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Navigating the Many Faces of Indonesia's Energy Transition Schemes

What's Next for Indonesia After the Landmark US$20 Billion Climate Deal?

Executive Summary

The much-anticipated G20 Leaders' Summit hosted by Indonesia last month has come to an end. Participants reached a Leaders' Declaration and signed numerous memorandums of understanding (MOUs) on important sectors, such as energy. These MOUs include agreements on the biggest climate deal ever reached, the US$20 billion Just Energy Transition Partnership (JETP).

Well before the 15-16 November summit, the Indonesian government had been stepping up its game to switch to a lower-carbon economy. In the past year alone, authorities had announced many changes and new political commitments on climate. From an updated Nationally Determined Contributions target, to the creation of umbrella regulation on a new carbon price scheme, and a Presidential Regulation reaffirming the country's ambition to accelerate early coal retirement, the government of Indonesia has displayed dedicated efforts to lay the groundwork for this transition.

The hard work has paid off. A few weeks ago at the Bali summit, the G7 International Partners Group (IPG) committed US$20 billion to help Indonesia move away from fossil fuel energy. In addition to this JETP deal, the Climate Investment Funds is allocating US$500 million concessional financing under its Accelerating Coal Transition (CIF-ACT) program to support the faster retirement of coal-fired power plants (CFPPs).

Multiple MOUs and cooperation agreements were signed during the G20 events. It is a challenge for many to track what has been agreed and signed, and who will provide the money. Some questions arise. Which energy transition proposals ultimately moved ahead? What are the details of these schemes? How do they meet the targets proposed? And how will it all be financed?

The Institute of Energy Economics and Financial Analysis (IEEFA) acknowledges that, as it stands, Indonesia is moving ahead with at least five energy transition schemes at the same time. These are the CIF-ACT program, which works in tandem with the Asian Development Bank's (ADB) energy transition mechanism (ETM) and the World Bank Group (WBG); the G7 International Partners Group's (IPG) Just Energy Transition Partnership for Indonesia (JETP-IDN); Indonesia's ETM Country

Platform (ETMCP); state utility Perusahaan Listrik Negara's (PLN) own version of its ETM; and the Indonesian Investment Authority's (INA) ETM.

From all the schemes, at least three transactions have been proposed on early coal retirement and announced to the public.

1. The 660 MW Cirebon-1 coal-fired power plant (CFPP), an independent power producer (IPP) refinancing deal led by PLN, ADB, PT Sarana Multi Infrastruktur (PT SMI) as the ETMCP, and INA;

2. The 1,080 MW Pelabuhan Ratu CFPP, an asset spin-off led by PLN and PT Bukit Asam (PTBA); and

3. The 2,640 MW Tanjung Jati B's 1-4 CFPPs, which Sumitomo Corporation will forgo early and swap with PLN in return for the latter's 9 GW Kayan hydroelectric project.

Although the progress is commendable, IEEFA will highlight in this report several issues and risks pertinent to the schemes and transactions. The lack of a governance structure will be considered, as will the risk of changes in political commitment, insufficient regulatory and administrative capacity, and absence of transparent data to guide the selection of early coal retirement and renewable infrastructure procurement.

Furthermore, this paper will compare and contrast each of the five schemes and assess their primary components. The appendix presents a summary table comparing the schemes side by side. Since many of the details are still being developed, IEEFA acknowledges a need to keep the appendix as a living document, to be updated whenever a new agreement is reached.

For Indonesia to realize the full benefits of the available global financing initiatives, there are key steps to follow. IEEFA will explain in this report the need to prepare the right policy framework which would unlock barriers to new developments in the renewable energy sector; to optimize Indonesia's outdated power systems by referring to globally accepted standards; to pilot efficient and economical innovations and techniques in power infrastructure which would create new markets and boost local manufacturing demand; and to align with the financial community's expectations and requests for the conduct of this transition.

Finally, this paper will raise a number of issues on the IEEFA watch list that would warrant further study:

1. How will the selection for early coal retirement and renewable energy procurement be carried out? Will it be inclusive with an adequate level of transparency?

2. How will the government of Indonesia address any unforeseen political risks? What support will be given to create a transparent and consistent policy framework, instead of piecemeal solutions, that will tackle problems in their entirety?

3. How can PLN improve its system resiliency to reduce repayment risks?

4. How should the different financing modalities be structured to achieve optimum outcomes? What would a good governance structure look like?

5. How will the carbon emissions associated with a coal retirement transaction be handled?

Each scheme comes with its own targets, participants and financing modalities. The many elements involved show that the Indonesian ETM is not a simple one-track endeavor. It is multitrack, multifaceted and driven by multiple players, and will unfold over a number of years. An important feature is that these efforts, though separate, are not stand-alone platforms, but rather they complement one another in working toward the goal of a faster energy transition.

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Indonesia's Energy Transition in its Myriad Forms

The term "just energy transition" can mean different things to different countries, depending on each country's geographical position and economic conditions. But key elements should remain the same for anyone carrying out a just energy transition plan.

1. Converting the energy system to the use of sustainable, renewable energy by investing in renewable energy generation and storage, including integration with a modernized energy distribution system.

2. Retiring fossil-fueled energy sources as quickly as practicable, on an objective, prioritized basis yielding the greatest environmental improvements and benefits at the lowest cost in the shortest time.

3. Providing for a fair and equal transition that considers

    a. Suitable and quality replacement job opportunities which take care of the reskilling, retraining and transition needs of the affected workforce;

    b. The assurance that no environmental damage is left behind;

    c. Improvements to public health, particularly in environmental justice communities that are the hardest hit; and

    d. The availability of other economic growth options for coal-dependent regions.

Given the huge cost of implementing these elements, it is necessary for each country to consistently make the most efficient use of the limited monies available. This is especially important for emerging markets dependent on support from foreign capital.

Out of the five schemes, three are backed by international proponents. The fourth mechanism is a combination of proposals being put forward by the national utility, PLN, itself, while the fifth one comes from the sovereign wealth fund, the Indonesian Investment Authority (INA).

1. The Climate Investment Funds' US$500 million Accelerating Coal Transition investment plan for Indonesia, in collaboration with multilateral development banks (MDBs), which will commit up to US$2.2 billion;

2. The G7 International Partners Group's US$20 billion Just Energy Transition Partnership for Indonesia;

3. The Indonesian ETM Country Platform, managed by PT Sarana Multi Infrastruktur (PT SMI);

4. PLN's energy transition proposal; and

5. The Indonesia Investment Authority's ETM.

A Multitrack, Multifaceted Endeavor Conducted by Multiple Players

Unlike South Africa's single-track, US$8.5 billion JETP deal, the Indonesian energy transition takes several forms involving many players. The schemes are fluid and multifaceted, allowing for flexibility.

Each of the schemes involves, potentially, billions of U.S. dollars in investment and support spread over multiple phases. Their details are very important: what the plans do, who will be responsible and how they will be implemented. Some of the details remain to be seen, considering that secretariats, such as one for the JETP deal, have not been established yet.

1. **The Climate Investment Fund's US$500 million Accelerating Coal Transition investment plan for Indonesia, in collaboration with MDBs**

