The **key enablers** for successful energy transition policy implementation

5) How **stakeholders** can be brought into the process to build credibility

What Are the Desired Outcomes of This Facility?

The purpose of any ETM is to facilitate a rapid transition away from high greenhouse gas (GHG) emissions as part of a global push toward a more sustainable environment. To make real progress on this overarching goal, it will be critical to ensure that any solution addresses chronic environmental impacts on public health, fostered by high concentrations of coal-fired power plants throughout the region, and the transition needs of affected communities. In addition, any ETM and related transition policies will need to consider how to substitute more resilient and sustainable outcomes in place of continued reliance on fossil fuel-intensive growth pathways in the target countries.

The purpose of any ETM is to facilitate a rapid transition away from high GHG emissions.

With new policy leadership, financial markets are finally evolving to price the externality costs of continued fossil fuel use, which negatively impact people and the environment. As a result, ADB's ETM program will inevitably be assessed based on its ability to both build on new financial market trends and accelerate the reduction and elimination of climate risks for the stakeholders they serve. To meet these expectations and have catalytic impact, the projects undertaken should also meet the highest standards of market governance and align with credible international coal phase-out goals.

Which Design Elements Determine the Success of an ETM?

Different types of early retirement schemes for old, inefficient, heavily polluting, and high emissions fossil fuel power facilities have been studied and implemented in many markets. The economics of fossil fuel asset stranding make it clear that if blended finance is to play a meaningful role in accelerating Southeast Asia's energy transition, any new facility should anticipate and support ongoing market change in parallel to retirements. A top priority must be to ensure that ETMs avoid over-reliance on outdated baseload purchase power agreement (PPA) structures that restrict the market's ability to reprice assets or shift dispatch priorities as the generation mix changes. "Energy transition" does not mean prolonging the life of

coal or substituting one form of pollution for another; it means getting to clean as rapidly as possible.

Cost-Competitive Markets With a Risk of Stranding

The good news is that policymakers and investors are not working with a blank slate when it comes to designing ETMs. This is a design process that benefits the market when it creates the right incentives. There are many lessons to draw on to determine what should be encouraged and avoided. How can a coal retirement facility be a real catalyst for transition? To date, they have been used to the greatest effect where careful attention is paid to the market context and the ability of developers to accept lower returns on legacy assets in exchange for an opportunity to pivot toward more attractive clean options.

As markets transition, it's critical that grids can support a more dynamic mix of variable and baseload-like power.

The financial logic of ETMs rests on the program's ability to motivate project owners to sell underperforming assets approaching the end of their economic life or at risk of stranding. It is further enhanced if the asset is well located relative to the grid and offtakers, making the site suitable for redevelopment with lower-cost renewables, storage, and sustainable grid management investments. These conditions create a scenario where sellers have a reasonable prospect of realizing better financial returns from a more cost-effective renewable asset than from an old fossil fuel project.

A second pre-condition that can encourage coal project owners to pivot emerges when policymakers and market operators have already taken steps to develop grid structures that support renewables and create market incentives for storage. In much of Southeast Asia, fossil fuel baseload generation decisions have dictated grid development. As markets transition, it's critical that grids can support a more dynamic mix of variable and baseload-like power. Markets that have deliberately planned for and enhanced funding for more resilient grid development, offering new revenue streams for system services, have an advantage in integrating the most cost-effective industrial scale renewables. If renewables developers see steady investment in the right grid and storage assets, they can take more price risk because of lower curtailment risks. This encourages competition and gives developers the confidence they need to invest at scale. This is an area where ADB's technical leadership, backed by funding, can partner with governments to have an outsized transformative impact on grid evolution.

Price Discovery for Coal Asset Sales

When market conditions support energy transition, an ETM can accelerate the process by creating incentives for coal plant owners to abandon plans to milk an old asset for free cash flow and instead focus on new clean power investment

opportunities. Real, market-oriented price discovery for an asset subject to an ETM is perhaps that mechanism's most critical design element. The most valuable lesson of the energy transition has been the importance of reverse auctions in revealing new power asset valuation trends. This is a critical point. As bankers will confirm, legacy book value bears no relationship to actual asset value, particularly when the true negative impact, risks, and operating cost struggles of technology have been revealed.

