

RISKS GROW FOR SOUTH KOREA'S OVERSEAS COAL INVESTMENTS

WITH PRIVATE FUNDERS AVOIDING COAL AND COVID-19 CREATING CONSTRUCTION DELAYS, SOUTH KOREA'S PUBLIC FINANCE INSTITUTIONS FACE NEARLY \$6 BILLION IN POTENTIAL STRANDED ASSETS

SUMMARY

With \$5.6 billion in support for overseas coal-fired power plants currently in construction or operating, key South Korean public finance institutions continue to increase their stake in overseas plants, including plans reportedly under consideration to provide a majority of the debt funding for the \$3.5 billion Jawa-9 and Jawa-10 coal plants in Indonesia, and seeks to acquire a 40% share of the \$1.2 billion Vung Ang-2 coal plant under development in Vietnam, with support from the Export-Import Bank of Korea. If approved, these new investments in overseas coal power would contradict the provisions of the comprehensive Green New Deal announced by South Korea's Democratic Party, in particular the plan's provisions for a phaseout of overseas coal financing by public institutions. Meanwhile, private funders have moved away from coal.

THE RENEWABLE COST REVOLUTION AND THE WITHDRAWAL OF PRIVATE LENDERS

The shift in the financial landscape is being driven in part by the rapid fall in the cost of renewables, in particular solar and wind power. The change is undermining the economic prospects for coal power worldwide, including in the Southeast Asian countries where most of the investments have taken place. 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 could face retirement at just 15 years old, and a coal plant that enters construction in 2020 and enters the active fleet in 2024 might see less than five years of operation.¹ Reflecting the deteriorating economics of coal power, analysts at Citi report an 80% decline in coal financing from 2010 to 2018. To date at least 130 major financial institutions around the world have announced measures to restrict funding for thermal coal power. Among these, the major international commercial banks Crédit Agricole, ING, Royal Bank of Scotland and Standard Chartered have announced respective commitments to have no exposure to thermal coal companies by 2030 at the latest. Yet key South Korean public finance institutions continue to move ahead toward financing the massive Jawa-9 and Jawa-10 coal-fired power plants in Indonesia, creating a massive stranded asset risk.

SOUTH KOREA'S GREEN NEW DEAL CALLS FOR A PHASE-OUT OF PUBLIC FINANCING FOR COAL

In March, as part of the campaign that led to a sweeping victory in Korea's Parliamentary elections,

¹ IEEFA, "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>

the ruling Democratic Party published a climate manifesto that promised to pass a Green New Deal. The plan includes the phase out of public support for domestic and overseas coal, directly contradicting the ongoing possibility of financing by Korean export credit agencies for the proposed Jawa-9 and Jawa-10 coal plants in Indonesia (see discussion below and Table 2.)

COVID-19 PLACES ADDITIONAL PRESSURE ON COAL PLANT ECONOMICS

The recession caused by the COVID-19 pandemic has depressed electricity demand. In addition, slowdowns caused by pandemic-related workforce and supply constraints have wreaked havoc on construction schedules. Global Energy Monitor has documented 15 locations where coal plants under development have been detrimentally affected by the pandemic.² Faced with the prospect of an economic contraction that could reach negative 0.4% in 2020, Indonesia's Ministry of Energy and Mineral Resources is exploring renegotiating power plant contracts with IPPs.

EXAMPLES OF EARLY CLOSURES AND FAILED INVESTMENTS

The closure of two recently built coal plants in the United States shows the real possibility of early retirement of coal plants worldwide due to competition from renewables, particularly during a period of recession. [Sandow power station](#) Unit 5, a 581 MW coal plant in the United States, was built in 2009 and retired in 2018 after less than ten years in operation, the result of competition from renewables and gas.³ In April 2020, it was announced that [Longview power station](#), a 807.5 MW coal plant built in 2011 in the United States, would also retire after less than ten years in operation as a result of competition from renewables, gas, and depressed market prospects resulting from the COVID-19 pandemic.⁴

BACKGROUND ON SOUTH KOREA'S OVERSEAS COAL SUPPORT

Since 2013, South Korea's bilateral finance institutions, including Export-Import Bank of Korea, Korea Trade

Insurance, Korean Development Bank, and state-owned Korean Electric Power Corporation (KEPCO) have invested US\$5.6 billion in supporting overseas coal coal-fired power plants. Top recipients of this public financing have been Vietnam with \$4.3 billion and Indonesia with \$1.2 billion, and Chile with \$100 million. In addition, KEPCO has announced \$133 million in support for the proposed 630-MW Thabametsi coal plant in South Africa, and to-be-determined amounts for two other plants that have yet to reach final investment decision (FID). These are the 1,000-MW Sual plant and the 600-MW Hanjo plant in the Philippines.

