Global Energy Monitor

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NO FUTURE FOR COAL

WITH THE ECONOMIC WINDOW CLOSING RAPIDLY, JAPAN'S SUPPORT FOR OVERSEAS COAL PROJECTS POSES $4.8 BILLION STRANDED ASSET RISK

SUMMARY

Declines in the cost of renewables are undermining the economic prospects for coal-fired power projects in South and Southeast Asia. According to recent modeling, by 2028 it will be cheaper to build new solar PV and onshore wind power in the region than to run existing power plants. This means that the average coal plant in Southeast Asia will be retired at just 15 years old, and a coal plant that enters construction in 2020 and enters the active fleet in 2024 will see less than five years of operation. Reflecting the deteriorating economics of coal power, analysts at Citi report an 80% decline in coal financing from 2010 to 2018. Private insurers including Standard Chartered, RBS, and Nippon Life have announced their complete withdrawal. Yet, key Japanese public finance institutions continue to support over 3,700 MW of coal plants, placing $4.8 billion at risk of becoming stranded assets.[1]

BACKGROUND

Since 2013, Japan's bilateral finance institutions, including Japan Bank for International Cooperation (JBIC), Japan International Cooperation Agency (JICA), and Nippon Export and Investment Insurance (NEXI), have invested over US$18 billion in supporting overseas coal projects, including coal-fired power plants, coal mines, coal-related electrical transmission, and coal transport infrastructure. Currently, that support continues, with $4.8 billion in financing support still pending, all for projects in three South or Southeast Asian countries.[2] Among coal-related projects that have reached financial closure, power plants represent US$13.7 billion, or 76% of lending. Power plants represent an even larger share of pending projects: US$4.2 billion, or 88% of $4.8 billion. The remaining funding, US$574 million, is a coal-related transmission line, the Java-Sumatra Interconnection Project (II). In addition, JIBC has approved US$650 million for the Van Phong 1 plant in Vietnam, while NEXI may provide several billion in insurance for the project. Finally, US$1.5 billion of lending for the Cirebon Coal Plant Phase 3 is stalled as the Indonesian government reconsiders the project. The power plants in the current pipeline are distributed as shown in Table 1.

Table 1. Distribution of Japanese Coal Financing

	Pending	Potential or Identified	Stalled
Indonesia	1,063,169,521	0	1,538,200,000
Bangladesh	1,325,720,000	0	0
Vietnam	2,399,000,000	650,000,000	0

Source: Global Energy Monitor, Global Coal Finance Tracker, accessed November 2019

[1] IEFFA, "Cheaper to build new renewables than run existing coal plants within 10 years' time in South-east Asia," October 29, 2018, http://bit.ly/33nbu5y

[2] Information in this briefing on Japanese lending is from the Global Coal Finance Tracker, October 2019, at http://bit.ly/2pMkJye

A CLOSING WINDOW

The three countries being considered for future Japanese financing—Indonesia, Bangladesh, and Vietnam—all have substantial amounts of coal power capacity under construction: 16,570 MW, 19,120 MW, and 22,910 MW respectively.[3] But for the past three years, initiation of further construction has fallen off dramatically. The reasons for the decline include growing competition from renewables, dampening expectations for power demand growth, the health toll of rising air pollution, and mounting alarm over global warming. For coal plant planners, projects are particularly vulnerable to a closing window of economic viability, since new solar PV and onshore wind are projected to be cheaper than existing coal by 2028.[4] Thus, even if plants are able to economically sell power for a few years, they risk becoming stranded assets before the end of the decade.