German Coal Decommissioning Auctions Highlight the Importance of Price Discovery

Since 2020, Germany has undertaken a 3-phase, coal exit program through a reverse auction system where hard-coal operators offered capacity volume reductions in return for financial compensation. The first auction under this program took place in December 2020 and the results of the third auction were announced in July 2021.

The auctions employed a range of design rules to encourage price discovery and accelerated decommissioning. The capacity to be auctioned was limited each time. The program itself is time limited to encourage early participation. A maximum price has been set for each auction, starting at EUR 165,000 per megawatt (MW) for the first round. Results from the auctions reflect the market context created by Germany's coal exit law and the ability of transparent auctions to achieve early decommissioning on pricing that reflects the commercial realities of stranded asset risk. Pricing from the first two rounds averaged EUR 66,000 and 59,000 per MW before rising to EUR 103,000 per MW for the final auction which was less than fully subscribed.

Source: Reuters, Carbon Pulse, Clean Energy Wire.

Transparent price competition is critical, because there have been suggestions that coal asset sellers should be offered full asset values[5] to kick start the program. This flies in the face of market governance norms and emerging market best practice. If the program relied on bilateral negotiations, which resulted in a non-competitive valuation and the granting of a confidential PPA for continued operations, it would be hard to be confident that all stakeholder interests were considered. By contrast, a transparent program of reverse auctions creates strong incentives for coal asset owners to offer assets at realistic prices that reflect market valuations. This is particularly true for older assets that are increasingly at risk of write-downs, or that may be so old that they are nearly or already fully depreciated.

Enhanced Power Sector Governance

In addition to prioritizing strong governance processes for the asset sale process, ETM designers should be alert to the role of local authorities, who will assume responsibility for overseeing the process. Any ETM will make long-term financial commitments on behalf of ratepayers and taxpayers. For this to result in durable agreements, there needs to be a certainty that the decision makers have a

[5] "Full asset value" here means repayment of all outstanding debt, recovery of upfront equity capital at book value and some form of compensation for profits foregone over the remaining life of the contract that is to be bought out.

stakeholder mindset. This is more easily accomplished in markets that have an active and accountable independent power sector regulator.

Unfortunately, most Southeast Asian markets lack an active and accessible independent regulator. Instead, power market decision-making typically sits with energy, power, or industry ministries that often have more loyalty to domestic energy interests and public or private power companies than price-sensitive power consumers. This could complicate the process of setting the right expectations for governance and accountability, especially for communities and investors who will be affected by ongoing management of any transition commitments well into the future. Without a credible commitment to stakeholder governance, it could prove difficult to attract the support of donor countries and international asset owners that have every reason to be sensitive to reputational risks.

Most Southeast Asian markets lack an active and accessible independent regulator.

Caps on Funding and Availability To Motivate Sellers

One final design criterion deserves attention. To attract investors with assurances of transparent pricing and positive transition outcomes, it will be important to ensure that sellers are realistic and motivated. The best way to do this is to set pre-announced limits on the pool of ETM capital to be invested, or the time period in which these transactions can be completed. Competition for capital—and access to the program—is a powerful motivator for sellers and would give investors comfort that the coal retirement process would not be subject to gaming or insider influence that would undermine transition outcomes. In a world where the lifecycle cost of alternative energy technologies continues to plummet, having access to a funded means to boost returns for a rapidly devaluing asset is highly motivating.

Southeast Asia Is Not a One-Size-Fits-All Region

Any analysis of the ETM will inevitably turn on the fact that the three power markets targeted for this ADB project—Vietnam, the Philippines, and Indonesia—have very different structural attributes. While all three markets have strong growth potential, they have relatively little in common regarding market structure, near-term renewables potential, and governance. As a result, domestic and regional stakeholders can be expected to interrogate the country-specific impact of any coal retirement plan. Transition, defined by the key policy drivers and the interplay of political interests, will be different in each country.

