



# Indonesia at the Tipping Point

## *Will it be Coal Lock-in or a Clean Future?*

The preliminary “quick count” results are in for the presidential election that took place on Wednesday April 17<sup>th</sup> and it appears that President Joko Widodo, known as “Jokowi,” seems likely to be on track for a second five-year term. His re-election can be seen as a vote of confidence in a President who has made improving infrastructure, and a buildout of the power sector, his highest priority.

In Jokowi’s first term, he championed a simple goal—the construction of 35GW of new generating capacity. The good news for future generations of Indonesians is that the state-controlled power company, PLN, missed its target because the technology options for young, fast-growth economies have changed dramatically. The bad news is that a legacy of rushed decisions made over the past two years now threaten to penalize consumers and limit Indonesia’s ability to benefit from increasingly cost-competitive renewables for years to come.

The story of Indonesia’s power sector for the rest of 2019 will be determined by whether Jokowi’s new administration can rise to the challenge and deal with four inter-connected problems. Promising to burn massive quantities of low quality Indonesian coal may have kept some voters warm, but Indonesians will be paying a very high price for their love affair with coal, and the younger generation will be stuck with limited options to fix a rigid system. Here is our checklist of the issues to watch as the new teams and policies take shape:

- New capacity choices
- System design
- Tariff politics
- Subsidies

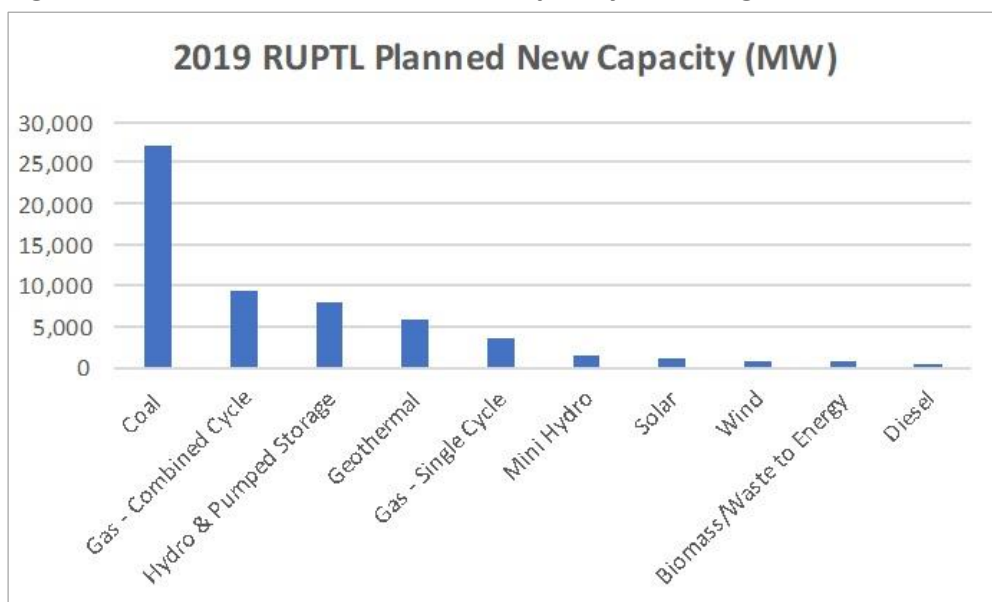
## Black Trumps Green

Over the past year, the Ministry of Energy Mineral Resources (MEMR) and leading policymakers have launched a range of policy initiatives with strong resource nationalism themes. (See [A Foreseeable Planning Mismatch—Indonesia’s Industry 4.0 Plans](#)). The motivating belief is that Indonesia’s economic future is dependent on aggressive domestic resource exploitation by state-owned enterprises and private resource owners in partnership with overseas companies that can mobilize cheap capital. For the power sector, this has resulted in the announcement of a series of remote mine-mouth coal IPPs in Kalimantan and Sumatera, as a well as a

final push for more than 5,000MW of high-profile coal IPPs in the already-crowded Java-Bali grid.<sup>1</sup>