In addition to the risk of stranded assets abroad, two of Korea's public finance institutions, The Korea Development Bank and the Export and Import Bank of Korea, agreed in March 2020 to provide 1 trillion won (US\$817+ million) bail-out for Doosan Heavy Industries, whose CEO claimed it had lost major orders due to South Korea's cancellation of coal and nuclear projects.⁵ Although the loan was ostensibly provided to alleviate the company's financial difficulties under the COVID-19 pandemic, Doosan Heavy's financial problems preceded the COVID-19 outbreak and are closely related to the company's dependence on coal equipment for 70-80% of its revenue stream.

Projects funded or under consideration for funding by South Korean state-owned entities are listed in Table 1.

A CLOSING WINDOW

The two main countries being considered for future South Korean financing—Indonesia and Vietnam—both have substantial amounts of coal power capacity under construction: 11,840 MW and 8,680 MW respectively, according to the Global Coal Plant Tracker.⁶ But for the past three years, initiation of further construction has fallen off by 85%, from 12,920 MW in 2016 for the Southeast Asia region to 1,810 MW in 2019.⁷ The

² "Impact of COVID-19 Pandemic on Major Fossil Fuel Projects, GEM.wiki, accessed April 20, 2020, <https://bit.ly/2KhI3KU>

³ "Luminant to Close Two Texas Power Plants," *Vistra Energy*, October 13, 2018, <https://bit.ly/3aqWery>

⁴ "Longview coal plant – one of AMERICA's best and newest – has just gone bankrupt," *IEEFA*, April 16, 2020, <https://bit.ly/3arg2Lq>

⁵ Jung Suk-ye, "Korean Government to Inject 1.6 Tril. Won into Ailing Doosan Heavy Industries", *Business Korea*, Mar. 27, 2020, <https://bit.ly/2xEYoGC>

⁶ "Coal Plants by Country (MW)," *Global Coal Plant Tracker*, January 2020, <https://bit.ly/2H2fHlt>

⁷ "More fizz than boom: 2019 sees coal plant growth in Southeast Asia dwindling as pipeline continues to shrink," *Global Energy Monitor*, October 23, 2019, <https://bit.ly/2VQSpqg>. Updated with full 2019 figure (1,810 MW) at "Changes from January 2019 to January

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 already cheaper than new coal plants in all major markets today and are projected to be cheaper than existing coal by 2028.⁸ 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.⁹

The fall in new construction preceded the COVID-19 epidemic, which has led to force majeure declarations at six plant construction locations in Indonesia and affected at least 11,136 MW of construction at 13 locations in Indonesia, Vietnam, and the Philippines.¹⁰

VIETNAM

Coal plant construction starts totaled 3,075 MW in 2016, then totaled only 1,570 MW through 2017, 2018, and 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 2018.¹¹ 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 2030.¹² Vietnam's offshore wind potential is 513 GW, over 14 times the entire coal power capacity of South Korea (37.6 GW).¹³ 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.¹⁴ 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.¹⁵ According to reports, KEPCO is considering acquiring the 40% share of this project currently owned by CLP Holdings, and will then invite KEXIM to provide financing.¹⁶ Such a move would increase KEPCO's exposure to coal at a time when Vietnam is pivoting toward renewables. 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.¹⁷ 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 2028.¹⁸ Vietnam's utility-scale solar capacity recently overtook that of Australia.¹⁹