Table 1: How Southeast Asia's Energy Growth Markets Compare

	Vietnam	Philippines	Indonesia
Installed Capacity (GW)	69.3	28.3	63[6]
Per Capita Power Consumption (KWh)	2,100[7]	897[8]	1,084[9]
% Renewable Energy (non-hydro)	24.9	29.1[10]	4.43
Domestic Coal and Gas	Vietnam has around 4.0 bn tonnes of proven coal reserves[11] and 27.4 tcf of proven natural gas reserves. Half of these reserves have high production costs. Most of Vietnam's exploitable gas reserves are in the south.[12]	According to DOE Philippines has a total coal resource potential of 2.4 billion metric tons. The Philippines holds 3.5 trillion cubic feet (tcf) of proven natural gas reserves, out of which 2.7 tcf lie in the Malapaya Gas reserve.[13]	As of 2019, Indonesia has proven coal resources of 149 billion tons and reserves of 37.6 billon. Proven natural gas reserves stand at 43.6 tcf.[14]
Power Sector Structure	Electricity Vietnam (EVN) owns a majority of the country's coal and hydropower assets. One subsidiary of EVN, operates the transmission grid while five distribution companies also operate under EVN.[15]	National Power Corporation (NPC), the SOE power company, has been unbundled . Distribution has been private since the 1970's handled by private utilities such as MERALCO and other electric cooperatives. At present NPC only holds control of off-grid electricity supply and	The State Electricity Corporation Perusahaan Listrik Negara (PLN) has a monopoly over Indonesia's generation, transmission and distribution resources. PLN currently owns 70% of the country's generation assets, while the remaining 30% are

[6] Draft RUPTL, 2021.
[7] Ener Data. Vietnam Energy Information. Accessed August 2021.
[8] Statista. Average annual electricity consumption per capita in the Philippines from 2011 to 2020. Accessed August 2021.
[9] World Bank. Electricity power consumption (kWH per capita) – Indonesia. Accessed August 2021.
[10] DOE Statistics. April 2021
[11] Vietnam mining and resources profile, Australian Trade and Investment Commission, 2020.
[12] Australian Government. Export Markets – Vietnam. Accessed September 2021.
[13] U.S. Energy Information Administration. Philippines. Accessed September 2021.
[14] ADB. Indonesia Energy Sector Assessment, Strategy, and Road Map. December 2020.
Kementerian Energi Dan Sumber Daya Mineral. Menteri ESDM: Cadangan Minyak Indonesia Tersedia untuk 9,5 Tahun dan Cadangan Gas 19,9 Tahun. January 2021.
[15] ADB. Assessment for Power Sector Reforms in Vietnam. 2015.

		some large hydropower assets.	owned by Independent Power Producers.[16]
Regulatory Structure	The Ministry of Industry and Trade assumes the main responsibilities of a regulator.[17]	The Energy Regulatory Commission (ERC) acts as an Independent Regulator.	The Ministry of Energy and Mineral Resources (MEMR) assumes the responsibilities of a regulator in Indonesia.
Wholesale Electricity Market	Vietnam's Competitive Generation Market has been operational since 2012 but controls only a small volume of power generation. Competition occurs for day-ahead markets through spot trading and fixed contracts.[18] A Wholesale Electricity Market (VWEM) was also piloted in 2020.[19]	The Philippines Wholesale Electricity Spot Market (WESM) has been operational in Luzon since 2006 and in Visayas since 2010.Despite having being in operation for over a decade now, the WESM is only responsible for a small portion of electricity procured by the utilities.[20] WESM operations are still pending in Mindanao.	No wholesale electricity market.

Source: IEEFA, Country Data.

The starting point for considering the merits of an ETM will be how each country is positioned in terms of their existing high carbon fossil fuel generation mix and how prepared the market is to respond to incentives for the energy transition. Over the past 30 years, these three countries have achieved rapid growth in generating capacity, mainly by relying on independent power development programs that mobilize foreign capital by offering 25-year power purchase agreements, often with complex terms and guarantees.

[16] The Diplomat. Indonesia's State-Owned Power Company is Hemorrhaging Cash – And That's Ok. September 2020.
[17] Thomson Reuters Practical Law. Electricity Regulation in Vietnam: Overview. Accessed September 2021.
[18] World Bank. Learning from Power Sector Reforms – The Case of Vietnam. March 2020.
[19] Viet Nam Energy Partnership Group. Technical Working Group 3: Energy Sector Reform Report of the 5th Meeting. September 2020.
[20] For example, up until 2020, MERALCO, one of the biggest distribution utilities in Philippines has only procured up to 12% of its consumption needs from the WESM. The rest has been procured through contracted capacity governed by Power Supply Agreements.

