



# Indonesia Wants to Go Greener, but PLN Is Stuck With Excess Capacity From Coal-Fired Power Plants

*It's Time for Japanese and Chinese Investors to Step Up and Be Part of the Solution*

## Executive Summary

Indonesia's excessive coal power expansion over the past 15 years has been built upon the shoulders of two financial giants, Japan and China, each led dominant roles with their respective export credit agencies and public banks. The result has been alarming, with a reserve margin of 50-60% in Indonesia's power utility company, Perusahaan Listrik Negara (PLN)'s main grids, accompanied by mounting debt and independent power producer (IPP) lease liabilities for the state utility, as well as a shrinking space for renewable energy to grow. As Japanese and Chinese investors reaped the benefits and returns from these over-investments, it is only logical for them to be part of the solution in supporting Indonesia's energy transition.

In recent weeks, at least 25 countries along with their public finance institutions have committed to ending public support for unabated fossil energy investment (by the end of 2022) at the United Nations Climate Change Conference COP26 in Glasgow. The commitment marked a significant milestone that effectively closed the door for future coal power projects, especially considering the significant role of public financiers in enabling coal power investments.

**Indonesia's coal power expansion has been built upon the shoulders of two financial giants, Japan and China.**

Prior to COP26, Chinese President Xi Jinping's pledge to exit overseas coal financing coincided with similar announcements from the Prime Ministers of Japan and South Korea. In the conference, Indonesian President Joko Widodo (Jokowi) also re-announced that no further expansion of coal power would be tolerated beyond projects already in the construction pipeline. Taken together, these should reflect a new turning point to change Indonesia's power sector direction toward the energy transition. However, PLN is already locked into unneeded baseload dirty power, as most of the coal power pipeline has been built or is under construction with strict terms and conditions in the purchase power agreements (PPA).

Since the adoption of power generation acceleration programs, the signing of new large coal PPAs has been unstoppable despite the lagging demand growth. This continued even after the leak in 2017 of a letter from the Minister of Finance to the

Ministry of Energy and Mineral Resources (MEMR) and Ministry of State-Owned Enterprises (MSOE). The letter expressed concern over PLN's financial situation, particularly its liquidity and solvency. Only in 2020 did PLN's new management and MEMR start to publicly acknowledge the mounting financial pressure on the power company, the risks it faced on oversupply and under-demand, and its limited ability to increase tariffs.

The role of Japanese and Chinese financiers in unlocking funding for Indonesia's coal-fired power plant (CFPP) projects is consistent with the pattern seen in other markets. The Institute for Energy Economics and Financial Analysis' (IEEFA) data show that Japanese and Chinese investors combined have 41% of ownership interests in Indonesia's coal IPP projects. Sumitomo Group appears to have the largest share. China Energy Investment (Shenhua Guodian Group) and China Huadian Group came in second and third if we exclude PLN subsidiaries' ownership in IPP projects.

Of the 31.9 gigawatts (GW) of currently installed CFPP capacity in Indonesia, 41% or 12.9GW was financed by Chinese entities, either fully or partially, while Japanese banks backed 17% or 5.5GW. As for the 13.8GW in the pipeline, at least 7.3GW have received financing from Japan or China and 2GW from South Korea. The remaining 4.5GW is still in the planning stages or under construction with limited information about reaching financial close.

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Most of these investments were made possible through a project finance structure. The structure allows a developing country to acquire funding for capital intensive infrastructure projects without collateral, except for the project itself. However, this is often at the expense of a strict contract structure and a full loan or business viability guarantee from the host government.

IEEFA's analysis on non-exhaustive datasets found that public financiers such as the Japan Bank for International Cooperation (JBIC), China Development Bank (CDB), Export-Import Bank of China (CEXIM) and the Export-Import Bank of Korea (KEXIM), have all played a monumental role beyond their traditional role as investment enablers. For example, in the 2 x 1000 megawatts (MW) Batang project, JBIC had acted as the majority lender, providing IDR 29 trillion (US\$2.0 billion), while a syndicate of other Japanese commercial banks including Mizuho, Sumitomo and Mitsubishi UFJ (MUFJ), provided the balance of US\$ 1.4 billion.

Chinese public financiers took similar paths. Available records suggest that both CEXIM and CDB were involved as sole funders of CFPP projects, such as the 2 x 1000MW Java-7 and the 2 x 600MW Sumsel-8 mine mouth plant.

While building some coal power capacity has offered solutions in the past decades, overbuilding them has never been wise. There is every reason to believe that

representatives of some of PLN's largest IPPs and lenders would like to see PLN's financials stabilize so they can benefit from Indonesia's long-term growth potential. The challenge now is to find a way to bring the various parties together before there is a crisis that would limit the Jokowi Administration's ability to map out credible options and protect the interests of vulnerable communities, ratepayers, and taxpayers.

If the big players - Japanese and Chinese IPP investors, their banks, export credit agencies, and multilaterals including the Asian Infrastructure Investment Bank (AIIB) and the Asian Development Bank (ADB) - seek a constructive role in resolving PLN's problems, there are four basic steps that would support confidence in PLN and permit a transparent dialogue about durable reforms. Steps should be taken to:

1. Establish a new standard of transparent governance for any reform process including system planning, debt renegotiations, coal retirement, and new power purchase agreements granted via tender processes.
2. Conduct a thorough performance system audit for at least five of PLN's main grid systems to provide a clear understanding of what is needed for a complete energy transition.
3. Ensure that under-performing CFPPs and proposed CFPPs in the pipeline that have not reached financial close are cancelled.
4. Accelerate a new "green" Electricity Supply Business Plan (Rencana Usaha Penyediaan Tenaga Listrik or RUPTL) process to identify cost-effective new renewables opportunities for existing and future investors.
5. Prioritize grid planning, backed by fresh investment to ensure that flexibility, resilience, and the required system services are appropriately funded to support renewables integration.

These steps would give all parties a common purpose and prevent transactional half-measures from cluttering the discussion if properly implemented. To meet this standard, it's crucial that discussions on renegotiation or sector restructuring should not be treated as business as usual. The Indonesian government must first acknowledge that PLN is in crisis and any panel convened to negotiate with the IPPs should also include participation of relevant ministries to ensure broad political accountability.

Decoupling short-term political goals from PLN's planning processes might be a start. To do this, the creation of a credible and empowered independent power sector regulator could provide the unbiased authority to align policy, planning, and project implementation. A well-supported independent regulator could work with stakeholders to clarify realistic tariff assumptions and oversee PLN's obligations to other state-owned enterprises (SOEs), influential consumer groups, and communities affected by PLN's performance.

PLN's 2021 RUPTL marked a renewed commitment for Indonesia to reduce emissions, while also highlighting the need for significant investment in renewable power capacity and grid flexibility. Of note, the "green" RUPTL includes the first serious embrace of solar technology in PLN's future, complemented by the introduction of pumped hydro storage. Both technologies are critical to PLN's efforts to develop the capacity and the operating skills to integrate renewables efficiently.

**PLN's 2021 RUPTL marked a renewed commitment for Indonesia to reduce emissions.**

Even in a modest demand growth scenario, the country's power demand is forecast to rise from 253 terawatt-hours (TWh) in 2021 to 390TWh by 2030, creating meaningful market opportunities for renewable capacity. And, in turn, Japanese and Chinese investors with cost-effective renewable and storage technologies abetted by smart grid and smart appliance solutions could benefit from the same concessional financing that has been available for coal technology.