INDONESIA

As of March 2020, it was reported by IJGlobal that Korea Development Bank and Kexim continue to consider \$232,575,000 in financing for the 2,000 MW Jawa-9 and Jawa-10 project in Indonesia, also known as Banten Suralaya power station²⁰. Key facts of the pre-feasibility report released to the press through a member of the National Assembly placed the exposure

2020 (MW)," Global Energy Monitor, January 2020, <https://bit.ly/2VKkhfR>

⁸ 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>

⁹ "How to waste over half a trillion dollars: The economic implications of deflationary renewable energy for coal power investments," Carbon Tracker Initiative, March 12, 2020, <https://bit.ly/34PZNqc>

¹⁰ "Impact of COVID-19 Pandemic on Major Fossil Fuel Projects, GEM.wiki, accessed April 20, 2020, <https://bit.ly/2KhI3KU>

¹¹ CNBC, "Vietnam is accelerating drive for renewable energy," November 6, 2019, <http://bit.ly/2OeUGJw>

¹² Xinhua, "Vietnam to increase wind power capacity," June 11, 2019, <http://bit.ly/34o237e>

¹³ 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/2XHMcO>

¹⁴ Charles Schmidt, "New Elevation Measure Shows Climate Change Could Quickly Swamp the Mekong Delta," *Scientific American*, August 28, 2019, <http://bit.ly/34hvdLz>

¹⁵ AirVisual, <http://bit.ly/33nJOx2>

¹⁶ "Why Mitsubishi Corp." No Coal, Go Green! Project, March 2020, <https://bit.ly/2VDDrFy>

¹⁷ 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>

¹⁸ Carbon Tracker Initiative, "Economic and financial risks of coal power in Vietnam," October 2018, <http://bit.ly/35CHtQs>

¹⁹ Marija Maisch, "Vietnam overtakes Australia for commissioned utility scale solar following June FIT rush," *PV Magazine*, July 5, 2019, <http://bit.ly/2DINsgB>

²⁰ "Lenders join Indonesian coal-fired financing," IJGlobal, March 27, 2020, <https://bit.ly/2x1iG18>

of Korean public lenders significantly higher, at \$1.55 billion. If approved, such financing would be out of step not only with Korea's Green New Deal but with the ongoing shift in Indonesia away from coal power. After starting construction on 6,100 MW of coal projects in 2017, construction starts in Indonesia fell to 1,124 MW in 2018 and 1,710 MW in 2019. With numerous projects being cancelled or abandoned, the overall pre-construction pipeline in Indonesia fell by 47% from 36,614 MW in mid-2016 to 19,360 MW in 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 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.²¹ 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 2028.²² This means that any further coal construction initiated after 2019 and completed after 2023 could have five years or less of operation before it faces the risk of becoming a stranded asset, 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 2019.²³

PHILIPPINES

After starting construction on 1,003 MW of coal power in 2016, new construction starts were 105 MW in 2017, and there were no starts in 2018 and 2019. Nevertheless, the pre-construction pipeline remained flat at 9,654 MW in 2016 and 9,444 MW in 2019. Coal projects in the Philippines face a well-organized opposition that includes the Catholic church, which

opposes coal over its climate and environmental impacts. In March 2019, Negros Occidental became the eighth and largest of the country's 81 provinces to ban all coal-fired plants, effectively canceling a 0.3 GW plant that had been proposed in 2018. On April 19, 2020, it was reported that the Philippines's oldest conglomerate, Ayala Corporation, will fully divest from coal by 2030, diverting investments to renewable generation.²⁴

SOUTH AFRICA

South Africa's large coal fleet has been plagued by scandal and construction problems. Coal projects face well-organized legal and social opposition. KEPCO's involvement as a co-owner in the troubled Thabametsi power station now faces difficulties, as three of the co-financers of the project, Rand Merchant Bank, Nedbank, Standard Bank, and FirstRand, have withdrawn support.

CONCLUSION

With billions already invested in new coal power overseas, South Korea also risks losing major amounts of finance capital due to the rapidly deteriorating economics of coal. Further investments in overseas coal plants will compound those risks. The danger of stranded assets calls for a reevaluation of the country's policies and a shift away from supporting such high-risk projects.

BACKGROUND ON GLOBAL ENERGY MONITOR

Global Energy Monitor is 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.