Table 2: Existing Coal Fired Capacity in Southeast Asia According to Age and Mode of Governance

Indonesia					
Age (Yrs)	**PLN**	**IPP**	**Total (MW)**	**% of Total**	**%IPPs**
0-10	11,162	9,437	20,599	65.6%	30.0%
10-20	2,680	705	3,385	10.8%	2.2%
20-30	2,930	2,450	5,380	17.1%	7.8%
Greater than 30	2,057	-	2,057	6.5%	0.0%
		Total	31,421		40.1%
Vietnam					
Age (Yrs)	**EVN**	**IPP**	**Total (MW)**	**% of Total**	**%IPPs**
0-10	10,604	6,880	17,484	83.8%	33.0%
10-20	1,500	1,340	2,840	13.6%	6.4%
20-30	-	-	-	0.0%	0.0%
Greater than 30	540	-	540	2.6%	0.0%
		Total	20,864		39.4%
Philippines					
Age (Yrs)	**Other/WESM**	**PPA**	**Total (MW)**	**% of Total**	**%PPAs**
0-10	2,192	4,039	6,232	56.9%	36.9%
10-20	52	586	638	5.8%	5.4%
20-30	30	3,243	3,273	29.9%	29.6%
Greater than 30	801	-	801	7.3%	0.0%
		Total	10,944		71.9%

Source: Country data and IEEFA Estimates.
Note: EVN = Electricity of Vietnam; IPP = independent power producer; NPC = National Power Corporation; PLN = PT Perusahaan Listrik Negara; WESM = Wholesale Energy Spot Market, PPA = Power Purchase Agreement, IPP = Independent Power Producer.

The biggest challenge for the ADB and for investors evaluating the potential impact of the ETM relates to how this initiative can change the reality of coal lock-in. The three markets that are the focus of this policy initiative have extremely young fossil fuel generation fleets and a large portion of the economically relevant assets are owned by independent power producers (IPPs) that are covered by guaranteed PPAs which insulate them from market pressures. This means that, barring forceful policy shifts, system operators and IPP sponsors lack clear incentives to respond to early retirement negotiations on terms that will fulfil the initiative's goals.

SOEs Versus IPPs

At the same time, ownership of the oldest, most inefficient and most highly polluting assets rests squarely with state-owned entities. It may be tempting for any ETM to target these facilities for retirement, given their carbon intensity. Nevertheless, careful study will be required to ensure that limited donor funds target only the

most effective measures that will create the right incentives to address the highest impact system reforms. If badly designed, an ETM could risk encouraging national power companies to delay decommissioning of their least cost-effective carbon-intensive assets while waiting for a donor handout to shutter them.

From an ETM design perspective, the barrier to energy transition posed by heavy reliance on IPPs in Southeast Asia should not be underestimated. The ADB deserves credit for acknowledging this challenge in the "Problem Analysis"[21] diagram that accompanies the TA program's description. According to the ADB, not only does reliance on guaranteed long-term PPAs result in "carbon lock-in" because of inflexible contract terms, but "limited PPA disclosure hinders price discovery" and works against accountability and public governance. This is because most PPAs are confidential, and policymakers have limited means of exercising oversight on behalf of stakeholders.