## Brief Background

In late June 2021, the Director General of Electricity, Rida Mulyana, delivered an important message. For the first time, he insisted on the need for IPPs to "share the pain" as PLN confronts the economic consequences of worsening oversupply in PLN's two biggest grids, namely Java-Bali and Sumatera.

"There's room for discussions, to share the pain. That's what we're encouraging them to do," Mulyana said. PLN might not be able to cancel PPAs, he said. However, it should be able to renegotiate certain conditions, including postponing the Commercial Operations Date (COD) of projects still under construction, and the take-or-pay clause in the PPAs.<sup>1</sup>

The news of the Director General's comments came as the first clear sign that backers of Indonesia's large pipeline of coal IPPs should be flexible on terms and conditions, despite having fixed PPAs. By September, PLN had made progress in negotiations with several IPPs with the biggest, the 2x1000MW Batang coal-fired power plant, agreeing to push back its COD.<sup>2</sup>

**PLN is now trapped in a financial straitjacket that leaves few easy options for reform.**

This is progress but extending COD is metaphorically still kicking the can down the road. It does not solve PLN's existential crisis, compounded by excess capacity,

<sup>1</sup> PLN renegotiates PPAs with IPPs amid oversupply issue. Petromindo. 30 June 2021.

<sup>2</sup> PLN says some IPPs agree to push back COD, lower capacity factor. Petromindo. 1 September 2021.

weaker-than-forecast demand, and over-reliance on guaranteed baseload CFPP contracts, making it legally difficult to avoid coal lock-in.

The issue of power overcapacity was not unheralded. Since 2017, IEEFA has scrutinized PLN's financial and operational data, highlighting the discrepancy between over-optimistic demand growth forecasts and the realized power consumption.<sup>3</sup> In that time, the misalignment of planning and policy with the reality of Indonesia's power market has led to an overinvestment in generation capacity. PLN is now trapped in a financial straitjacket that leaves few easy options for reform.

This is a crisis that has so far garnered little attention from the Indonesian public, as tariffs and power for electricity have largely been stable. By 2020, however, it was becoming hard to ignore PLN's weak financial fundamentals, and the COVID-19 pandemic depressed PLN's demand even further. But instead of acknowledging that the government was increasingly forced to prop PLN up in an unsustainable way, PLN remained coy about it.

The government and PLN had hoped Indonesia would have a traditional "V" shape recovery post-pandemic and that demand would recover within a year. Instead, power consumption shrank by -0.8% in 2020,<sup>4</sup> although today it has bounced back, 4.4%<sup>5</sup> up year-to-date.

In the early days of the pandemic, IEEFA issued several briefing notes, stressing the importance of bringing all stakeholders together to share the burden with PLN.<sup>6</sup> Renegotiation of IPP PPAs was highlighted as the most realistic way to craft a durable financial solution for PLN, using the crisis as an opportunity to reboot and restructure. Sadly, PLN's management consistently rejected the idea, claiming they had no intention of going into legal battles over these contracts.<sup>7</sup> Yet, recent statements indicate that PLN is now embracing 'consultations' with some IPPs to discuss the postponement of CODs and scaling down the capacity factor from 85% to 65%, while PLN waits for demand to rise.<sup>8</sup>

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<sup>3</sup> [Overpaid and Underutilised: How Capacity Payments to Coal Fired Power Plants Could Lock Indonesia into a High-Cost Electricity Future](#). IEEFA. August 2017.

<sup>4</sup> PLN presentation material for RUPTL 2021 Dissemination. 5 October 2021.

<sup>5</sup> PLN: Power consumption up 4.44% driven by stronger demand from industries. Petromindo, 9 September 2021.

<sup>6</sup> [PLN in Crisis—Time for Independent Power Producers to Share the Pain?](#). IEEFA. April 2020.

<sup>7</sup> [PLN belum berniat lakukan renegotiasi kontrak PPA pada pembangkit tua](#). Kontan. 7 August 2020.

<sup>8</sup> PLN Vice CEO, Darmawan Prasodjo admitted this in a public webinar held by Kompas on Thursday, 21 October 2021.

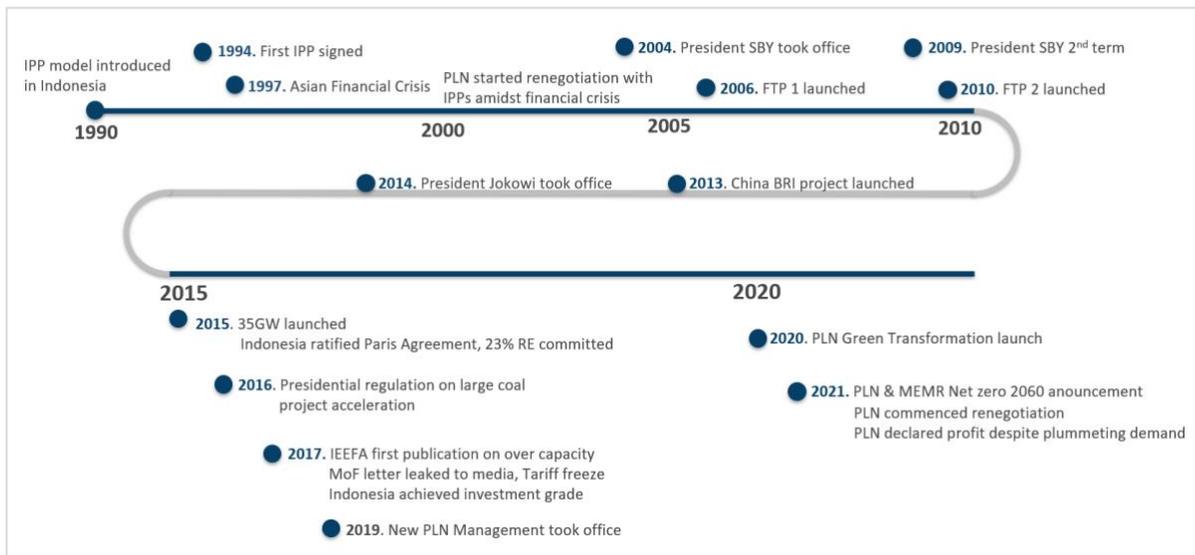
## How Did PLN End Up Here?

PLN's strategy of high reliance on rigid PPAs began with the 1997 Asian Financial Crisis. At the time, PLN's financials were overwhelmed by the impact of the financial crisis, which undermined the Indonesian Government's standing in global markets. PLN was collateral damage and was unable to maintain cash flow, repay debt, or secure funding for planned investments. It was locked out of capital markets at the time when new power capacity could unlock the country's growth potential.

Post-crisis, private sector IPPs backed by project finance, following the multilateral bank playbook, became a way out for Indonesia. Often celebrated as the best solution for developing capital intensive projects, project finance structures allow developing countries previously unable to acquire funding for infrastructure projects to borrow at a lower cost without fixed collateral, other than the project itself and future cash flows.

Project finance typically comes with demanding conditions, including very rigid contract structures, with strict terms and conditions to secure loan repayment with low risk to the lenders. The essential PPA requirements to support project financing are take-or-pay clauses and guarantees, typically from the host government. In Indonesia's case, this has required a sovereign guarantee of the loan principal or a business viability guarantee from the government or the off-taker. The structural weakness of the Indonesian rupiah, and resultant foreign exchange (FX) risks for lenders, also resulted in terms to protect the IPPs from FX risks. The supportive terms were advantageous to lenders, setting the stage for private players, project sponsors, and financiers alike to step in. Japan and China took leading roles in enabling coal power build-out.