²¹ Hans Nicholas Jong, "Indonesia's president signals a transition away from coal power." Mongabay, July 16, 2019, <http://bit.ly/37FKYYk>

²² Carbon Tracker Initiative, "Economic and financial risks of coal power in Indonesia," October 2018, <http://bit.ly/2OiiK87>

²³ "Indonesia's Coal-Fired Electricity Generation Glut," *Jakarta Post*, December 22, 2017, <http://bit.ly/2OhSMYl>

²⁴ Claire Jiao and Dan Murtaugh, "Philippines' Oldest Conglomerate to Get Out of Coal by 2030," Bloomberg Green, April 19, 2020, <https://bloom.bg/2ytJh3c>

Table 1. Major Projects in Vietnam with South Korean Funding or Potential Funding

Project	Status	Finance (US\$)	Lender	Notes
Nghi Son-2 Coal Plant	Finance Closed; Construction Underway	936,000,000 261,000,000	Ex-Im Bank of Korea KEPCO	In November 2017 KEPCO finalized the US\$2.3 billion (2.56 trillion won) contract with Electricity of Vietnam (EVN). KEPCO said it will break ground this year and complete the project in 2021. Once completed, KEPCO will operate it for 25 years before transferring it to the Vietnamese.
Song Hau-1 Coal Plant	Finance Closed; Construction Underway	507,000,000 480,000,000	Korea Trade Insurance Ex-Im Bank of Korea	In 2016 it was reported that Korea Trade Insurance Corporation (K-Sure) and Korea Export-Import Bank (Kexim) will jointly provide financing of US\$987 million alongside a consortium of nine international commercial banks who will provide a further US\$213 million 10-year syndicated loan. In August 2019 construction was 77% complete and the project was running two years behind schedule.
Thai Binh-2 Power Center	Finance Closed; Construction Underway	600,000,000	Ex-Im Bank of Korea	In July 2019 it was reported that credit for the project had been cut and construction had been suspended due to the embezzlement scandal and other problems detailed in the MOIT's November 2018 report. In November 2019 construction had resumed and the plant was reportedly 84.2% complete.
Vinh Tan-4 Coal Plant	Finance Closed; Operating	300,000,000 341,000,000	Ex-Im Bank of Korea Korea Trade Insurance Corp.	Vinh Tan-4, sponsored by Electricity of Vietnam, went into operation in 2017 (Unit 1) and 2018 (Unit 2). The project was funded by Kexim \$300,000,000) and K-sure (\$341,000,000). Financial closure was on September 1, 2017.
Vinh Tan-4 Coal Plant Extension	Financed Closed; Operating	455,000,000 455,000,000	Ex-Im Bank of Korea Korea Trade Insurance Corp.	Vinh Tan-4 Extension, sponsored by Electricity of Vietnam, went into operation in 2019. The project was funded by Kexim and K-sure, which both provided \$455 million, with financial closure on January 1, 2014. The project was funded by Kexim and K-sure, which both provided \$455 million, with financial closure on January 1, 2014.
Quang Trach-2 Power Center	Seeking Finance; Project in Preliminary Stage	None committed	POSCO	This project has struggled to find investors. Among those announcing potential support is Korea's POSCO Group, which announced in April 2015 that it was interested in joining the project as a co-investor. To date, that participation has not been confirmed, and there have been no announcements of support by Korea's public finance institutions.
Vung Ang-2 power station	Seeking Finance; Project Permitted	To be decided	KEXIM	This project was sponsored by Mitsubishi, Choguko, and CLP (China Light & Power), but CLP is seeking to sell its equity to exit this project. KEPCO is going through its internal process to purchase CLP's share (40%). Korean public finance institutions are not involved in the project yet, but KEPCO has indicated that it plans to seek KEXIM's support.