This pattern of backward-looking policymaking has become so well entrenched, that South East Asian energy experts are accustomed to Indonesia's coal "exceptionalism," despite the risk of reaching the point of no return on coal lock-in. (IEEFA Indonesia: 2019 energy plan falls short)<sup>2</sup>. The most recent power planning document released by the MEMR is notable for allocating 69% of future new capacity to fossil fuels and sketching in a renewable solution just in time for Indonesia's Paris commitments that is heavily reliant on large-scale hydro and geothermal.

**Figure 1: Coal Dominates the New Capacity Planning**



Source: 2019 RUPTL.

Will Indonesia's one-sided love affair with coal change anytime soon? The presidential campaign and some recent high-profile media events suggest that the political risks to the coal lobby may be growing. At various points in the presidential campaign, both candidates were put on the spot for their lack of commitment to new, greener energy technologies. Although they were eager to embrace resource nationalism, they were just as eager to claim a commitment to clean energy despite the fact that neither side has the bona fides.

The political risks associated with the status quo were made even more apparent in the reaction to the release of a documentary called "*Sexy Killers*" which highlights the cost of coal to Indonesian communities and the many links between the resource companies and political elites. Young social media-savvy Indonesians flocked to see

<sup>1</sup> Proposed IPPs include Batang (2x1000MW), Java 9 & 10 (2x1000MW), and Tanjung Jati A (1,320MW)

<sup>2</sup> IEEFA. [IEEFA Indonesia: 2019 energy plan falls short](#). Brown.Hamdi.March 4, 2019

the film with millions of online views while local officials scrambled to shut down public screenings.

These political pressure points serve as warning flags that the new administration may choose to act on. Indonesia's single-minded reliance on coal has raised risks to the economy that policymakers are aware of but have lacked the foresight to address, relying instead on broken models from other markets. As a result, the key to improved performance for MEMR and PLN over the next five years will rest on new planning, transparency, and accountability disciplines.

Coal thrives in the dark; the cost of over-committing to baseload coal power goes unacknowledged when decision-makers do not have to link their decisions to anything beyond narrow local imperatives. This is the pattern that used to define China's power policies and resulted in structural over-capacity, unmanaged environmental impacts, and systemic problems with corruption that distorted pricing for generations of consumers.

Now is the time for MEMR and PLN to re-direct their planning and operating disciplines. First up should be a review of demand forecasting techniques and the development of new pricing tools that would provide meaningful incentives for energy efficiency and the provision of cost-effective peaking reserves, such as battery storage. This should be paired with a second needed reform: full transparency on the cost and performance of PLN's existing system. Over-reliance on black box figures such as BPP and bilateral PPAs have robbed the market of price discovery and accountability. Without more transparency about how the system actually performs and what it costs, MEMR is ill-equipped to make effective decisions about future generation capacity.

To ensure that MEMR and PLN gain credibility in the coming years, it is time to consider a third reform: full system-performance audits of all bilateral IPP deals for capacity additions of more than 50MW. The rest of the world is moving toward transparent technology-agnostic power auctions for a reason. When designed correctly, they mobilize the best technology and capital in a way that creates alignment with long-term system needs. Audits are a second-best solution, but they have the potential to inoculate the system against decision-making that cannot stand the test of transparency.

## What About the Grid?

One of the biggest failings of MEMR's power planning process is the fixation with baseload power. System solutions, backed by a flexible inter-connected grid, play no meaningful role in PLN's design criteria. They should. To get a sense of the problem, one need look no further than the reserve margin data for the Java-Bali grid.

**Table 1: Java-Bali Grid Reserve Margin**

Regional Balance (MW)	West Java	Central Java	East Java and Bali	Total Java-Bali
Net Available Capacity	18,222	6,257	10,040	34,519
Net Peak Load	16,203	4,353	6,514	27,070
Reserve Margin	12.5%	43.7%	54.1%	27.5%

Source: RUPTL 2019.