Figure 1: Timeline of Key Events



Source: Compiled sources.

The catalyst for PLN's growing dependence on IPPs with restrictive PPAs came during President Susilo Bambang Yudhoyono's administration when the Fast-Track Program 1 (FTP 1) was introduced. The program aimed to accelerate generation capacity by adding 10GW of CFPPs. At the time, large-scale CFPPs were considered a cheaper alternative to diesel power plants. Fast-Track Program 2 (FTP 2) followed four years later, in a similar heavy coal-baseload pattern, but with a greater share of renewables, particularly hydro and geothermal. The implementation of FTP 1 and FTP 2 suffered many delays, with some projects facing extended hold-ups.

When President Joko Widodo took office in late 2014, he adopted a more ambitious target of constructing 35GW of generation capacity within five years. The plan was linked to the government's bullish economic targets. This optimism about Indonesia's growth prospects and PLN's fear of not coping with demand increases leads planners to embrace an over-optimistic power demand forecast that has had long lasting implications.

The key to the over-estimation was the choice of the multiplier applied to gross domestic product (GDP) growth forecasts to estimate power demand. Instead of using a more prudent multiplier, PLN adopted a demand elasticity factor of 1.34 times the GDP growth to align with the political agenda, rather than the bottom-up supply-demand needs of the power system. It could be argued that the elasticity was based on the average of the 2004-14 figures (see below graph). However, erratic data trends, as well as declining energy intensity of growth in most developing countries, should have been noted as reasons for more caution.<sup>9</sup>

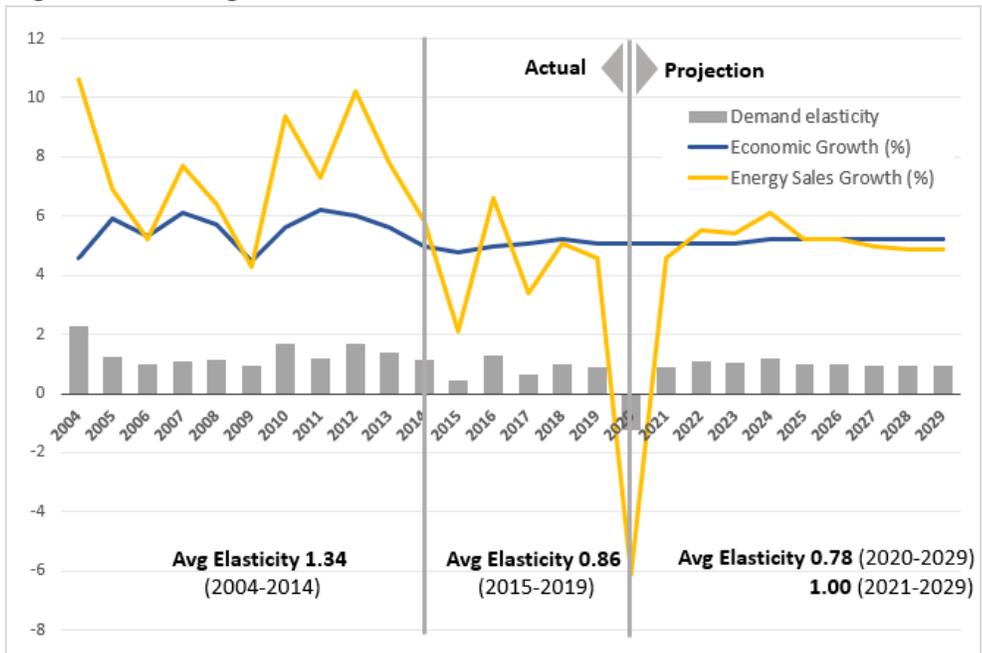
IEEFA's analysis found that the exaggerated demand growth forecasts showed persistent over-estimation by an average of 34.2% over an eight-year period since the 2015 RUPTL issuance.<sup>10</sup>

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<sup>9</sup> [Global Energy Intensity Continues to Decline](#). EIA. 12 July 2016.

<sup>10</sup> [PLN in Crisis—Time for Independent Power Producers to Share the Pain?](#) IEEFA. April 2020.

Figure 2: Misalignment of Demand Forecast vs Realization



Source: PLN presentation on 25<sup>th</sup> August 2021.

Looking back at the early years after the Asian Financial Crisis, it’s hard not to sympathize with PLN’s effort to prioritize Indonesia’s electrification needs. Project finance backed by sovereign guarantees delivered bulk power generation capacity, but it has come at a high cost. Having so much capacity governed by inflexible PPA terms now makes it difficult for PLN to arrive at a cost-effective capacity and debt management scenario that responds to today’s realities with balanced risk-sharing mechanisms between PLN and the IPPs.

The first sign that a reset might be needed emerged in 2017 after Indonesia received investment grade status, in recognition of the country’s significantly improved financial fundamentals, which then cut borrowing costs to reflect lower credit and FX risks for lenders. So, when new PPA contracts with strict take-or-pay mechanisms for unneeded capacity were still being signed, this raised further questions. Especially when generous terms and conditions of PLN’s new PPA contracts (given the high level of guarantees) were still being offered to lenders and project sponsors, despite Indonesia’s new investment grade status.

Sector analysts were alerted to the issues by a leaked letter from the Minister of Finance, Sri Mulyani, to the then Minister of State-Owned Enterprise (MSOE) Rini Soemarno, and the Minister of Energy and Mineral Resource (MEMR) Ignasius Jonan. The letter expressed Sri Mulyani's concern over PLN's financial situation, in particular the company's current and future liquidity and solvency. The minister highlighted how the Ministry of Finance (MoF) had asked PLN's lenders to issue waivers due to PLN's inability to meet the terms of its loan covenants over the years. She also highlighted the fact that due to limited internal cash flow, PLN had to find external funding to fulfil its obligations, especially those mandated by the government.

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Notably, the finance minister was very clear in the letter about concerns related to PLN's ability to service its debt in the future, electricity sales had not grown as targeted, and the government's decision not to increase the electricity tariff could expose PLN to a risk of default. She also asked both ministries to reconsider the 35GW target to reflect PLN's inability to finance its investment from its own operational cash flow, the outlook for PLN's high debt maturity profile, as well as the impact on the Government of Indonesia on the ballooning subsidy, and State Capital Injection obligations to support SOEs such as PLN.<sup>11</sup>

Sri Mulyani deserves credit for highlighting the key risk factors that undermine PLN's financial stability. Rather than addressing the risks, PLN's CEO responded with denials to the leaked letter, saying that PLN's financials were fine and under control.<sup>12</sup> In fact, a few high-capacity coal-fired IPP projects with strict take-or-pay provisions were finalized during this period, despite warnings of oversupply to PLN's biggest grid, the Java-Bali.

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<sup>11</sup> Sri Mulyani Surat Jonan dan Rini Soal Potensi Gagal Bayar Utang PLN. Kumparan. 27 September 2017.

<sup>12</sup> Surat Sri Mulyani Bocor, PLN Klaim Keuangannya Aman. Tempo. 28 September 2017.