VIETNAM

Coal plant constructions starts totaled 3,075 MW in 2016, then totaled only 1,470 GW through 2017, 2018, and the first half of 2019, as finance capital has shifted toward renewables. In October, energy research firm Wood Mackenzie said that Vietnam's solar capacity will reach 5,500 MW in 2019, up from only 134 MW in 2018.[5] Vietnam is the first state in ASEAN to have installed offshore wind power and is expected to surpass Thailand as the leader in wind power capacity, with plans to build 6,000 MW by 2030.[6] Vietnam's offshore wind potential is 513 GW, much larger than the entire coal power capacity of Japan (291 GW).[7] Global warming is becoming an existential concern, with a recent study reporting that the Mekong Delta's elevation above sea level averages just 0.8 meter, potentially making 12 million people vulnerable to rising seas by mid-century.[8] Public opposition to coal has grown alongside the expanding coal fleet due to negative impacts such as worsening air pollution, with capital Hanoi ranked among the worst in the world.[9] The government has reduced its 2030 target for coal, from 75,000 MW to 55,000 MW, in response to public pressure. Community groups are pushing for further coal reductions in the country's 2020 energy plan. There have been numerous delays in the commissioning of planned coal and gas plants, according to a 2019 government report.[10] Two coal units have been cancelled and seven postponed until "after 2030," with shorter delays for another 37 units totaling 22,000 MW. This means much of Vietnam's pipeline is not due to be built until the late 2020s. In contrast, analysts report solar will be cheaper to build than new coal as soon as 2020 and will out-compete existing coal by 2028.[11] Vietnam's utility-scale solar capacity recently overtook that of Australia.[12]

INDONESIA

After starting construction on 6,100 MW of coal projects in 2017, construction starts in Indonesia fell to 1,124 MW in 2018 and 1,500 MW in the first half of 2019. With numerous projects being cancelled or abandoned, the overall pre-construction pipeline in Indonesia fell by 55% from 36,614 MW in mid-2016 to 16,570 MW in mid-2019. The reductions are consistent with previous retrenching by Indonesia's Ministry of Energy. Its 2015 ten-year energy plan envisaged 42,000 MW of new coal capacity over the next decade, a target later cut to less than 27,000 MW. At a July 2019 cabinet meeting, President Joko Widodo reportedly expressed his intention to wean Indonesia from

[3] Coal plant construction starts are from Global Energy Monitor, Global Coal Plant Tracker, July 2019, http://bit.ly/2hBWMSf
[4] Carbon Tracker Initiative, "Cheaper to build new renewables than run existing coal plants within 10 years' time in South-east Asia," October 29, 2018, http://bit.ly/33nbu5y
[5] CNBC, "Vietnam is accelerating drive for renewable energy," November 6, 2019, http://bit.ly/2OeUGJw
[6] Xinhua, "Vietnam to increase wind power capacity," June 11, 2019, http://bit.ly/34o237e
[7] Duc Luong Nguyen, A Brief Overview of Assessments of Wind Energy Resource Potential in Vietnam," *Journal of Fundamentals of Renewable Energy and Applications*, 2014, http://bit.ly/2XHMcO6
[8] Charles Schmidt, "New Elevation Measure Shows Climate Change Could Quickly Swamp the Mekong Delta," *Scientific American*, August 28, 2019, http://bit.ly/34hvDLz
[9] AirVisual, http://bit.ly/33nJOx2
[10] Ministry of Industry and Trade, "On the Implementation Progress of Power Projects in the Revised Power Development Plan 7," June 4, 2019, http://bit.ly/2OLB130
[11] Carbon Tracker Initiative, "Economic and financial risks of coal power in Vietnam," October 2018, http://bit.ly/35CHtQs
[12] Marija Maisch, "Vietnam overtakes Australia for commissioned utility scale solar following June FIT rush," *PV Magazine*, July 5, 2019, http://bit.ly/2DlNsgB

reliance on coal. The reported comment followed a period of severe air pollution in Jakarta that prompted a citizen lawsuit holding top officials liable for operating coal plants near the city.[13] A financial analysis of Indonesia's coal power sector found that new solar PV capacity will be cheaper than new coal capacity by 2021, and new solar PV capacity will be cheaper than existing coal capacity by 2028.[14] This means that any further coal construction initiated after 2019 and completed after 2023 will have no more than 5 years of operation before it faces the risk of stranded assets, as new PV offers generation to the grid at a lower cost. Moreover, demand has increased at less than half the rate expected by planners, with reserve margins in the Java-Bali system expected to reach 55 percent in 2019.[15]