The unbalanced design of the Java-Bali grid is a glaring indication of how system design considerations have been given a backseat to coal power deal-making. Java-Bali is Indonesia's largest and best developed grid and yet obvious challenges related to system integration have been ignored in recent years and sensible efforts to improve inter-connection to balance the load within the Java-Bali grid seem to have been neglected. At the same time, under-investment in the transmission and distribution capacity needed to support West Java's load requirements have either been over-looked or misrepresented in the data.

In well-managed systems, a 27.5% reserve margin would be considered a generous reserve that would accommodate new clean energy additions designed to provide cost-effective peak load management options. Unfortunately, this is not what we are seeing and PLN continues to describe a 25% to 30% reserve margin for the Java-Bali grid as a normal target. The net result is designed over-capacity and West Java is effectively regarded as an island which now "requires" new high-cost IPP capacity such as the controversial 2,000MW Jawa 9 & 10.

Make no mistake. Indonesia as an archipelago nation faces important system design challenges. This is particularly true as planners grapple with the true cost of generation in a scenario where the Java Bali grid is likely to be inter-connected with Sumatra. It is noteworthy that a US\$2.1bn high voltage interconnection plan was put forward in 2014 with backing from the Japan International Cooperation Agency (JICA) which was expected to deliver an estimated 3,000MW from Sumatra to West Bali.<sup>3</sup> This is not an issue that has gone away. The interconnect has been delayed since 2016, but the rationale for more sophisticated grid planning remains relevant as PLN rushes to commit to more mine-mouth projects requiring isolated special-purpose grid connections.

The planning conflict was made apparent in the 2019 RUPTL. Although generous new baseload plans were laid out, calling for 56.4GW of new capacity, forecast transmission capacity was cut aggressively—a mismatch which suggests that there is a fundamental disconnect between generation and grid planning processes.

<sup>3</sup> [https://www.sourcewatch.org/index.php/Java-Sumatra\\_HVDC\\_Interconnection\\_System](https://www.sourcewatch.org/index.php/Java-Sumatra_HVDC_Interconnection_System)

**Table 2: PLN's Stalled Grid Build Out**

Description	Unit	RUPTL 2018-2027	RUPTL 2019-2028	% of change
Electricity Demand Projection	%	6.9	6.4	-6.4%
Additional Generation Capacity	MW	56,024	56,395	0.7%
Total Transmission Plan	kms	63,855	57,293	-10.3%
Total Network Substations	MVA	151,424	124,341	-17.9%
Total Distribution Plan	kms	526,390	472,795	-10.2%
Total Distribution Substation	MVA	50,216	33,730	-32.8%

As we move through 2019, it will be crucial to look for signs that MEMR and PLN can begin to address generation and grid development needs in a more holistic way. This is particularly important with the explosion of mine-mouth and remote baseload under consideration for Sumatra and Kalimantan. Low-cost and high-polluting coal supports the economics of these projects, but generation is only one part of the overall price of delivered power.

## Watch Out Ratepayers!

PLN's finances are in desperate shape as a result of a pre-election tariff freeze. With tariffs frozen since the beginning of 2017, IEEFA forecasts indicate that PLN's operating losses before subsidy are on track to balloon to an estimated IDR66.0trn in 2020 and IDR108.1trn in 2021 as new high-cost IPPs come online. ([PLN's Coal IPP Funding Gap Suggests Tariffs Must Rise in 2020](#)). Based on a modelling exercise IEEFA undertook in 2018, it appears that tariffs would need to rise by 10% to 25% in 2020 to keep PLN's operating losses—and the subsidy required from the Ministry of Finance—in a manageable zone. This will be crucial to the rating agencies whose supportive ratings are premised on the government's commitment to policies that will ensure that PLN's stretched credit fundamentals don't spin out of control.