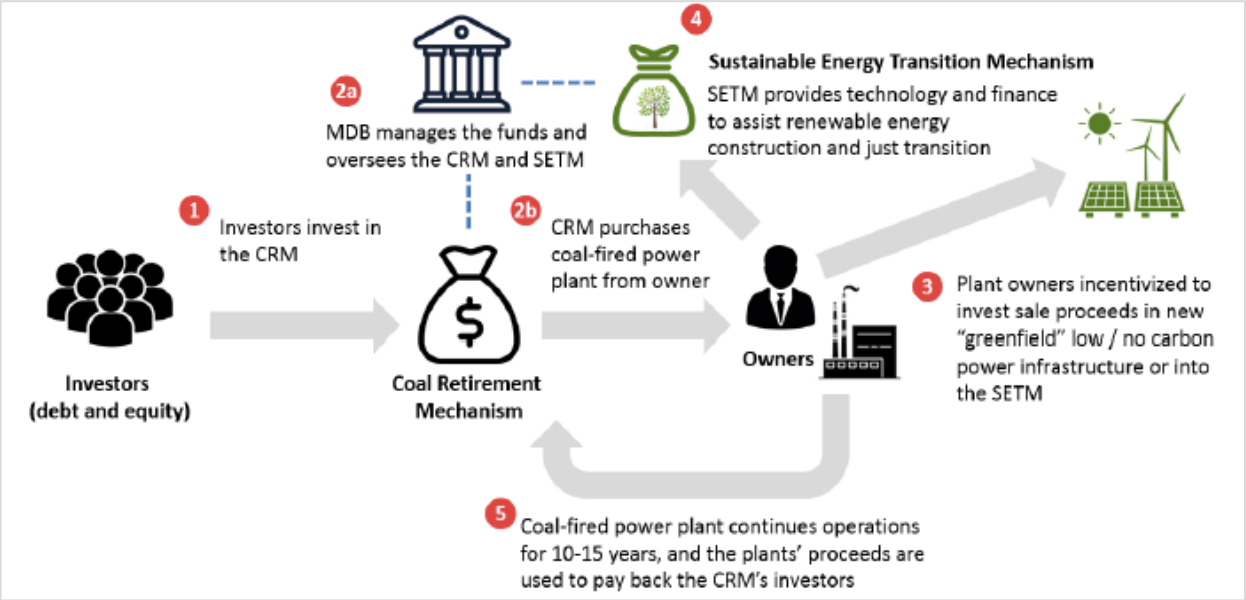
This lack of transparency is not a technical energy sector issue but reflects the habits of the project finance world, and often a desire to keep certain contractual legal matters out of public view. The opaque governance of PPAs could hurt the economic rationale for ETMs. The risk with the veil of confidentiality used to shield IPP investors and government counterparties from oversight is that stakeholders have little ability to understand the value drivers and burden sharing provisions that may only be found in a PPA's fine print governing certain terms and related payments or penalties. As a result, the lack of transparency means that it will be hard to confirm asset values or assess the negotiating stance of IPP sponsors and system operators.

From an ETM design perspective, the barrier to energy transition posed by heavy reliance on IPPs in Southeast Asia should not be underestimated.

A second issue for PPAs that requires careful analysis is the role that the new generation of PPAs may play in the post-transaction retirement packages that investors will agree with system operators. The proponents of ETMs have sketched out financial structures that would put in place new PPAs, granting investors an additional 10 to 15 years of operations before retirement. This aligns with the assumption that target assets for the ETM would be roughly 10 to 20 years old and would then have a useful life before retirement of 25 to 30 years.

[21] ADB. Accelerating the Clean Energy Transition in Southeast Asia. April 2021.

Figure 2: Illustration of ETM



Source: Donald P. Kanak.[22]

From a bankers' perspective, the guarantee of 10 to 15 years of additional operation—regardless of other market developments—seems justified as a way to deliver traditional investment returns to coal asset buyers and secure asset wind-down commitments from system operators. However, what is overlooked is that any decision to guarantee a full economic life to a high-carbon emissions facility works against the goal of creating focused incentives for rapid transition.

Will "Transition PPAs" Support Transition?

If technology innovation and cost deflation continue, as experts are forecasting, it's likely that this new set of "transition PPAs" could impede economically efficient transition rather than accelerate it. At the very least, it would be rational for system operators to build in the right to re-negotiate certain terms if system economics shift in ways that undermine the case for delayed retirement.

It's also important to take the project owners' perspective into account when considering any incentives. If a facility that is an eligible candidate to access this mechanism is anywhere near ten years old, it is already only 10-15 years away from the end of its PPA. Further, it has already amortized most of its debt and perhaps is already recovering its equity capital. Thus, the project owners and lenders are already significantly compensated without doing anything. Moreover, the original project owners would have the right just to run out the clock on their contract. If it is a build-operate-transfer (BOT) project, the receiving government entity could then just shutter the plant at the end of the PPA term. These factors do not appear to

[22] PFIS. For Health and Climate: Retiring Coal-Fired Electricity and Promoting Sustainable Energy Transition in Developing Countries. Donald Kanak. Accessed August 2021.

create the appropriate conditions for transition, rather a maintenance of the status quo.