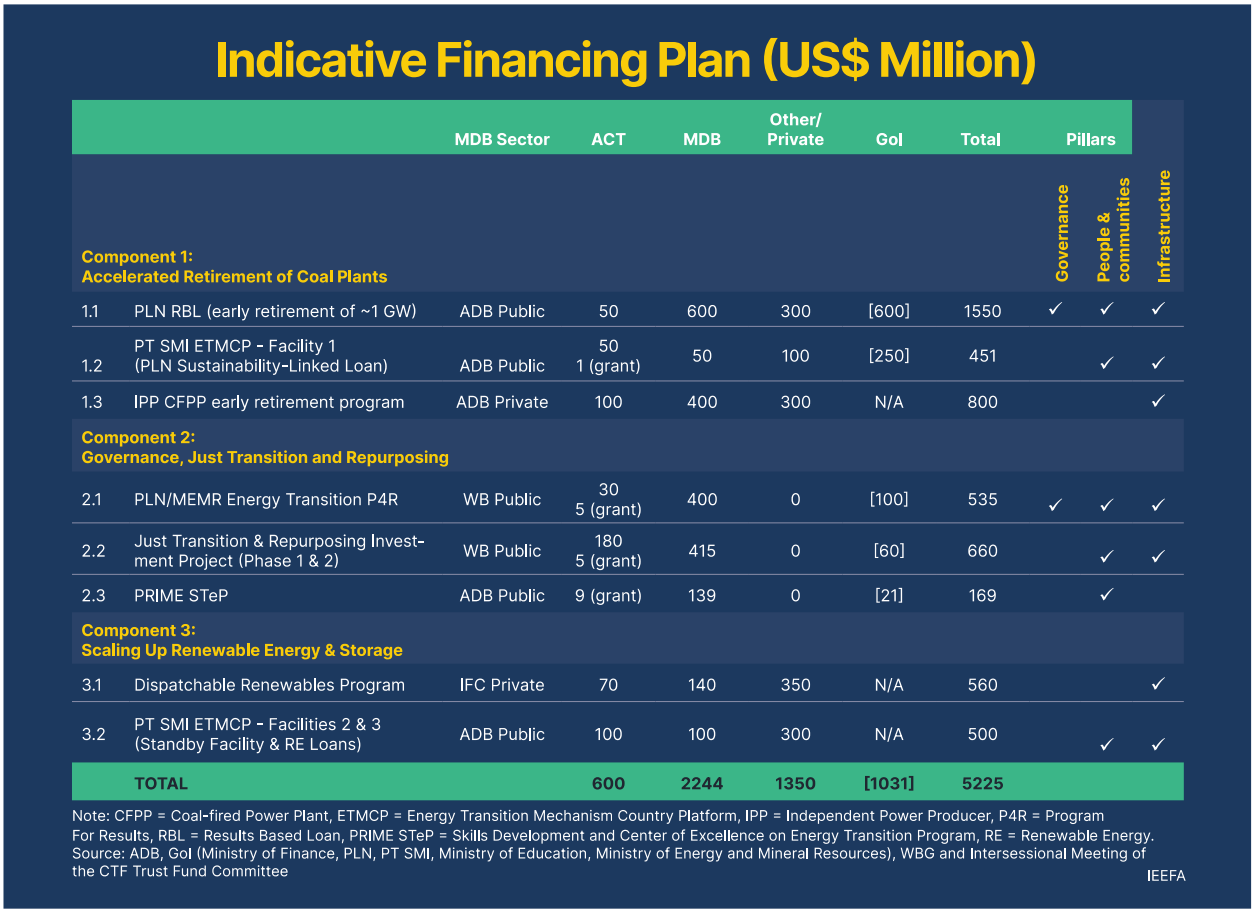
   The CIF-ACT program provides the first multilateral funds for climate action in developing countries. It was launched at the 26th United Nations Climate Change Conference in Glasgow last year. Indonesia, along with India, the Philippines and South Africa, were selected to be the first beneficiaries.

   In late October 2022, the CIF governing board agreed to support Indonesia with US$500 million in concessional, risk-bearing capital from the CIF-ACT program. By its investment, the CIF is expected to catalyze additional financing from partners, including MDBs, the government of Indonesia and the private sector, totaling up to US$4 billion.

   Together with the Indonesian government, ADB and WBG, the CIF-ACT program published a formal document detailing an investment plan to accelerate coal retirement by five to 10 years.[1] The investment plan is to help Indonesia reduce 50 million tonnes of carbon dioxide equivalent (MTCO2e) by 2030 and 160 MTCO2e by 2040. It is split into three components: accelerated retirement of at least 1 GW of CFPPs; governance, just transition and repurposing; and a scale-up of renewable energy and storage. The government has given the CIF a financing plan for the three components, while ADB and WBG have joined forces and split responsibilities on each component. Details of the indicative financing are as below:[2]

[1] CIF. Intersessional Meeting of the CTF Trust Fund Committee. 25-26 October 2022.
[2] No formal announcement has been made on how much of these financing plans have been approved. The only committed amount so far is the US$500 million from CIF-ACT, while the rest are being discussed by the MDBs and the government of Indonesia.

Figure 1: CIF-ACT, ADB and WBG Indicative Financing Plan (US$ million)



Indicative Financing Plan (US$ Million)

		MDB Sector	ACT	MDB	Other/ Private	GoI	Total	Pillars		
								Governance	People & communities	Infrastructure
Component 1: Accelerated Retirement of Coal Plants										
1.1	PLN RBL (early retirement of ~1 GW)	ADB Public	50	600	300	[600]	1550	✓	✓	✓
1.2	PT SMI ETMCP - Facility 1 (PLN Sustainability-Linked Loan)	ADB Public	50 1 (grant)	50	100	[250]	451		✓	✓
1.3	IPP CFPP early retirement program	ADB Private	100	400	300	N/A	800			✓
Component 2: Governance, Just Transition and Repurposing										
2.1	PLN/MEMR Energy Transition P4R	WB Public	30 5 (grant)	400	0	[100]	535	✓	✓	✓
2.2	Just Transition & Repurposing Investment Project (Phase 1 & 2)	WB Public	180 5 (grant)	415	0	[60]	660		✓	✓
2.3	PRIME STeP	ADB Public	9 (grant)	139	0	[21]	169		✓	
Component 3: Scaling Up Renewable Energy & Storage										
3.1	Dispatchable Renewables Program	IFC Private	70	140	350	N/A	560			✓
3.2	PT SMI ETMCP - Facilities 2 & 3 (Standby Facility & RE Loans)	ADB Public	100	100	300	N/A	500		✓	✓
	TOTAL		**600**	**2244**	**1350**	**[1031]**	**5225**			

Note: CFPP = Coal-fired Power Plant, ETMCP = Energy Transition Mechanism Country Platform, IPP = Independent Power Producer, P4R = Program For Results, RBL = Results Based Loan, PRIME STeP = Skills Development and Center of Excellence on Energy Transition Program, RE = Renewable Energy.
Source: ADB, GoI (Ministry of Finance, PLN, PT SMI, Ministry of Education, Ministry of Energy and Mineral Resources), WBG and Intersessional Meeting of the CTF Trust Fund Committee

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Source: CIF. Intersessional Meeting of the CTF Trust Fund Committee, 25-26 October 2022.
a: GoI's contribution is subject to further discussion of project needs and to annual budget approvals or endorsements. These numbers do not include broader MoF corporate support for the executing agencies, such as PLN and PT SMI.
b. To be confirmed in future market sounding.

The CIF-ACT investment plan is led by ADB and comprises a combination of result-based lending (RBL), project loans, financial intermediary loans (FILs), grants and direct investments. It will primarily consist of debt totaling up to US$5 billion, both concessional and commercial, while US$20 million has been proposed in the form of grants. Although it is not yet clear how much of the grant portion from the investment plan will be approved, the proposal translates into 0.4% in grants and 99.6% in loans, with likely a small portion of equities. While the concessional lending terms will be favorable compared to typical commercial lending, emerging countries like Indonesia would benefit more from a higher portion of grant funding, particularly to be used in non-

commercial areas, such as education and social support for affected communities.

RBL, or result-based lending, is a specific form of program-based public-sector debt offered by MDBs to a sovereign government. A program, in MDB parlance, is a set of policy or institutional reforms in which a government agrees to invest using the proceeds of an MDB loan. The monies can be allocated to sovereign or subnational purposes, which include state-owned enterprises under the control of the government. The government agrees to an array of performance outcomes from the lending program that can be assessed against established disbursement-linked indicators (DLIs). It will then fund, using partial advances from the RBL and/or from its own account, investment in those activities. Upon meeting the DLIs, the MDB will disburse funds from the RBL.[1] The key aspect of RBLs is that, by the nature of the DLI design, the outcomes, impacts and effectiveness of the borrowing are easily monitored by all observers, thus increasing transparency.

An FIL, or financial intermediary loan, is a one-step or two-step loan granted to a sovereign government, which acts as the borrower on record and will on-lend those monies to a specific entity for projects or activities agreed in advance. In the case of the Indonesia ETM, ADB will provide a two-step FIL to the Ministry of Finance, which will on-lend it to PT SMI, which will then allocate the monies to support PLN's energy transition projects. Because the government is the official borrower, FILs seek to motivate the government to guarantee that the end user of the funds is appropriately skilled and well-managed in undertaking the assigned investment role.

Concessional loans are low-cost debt instruments typically provided by development finance institutions (DFIs) and non-governmental financial organizations. The DFIs use their high credit ratings and market borrowing power to amass funds for lending, then manage their portfolios to assure low costs are available to certain types of borrowers. Concessionality is achieved through a combination of interest rates below market levels – often fixed at 1%-2% over long loan periods regardless of global market conditions – borrowing terms of 20 to 50 years, and protracted suspension of repayments, often until eight to 10 years from the start of the loan.

[1] Summarized from ADB's Operations Manual, Policy and Procedures, Section D18, 10 March 2021.