BANGLADESH

Since the 1320 MW Rampal plant and the 1320 MW Payra plant entered construction in 2017, no further coal power capacity entered construction in 2018 or 2019. Over 14,700 MW of capacity has been shelved or cancelled since 2010. Financed by JICA, the 1200 MW Matarbari Coal Plant is expected to enter construction in 2020. The project is expected to be highly uneconomic, due to the high cost of the planned coal port infrastructure required by the project. For Phase I, costs as high as BDT13.5 per kilowatt hour have been quoted, or US$160 per MWh. That cost is many times higher than the US$35.5 per MWh bids for solar in recent India energy auctions. Now JICA, which funded the plant, is considering funding an additional 1200 MW phase, in hopes of spreading out the costs of the port between both plants. By the time a potential Phase II enters operations in the late 2020's, new PV capacity is expected to be cheaper than existing coal-fired power plants on a levelized cost basis, and it appears likely that both phases will become stranded assets. Meanwhile, prospects for both solar power and wind energy have steadily risen in the country, including 30,000 MW of wind energy potential at wind speeds of 5.75-7.75 m/s, according to the US Department of Energy.[16]

METHODOLOGY

In this report, "stranded assets" include overnight capital costs in United States dollars, based on IEA estimates of $1400/kW for ultra-supercritical capacity in South Asia (Matarbari Phase II) and $1,200/kW for supercritical capacity (Kalseltent 2, Indramayu 4, and Van Phong-1).

BACKGROUND ON GLOBAL ENERGY MONITOR

Global Energy Monitor in a nonprofit research organization developing information on fossil fuel projects worldwide. Through its Global Coal Plant Tracker (GCPT) project, Global Energy Monitor has provided biannual updates on coal-fired generating capacity since 2015. GCPT data is used by the International Energy Agency (IEA), the OECD Environment Directorate, UN Environment Programme, U.S. Treasury Department, and World Bank. GCPT data is licensed by Bloomberg LP and UBS Evidence Lab, and is used by the Economist Intelligence Unit and Bloomberg New Energy Finance.

[13] Hans Nicholas Jong, "Indonesia's president signals a transition away from coal power." Mongabay, July 16, 2019, http://bit.ly/37FKYYk

[14] Carbon Tracker Initiative, "Economic and financial risks of coal power in Indonesia," October 2018, http://bit.ly/2Oiik87

[15] "Indonesia's Coal-Fired Electricity Generation Glut," *Jakarta Post*, December 22, 2017, http://bit.ly/2OhSMYI

[16] Sohel Parvez, "Coastal belt holds wind power prospects: study," *The Daily Start*, November 11, 2018, http://bit.ly/2OhtbPt

Table 2. Major Projects with Japanese Funding in Progress or Identified

Project	US$ mil.	Lender	Notes
Bangladesh			
Matarbari Coal Plant Phase II $1.326 billion JICA	1,326	JICA	This project, aimed to be completed in 2028, would add two additional 600 MW units to a coal-fired power plant on the coast of Bangladesh. The first two 600 MW units are expected to begin construction in 2020 by Sumitomo Corporation, funded by a loan of US$608 million, and are scheduled for completion in 2024.
Indonesia			
Java-Sumatra Interconnection (II)	574	JICA	This project would allow for construction of 558 km of transmission lines to bring power from 3,0000 MW of new coal plants planned by independent power producers in Sumatra, for the "power-impoverished" Java. It builds on previous loans by JICA for the project in 2008 for engineering and in 2010 for Phase I of transmission line construction.
Kalselteng 2 Coal Plant	489	NEXI and JBIC	This project will add two 100 MW units to the existing Kalselteng 2 Coal Plant. Construction is underway and the project is scheduled for completion in 2020.
Indramayu power station, Unit 4		JICA	This project is included in the country's long-term power plant with a completion date of 2026.
Vietnam			
Van Phong 1	2,399 pending; 650 identified	NEXI and JBIC	After a troubled history spanning over eight years, this project started construction in August 2019. A group of Japanese NGOs called on Sumitomo to withdraw from the project because it violates Sumitomo's own policies on coal plants.

Source: Global Energy Monitor, Global Coal Finance Tracker, accessed November 2019