Concerns about the rigidity of terms associated with a guaranteed retirement structure deserve more attention, given some of the specific issues playing out in Southeast Asian power markets. Although the Philippines is the only market with a wholesale electricity market with some price-setting power, Vietnam has a more limited market that policymakers hope to develop. If this were to happen, both markets could see more market pricing signals aligning with the new economics of renewables integration. Both markets are also expected to integrate new high-cost liquefied natural gas (LNG) into the generation mix priced on a take or pay basis over the next five years, a development which itself could create a new form of long-term carbon lock-in.

Concerns about the rigidity of terms associated with a guaranteed retirement structure deserve more attention.

The combined impact of these two changes could raise the pressure on policymakers and system operators to prioritize more price competition and system flexibility in the biddable part of the market. This trend could also gain momentum as regional system operators take advantage of new storage and grid technologies that can increase operating efficiencies with a more diverse generation mix driven by renewables. If this happened, stakeholders would be right to ponder the merits of fixed terms for one-off transactions—regardless of how well intended—that do not align with how the region's power markets are evolving in response to country-specific conditions.

Carbon Markets Could Change the Economics

One final puzzle relates to each country's progress in developing carbon markets or some form of carbon pricing. Preliminary proposals covering the financial case for the ETM float the possibility that carbon credits could be a source of cash flow to boost returns for investors once the coal unit has been decommissioned. This is an assumption that needs to be stress-tested with care due to the potential for moral hazard.

Although there are preliminary discussions in Vietnam, Indonesia, and the Philippines about limited carbon markets, there is no certainty that functioning carbon markets could support this type of commitment. The first concern to address is whether there is a credible policy basis for accepting delayed coal decommissioning as a carbon "saving" and, if so, how this would be expressed contractually in the context of a PPA. A second issue is the reliability of any method used to value future credits for investors.

And finally, given the complex political calculus that accompanies carbon market development, it could prove difficult to accommodate the interests of foreign ETM

investors in a domestic policymaking process. Given the broad sustainability goals that have framed the ETM discussion, reputation-sensitive foreign investors are unlikely to want to find themselves in a situation where their interests could be privileged relative to the interests of domestic consumers.

Other Building Blocks for Accelerated Transition May Deserve More Attention

The ADB's technical assistance concept paper makes it clear that the mechanism for accelerated coal phase out is only one of five planned outputs of the process. The list of targeted outputs includes:[23]

- Opportunities for public and private sector investments in **new renewable energy capacity** increased.
- Opportunities for **energy efficiency improvements** through public and private investments developed.
- Mechanism for **accelerating the phase out of coa**l and other fossil fuel based generation assets established.
- Energy sector **governance and transparency** in Southeast Asia enhanced.
- Regional **power grid integration** in Southeast Asia enhanced.

This list is a positive sign that the consensus-building process behind ADB's policy work on energy transition may be receptive to other initiatives that could offer high impact and attract more country-level stakeholder support. The case for more focused efforts to de-risk renewables investment is well understood but often underfunded in Southeast Asia, as bank regulators and domestic banks continue to a show limited appetite for the risk-reward profile of new renewable assets. Energy efficiency investments have also suffered from benign neglect, as energy ministries have opted for large-scale fixed asset investments over more management-intensive energy savings strategies that would cut subsidies and support new consumer pricing strategies.

Far and away, the most important energy transition enabler that is hinted at in the ADB's list is grid investment. Regional power sector analysts understand that grid investment for conventional and renewable power assets has long taken a back seat to generation-driven planning and investment priorities. This strategic gap will hurt the effort to accelerate energy transition in the region, regardless of how country-level policymakers choose to craft new policy initiatives.

[23] ADB Technical Assistance Concept Paper. Accelerating the Clean Energy Transition in Southeast Asia. April 2021.

New grid investment is sorely needed in Southeast Asia's energy growth markets to improve system efficiency, enable more renewables, and address long-term resilience challenges associated with rapid development and physical climate risks. In markets like Vietnam and the Philippines, where a new focus on storage could transform the renewables cost equation, "green" grid investment funded by new sources of blended finance could be transformative. Not only does targeted grid investment facilitate renewables and storage integration, but it also de-risks investment in renewables by reducing curtailment risk. This in turn delivers more competitive pricing and encourages developers to consider more scalable projects.

The case for more focused efforts to de-risk renewables investments is well understood but often underfunded in Southeast Asia.