The CIF-ACT program comes with some merits. **First**, the MDBs have agreed among themselves to split responsibilities on each component of the investment plan. This is a big improvement on previous proposals in which the ADB, CIF and WBG each had its own stand-alone energy transition activities. By joining forces, each MDB will be able to concentrate on its goals of the transition. For example, ADB will focus its public fund on the RBL loan to PLN, to be used for the early retirement of 1-2 GW coal plants. RBL is a debt mechanism that ADB and PLN have implemented satisfactorily before, so both parties understand the modality well.[3] On the other hand, the WBG will focus on the just transition part of the equation, along with decommissioning and repurposing the old plants. Meanwhile, the International Finance Corporation (IFC) will deal with private-

[3] CIF. Intersessional Meeting of the CTF Trust Fund Committee, 25-26 October 2022.

sector investments on renewables. Details of the MDBs' responsibilities are set out in the document.

Secondly, having MDBs in the mix means that there will be a prescribed governance structure with a clear monitoring and evaluation (M&E) framework. In fact, the CIF-ACT document has laid out a draft M&E framework that would be used for checks and balances during the implementation of the program. The participation of the MDBs will also hopefully draw greater attention to the just part of the transition. This includes ensuring smooth job transitions, support for affected workers and other people, education, the repurposing of land, and gender equality.

According to the CIF-ACT document, PLN planned to retire nine of its CFPPs early, by 2030, with a total capacity of 4.9 GW and a total book value of IDR83.5 trillion (US$5.6 billion). **IEEFA found this list a point of concern.**

Some of the CFPPs listed are already very old and will be beyond their economic useful life by 2055, which was their original decommissioning year according to PLN. By then Suralaya units 1 and 2 will be 70 and 69 years old, respectively, while Paiton Unit 1 will be 62. This is not common international best practice. According to the United States National Association of Regulatory Utility Commissioners, the average life of such plants is 40 years. IEEFA believes these already aging plants should not have been on the list; instead, PLN should retire them within the next couple of years and write them off, considering they will be 40 by 2025 – the average life of a CFPP.

Figure 2: Proposed PLN Coal Plans for Retirement by 2030

No.	Facility / Unit Name	Capacity (MW)	Book Value (TR Rp)	Book Value (USD MN)	Book Value (USD MN/MW)	COD (Year)	Remaining Life	Decommissioning Year	Age at Decommissioning
1	Suralaya U1	400	5.85	390	0.49	1985	33	2055	70
2	Suralaya U2	400				1986	33	2055	69
3	Suralaya U5	600	45.20	3,013	1.67	1996	33	2055	59
4	Suralaya U6	600				1997	33	2055	58
5	Suralaya U7	600				1997	33	2055	58
6	Suralaya U8	625	8.60	573	0.92	2011	23	2045	34
7	Paiton U1	400	5.05	337	0.84	1993	33	2055	62
8	Paiton U9	615	6.50	433	0.70	2012	23	2045	33
9	Adipala	660	12.30	820	1.24	2015	23	2045	30
	Total	4,900	83.50	5,567					

Source: PLN and Intersessional Meeting of the CTF Trust Fund Committee IEEFA

Source: Intersessional Meeting of the CTF Trust Fund Committee.

The key flaw in the presentation of the list of plants to retire is **a lack of disclosure on the selection criteria**. A reasonable level of transparency and disclosure is required to justify why some plants are better than others. The merit in retiring a plant should be based on its operational efficiency or, more accurately, inefficiency, the level of pollution generated and the overall marginal cost of operation. Secondly, information is needed on how much each plant has been run in the past. The current overcapacity shows there are clearly plants that are rarely, if ever, run because they are either performing poorly or situated in an area of acute oversupply.

In addition, IEEFA believes in not using public money to phase out these old CFPPs at such a high book value, considering the book value was artificially raised as a result of PLN's asset revaluation in 2015.[4] At the time, the asset revaluation was meant to support PLN's balance sheet, and to increase the utility's gearing ratio to boost its profile for future debt issuances. One of the steps taken was to increase the book values of nearly fully depreciated plants.

The revaluation boosted PLN's asset value and prolonged the assets' life. These value increases do not necessarily reflect "fair market value" as defined under the International Financial Reporting Standards (IFRS) or Generally Accepted Accounting Principles (GAAP). Instead, the numbers stand in the way of objective management decision-making about the assets' true value to the grid and actual cost to the ratepayer and government.

The asset accounting issue may be complicating objective decision-making in the context of the ETM. The challenges associated with the 2015 asset revaluation[5] have been a known issue between PLN and the government in the years before the ETM was proposed; addressing it ahead of international negotiations would likely have been prudent. The only thing that has kept PLN from writing off these assets is the absence of a regulatory umbrella which would enable the utility to do so without being seen as causing state losses.

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The same concern applies to the lack of disclosure on the selection process of ADB's first potential transaction for an early CFPP retirement. In the G20 summit, ADB signed an MOU with PLN, INA and PT Cirebon Electric Power (CEP) to jointly explore an early retirement of the 660 MW of the Cirebon-1 CFPP. This is the first CFPP owned by an independent power producer (IPP) that is being considered for retirement through the ADB ETM platform.[6]

[4] IEEFA. Never Waste a Crisis – Indonesia's PLN Needs a Coherent Strategy to Ride Out the Covid-19 Pandemic. 4 September 2020.
[5] Detikfinance. Setelah Revaluasi, Aset PLN Menjadi Rp 1.227 Triliun. 29 June 2016.
[6] ADB. ADB and Indonesia Partners Sign Landmark MOU on Early Retirement Plan for First Coal Power Plant Under Energy Transition Mechanism. 14 November 2022.

Although details of the transaction are still being discussed, one question arises from power-sector analysts. Why is the first transaction under consideration on the ADB ETM platform an IPP-owned CFPP and not PLN's?

2. The G7 International Partners Group's Just Energy Transition Partnership for Indonesia

The JETP – IDN deal, struck between Indonesia and the G7 IPG countries, was one of the most important announcements made in the G20 summit. Valued at US$20 billion, the deal was brokered by the U.S. and Japanese governments, and was modeled after South Africa's US$8.5 billion JETP, though there are some important differences.

It was agreed that the donors, namely the U.S., Japan, Canada, Denmark, the European Union, France, Germany, Italy, Norway and the United Kingdom, will provide US$10 billion over three to five years, while some members of the Glasgow Financial Alliance for Net Zero (GFANZ) will bring another US$10 billion of private capital to the table. The group of private financiers, including the Bank of America, Citi, Deutsche Bank, HSBC, Macquarie, Mitsubishi UFG (MUFG) and Standard Chartered Bank, have shown interest and are working to provide the funds. It is unclear how much and what financing mode each of these parties will contribute as negotiations are still underway.

At the summit, a joint statement was issued with pronounced goals for Indonesia. These include:[7]

- Peaking power-sector emissions by 2030 at no more than 290 MTCO2e, down from the 2030 baseline value of 357 MTCO2e. This should be followed by a declining trajectory to achieve net-zero emissions in the power sector by 2050, a decade earlier than the planned 2060;
- Speeding up deployment of renewable energy to reach 34% of the renewable energy mix by 2030;
- Freezing the existing pipeline of on-grid and off-grid CFPPs, **including captive coal power plants**, in accordance with the new Presidential Regulation No 122/2022 and finding potential renewable solutions;
- Accelerating early CFPP retirement as prioritized and identified by the Indonesian government's JETP investment plan;
- Accelerating widespread energy-efficiency deployment; and
- Accelerating the development of a vibrant and competitive local industry in renewables and energy efficiency by investing in local technological capacity and knowledge.

One positive aspect of the JETP that was not included in the CIF-ACT investment plan nor any of the other mechanisms, was on restricting the development of

[7] The White House. Joint Statement of the Indonesian JETP.

captive CFPPs. This difference will be far-reaching, considering the issue has raised concerns among domestic and foreign communities.

An article by Politico said JETP discussions held prior to the G20 summit were tough, and that the Indonesian government found it hard to agree on the timeline and the terms requested by the G7 countries. It said one of the sticking points was in cutting coal subsidies nationally and canceling the 5 GW of a captive-coal facility in the North Kalimantan region that the government had approved.[8]

The Coordinating Minister of Maritime Affairs and Investment, Luhut Pandjaitan, later gave a speech during the summit that contained a public acknowledgement of the government's firm stance. He said energy transition was key to a low-carbon economy, but that the Indonesian government believed it should not sacrifice the economic development of the country.[9]

Unlike the CIF-ACT-MDB mechanism, the JETP negotiations mostly took place behind closed doors, typical of government-to-government talks. The public was largely not enlightened as to how the decisions were made and what was offered on the table.