**Table 3: PLN's Sea of Red Ink**

PLN – FORECAST INCOME STATEMENT	2017	2018E	2019E	2020E	2021E
(in Millions IDR)	Rp	Rp	Rp	Rp	Rp
<b>REVENUES</b>					
Sale of electricity	246,586,856	263,652,568	282,406,098	304,469,075	327,635,200
Sales GWh	223,530	239,000	256,000	276,000	297,000
Sales YOY% Change	3.5%	6.9%	7.1%	7.8%	7.6%
Other revenue	8,708,387	9,373,159	10,089,199	10,860,494	11,691,342
<b>Total Revenues</b>	<b>255,295,243</b>	<b>273,264,728</b>	<b>292,751,298</b>	<b>315,605,569</b>	<b>339,623,542</b>
<b>OPERATING EXPENSES</b>					
Fuel and lubricants	116,947,824	136,712,006	153,254,159	165,207,983	177,763,790
Purchased electricity	72,426,641	79,665,218	86,932,466	119,166,407	169,735,723
YOY % Change	21.3%	10.0%	9.1%	37.1%	42.4%
Depreciation	29,160,597	32,076,657	35,284,322	37,048,538	38,900,965
Other expense	56,939,032	58,005,035	59,097,688	60,217,657	61,365,626
<b>Total Operating Expenses</b>	<b>275,474,094</b>	<b>306,458,915</b>	<b>334,568,635</b>	<b>381,640,587</b>	<b>447,766,105</b>
<b>OPERATING LOSS BEFORE SUBSIDY</b>	<b>(20,178,851)</b>	<b>(33,194,188)</b>	<b>(41,817,338)</b>	<b>(66,035,018)</b>	<b>(108,142,563)</b>
Government's electricity subsidy	45,738,215	48,903,652	67,376,702	91,594,382	133,701,927
YOY % Change	-21.2%	6.9%	37.8%	35.9%	46.0%
<b>OPERATING INCOME AFTER SUBSIDY</b>	<b>25,559,364</b>	<b>25,559,364</b>	<b>25,559,364</b>	<b>25,559,364</b>	<b>25,559,364</b>

Note: PLN has not yet released its 2018 results.

Power tariff politics are sensitive in most countries and Indonesia is no exception. In fact, Jokowi's challenger in this month's election, Prabowo Subianto, made a point of promising that he would cut power tariffs even further during one of the presidential candidate's debates.

The challenge now will be for MEMR and PLN to find a way to create a positive narrative to neutralize the inevitable blowback from rising power prices. The most common strategy for convincing an unhappy public that higher tariffs are necessary is either to highlight a looming crisis or to pair a tariff increase with system improvements and reforms that offer realistic hopes for improved performance in the future. This latter strategy should be within Jokowi's reach, given PLN's mixed reputation. What is missing, however, is a reform-oriented narrative that would better align PLN's development with new clean technologies and better financial management.