ADB Has Grid Investment Experience To Offer

Efforts to encourage more financing for grid investment have been a priority for ADB. They have invested considerable technical resources to steer regional planners toward interconnection strategies that would also support cross-border grid inter-connection. This is relevant in the Mekong region for markets like Vietnam where Vietnam Electricity (EVN) has just committed to purchasing power from a Lao-based wind project backed by Thailand's BCPG, the renewable arm of Bangchak Corporation.[24] In Indonesia, ADB and Japanese funders have long offered support for a proposed Java-Sumatra interconnection project[25] that could have introduced more cost-effective approaches to the design of the Java-Bali and Sumatra power systems.

The case for greening the grid to facilitate storage investments is even higher in a market like the Philippines, where the power market structure is poised for change. New incentives for storage and system services are needed to increase the efficiency of existing generation assets and improve the economics of new industrial scale renewables. This would support policy efforts to increase system flexibility over the next five to ten years and limit the entry of new coal-fired power assets that would aggravate baseload lock-in. From a market perspective, it would also create tangible incentives for project sponsors to anticipate rather than avoid the realities of coal phase-out.

As stakeholders sharpen their focus on the potential deliverables from the ADB energy transition technical assistance program, it will be important to focus on two key elements of the program. As part of the work to explore the potential of the

[24] Bangkok Post. BCBG Eager to Build Asean's Largest Wind Farm in Laos. July 2020.
[25] ADB. Sustainable Energy Access in Easter Indonesia. Accessed September 2021.

ETM, the country consultants will perform an "analysis of coal power generation fleet in relation to power sector development plans in several countries to determine a potential for a significant share of retirement (Q2 2022)."[26]

Depending on the level of collaboration that the ADB receives from beneficiary country governments and their utilities, this analysis should result in a valuable, technically validated document. This document will confirm each system's highest emissions/least efficient fossil fuel generation assets based on metrics such as marginal operating cost, marginal efficiency, and carbon emission marginal cost. Researchers who have struggled with the complex disclosure and data habits in these three markets will appreciate the importance of ADB providing verified data that sheds light on the full economic impact of the current fossil fuel generation mix, as well as new units scheduled to come online in the next five years.

Efforts to encourage more financing for grid investment have been a priority for ADB.

PPA Transparency Is Critical for Energy Transition

The second deliverable that deserves more attention from stakeholders is the plan to develop new terms and guidelines for disclosure of PPAs that would meet "best practice in other regions."[27] This task is expected to be completed by Q2 2022 with the goal of presenting the work at a high-level regional forum in Q3 2022. The final stage of the work would target capacity building for the adoption of the guidelines by governments in Q1 2022.

How the Asian Development Bank Describes the Problem With the Power Purchase Agreements

"...the development of cost-effective energy infrastructure in several SEA countries has been hindered by inadequate sector governance and transparency. This is reflected in the limited public disclosure of the terms and conditions of power purchase agreements (PPAs), owing to the region's preference negotiated bilateral agreements rather than reverse auctions. This has led to information asymmetry, conflicts of interest, high transaction costs, non-competitive pricing, and often poor quality of service."

Source: ADB.[28]

Given the importance of project finance and the eco-system of bankers, lawyers, equipment suppliers, policymakers, and investors that have shielded this market

[26] ADB Technical Assistance Concept Paper. Accelerating the Clean Energy Transition in Southeast Asia. April 2021, p. 10.
[27] Ibid.
[28] ADB Technical Assistance Concept Paper. Accelerating the Clean Energy Transition in Southeast Asia. April 2021, p. 16.

from oversight, the limited focus on future PPA disclosure may not provide the transparency needed to catalyse donor funding. Financial analysts and counterparties to any ETM negotiations will also require detailed PPA disclosure to perform required asset valuations and model future cash flows. There will need to be consideration given to change of law provisions and arbitration clauses in the PPAs. As a result, the TA's seemingly light touch work program may miss the mark, especially if the goal is to re-engineer financial markets to support energy transition. This could open the door for stakeholders to look for more effective strategies to raise the bar on PPA transparency to complement ADB's limited proposals.

What's Been Overlooked?

As noted above, there will naturally be an important opportunity for regional stakeholders and donor countries to identify and fill the gaps neglected in the ADB's current energy transition work program. ADB has shown unusual ambition by promoting the ETM as an innovative market-based solution for Southeast Asia's complicated markets. Nevertheless, local stakeholders and policymakers should be encouraged to respond with ideas that build on the ADB's new commitment to energy transition policy support.