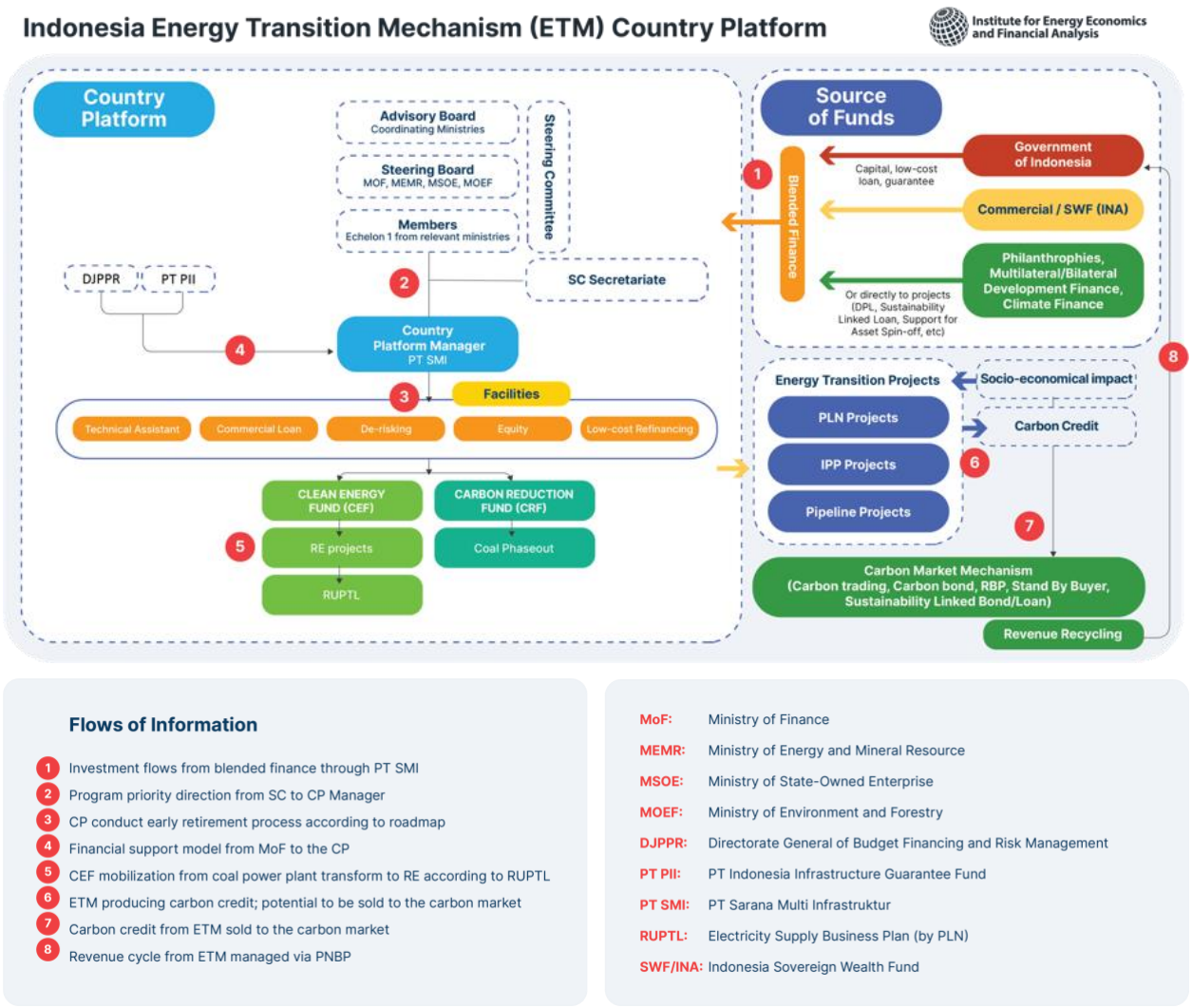
According to the joint statement, a JETP secretariat consisting of all relevant parties will be established to finalize the JETP Investment and Policy Plan within the next three to six months. The statement also laid down a Partnership Action Plan detailing the actions to be taken by the secretariat and the partners, including finalizing initial sources of financing for specific JETP projects and efforts. This means the next six months will be a most crucial window for all parties to decide how to use the US$20 billion. The public will be monitoring this, and hopes are high that the process will be as inclusive as possible through an extensive public consultation.

3. The Indonesian ETM Country Platform, managed by PT Sarana Multi Infrastruktur

Another major announcement made during the G20 summit was the grand launch of the Indonesian ETM Country Platform, which has been set up by the government to coordinate energy transition activities. It is "a framework that will mobilize financial resources and support from international partners, including multilateral and bilateral institutions, philanthropies, and private investors, for a just and affordable energy transition."[10] The country platform will be run and managed by PT SMI, a special mission vehicle of the Ministry of Finance that will also act as the national focal point on ETM activities.

[8] Politico. G7 Offered Vietnam and Indonesia $15 billion to drop coal. They said 'maybe'. 26 October 2022.
[9] Press Conference: Just Energy Transition Partnership
[10] As stated in the Ministry of Finance's speech during the launch of the ETMCP in Bali on 14 November 2022.

Figure 3: Indonesia's Energy Transition Mechanism Country Platform (ETMCP)



Source: Ministry of Finance.

The idea of creating a country platform is to centralize funding through the designated fund manager, PT SMI, to provide better governance and monitoring of the energy transition activities. PT SMI is a government entity seen as having a good track record in managing previous blended finance facilities, especially in infrastructure project development, which include structuring and financing projects. It is also the only Green Climate Fund (GCF) Accredited Entity[11] in Indonesia, having obtained BBB/stable status on its international credit rating, and an AAA/stable status on its domestic rating.

As part of the CIF-ACT investment plan, the Indonesian government will receive an FIL from ADB, which it will then on-lend to PT SMI through the ETMCP. ADB

[11] Obtaining the status of GCF Accredited Entity is considered highly valuable as the evaluation process is very complex with rigorous assessment.

proposes extending three dedicated facilities to PT SMI as the ETMCP, namely commercial co-financing to support PLN in the accelerated retirement plan, a standby facility for PT SMI to co-share risk in derisking instruments for renewable energy projects, and a commercial loan to develop renewable energy infrastructure.[12]

The ETMCP is expected to raise funding not only from the CIF-ACT-MDBs, but also from other private capital, including sovereign wealth funds, philanthropic groups, and bilateral or multilateral donors, and to solicit revenues from a future carbon credit mechanism. What differentiates the ETMCP from the other schemes is that PT SMI will be the central platform, especially for transactions requiring government facilities, such as government guarantees, public-private partnerships or other incentives. Transactions that do not require the government's help, either to retire a CFPP early or to build more renewables, are not obliged to go through PT SMI. The carbon credit revenues will also serve as an additional source of finance that could be channeled back to the projects.

Though the Indonesian government has been stepping up efforts to promote investment opportunities through the ETMCP, it has yet to confirm the amount of its own contribution. The political commitment to support this platform should be seen in light of future tightening fiscal conditions and a likely change of political landscape, given the presidential election coming up in February 2024.

So far, PT SMI has not announced any commercial financier participation agreement, other than the involvement of the government's INA committed so far. Such fundraising poses challenges. PT SMI's Director of Investment and Financing, Sylvi Juniarti Gani, said lenders viewed the early retirement program as too risky because the coal plant projects under the program were not yet included in the Indonesian green taxonomy. According to her, most lenders saw this as a material potential risk due to the heavy exposure to coal.[13]

The political commitment should be seen in light of future tightening fiscal conditions and a change of political landscape in 2024.

PT SMI is faced with a huge task in the future. As the fund manager of the ETMCP, it is exposing itself to risks including conflict of interest, undue influence and corruption, considering the amount of money it would have to manage. These potential problems are in addition to the complicated policy course and the lack of a platform for a carbon-pricing mechanism that has been inadequately discussed but is supposed to be another source of funding for the ETMCP.

[12] *Op.cit.* CIF. P. 112
[13] Bisnis.com. Pensiun Dini PLTU, Wamen BUMN: PTBA Bisa Ambil Alih Aset PLN. 16 October 2022.

4. PLN Energy Transition Proposal

Outside of the international deals, state utility PLN has announced its own version of how to implement the transition and what would be acceptable to it in the process of decarbonizing its power system.

On 1 November, PLN held an Energy Transition Day for the first time. The event was a showcase for PLN to unveil its plans for an accelerated early coal retirement and the development of renewable energy, such as biomass co-firing, hydrogen or ammonia co-firing, and carbon capture and storage. PLN proposed three early coal retirement plans, all at the negotiation stage, without saying which coal plants might be retired or canceled. The three schemes come with their own issues, as described below.