**Table 1: PPAs Signed in 2017 and After**

Province	Constructi	Procurem	PPA	Financing	Designated Name	Owner	Financier	Remarks	Capacity (MW)	PPA Signed	Financial Close	COD year
Banten					Jawa-9 & Jawa-10	IPP	IDN, KR, CHN	Indo Tenaga Raya (Indonesia Power 51%, Barito Pacific 34%, KEPCO 15%)	2,000	2017	2020	2025/26
Aceh					Meulaboh aka Nagan Raya Unit 3-4	IPP	CHN, IDN	Meulaboh Power Gen (PP Energi 34%, China Datang Ovs 62%, Sumberdaya Sewatama 4%)	400	2017	-	2023
Jambi					PLTU MT Jambi-1 Unit 1-2	IPP	IDN	Putra Indotena - PLN BB	600	2018	not yet	2027
					PLTU MT Jambi-2 Unit 1-2	IPP	CHN, IDN	Pembangkitan Perkasa Daya (PT PP Energi 5%, China Huadian x%)	600	2019	not yet	2026
South Sumatera					MT Sumsel-8 Unit 1-2	IPP	CHN, IDN, CHN	Huadian Bukit Asam Power (Bukit Asam 45%, China Huadian 55%)	1200	2017	2018	2022
North Sulawesi					Sulut 3 Unit 1	IPP	IDN, CHN, IDN	Minahasa Cahaya Lestari (Toba Bara S 90%, Sinohydro Corp 10%)	50	2017	2018	2021

Source: PLN, MEMR, various public statements.

Both the SOE and MEMR ministries were seemingly inattentive to PLN's financial condition until economic growth plateaued in 2019. Even then, PLN's inability to raise tariffs and increase demand while struggling with volatile coal and gas prices and excess capacity was viewed as transitory risks subservient to hitting capacity expansion targets. Lenders and USD bond investors were also inattentive due to the close link between PLN's credit rating and the investment-grade sovereign rating.

It wasn't until the pandemic hit in 2020 that PLN's new management finally acknowledged the company's risks. The new CEO, Zulkifli Zaidi, a former banker, made a public statement in June 2020 about PLN's unhealthy cash flow condition, courageously asking the government to disburse the compensation payment as promised.<sup>13</sup> This initiated a period of growing transparency regarding PLN's challenges. In the past six months, PLN's officials have stepped up to dialogues, presumably to prepare the public for the tougher steps and higher tariffs that may be required in the near future.

## And Now the Fragile Recovery Is Putting More Strain on PLN's Financials

With the shadow of Covid-19 finally receding, there are hopes Indonesia can move toward a more sustainable economic recovery. The latest estimates for Indonesia's trade balance look promising with a surplus of US\$4.7 billion in August 2021<sup>14</sup> helped by surging coal exports. Indonesia's overall economic recovery is still very fragile, however. The fiscal deficit remains a significant structural risk, with growing SOE liabilities and limited taxing power. In a recent report, Fitch forecasts no improvement in the fiscal picture in 2021, targeting a deficit of 6.1% and downgrading 2022 GDP growth to 4.9%.<sup>15</sup>

<sup>13</sup> Dirut Akui PLN Tidak Sehat, Utang Sudah Dekati Rp500 Triliun. Dunia Energi. 25 June 2020.

<sup>14</sup> Indonesia Balance of Trade. Trading Economics. Accessed on 7 October 2021.

<sup>15</sup> Indonesia's Deficit Financing Reflects Difficult Policy Choices. Fitch Ratings. 6 September 2021.

The future of Indonesia’s economic recovery relies heavily on containing infections to avoid a collapse of the public health system, by rigorous control over the public’s mobility and periodic strict lockdowns with negative consequences for economic growth. As the economy slows, so does PLN’s demand.

For the remaining months of 2021, the outlook on COVID-19 in Indonesia should be comparatively benign. The government’s effort to control the second wave of infections that gripped the country in June-August now yields results for public health and the economy, with demand slowly creeping back up. The past six months have shown how volatile the economy is in relation to COVID-19, and how this uncertainty can depress growth.

The downside risk was confirmed when the Minister of Finance altered her economic forecast for this year from 5% to the range of 3.7-4.5% in July 2021,<sup>16</sup> in line with the credit rating agencies and the World Bank.

**Table 2: Indonesia’s GDP Forecast Post 2<sup>nd</sup> Wave of COVID-19**

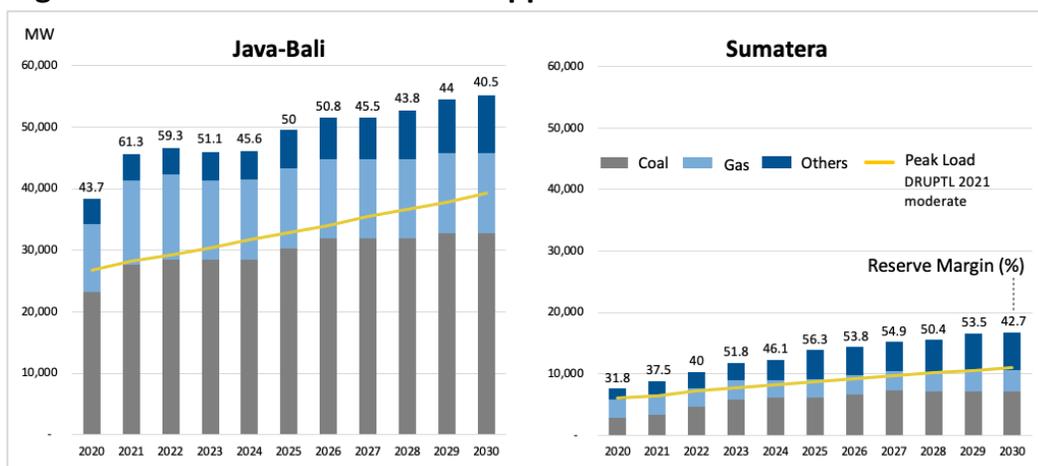
	MoF	S&P	Fitch	Moody’s
2021 Previously	5%	4.4%	5.3%	
2021 Current	3.7 – 4.5%	2.3 – 3.4%	4.8%	4.5%
2022 Previously		5.2%	5.3%	
2022 Current	5 – 5.5%	5.6%	4.7%	5.2%
Long-term Outlook		Negative BBB	BBB Stable	Baa2 Stable
Fiscal Deficit Estimate 2021	6.1%	6%	6.1%	

Source: MOF, S&P, Fitch, Moody’s.

Due to the depressed economic outlook, PLN’s financial condition will remain burdened by sluggish demand and higher operating costs, as 10GW of new capacity comes onto its books in the coming 24 months. This will aggravate already stressed operating cash flows as the reality of over-capacity begins to dominate the financial outlook. For example, PLN is currently forecasting 40-60% reserve margins for the Java-Bali grid over the next ten years, and 30-56% in Sumatera. In other words, these grids, accounting for 88.1% of PLN’s “market” by revenue, are now structurally over-supplied for the next decade.

<sup>16</sup> Sri Mulyani Revisi Target Pertumbuhan Ekonomi RI 2021, Batas Bawah Jadi 3,7 Persen. Bisnis.com. 7 July 2021.

Figure 3: PLN's Main Grids Over-Supplied Until 2030



Source: PLN.

## Two Giants Bet Big on Indonesia's Coal Fired Power Future

Over the past five years, much of Indonesia's power sector analysis has been shaped by PLN's 35GW program and the divergence from a sustainable development pathway. As COVID-19 recedes, policymakers must now address the reality of structural excess capacity and misdirected investment, along with growing awareness of the scope of the problems as domestic stakeholders and foreign investors seek to understand those involved in the process.