Source: Global Energy Monitor, Global Coal Public Finance Tracker, accessed April 2020

Table 2. Major Projects in Indonesia with South Korean Funding or Potential Funding

Project	Status	US\$	Lender	Notes
Jawa-9 and Jawa-10 Coal Plant (also known as Banten Suralaya)	Finance Under Consideration; Project in Pre-Permit Development	Up to \$1.55 billion	Ex-Im Bank of Korea Korea Trade Insurance Korea Development Bank KEPCO	In September 2019 it was reported that PLN was advancing the financing arrangements for the US\$3.5 billion expansion and was hopeful of reaching financial closure by the end of 2019. The financing structure was said to comprise 25 percent internal financing and 75 percent financing via a syndicated loan from 15 Indonesian and foreign lenders. In March 2020 the financing was reported to be moving closer to realization. It was reported that, alongside DBS, Korea Development Bank and Kexim, the Indonesian Bank Mandiri, Bank Rakyat Indonesia and Bank Negara Indonesia are also set to be involved in the financing. The key facts of the pre-feasibility report were released to the press through a member of the national assembly. According to the pre-feasibility report, \$1.55 billion will be provided by Korean export credit agencies, with the breakdown not provided. The support of Korea's export credit agencies is tied to the involvement of Doosan Heavy as the EPC contractor for the project.
Cirebon Coal Plant	Finance Closed; Construction Underway	522,000,000	Ex-Im Bank of Korea	In April 2017 a loan agreement was made to provide US\$1.6 billion for Cirebon 2. The Export Credit Agencies Japan Bank for International Cooperation (JBIC) and the Export-Import Bank of Korea (Kexim) will provide 60% of project debt (US\$960m). Private banks will provide the remaining 40% of project debt (US\$640m), including ING Bank, Mitsubishi UFJ Financial Group, Mizuho Bank and Sumitomo Mitsui Banking Corporation.
Tabalong power station	Finance Closed; Construction Underway	485,000,000	Korea Development Bank	This project reached financial closure on January 18, 2017. The project is co-owned by Adaro Indonesia (65%) and KEPCO (35%). In addition to funding from Korea Development Bank, the project has also received lending from Bank of Tokyo-Mitsubishi, DBS Bank, HSBC, Mizuho Bank, and Sumitomo Mitsui Banking Corporation.

Source: Global Energy Monitor, Global Coal Public Finance Tracker, accessed April 2020

Table 3. Major Projects in the Philippines and South Africa with South Korean Funding or Potential Funding

Project	Status	US\$	Lender	Notes
Sual KEPCO Power Station	Finance Pending; Project in Pre-Permit Development	None committed		In May 2018 KEPCO announced that it was in talks with a "local partner" and was investing US\$2 billion to develop a 1,000-MW coal-fired plant in Sual but did not name the partner. In June 2018, in what appears to be a reference to the same project, SK Engineering & Construction (SKE&C), a subsidiary of South Korean conglomerate SK Group, announced that it had signed a Letter of Intent (LOI) with the Government of the Philippines to build two 600 MW coal-fired power plants on Luzon island at an estimated cost of KRW2.2 trillion (US\$1.98 billion). In January 2019 KEPCO signed a memorandum of understanding with Trans-Asia to acquire the site of Trans-Asia's proposed 3 x 300 MW Baquioen power station and use it for KEPCO's 1 x 1,000 MW Sual KEPCO power station.
Hanjo power station	Finance Pending; Project in Preliminary stage	None committed		In March 2019, Hanjo Group Manufacturing from South Korea signed a memorandum of agreement with the Bataan provincial government for a 600 MW coal plant in the province. Bataan governor Albert Garcia said the project, estimated to require an investment of about US\$1 billion, would be under a public-private partnership. The project will need to undergo a feasibility study, so no dates have been announced yet on the start of construction or the commercial operation date. In addition, the specific site for the plant is still to be identified.
Thabametsi power station	Financing Not Finalized; Project in Pre-permit development	133,000,000	KEPCO	This project, which has received strong local opposition, is co-owned by Marubeni and KEPCO. In October 2016 KEPCO announced that it planned to invest US\$133 million in the project. The owners have sought \$2 billion in funding from 12 lenders, including South Africa Public Investment Corporation, Development Bank of Southern Africa, Industrial Development Corporation, Standard Bank, Nedbank, ABSA, and Rand Merchant Bank. Nedbank, Standard Bank, and FirstRand have withdrawn from the project.

Source: Global Energy Monitor, Global Coal Public Finance Tracker, accessed April 2020