Accelerated Depreciations and Write-offs

The first proposed plan is to write off or accelerate depreciation of selected coal plants from PLN's book. Naturally, this would have to be PLN's oldest plants. As explained earlier, PLN's asset revaluation in 2015 has complicated the process. Not only does PLN have no legal umbrella to do such a thing, it might be seen creating state losses if it went ahead, spelling other legal implications. Writing off assets will also significantly lower their value, which could contribute to a higher debt-to-equity ratio, creating great concern for PLN management. According to Senior Researcher Joko Tri Haryanto from the Ministry of Finance, this issue is being discussed between the ministry, PLN and the State Judiciary Systems.[14]

Asset Spin-offs

Selling or spinning off assets is a PLN mechanism to transfer its CFPP assets in whole or in part to potential buyers in the market. The spin-off is expected to use blended finance, thus requiring less capital and enabling early retirement of the assets. These spin-offs will be presented to the market as trials for a "go-to-market scheme".

A possible spin-off that PLN mentioned in its announcement was the PT Bukit Asam plan to acquire PLN's 1,080 MW Pelabuhan Ratu coal-fired plant, located in West Java. PLN and PTBA signed a principal framework agreement in mid-October, aiming to accelerate retirement of the CFPP from 24 years to 15 years. Estimates put the acquisition's transfer value at US$800 million, and the reduction of emissions equivalent to 51 MTCO2. No financing details were revealed, except that the takeover would use low-cost financing or tap the blended finance offered by the Ministry of Finance through the ETMCP.[15]

The takeover can be seen as a natural reshuffling of assets often done among state-owned enterprises. Perceptions were different on the public stock market, however. PTBA's share price dropped 6.82% and then another 5.81% on the

[14] As explained during the ADB public consultation after the launch of the ETMCP on 16 November.
[15] PTBA. PLN and PTBA Explore the Early Retirement of Pelabuhan Ratu Coal-fired Station. 19 October 2022.

two days after the announcement.[16] This can be viewed as market signals of fear that the transaction could affect PTBA's financial performance and lower dividends for investors. To bring back investor confidence, PTBA's management quickly clarified nothing was fixed yet, and that everything was pending a due diligence and valuation process. They also said PTBA would not be taking over 100% of the asset, and that the plan was to set up a joint venture with one of PLN's subsidiaries. To ensure PTBA's cash flows and dividends remained safe, they would tap the "green loan" option to refinance with lower interest.[17]

The PTBA case is a stark reminder that when it comes to acquisition deals, many things need to be considered, especially where public money is involved. The process of completing an asset transfer or acquisition could take years, with a very high risk of failing to proceed further if either party cannot agree on the valuation or specific terms and conditions.

During Energy Transition Day early last month, PLN said a second spin-off was in progress with an undisclosed investor. Following the MOU signing ceremonies during the G20 event, this investor is likely to be Sumitomo Corporation. The two companies signed a Principles Agreement to develop new renewable energy power-generation projects more quickly, along with a joint study on the early transfer and retirement of CFPPs.[18]

The process of completing an asset transfer or acquisition could take years to arrive at agreement on asset valuation.

Days later, the Coordinating Ministry for Economic Affairs announced that Sumitomo planned to forgo its 2640 MW Tanjung Jati B unit's 1-4 CFPPs early and swap them with PLN's 9 GW cascading hydroelectric projects in the Kayan river in North Kalimantan. The idea of swapping the facilities came from the Japan Bank for International Cooperation (JBIC), according to Dadan Kusdiana, Director General for New and Renewable Energy of the Ministry of Energy and Mineral Resources (MEMR). This was a follow-up to Indonesian President Joko Widodo's agreement with Japanese Prime Minister Fumio Kishida during the G20 summit to initiate an Asia Zero Emission Community (AZEC) concept.[19] Through the AZEC, Indonesia would get priority to receive US$500 million from Japan to implement an energy transition program, media reports said.[20] It was not clear whether this would be included as part of the JETP deal or separate from it.

[16] Bisnis.com. Saham Ambrol, BEI Dalami Akuisisi PLTU Pelabuhan Ratu oleh Bukit Asam (PTBA). 19 October 2022.
[17] CNBCIndonesia.com. PTBA Blak-blakan PLTU Pelabuhan Ratu, Ada Skema Joint Venture. 4 November 2022.
[18] Sumitomo Corporation. Conclusion of Principles Agreement on Energy Transition in Indonesia. 17 November 2022.
[19] MSN.com. Kementerian ESDM dan JBIC Bahas Pensiun Dini PLTU Tanjung Jati B. 25 November 2022.
[20] Kumparan.com. Sumitomo Lepas Aset PLTU Tanjung Jati B di Jepara. 25 November 2022.

It should be noted that Tanjung Jati B units 1-4 were contracted as a financial lease to PLN until 2030, by which time the assets would have been transferred to PLN after the state utility completes its financial lease obligations. Sumitomo is said to be taking a substantial loss of about IDR40 trillion from incomplete financial lease payments if the transaction is finalized next year. But Sumitomo is expected to recoup all its losses through the huge hydro projects, if and when they come online.

IPP Refinancing

By refinancing an IPP, concessional financing and termed capital can be mobilized to shorten the period of a power purchase agreement (PPA), allowing the power plant to close earlier. The abovementioned Cirebon-1 660 MW deal was the first of its kind, reflecting a concerted effort by PLN, ADB, INA and PT CEP – the IPP – to explore the scheme further. If it does go through, the deal will be interesting to monitor, given that PPAs have in the past been confidential and kept out of the public eye in Indonesia. The lack of transparency could hinder the scaling up and acceleration of such transactions.

The first hurdle to performing this scheme is to get the IPPs to agree to let go of their investment, and then to agree on the valuation of the assets. Such negotiations could take years.

5. Indonesia Investment Authority's Energy Transition Mechanism

While the government was trying to secure the CIF-ACT and JETP global deals, Indonesia's sovereign wealth fund INA was advancing the energy transition ambition in its own way. Established in early 2021, INA received a state capital injection of US$2 billion in cash, and US$3 billion in the form of government transfers of the shares of two state-owned enterprises.

INA's investment mandate is to help the country attain sustainable development and to build wealth for future generations. Nonetheless, its energy transition venture has remained low profile and overlooked by the public against the backdrop of the JETP and ETMCP announcements during the G20 summit.

In its press release, issued a day before the G20 summit started, INA said "its ETM program intends to provide a mix of equity and debt financing to acquire, optimize, and accelerate the retirement of operational CFPPs, which supports carbon emissions reduction in the long run, in line with Indonesia's pledge for carbon neutrality by 2060."[21] The one point that stood out from the statement was the fact that INA would leverage its position as a sovereign wealth fund to act as an equity provider, alongside PT SMI, to provide the necessary blended finance capital.

IINA has made significant progress to promote energy transition. It is in talks with ADB, PLN and PT CEP to find a suitable structure and financing term to maximize the early retirement of the Cirebon-1 CFPP under the ADB ETM platform. It is also exploring opportunities with the Global Energy Alliance for People and Planet (GEAPP) to accelerate CFPP retirement and grow renewable

[21] INA. Press Release: Inking Three Agreements to Early Retire Coal-Fired Power Plants, INA Demonstrates its Commitment to Accelerate Energy Transition in Indonesia. 14 November 2022

energy in the country.[22] On the greener side of the equation, INA has signed an MOU with Contemporary Amperex Technology Co. Limited (CATL) and CMB International Capital Corporation Limited (CMBI) to jointly invest in the establishment of a green fund that will focus on funding the end-to-end electric vehicle value chain in Indonesia. The three parties said the fund size could reach up to US$2 billion.[23] If done right, this joint investment could be catalytic to the growth of local EV manufacturing capacity. INA has enlisted Standard Chartered Bank and DBS Bank as financial advisers to the ETM program.

Comparison of the Proposed Schemes

As it stands, at least five different courses of action are moving ahead, put forth by the various actors to carry out Indonesia's energy transition. Differences exist in the scope, the scale and the ambition of each scheme, but the goal is the same: to retire CFPPs faster and deploy renewables solutions in a just manner. These five pathways are not stand-alone platforms, but complement one another.

In this report, IEEFA has compiled the available elements needed to ensure a smooth deployment of Indonesia's energy transition. A summary of the elements is presented below, and the details can be found in the appendix. IEEFA acknowledges that these elements will change as negotiations continue, and will hence treat the appendix as a living document that will be updated once new information emerges.