To understand the full picture and PLN's options for reform, it is important to evaluate the role of the IPP project sponsors and lenders in flooding the Indonesian power market with redundant capacity. To map the historical development of Indonesia's power sector, IEEFA has analysed the project sponsors and lenders. Given the opaque nature of power sector transactions, the data presented below are not comprehensive, though likely to represent the overall trends that have shaped the sector.

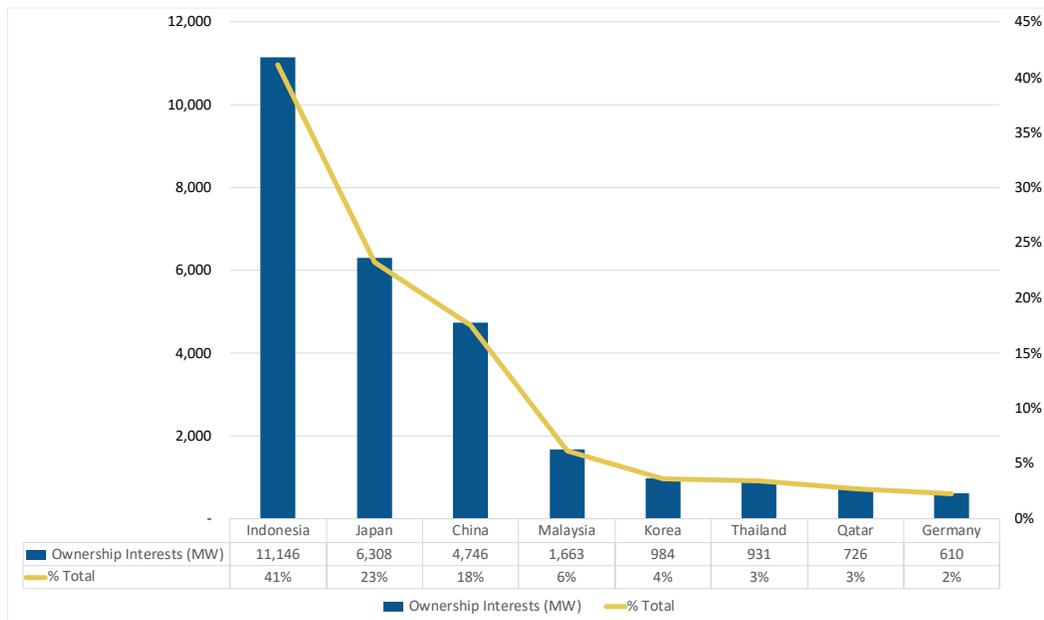
### Japanese and Chinese Private Investments Have Long Dominated Indonesia's CFPP Projects

Private power producers started to gain access to the Indonesian power market in the early 1990s, and Japanese investors were the first to find their way into the sector. Bringing in their own technology and low-cost financing, the Japanese provided a complete package of naturally attractive solutions to PLN. The first landmark coal power IPPs were pioneered by leading Japanese trading houses including Mitsui, Sumitomo and Marubeni, which already knew the Indonesian market through their coal, and oil and gas businesses. To reduce potential offtake risk, they concentrated on large-scale projects in the most populous island of Java.

The second wave, Chinese project sponsors, came much later after the FTP 2 program was announced in 2016. Before that, Chinese involvement was mainly through PLN or government-to-government arrangements. Unlike the Japanese project sponsors who favoured large-scale facilities with current technology, the Chinese investments were more diverse, varying in scale and CFPP technologies. Their investments also spread beyond Java, with a focus on targeted opportunities in Sumatera and Sulawesi. Following the consortium approach used by the Japanese, Chinese project sponsors relied on Chinese engineering, procurement, and construction (EPC) entities, bringing low-interest financing from national banks and credit enhancement from government-backed export-credit institutions. Taken together, Japanese and Chinese sponsors account for 41% of the ownership interests of coal IPP projects in Indonesia.<sup>17</sup>

Their influence in unlocking financing for the market is higher than this figure would suggest, however. Indonesia’s equity interest in coal IPPs, via PLN subsidiaries Indonesia Power and PJB, also totals 41%, but many of these equity interests are minority investments in foreign IPP projects. Market commentators believe that some of these are notional equity interests that did not require an upfront financial commitment from the Indonesian side, leaving the Japanese and Chinese sponsors to secure financing from the traditional banks.

**Figure 4: Indonesian Coal IPP Ownership by Project Sponsor’s Country**



Source: Compiled Sources – World Bank, PLN, Refinitiv, Project Finance Institute, IJ Global, China Aid, MoF, various media releases.

<sup>17</sup> IPP projects are defined as projects not wholly owned by PLN. A majority of the Indonesia IPP projects are owned partly by PT Indonesia Power or PT Pembangkitan Jawa Bali, both of which are PLN’s subsidiaries.

Based on IEEFA’s data set, Sumitomo appears to be the largest foreign investor in the Indonesian power sector based on their ownership in Tanjung Jati B CFPP; a 3.6GW coal-fired complex currently supplying the Java-Bali grid. China Energy Investment (Shenhua Guodian Group) came second and China Huadian Group fourth, after PLN’s subsidiaries PT Indonesia Power and PT Pembangkitan Jawa Bali (PJB). YTL Group from Malaysia is notionally fifth due to ownership interests in two large coal power projects. However, the interest in Paiton is modest compared to the still-unfinanced Tanjung Jati A project that has been in the pipeline for years.

**Table 3: Projects That Have Not Reached Financial Close**

Province	Constructio Procurement	PPA	Financing Planning	Designated Name	Owner		Financier	Remarks	Capacity (MW)	PPA Signed	Financial Close	COD year
					Owner	Financier						
Jambi				PLTU MT Jambi-1 Unit 1-2	IPP	IDN	have not reached FC	Putra Indotenaga - PLN BB	600	2018	not yet	2027
				PLTU MT Jambi-2 Unit 1-2	IPP	CHN, IDN	have not reached FC	Pembangkitan Perkasa Daya (PT PP Energi 5%, China Huadian)	600	2019	not yet	2026
South Sumatera				MT Sumbagsel 1 Unit 1-2	IPP	IDN	have not reached FC	PT Sumbagsel Energi Sakti Perwali (partially owned by PJB)	300	-	-	2024
West Java				PLTU Jawa-3 (FTP2) / Tanjung Jati A	IPP	JPN, IDN, KR	have not reached FC	Tj Jati Power Company, Bakrie Power (Bakrie & Brothers Tbk 20%, YTL Corporation 80%)	1,320	1997, amended 2015	not yet	2025/26

Source: PLN, Annual Report 2020.