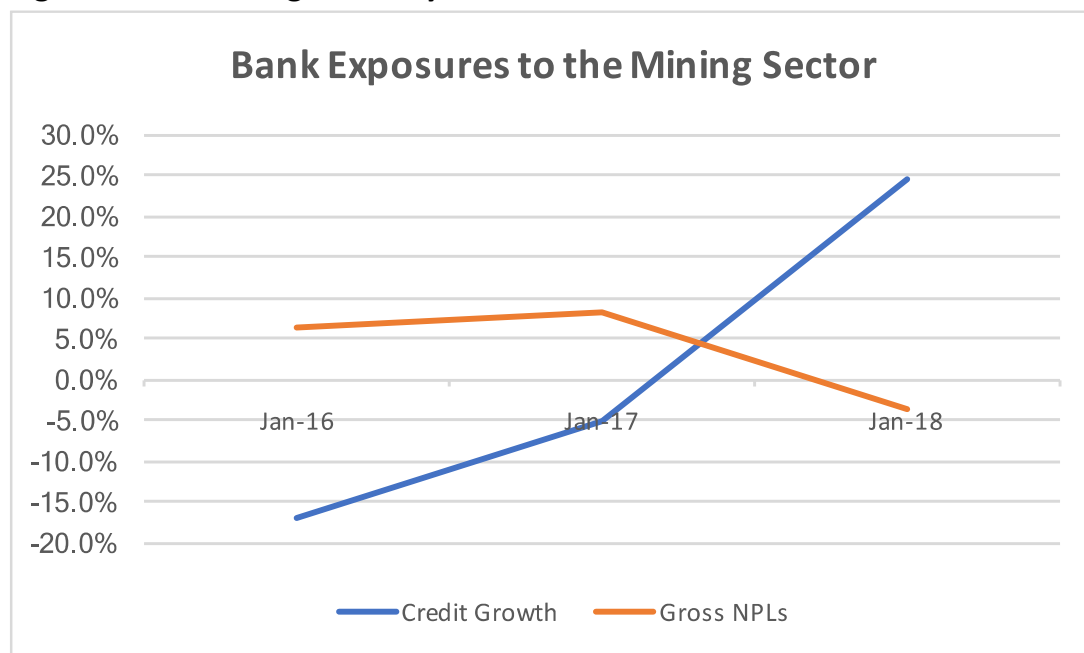
## Counting the Cost of Coal

One of the most interesting lessons of the past three years has been how rapidly the promise of clean energy technology paired with the damaging impacts of air pollution have changed the power development equation in Asia. Where once a China-style resource nationalism strategy on coal development would have seemed inevitable, it is now China and India that are leading the way toward policy and market structures that give both countries a clear pathway for transitioning away from coal.

It is hard to know exactly which political catalysts will emerge to reward Indonesian politicians who do the math on clean energy and the impacts of climate change. What is certain, however, is that the cost of Indonesia's reliance on coal is much higher than most policymakers acknowledge.

One indication of the cost of coal to Indonesian consumers can be seen in the habits of the Indonesian banking sector. While the leading Indonesian banks prioritize tough lending standards, they have historically been generous in their lending to coal companies. As a result, after the coal sector was hit when prices collapsed in 2016, the banks were saddled with a fresh round of bad loans due to the poor financial management habits of coal companies that habitually prioritize expansion over balance sheet management.

**Figure 2: The Mining Credit Cycle**



Source: Indonesia Financial Services Authority.

What was the solution to this impasse? Did the banks suffer? No, according to the analysis provided on a recent ratings agency call with investors, the highly profitable Indonesian banks sailed through because they promptly raised prices on mortgages to the 9% to 10% range for Indonesia's rising class of homeowners. This wealth transfer is a heavy burden for Indonesia's younger generation.

Finding capital for new businesses from Indonesian banks is extremely hard, and many young entrepreneurs struggle to reach the scale needed to compete. Nevertheless, the outlook for Indonesian banks remains positive. Despite new worries about the outlook for coal markets, investors are banking on the idea that any losses on coal loans can be recouped from Indonesian consumers who cannot yet find competitive pricing for common consumer finance products.

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When you add this misallocation of capital to the systematic mispricing of coal and power, Indonesia has a tangle of misdirected economic incentives all of which make it more difficult for Indonesia to address its climate risks. For policymakers, especially the senior officials at the Ministry of Finance and Bank Indonesia, it is time to carry out the type of scenario planning that is part of the Task Force on Climate-related Financial Disclosures (TCFD)—and to make it public. The sooner Indonesian government officials are forced to be transparent about who is subsidizing whom, the easier it will be for Indonesians to realize that air pollution, growing flood risks, and expensive mortgages may all have the same root cause.



## About IEEFA

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

## About the Author

### Melissa Brown

Energy Finance Consultant Melissa Brown, a former securities analyst at JP Morgan and Citigroup, has played a leading role in various Asian investment organizations focused on mainstream and sustainable investment strategies for public and private equity investors over the past 25 years.

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