Figure 4: Comparison of Indonesia's Energy Transition Schemes

Energy Transition Schemes	CIF-ACT ADB ETM WBG	G7 IPG JETP-IDN	IDN ETMCP	PLN ETM	INA ETM
Committed/ *indicated amount*	CIF-ACT $500 mn; ADB, WBG $ 2.2 bn; GOI & private US$ 2 bn	US$ 20 bn = US$ 10 bn public US$ 10 bn private	Contribution from GoI tbc	*PLN indicated a need of US$ 726 bn until 2060*	Undisclosed for CFPP Retirement; US$ 2 bn for the Green Fund
Participants	**Climate Fund**: CIF-ACT **MDBs**: ADB, WBG **Private**: IFC, ADB Private Sector	G7 countries + EU, Denmark, Norway **Private**: BoA, Citi, Deutsche Bank, HSBC, Macquarie, MUFG, Standard Chartered	**Platform manager:** PT Sarana Multi Infrastruktur (PT SMI) **Steering Committee:** MOF, MEMR, MSOE, MOEF	PLN & partners	Indonesia Investment Authority (INA) **
Financing modalities	Grants, highly concessional loans, commercial loans, RBL, Financial Intermediation Loan (through PT SMI), project loans	Grants, highly concessional loans, commercial loans, guarantees, Technical Assistance (TAs)	GoI contribution (State budget), concessional loans, commercial loans, carbon credit revenues	A mix of equity, debt, and grants	A mix of equity and debt
Coal retirement target	Up to 2 GW by 5-10 years	No GW target, only peak emission from power sector of 290 MTCO2e by 2030	15 GW identified	6.7 GW of PLN's owned CFPPs by 2030	1.5 GW
RE target	400 MW installed RE and 90 MW storage	34% RE power mix by 2030		16 GW RE until 2030	

Source: Documents compiled by IEEFA.

[22] *Ibid*

[23] INA. Press Release: INA, CATL, and CMBI to Establish Green Fund Focusing on End-to-End Electric Vehicle Value Chain Investment. 14 November 2022.

Each of these schemes might seek to perform its own transition activities with certain partners, such as the swap between PLN and Sumitomo. It might be a collaborative effort through the provision of blended finance, such as the refinancing and early retirement of Cirebon-1 by ADB, PLN, INA and PT CEP. Meanwhile, any transactions that will be seeking specific government incentives or facilities have to go through PT SMI's ETMCP channel.

With all these schemes running simultaneously, governance needs to be correctly set up from the start before it becomes an issue. Considering the long lead time of each transition project, the biggest challenge will be to ensure that transparency, accountability and political commitment can coexist consistently in the long term. The mechanism and transaction details need to be designed in a way that would deliver the best value for investors, for the country, and for the planet. Then, there is also the question of whether the money committed by the funders constitutes new funds, or if most of it will come from recycled funds. Either way, governance of the finances is the key to successful implementation.

Considering the long lead time of each transition project, the biggest challenge will be to ensure that transparency, accountability and political commitment can coexist consistently in the long term.

Key Steps to Realizing Full Benefits of Global Financing Initiatives

What energy transition is, first and foremost, is about the changing nature of the power system. An infrastructure once dependent on fossil fuels has started transforming into a highly flexible, dynamic and diverse system running on renewables. This is made possible by innovation in technology and business processes, creating a deflationary curve for renewable energy and storage technologies.

Energy transition is a long process that evolves over time. It should allow trends in technological changes to prove their merit as being economically, fiscally and environmentally sustainable, overtaking the legacy economics of the current power system.

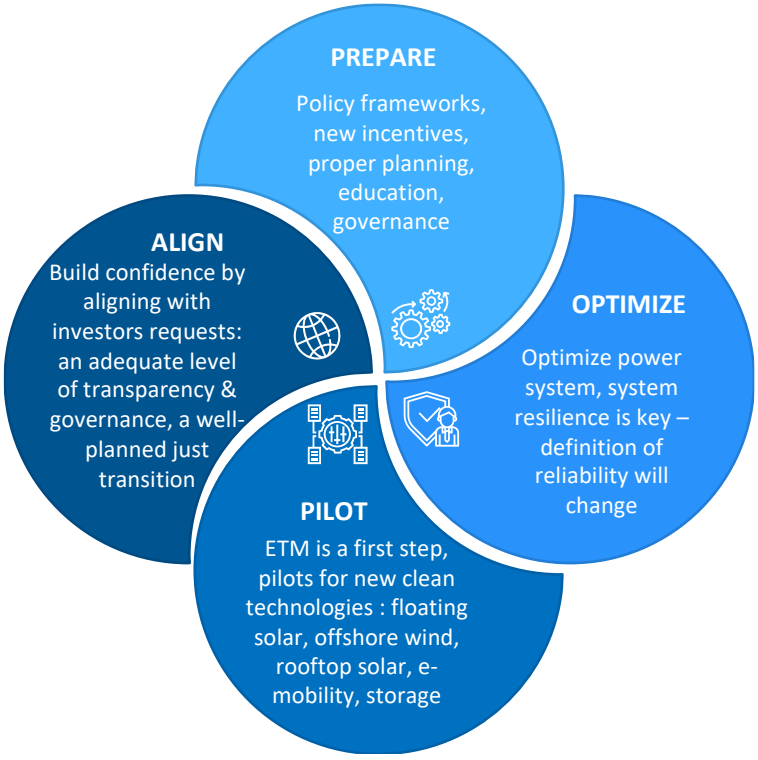
The changing landscape of the energy system highlights the fact that it is **technology-driven**. The costs of new clean technology will continue to fall while prices of fossil fuels will likely rise. These signs point to a global energy revolution happening at a rate faster than ever seen.

Indonesia's energy transition pathway can benefit from global energy transition financing trends seen elsewhere. IEEFA's research one year ago found that

throughout the two decades prior, more than 80% of Indonesia's coal-powered fleets were financed by three East Asian countries – China, Japan and South Korea.[24] This will soon change, and in fact has begun to change, as the three countries have committed to no longer financing new CFPPs abroad. Globally more than 1,400 organizations, including financial institutions, insurance companies and asset managers and owners representing US$39.2 trillion of assets under management, have announced plans to divest from coal and fossil fuel.[25] On the other hand, the same players are committing to investing in decarbonization projects and renewables and storage technologies. Regardless of any one country's decision to use fossil fuels, the financing for those investments is going to be increasingly difficult to secure. Meanwhile, the funds available for more sustainable investment are growing.

However, it will be very difficult to mobilize capital for coal retirement if it is done piecemeal. For Indonesia to fully benefit from the new global initiatives on energy transition financing, IEEFA has a few recommendations on the key steps to follow:

Figure 5: Key Steps to Financing Indonesia's Energy Transition



Source: IEEFA analysis.

[24] IEEFA. Indonesia Wants to go Greener but PLN is Stuck with Excess Capacity from Coal-Fired Power Plants. 1 November 2021.
[25] Divestmentdatabase.org. Invest-Divest 2021: A Decade of Progress Towards a Just Climate Future. 26 October 2021.

1. Prepare

Good preparation is key to a good execution. To smoothly execute a well-planned and just energy transition in Indonesia, it is important to have a well-prepared, well-designed and consistent policy framework, under which new incentives are introduced and proper planning is in place for both technical execution and financial and human resources development. It is imperative to include continuous planning for education in skills relevant to upscaling the renewable sector. What should not be left behind is the juxtaposition of the preparation with good governance, transparency and accountability during execution.

Less than a decade from now, investors may no longer be willing to support state-owned power enterprises that do not have a transition plan. Excellent system planning will be a natural insurance against future power problems.

2. Optimize

In view of Indonesia's antiquated power infrastructure, it is vital for PLN to build consensus among its engineers and technocrats on ways to optimize the systems. PLN needs to align itself with the globally accepted system planning discipline.

A wide range of modern technologies in power systems exists, such as the new autonomous grid synchronizers known as phasor measurement units, advance electric meters, demand management applications and advance weather forecast devices,[26] and these technologies will keep evolving. PLN will need to build expertise and update itself constantly on new power system technologies, including investing in the development of its people so they can learn how to use and optimize these resources. PLN might also need to redesign some of its systems and focus on building system resiliency through more rigorous investment in the grid and distribution systems.

In modern power systems, resilience is key to supporting the best, most cost-effective options of generation. How system reliability is defined will change. PLN can no longer depend on a "baseload" mindset, because a reliable power system will not necessarily be defined by baseload generation supplying static demand growth. It will instead be defined as flexible demand following diverse supply from renewables, a trend that is emerging in resilient systems like South Australia and parts of Europe.[27]

3. Pilot

Energy transition will be different in each country, thus the pathway for it must be customized according to the respective market and economic and political conditions. The ETM, whatever the version, offers a good first step, and a

[26] U.S. Energy Information Administration. New Technology Can Improve Electric Power System Efficiency and Reliability. 30 March 2012.
[27] Climate Champions. South Australia Has Become a Renewable Energy Powerhouse. How Did They Do It? 12 March 2021.

suitable testing ground for unlocking capital to finance a country's energy transition.