**Table 4: Top 10 Companies With Disclosed Ownership Interest**

Project Sponsors	Disclosed Ownership Interest (MW)	% of Total	Country	Disclosed Project Participation
Sumitomo Corp	3,640	13.4%	Japan	Tj Jati B Unit 1-2 (100%) Tj Jati B Unit 3-4 (100%) Tj Jati B Unit 5-6 (50%)
China Energy Investment (Shenhua - Guodian Group)	2,060	7.6%	China	Jawa 7 (70%) Sumsel 1 MT Unit 1-2 (25%) Simpang Belimbing MT Unit 1-2 (70%)
PJB and subsidiaries	1,807	6.7%	Indonesia	Jawa 7 Unit 1-2 (30%) Cilacap Unit 1-2 (49%) Cilacap exp Phase 1 (49%) Cilacap Exp Phase 2 aka Jawa-8 (49%) Banjarsari Unit 1-2 (29%) Sumbagsel Unit 1-2 (10%) PLTU Mamuju Unit 1-2 (10%)
Indonesia Power	1,746	6.4%	Indonesia	Jawa 9-10 (51%) Kalbar 1 Unit 1-2 (35%) Kaltim (MT) unit 1-2 aka Muara Jawa (90%) Jambi 1 MT Unit 1-2 (100%) Lati Unit 1-2 (47%)
China Huadian	1,424	5.3%	China	Sumsel 8 MT Unit 1-2 (55%) Celukan Bawang 1-3 (51%) Jambi -2 MT (95%)
YTL Group	1,300	4.8%	Malaysia	Tanjung Jati A 1-2 (80%) Paiton Unit 5-6 (20%)
PT Sumber Segara Primadaya (SSP)	1,153	4.3%	Indonesia	Cilacap Unit 1-2 (51%) Cilacap exp Phase 1 (51%) Cilacap Exp Phase 2 aka Jawa-8 (51%)
RATCH	931	3.4%	Thailand	Paiton Unit 3, 7, 8 (45.51%)
Adaro	810	3.0%	Indonesia	Batang Unit 1-2 (34%) Kalsel Unit 1-2 (65%)
Marubeni	748	2.8%	Japan	Cirebon Unit 1 (32.5%) Cirebon Unit 2 (35%) Paiton Unit 5-6 (15%) - indirect through YTL Power

Source: Compiled Sources – World Bank, PLN, Refinitiv, Project Finance Institute, IJGlobal, China Aid, MoF, various media releases.

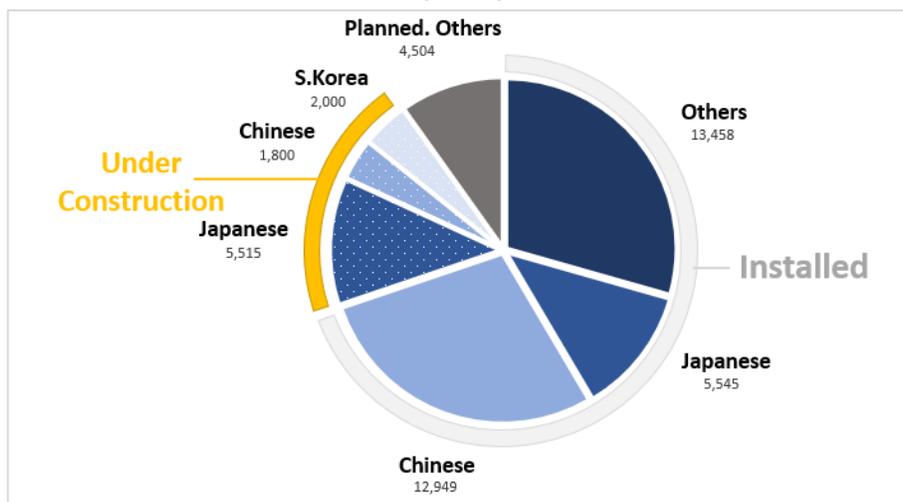
### *The Role of Japanese and Chinese Lenders, Both Public and Private Financiers, Were Crucial in Unlocking Financing*

The dominance of Japanese and Chinese banks in global coal power sector financing over the past two decades is now well-known. Their role in unlocking funding for Indonesia’s coal IPPs is a consistent pattern seen in other markets. Of the 31.9GW of current CFPP installed capacity in Indonesia, Chinese entities financed 41% or 12.9GW, fully or partially, while Japanese banks backed 17% or 5.5GW.

In addition, out of the 13.8GW of Indonesia’s approved pipelines of CFPP, at least 7.3GW has received financing from Japan or China and is currently under construction, and 2GW financed by South Korea. Of the 4.5GW still in the planning

stage or under construction, there is limited information available on whether the projects will reach financial close.

**Figure 5: Majority of Indonesia CFPP Projects Were Financed by Japanese and Chinese Lenders (MW capacity)**



Source: Compiled Sources – World Bank, PLN RUPTL, Refinitiv, Project Finance Institute, IJGlobal, China Aid, MoF, various media releases.

Note: Attribution of capacity based on the dominant financiers' country of origin.

A salient point in analysing data on Japanese and Chinese financing in Indonesia's CFPP projects was the high level of public funding poured into the sector. It is well understood that public financing from national development banks or export credit agencies is usually the critical enabler for investments in higher-risk developing markets. By providing guarantees and credit enhancement, they have been able to de-risk the full financing package for IPP projects to allow commercial banks to step in and provide financing. The backing of these national entities delivers lower interest rates and friendlier terms and conditions, although sometimes at the expense of the provision of a full loan or business viability guarantee letter (BVGL) from the host government.<sup>18</sup>

Full sovereign guarantee provided by the Indonesian government for loans taken by PLN to accelerate CFPP projects listed in the FTP 1 programs led to a significant amount of Chinese financing going directly to PLN. These guarantees helped

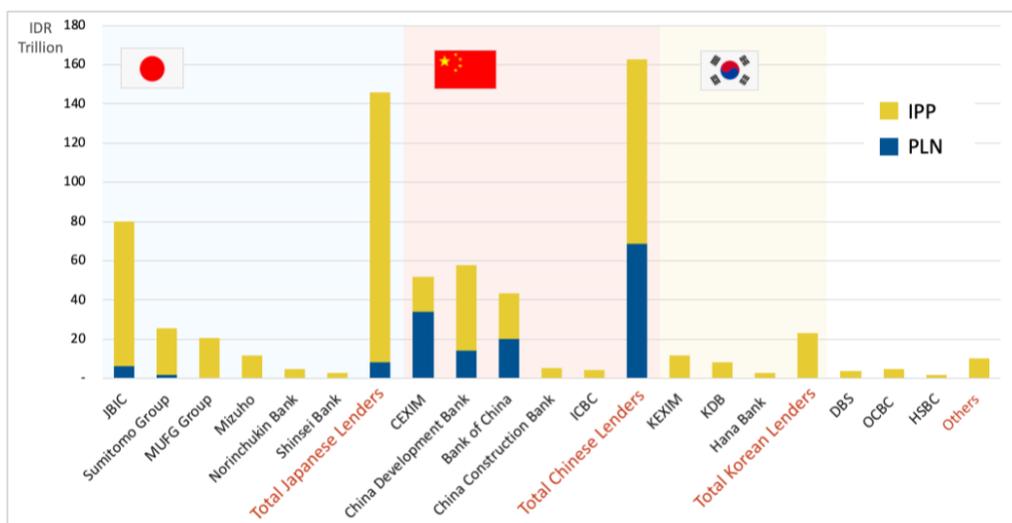
<sup>18</sup> The Indonesian government provides three types of guarantees related to development of power projects:

1. Full loan guarantee given to PLN's creditors for loans obtained by PLN to conduct PLN's own projects as mandated by the FTP 1, 2 and the 35GW program.
2. Business Viability Guarantee Letter (BVGL) which is issued for IPPs to ensure PLN's financial obligations under the PPAs. These guarantees are given to some FTP 2 and 35GW programs.
3. Joint guarantee mechanism taken by the Indonesia Infrastructure Guarantee Fund (IIGF) for Public Private Partnership (PPP) projects. Only PPP projects can access these guarantees for a fee.

advance at least 36 of PLN’s CFPP projects, many of which used Chinese technologies and EPCs.<sup>19</sup>

Previously, overseas financing transactions for PLN were in the form of collateral-free two-step loan financing (through a government-to-government loan mechanism). In contrast to the Chinese, JBIC had provided PLN with significant two-step loans not pegged to specific CFPP projects but did not receive the same kind of guarantee.<sup>20</sup> As Indonesia took on a more ambitious target for developing coal capacities in the IPP programs, most Japanese loans were directly attributed to the coal IPPs, some of which might have received a BVGL from the MoF.