In the run-up to the UN meetings at COP26 in November, donors would be smart to prioritize solutions that will give energy growth countries stronger incentives to restructure their planning and investment habits with real urgency. Unfortunately, the recent net-zero proposals and the ongoing power planning processes across the region raise real questions about whether policymakers have fully grasped the need to change the way capital is allocated to clean energy options at the market level.[29] More attention needs to be given to investment strategies that can drive capital quickly, ideally over the next 18 months.

In the run-up to COP26, donors would be smart to prioritize solutions that will give energy growth countries stronger incentives to restructure their planning and investment habits with real urgency.

As stakeholders consider responses to the ADB initiative, additional questions will inevitably come up about the motivations of the different participants in the process. For the ETM to gain credibility, it will be crucial to strike a balance between the interests of sellers, investors, ratepayers, and those communities that are negatively impacted by the high cost of health impacts and environmental remediation. It's concerning that community issues have been delegated to a separate funding structure that, however well intended, may not be fully integrated into the ETM deal structure.

The potential sellers are likely to be fossil fuel IPP owners, development finance institutions with material project interests, and state-owned entities that have

[29] IEEFA. Putting PLN's Net Zero Ambition Into Context. June 2021.

owned or funded operating coal assets. Some of these players, when looking at past performance versus stated intentions, may lack credibility with the investors and donors who will be crucial to any funding efforts. This is something that the ADB and the banks involved in the marketing process will need to address as quickly as possible.

Investors and Local Stakeholders Will Be Asking Hard Questions

Improved governance and transparency are a necessary starting point. Investors and local stakeholders will naturally look at how these sales will affect market realities, and whether politicians and policymakers have an enduring commitment to improving the country's clean energy fundamentals. For example, it would damage the credibility of the process if it were discovered that sellers in any ETM program continued to commit capital to new coal-fired power assets.

The policymakers with whom ADB will engage in the TA process should also expect to be asked to address sensitive community transition issues as part of the work on coal retirement. This is an area where local stakeholders have a critical role to play. It is envisioned there will be donor and government funding for a transition facility, but it will fall to stakeholders to provide clear guidelines for foreign investors on community expectations. Coal plant retirement should not be a zero-sum game, but local employment and environmental justice expectations will need to be clarified.

What's the Budget?

The final issue that should never be overlooked in discussing market-based financial solutions is how much money would be needed to position an ETM program for success. Senior ADB officials have already signalled their intention to press partners at the upcoming COP26 meetings for commitments to the ETM facility.[30] According to ADB Vice President Ahmed M. Saeed, a 2022 transaction could be undertaken to show proof of concept and support efforts to scale up a facility and extend it to other markets in the region.

The funding that would be needed to support the scale up of this program is dramatically higher than existing ADB clean energy financing programs. Simply funding the buyout of the book value of one large coal-fired facility in the 1 gigawatt (GW) range would cost approximately USD1.0 billion (bn) if the backer's generous assumption of USD 1.0 to 1.8 million per MW were used. If the goal were to use the ETM facility to support the early retirement of half of the coal fleet in Indonesia, the Philippines, and Vietnam, the total facility size could balloon to as much as USD 30.0 to 55.0 bn.[31] This is significantly more than the ADB's USD 20.0 bn COVID-19 assistance package or the USD1.7 bn of co-financing pledged for the ASEAN Catalytic Green Finance Facility.[32]

[30] Reuters. ADB, Citi, HSBC, Prudential hatch plan for Asian coal-fired closures. 3 August 2021.
[31] Ibid.
[32] ADB. ASEAN Catalytic Green Finance Facility. January 2020.

Given the gap between current funding levels for energy transition in Southeast Asia and the commitments that would be needed to turn an ETM into a viable catalyst for decommissioning, stakeholders would be right to stress test any statements concerning the timing or funding levels for the ETM. This is a market that needs credible market catalysts to accelerate the transition. Matching the expansive goals in the ADB's USD4.05 mn TA with efforts to mobilize tens of billions of dollars from a mix of donor nations and financial investors would be ambitious under any circumstances. It will naturally raise questions about how this process can be managed to ensure that other, potentially more cost-effective, proposals are not crowded out.

About IEEFA

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

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