Given the speed of technological innovations, it is reasonable to expect Indonesia to quickly invest in new green industrial parks, smart grids, floating solar systems, geothermal infrastructure, offshore wind, rooftop solar power and e-mobility. Indonesia is not lacking in resources to realize such a goal. New technologies will create new markets – and thus change Indonesia's energy choices.

In a best-case scenario, if any of the ETM programs matures over the next 18 to 24 months, it could mean redirecting the country to a new power system. PLN's oversupply at its Java-Bali grid provides an unparalleled opportunity to test renewable energy power generation, storage, grid control and demand management techniques while under little pressure to supply more energy. However, PLN's previous practice of opaque and unclear schedules for procuring renewables and storage projects have unsettled many private investors.

Indonesia should not miss this opportunity to redesign its power system. Only when the country moves in a more systemic direction would investors be prepared to inject capital into PLN.

4. **Align** (with the financial community)

There are many flavors of finance, but the type of long-term, dedicated clean energy finance Indonesia needs will come only when the market and policy drivers are in place, and when transparency and governance are at adequate levels. To build market confidence, it is crucial to align expectations and plans with investors' requests. This will give market players an avenue to derisk investments.

PLN's Chief Executive Darmawan Prasodjo underlined the need for collaboration in his speech on Energy Transition Day last month. Prasodjo said a global effort was required to help PLN to remove 250 MTCO2 in 25 years, including US$726 billion of investment to achieve PLN's decarbonization plan by 2050. He pushed for more support and participation from the international financial community.

The missing key element is in the details of how the transition would be managed, measured, monitored and reported. Except for the CIF-ACT-MDB scheme, it is not yet clear how transparent governance will be conducted or whether a concerted effort will be made to perform this crucial task. Without such objectivity, the government cannot expect lenders or donors to proceed with the funding they have in mind. There should not be room for any moral hazards during the negotiation or implementation of the projects. Prudent use of the transition funds needs to take top priority. Indonesia has to remember that the fine print matters.

A second missing element, which has been a source of concern in the financial community, is the lack of guidelines for transition finance in the green taxonomies' framework in both the domestic and global contexts. This concern was acknowledged by Haryanto from the Ministry of Finance in a public

consultation for the ETMCP launch. He said that to address such investor concerns, the government had formally requested the Indonesian Financial Services Authority (OJK) to include the definition of transition finance in the country's green taxonomy 2.0. Haryanto also mentioned the government's effort to address green taxonomy issues in the global context through cooperation with GFANZ members. Although transition finance was not yet in any of the global taxonomy frameworks, some corporations, such as MUFG, had incorporated a definition in their internal policy frameworks, Haryanto said. According to him, the Indonesian government took reference from the MUFG definition when suggesting the changes to the OJK.

What's Next on the IEEFA Watch List?

Indonesia's multitrack mechanism proves that when a country embarks on energy transition, there is no one-size-fits-all solution. Much of this process will be visible and scrutinized by investors, stakeholders and the public. Considering the huge amount of capital needed to turn around Indonesia's fossil dependence and create a sustainable, low-carbon economy, private participation is inevitable. And the two biggest issues anathema to private investors are political risks and governance. It will be critical to build confidence in Indonesia's ability to navigate the complex policy and market decisions that must be made. It is also crucial to appreciate how these changes will affect PLN, the Indonesian government's fiscal condition, and Indonesian consumers.

For Indonesia to really capitalize on this opportunity and to meet challenges in the decades ahead, IEEFA has a watch list to offer:

1. **How will the selection for early coal retirement and renewable energy procurement be carried out? Will it be inclusive and adequately transparent?**

   Phasing out uneconomic and inefficient CFPPs will create space for cost-effective renewables and storage solutions. An early phaseout will also improve grid efficiency and become a natural way for PLN to ease its overcapacity.

   The selection and decision-making process on which CFPPs to take down, and which renewable energy sources to procure, needs to be transparent, well-designed and inclusive. Refusing to write off assets that were inflated by the 2015 revaluation could be seen as a show of ill will from the government of Indonesia to stakeholders.

   On the other hand, greater openness by PLN on the data front would be seen as a show of goodwill. Another way to improve transparency and power-sector governance is through the establishment of an independent power regulator, which does not yet exist in the country.

2. **How will the government of Indonesia address political risks? What support will be given to create a transparent and consistent policy framework, instead of piecemeal solutions, that will tackle problems in their entirety?**

Political risk is one of the most feared by private investors eyeing emerging markets. The private sector is used to evaluating business risks; however, a change of government or political constellation is something that they cannot measure.

To minimize this risk, Indonesia needs a holistic approach to the transition. That requires many aspects of the transition to occur simultaneously. Undertaking a transition is as much about sound policy development as it is about the market. A credible and consistent package of policies, backed by strong execution of the plans, would substantially reassure investors, so the Indonesian government and PLN should not miss this boat by moving back and forth in the regulatory space.

The new Presidential Regulation No 112/2022 is appreciated, but still insufficient

The long-awaited Presidential Regulation No 112/2022[28] on renewable energy, in effect since September 2022, drew much appreciation among the public. The new regulation creates a legal umbrella to govern the process of early coal retirement. It also provides clear guidelines on executing a CFPP moratorium. But it still gives leeway to develop new captive coal power in certain industrial usage[29] or in developments that have been declared National Strategic Projects. This clause was seen as problematic, especially during the tough negotiations for the JETP model, which were highlighted by the aforesaid Politico article.

On the upside, No 112/2022 also offers welcome additions that support renewables development. It creates enabling conditions to remove bottlenecks that historically impede development, by issuing ceiling prices for all types of renewables with location-specific multiplication factors. This addresses past regulatory limitations which compel renewables to compete with PLN's average generation costs.

[28] Presidential Regulation No 112/2022

[29] "Certain industrial usage" refers to CFPPs that are integrated with industries built to increase the added value of natural resources.

Table 1: How Presidential Regulation No 112/2022 Addresses Issues in Renewables Development

Renewables Development Issues	MEMR Reg 50/2017 and its Amendment MEMR Reg 4/2020	Presidential Reg 112/2022
Renewable energy tariff	Fixed with ceiling price capped at the national average of PLN's generation cost	Fixed with ceiling price capped according to renewable energy type and size (ceiling price for small-scale renewable energy is higher)*
Tariff staging	No (flat tariff throughout PPA)	Yes (1-10 years higher, tariff declines afterward)
Location factor for tariff	No	Yes, between 1.0 – 1.5x (eastern part of Indonesia and isolated systems receive higher multiplication factor). Second stage has no location multiplication
Indexed to inflation	Not directly. PLN's average generation cost is heavily influenced by cost of fossil fuel, so the renewable energy tariff is indirectly influenced by inflation	No
Procurement	Direct appointment for hydro and geothermal power, and direct selection (lowest price bids) for other energy sources. PLN decides on procurement quota in the RUPTL**.	Direct appointment for hydo and geothermal power, and direct selection (lowest price bids) for other energy sources. MEMR sets procurement quota

** Tariff cannot be escalated, except for geothermal energy, whose ceiling price should follow the base tariff before escalation.*
*** RUPTL, or Rencana Usaha Penyediaan Tenaga Listrik, is the business planning document of a utility company.*

The regulation does not answer several critical questions from renewable energy developers. **Firstly**, the procurement mechanism largely stays the same and assurance is lacking that it will be clear and accelerated. Although new procurements are subjected to a limit of 90 or 180 days, past experience has revealed the many loopholes to bypass these rules. **Secondly**, though renewables now have a higher tariff cap, it will still need to be negotiated between the developers and PLN. History has shown that bidding and negotiation take a lot of time and patience, and can sometimes be unappealing to investors.

More legislation is in the offing to accompany the Presidential Regulation, including ministerial rules on standardized PPAs for renewables and the necessary enforcement regulations on carbon credit mechanisms, on top of the highly anticipated Renewable Energy Law. No 112/2022 also contains provisions to increase synergy between the Ministry of Energy and Mineral Resources, Ministry of State-Owned Enterprises and Ministry of Finance in the renewable energy development and energy transition implementation program.

3. How can PLN improve its system resiliency to reduce repayment risks?

A resilient system that integrates storage and manages variability, and is responsive to demand, will mean less curtailment risks for developers of intermittent renewables. Less curtailment will translate into lenders bearing less repayment risks, thus easing their concerns, which can then lower the cost of debt.

Secondly, a resilient and smart system coupled with excellent planning provides natural insurance against spikes in demand growth. This can be achieved through increasing optionality, for example, through higher adoption of distributed energy systems, new storage solutions, demand response management and smart system solutions.