**Figure 6: Identified CFPP Financing from Japanese, Chinese and South Korean Lenders**



Source: Compiled Sources – World Bank, PLN, Refinitiv, Project Finance Institute, IJ Global, China Aid, MoF, various media releases.

It’s notable that the leading Japanese and Chinese public financiers, JBIC, CDB, and CEXIM, appear to have played a monumental role in funding many CFPPs in Indonesia. This is a departure from their traditional role, where they have only acted as the enabler to other domestic lenders. For example, in the 2 x 1000 MW Batang project, JBIC had acted as the majority lender, providing IDR29 trillion (US\$2.0 billion), while a syndicate of other Japanese commercial banks including Mizuho, Sumitomo, and MUFJ provided the rest of the funding, US\$1.4 billion. This transaction received the then newly created joint guarantee facility provided by the Indonesia Infrastructure Guarantee Fund (IIGF).

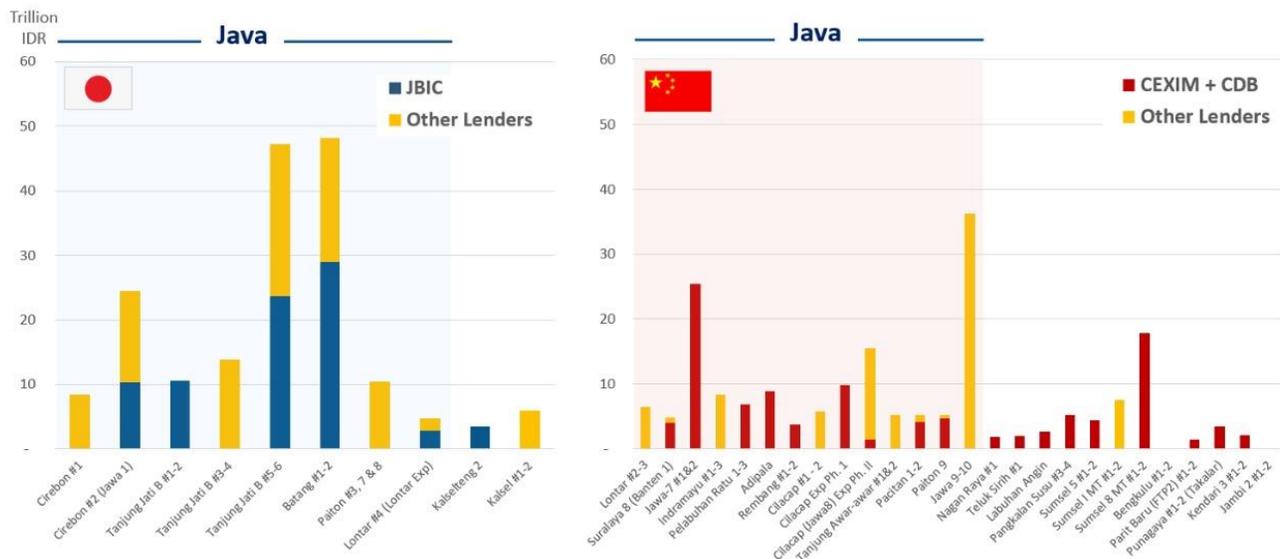
The Chinese public financiers also exhibited similar characteristics. Available records suggest that both CEXIM and CDB were the sole funders of CFPP projects,

<sup>19</sup> LAKIN DJPPR 2020, 2019, 2018, 2017.

<sup>20</sup> According to PLN Annual Report FY2020, overseas two-steps loans provided through government-to-government loan mechanism to PLN are collateral-free. PLN Annual Report FY2020 page 112.

such as the 2 x 1000MW Java-7 and the 2 x 600 MW Sumsel-8 mine mouth plant. The spurring of IPP projects since the FTP 2 program might be seen as a result of BVGL given by the MoF to IPPs as credit enhancement. Both the Japanese and Chinese players have enjoyed these guarantees in return for their project financing structure.

**Figure 7: The Dominant Role of Japanese & Chinese Public Financing in CFPP Projects**



Source: Compiled sources – World Bank, PLN, Refinitiv, Project Finance Institute, IJ Global, China Aid, MoF, various media releases.

Note: Other lenders may include minority portion of Japanese & Chinese commercial banks, and other public/commercial banks.<sup>21</sup>

The data above do not include Chinese investments in CFPP projects that are not connected to the PLN grid. Significant CFPP projects are usually related to specific industrial parks or smelters owned by Chinese investors, such as the 2,860MW Nanshan Industrial Park, the 1,645MW Delong Virtue Dragon Nickel Smelter Park, and in the Indonesia Morowali Industrial Park, the 700MW Tsingshan Stainless Steel, 300MW Guangching Nickel, and 130MW Shanghai Decent Investment Group.

## How Can Japan and China Be Part of the Solution?

The history of Indonesia’s IPP program and extensive Chinese and Japanese investments set the terms for choices Indonesian policymakers must now make about rescuing PLN and making commitments about a decarbonization pathway in conjunction with the Jokowi Administration’s net-zero commitments. To date, the many complex legal and contractual issues that accompany IPP financing have

<sup>21</sup> Jawa-9/10 was financed through syndicated loans with dominant South Korean banks’ involvement, including minority portion from Bank of China.

prevented PLN from openly discussing the issue of burden sharing with investors and lenders.

Nevertheless, there is little reason to believe that PLN can manage this problem alone. If Indonesia had a liberalized power market where IPPs were expected to take normal market risk, the various parties would come together to identify restructuring and devise options that would allow PLN to shed assets and reduce near-term debt and IPP payment obligations. If properly governed, these options would give all parties greater certainty about PLN's ability to meet its long-term obligations to investors, Indonesian ratepayers and taxpayers.

**It is undeniable that Japan and China have played a key role in Indonesia's power infrastructure development at both the government and private sector levels.**

It is undeniable that Japan and China have played a key role in Indonesia's power infrastructure development at both the government and private sector levels. While building some coal power capacity provided solutions in past decades, *overbuilding* them has never been a wise option. Now, global climate commitments backed by the Chinese and Japanese governments are at odds with the financial interests in Indonesia's power sector.

The case for burden sharing between PLN and the IPP investors and funders is even more relevant now, given the series of announcements signalling a belated end to coal financing by the major countries active in Indonesia's power sector. Chinese President Xi Jinping's recent speech at the UN General Assembly about exiting overseas coal financing was as motivational as it is binding for Chinese funders. An announcement quickly followed up Xi's pledge from the Bank of China committing to exiting new overseas coal mining and coal power project financing as early as Q4 of 2021, except for projects already signed.<sup>22</sup>

Former Japanese Prime Minister Yoshihide Suga's commitment this year to a more ambitious carbon neutral position includes "fundamentally changing" its coal power investment policy. In October 2020, Japan stated the objective of carbon neutrality by 2050.<sup>23</sup>

Both pledges, along with South Korea's President Moon Jae-in's commitment to achieve carbon neutrality by 2050, were meaningful and showed signs of leadership by North Asian leaders. The challenge now is to bridge the gap between these high-level policy commitments and the potentially destructive consequences of aggressive coal power financing.

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<sup>22</sup> The Bank of China formulated the "Action Plan for Bank of China to Serve the Targets of "Carbon Peak and Carbon Neutrality". Bank of China. 24 September 2021.

<sup>23</sup> Suga vows to meet Japan's zero-emissions goal by 2050. Nikkei. 26 October 2020.

## *What is Needed for a Reset?*

Indonesia's intention to commit to a more comprehensive energy transition pathway is gaining momentum. But progress will be limited until the scope of PLN's structural problems can be addressed.

Without more determined action to ring-fence risks associated with PLN's weak financial position, investors may be obligated to consider downside scenarios that could affect Indonesia's credit standing. Credit rating agencies have yet to flash warning signals, but a resurgence of COVID-19 could be all it takes to raise new questions about risk to the country's investment grade status.

Stakeholders should also be aware that PLN's overcapacity challenges will become much more apparent to investors in the next year, when almost 10GW of new power from baseload CFPP comes online, bringing with it a large increase in payments to the foreign IPPs.

Reasonably, some of PLN's largest IPPs and lenders would like to see the company stabilize so they can benefit from Indonesia's long-term growth potential. The challenge now is to bring together the various parties before a crisis limits the Jokowi Administration's ability to map out credible options and protect the interests of vulnerable communities, ratepayers and taxpayers.

## *Reforms for the Future*

If the big Japanese and Chinese players including IPP investors, their banks, export credit agencies, and multilaterals including AIIB and ADB, want to play a constructive role in resolving PLN's problems, there are four basic steps that would support confidence in PLN and allow them to support a transparent dialogue about durable reforms. Steps should be taken to:

1. Establish a new standard of **transparent governance** for any reform process, including system planning, debt renegotiations, coal retirement, and new power purchase agreements granted via tender processes.
2. Conduct a **thorough performance system audit** for at least five of PLN's main grids, to clearly understand what is needed for a complete energy transition.
3. Cancel **under-performing CFPPs and proposed CFPPs in the pipeline** that has not reached financial close.
4. Accelerate the new "**green**" RUPTL process to identify cost-effective new renewables opportunities for existing and future investors.

**Stakeholders should be aware that PLN's overcapacity challenges will become apparent to investors in the next year when almost 10GW of new power from baseload CFPP comes online.**

5. Prioritize **grid planning backed by fresh investment** to ensure that flexibility and resilience, as well as required system services, are appropriately funded to support renewables integration.

Properly implemented, these four basic steps would give all parties a common purpose and prevent transactional half-measures from cluttering the discussion. To meet this standard, it's crucial that discussions on renegotiation or sector restructuring should not be treated as business as usual. The Indonesian government needs to acknowledge, first and foremost, that PLN is in crisis, and any panel convened to negotiate with the IPPs should also include the participation of all relevant ministries to ensure broad political accountability.

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The recent developments of accelerated coal plant retirement programs for emerging markets, such as the ADB's Energy Transition Mechanism (ETM) could be seen as an alternative. However, it should not be viewed as an easy way out for project sponsors and lenders to exit past investments.<sup>24</sup> Though the Japanese and Chinese asset owners could be significant beneficiaries of the program, early discussions among stakeholders indicate an expectation of strict governance, monitoring and a thorough policy overhaul on the Indonesian power sector before any potential funders would want to chip into the fund. This means the government, PLN, and related stakeholders will all need to align expectations to avoid a mismatch in the future, including an agreement on choice of coal assets, valuation of the assets, and ring-fencing reinvestment of such fund for the development of renewables capacity and the much-needed grid investments.

As a start, decoupling short-term political goals from PLN's planning processes becomes a crucial step. To do this, it may be time to create a credible and empowered independent power sector regulator that could provide the unbiased judgement needed to align policy, planning, and project implementation. A well-supported independent regulator could work with stakeholders to clarify realistic tariff assumptions and oversee PLN's obligations to other SOEs, influential consumer groups, and communities affected by PLN's performance.

### *Shift of Investment – Aligning With the New 'Greener' RUPTL*

To frame constructive negotiations, it will be essential for Indonesia to show new commitment to a viable pathway for renewables integration. In May 2021, President Joko Widodo announced a pledge to stop the addition of new coal power projects outside those that have been financed and under construction.<sup>25</sup> The commitment was soon validated by the issuance of PLN's 2021 Electricity Business Plan (RUPTL)

<sup>24</sup> ADB backs coal power retirement in Southeast Asia. IEEFA. 2021.

<sup>25</sup> Jokowi forbids new coal power plants into the RUPTL. CNBC Indonesia. 27 May 2021.

which shed almost 13.2GW of planned coal capacity and increased the 2030 target for renewable capacity by as much as 20.9GW.<sup>26</sup>

**Table 6: Renewables Capacities in RUPTL 2019 vs 2021**

In MW		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Hydro / Pump Hydro	RUPTL 2019	1,234	200	350	1,716	3,074	149	486	1,477			8,686
	RUPTL 2021	544	207	409	376	2,667	370	456	1,613	1,791	1,956	10,389
Geothermal	RUPTL 2019	147	455	245	415	2,759	45	145	55			4,266
	RUPTL 2021	136	108	190	141	870	290	123	450	240	808	3,356
Solar	RUPTL 2019	219	129	160	4	250		2	2			766
	RUPTL 2021	60	287	1,308	624	1,631	127	148	165	172	157	4,679
Bioenergy	RUPTL 2019	60	357	50	103	19	5	15	35			644
	RUPTL 2021	12	43	88	191	221	20		15			590
Wind	RUPTL 2019	30	360	260	50	150			5			855
	RUPTL 2021		2	33	337	155	70					597
Baseload Renewables	RUPTL 2019											
	RUPTL 2021						100	265	215	280	150	1,010
Peaker Renewables	RUPTL 2019											
	RUPTL 2021										300	300

Source: RUPTL 2019-2028 & RUPTL 2021-2030.

The recent RUPTL marked a renewed commitment for Indonesia to reduce emissions while also highlighting the need for significant investment in renewable power capacity and grid flexibility. Of note, the “green” RUPTL includes the first serious embrace of a role for solar technology in PLN’s future. The introduction of pumped hydro storage complements this. Both technologies are critical to PLN’s efforts to develop the capacity and operating skills needed to integrate renewables efficiently.

Even with a modest demand growth scenario, the country’s power demand is forecast to rise from 253TWh in 2021 to 390TWh by 2030, creating a meaningful market opportunity for renewable capacity. This should create a significant market opportunity for Japanese and Chinese investors with cost-effective renewable and storage technologies that could benefit from the same concessional financing available for coal technology.

The grid sector is another area for targeted business investment to attract concessional financing and system-driven planning. A flexible and reliable smart grid would be the critical enabler for higher penetration of renewable energy and demand management. As Indonesia grapples with the realities of implementing its net zero pledges in the near future, there must be greater urgency in PLN’s plans to upgrade and prepare its grid systems to benefit from new technology innovations.

Here, the two giants can play a major role. Japan and China have the ability to provide technology for grid upgrades, smart grid equipment, and smart appliances. Combined with their typical concessional financing, they could also mobilize precisely the type of long-term capital appropriate to funding critical grid infrastructure.

<sup>26</sup> RUPTL 2021-2030.

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The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. [www.ieefa.org](http://www.ieefa.org)

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