If everything is done and the growth of renewables is still not enough to cover medium-term expectations in demand growth, there is always the option to mothball coal power plants. This means placing the coal plant in a shutdown but preserved condition where it could be restored over a number of months and put back into service if demand projections foresee the need. Mothballing preserves the life of the plant without operating it or inducing unnecessary wear and tear. It is a realistic option for PLN that does not obligate or guarantee the plant's return to service.

Secondly, a resilient and smart system coupled with excellent planning provides natural insurance against spikes in demand growth.

Should PLN or the government opt for a mothball approach, this would have to be predefined in an agreement with stakeholders. The reason is that it should be done only under certain conditions, one of them being an objectively defensible belief that energy demand growth will be so strong under short to medium-term plans that existing plants cannot fulfill the need, and that any renewables developments will fall short of meeting the heightened demand.

4. How should the different financing modalities be structured to achieve optimum outcomes? What would a good governance structure look like?

A lot of new financing options for global energy transition have emerged in the last two years. The ADB ETM might have started the process, but the concept of blended finance to spearhead development of infrastructure projects has been discussed for years. Yet, financing an energy transition which takes dirty fuel into an investor's portfolio poses a different risk, a reputational one that interested participants might not savor. There needs to be a concerted effort and agreement among the Global North and the Global South on how to proceed. Taxonomies might need to align.

There is no question that Indonesia needs to build investor confidence to mobilize capital. The key issue is whether the setting of new targets, more robust system planning, transparent policy steps, greater disclosure of

sustainability indicators and good execution of new clean energy regulations can unlock more green finance for PLN and the domestic market. It might be worth exploring other forms of sustainable finance, such as sustainability-linked bonds and loans, to move past the limited concessional capital.

Investors need to think about how the different financing modalities would change the way the capital market works and be catalytic to the private capital market.

5. **How will the carbon emissions associated with a coal retirement transaction be handled?**

   The ETM process might have been a catalyst for the Indonesian government to issue new policies to support a carbon-pricing mechanism. But in the case of coal asset spin-offs or coal IPP refinancing, whether the carbon emission burden will be transferred to the new owner remains to be seen. The Ministry of Finance's Haryanto has said the government is discussing emission credit issues and has reached no agreement yet on how to assign the emission credits and burden. Considering that carbon credit revenues are expected to contribute significantly to the ETMCP, and the ultimate goal of all the schemes is to reduce emissions, the assignment and approaches taken toward carbon accounting will be an important issue to watch.

Ultimately, energy transition is not just a checkbox. It is about preparing for the future and finding real solutions to the country's long-term challenges on energy independency, affordability and sustainability. At the crux of the matter is the need to free up both capacity and capital, to begin re-engineering Indonesia's power systems, embrace new and efficient technologies, and build a cleaner, more resilient system in the long run.

Indonesia's energy transition will not be perfect, and it does not have to be perfect. But the process needs to start now. And despite all the challenges, the setbacks and the currently opaque process, PLN's move toward decarbonizing, which would have been seen as near impossible not long ago, should be applauded.

To quote from two-time Nobel Prize winner Marie Curie, "the way of progress is neither swift nor easy," but there should always be one.

Appendix

	Energy Transition Proposals				
Transition Plan Elements	**CIF-ACT ADB ETM Other MDB (WB/IFC)**	**G7 IPG JETP IND**	**INA ETM**	**ETM Country Platform**	**PLN ETM**
Committed /indicated amount	CIF-ACT = US$500 million *Up to US$4 billion from MDBs, GoI and private sector*	US$20 billion: ~ US$10 billion public ~ US$10 billion private	Undisclosed for coal retirement program *Up to US$2 billion for the Green Fund*	GoI's contribution to be confirmed	*PLN indicated a need for US$275 billion until 2060*
Indicated time frame		3-5 years			
Participants	**Climate Fund**: CIF-ACT **MDBs:** ADB, WBG **Private**: IFC, ADB private sector, Operations Dept	**Public:** Governments of Canada, Denmark, EU, Germany, France, Italy, Japan, Norway, UK, US **Private**: Bank of America, Citi, Deutsche Bank, HSBC, Macquarie, MUFG, Standard Chartered	INA**	**PT SMI** as platform manager **Steering Committee**: MOF, MEMR, MSOE, MOEF	PLN and its partners
Financing modalities	• Grants/highly concessional loans (CIF) • Concessional loans (ADB, WB) • Commercial loans (ADB private arm, IFC)	• Grants • Concessional loans • Commercial loans • Guarantees • Technical assistance (TA)	A mix of equity and debt	• GoI's contribution (State Budget) • Concessional loans • Commercial loans (INA & others) • Carbon credit revenues	A mix of equity, debt and grants
Coal retirement target	Up to 2 GW by 5-10 years ~ 1GW from RBL ~ 1GW from RBL	No GW target set, only to peak emission target from power sector at 290 MTCO2e by 2030	1.5 GW INA claimed to have its own list of CFPP	15 GW identified for early retirement	6.7 GW of PLN's CFPPs identified (3.5 GW by 2030, and 3.2 GW by 2040)
CFPP retirement current pipeline	ADB-ETM first transaction: Refinancing of Cirebon-1 660 MW	-	Cirebon-1	Cirebon-1	Cirebon-1

CFPPs under discussion	A list of PLN's own CFPP offered in the IP proposal: Suralaya-1 440 MW Suralaya-2 400 MW Suralaya-5 600 MW Suralaya-6 600 MW Suralaya-7 600 MW Suralaya-8 625 MW Paiton U1 400 MW Paiton U9 615 MW Adipala 660 MW	undisclosed	undisclosed	undisclosed	Discussion undergoing for Pelabuhan Ratu 1,080 MW with PTBA Principles Agreement signed with Sumitomo to explore possibility of swapping 2,640 MW Tanjung Jati B unit 1-4 with 9 GW Kayan hydro projects
Coal retirement interventions	**ADB Public** • Retirement of 1 GW through RBL • Retirement facility through ETMCP **ADB Private** • IPP CFPP early retirement **WB Public** • PLN/MEMR Energy Transition Program • Just transition & repurposing **ADB Public** • PRIME STeP	• Freezing existing pipeline of on-grid CFPP in the RUPTL • Reaffirming full coal moratorium on any new on-grid as stated in the new Presidential Reg 112/2022 • Restricting captive coal in accordance with the new Presidential Reg	Collaborate with ADB and PLN on potentially buying out or refinancing CFPPs		• Asset write-off • Asset spin-off • IPP refinancing
Renewable energy target	400 MW installed RE and 90 MW energy storage	• 34% RE of all power generation by 2030			16 GW until 2030
RE interventions	ADB Private • Storage deployment acceleration in power & transport IFC Private	• Specific RE mix target • Energy efficiency (EE) reforms • Strengthening local industry in RE & EE	Signed MOU with CATL & CMBI to jointly invest in the establishment of a Green Fund, focusing on electric vehicles (EVs)	• T&D upgrades • RE + storage • Demand-side EE measure	• Hydro, geothermal power • Biomass co-firing • Smart grid & control system

	• Dispatchable RE program ADB Public • RE loans and standby facility through ETMCP	• RE outside Java-Bali, including captive power • Align local content requirements	value chain investment		• Green energy as a service – REC • EV ecosystem
Emission reduction target	• 50 MTCO2e by 2030 • 160 MTCO2e by 2040 • Up to 15 million tons of coal diversion, up to 150 hectares of mine areas reclaimed, reforested or restored	Peak power emissions at 290 MTCO2e by 2030, and decline afterward toward net zero by 2050			250 MTCO2 in 25 years
Approaches	**Investment Plan**: • Early coal retirement (ADB public & private & CIF) • Just transition, including coal decommissioning & repurposing (WB) • RE scale-up (IFC & ADB) • Adoption of up to 4 policies	Details of the **JETP Investment and Policy Plan** will be developed within next 6 months jointly with GoI and PT SMI • Early coal retirement (on-grid & off-grid power, including captive power for industrial use) • Just transition inc. coal decommissioning & repurposing (WB) • RE scale-up (IFC & ADB)		ETMCP is set to be the centralized funding platform that will mobilize financial resources and support from international partners	**PLN 8 lighthouse initiatives**: • Early coal retirement • Biomass co-firing • Hydrogen & ammonia co-firing • CCUS • RE • Smart grid & control system • Green energy as a service – REC • EV ecosystem
Just transition support	Led by WBG		Signed MOU with GEAPP		
Employment programs	√		√		

CFPP decommissioning/ repurposing	√				√
Coal mine or coal plant site restoration	√				
Women, youth and vulnerable inclusion	√	√			

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

About the Author

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