



KEPCO's Clean Energy Transition Hangs in the Balance

Overexposure To Fossil Fuels and Financial Challenges Are Warning Signs for Debt Investors

Executive Summary

The global power sector's decarbonisation and transition to net zero emissions are determined by two factors: credible, strategic and disciplined decisions; and funding to support the plans.

However, these attributes have proven difficult for South Korean state-owned electricity provider Korea Electric Power Corporation (KEPCO).

In 2020, IEEFA¹ reported on KEPCO's unstable returns and risky overseas coal investments, which was at odds with market trends and climate warnings against new fossil fuel projects.

Two years later, following its US\$6 billion record-high operating loss in Q1 2022,² KEPCO declared it was selling fossil fuel-fired power plants outside the country.

Divesting these assets is the right move. However, given the challenges with fossil fuels, who will still buy these plants and at what price?

This report analyses how KEPCO got into this situation and raises questions about the potential risk to its debt investors and the uncertainty of its transition plans.

¹ IEEFA. [Question time for KEPCO Board](#). June 2020.

² Korea Times. [KEPCO to sell all overseas coal power plants following record losses](#). May 2022.

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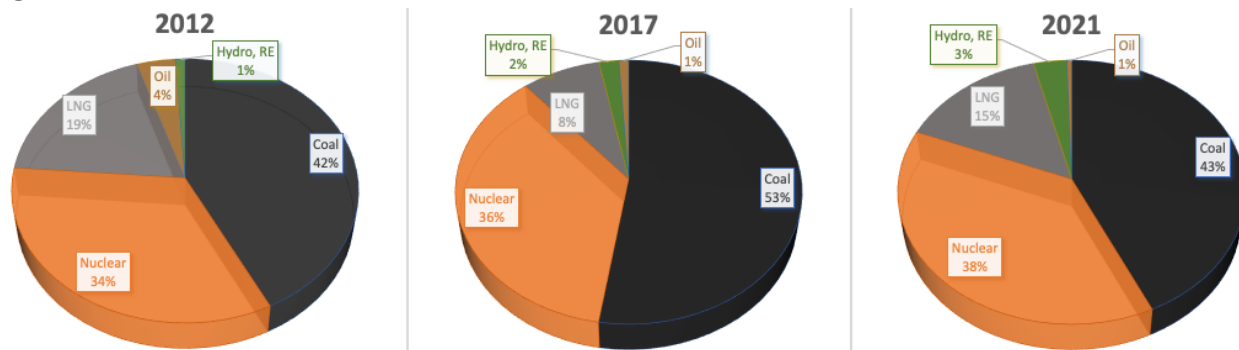
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KEPCO's Questionable Investment Choices

Over the past decades, KEPCO has focussed on coal and nuclear.

Based on KEPCO's investor presentations, coal represented 43-52% of its power generation mix in the last 10 years, followed by nuclear (34-38%) and liquefied natural gas (LNG) (8-19%). Overall, fossil fuel generation amounted to 60% and nuclear 36%.

Figure 1: Fossil Fuels Lead KEPCO's Power Generation Assets



Source: KEPCO Investor Presentations

KEPCO relies on corporate bonds to finance its power generation expansion. In 2018/2019, KEPCO took what appeared to be a step in a positive direction and issued green bonds, of which proceeds are required to be allocated to green projects which includes renewable energy.

According to its Green Bond Framework, KEPCO's new strategy involves "focussing its resources on creating a clean and efficient energy ecosystem as part of its effort to cut down greenhouse gas emissions".³

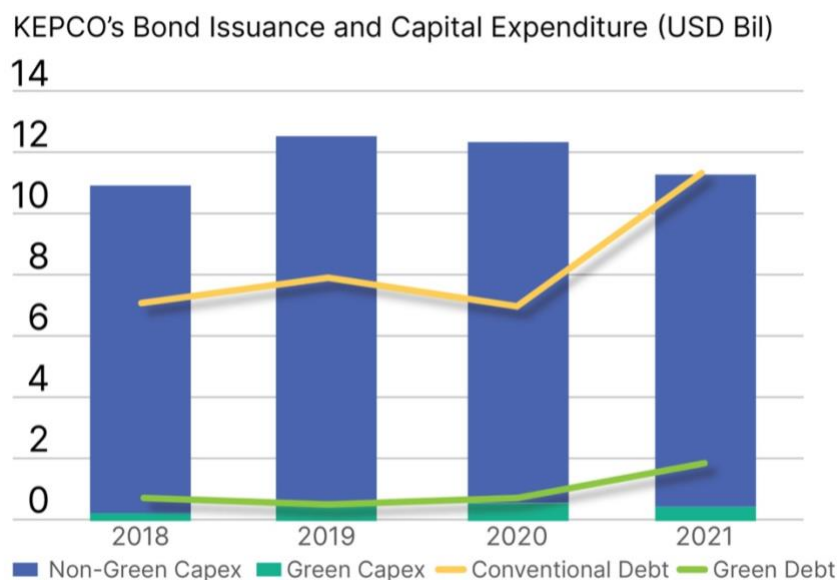
However, as seen in Figure 2, while KEPCO continued to tap the green bond market, its green issuance volume is inconsequential to conventional issuance, and its green projects appear small relative to other investments, which is hardly consistent with a strategy to reduce its emissions footprint.

In fact, KEPCO was still investing in large new coal and gas projects overseas in as recently as 2020. This includes the controversial coal power plants Jawa 9 and 10 in Indonesia and Vung Ang 2 in Vietnam.

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³ KEPCO website. [KEPCO Sustainable Finance Framework \(Oct.16.2019\)](#). May 2020.

Figure 2: Green Investments Remain Insignificant to KEPCO's Total Capex Spending



Source: KEPCO Investor Presentations and Thomson Reuters

KEPCO's ongoing fossil fuel investments not only contradict its green ambitions, but also the Korean government's Green New Deal announced in July 2020 which intended to phase out coal financing. In late 2020, KEPCO announced that it had no further plans to pursue overseas coal power projects.

In early 2022, KEPCO wrote⁴ to investors about its new investment direction centred around a "Zero for Green" vision to go carbon-neutral by 2050. This involves improving energy efficiency, investing in renewable energy and LNG generation assets, carbon capture, utilisation and storage (CCUS), and smart electricity grids. Other plans include converting fuels into hydrogen, which implies investing in unproven low carbon technology like blue hydrogen;^{5,6,7} converting 12.7GW of coal to gas plants by 2034; and having shuttered 3.3GW of coal plants that were beyond their useful lives at the end of 2021.

The investor letter suggests that KEPCO is making effort in moving away from coal. However, these new plans came too late. KEPCO's financial performance spiralled from bad to worse as it reported operating losses of approximately US\$ 5 billion for financial year ended 2021, US\$ 6 billion for Q1 2022 and US\$ 5 billion for Q2 2022.⁸

⁴ KEPCO website. [Investor Relations: Investor Letters](#). 20 January 2022.

⁵ IEEFA. [Blue Hydrogen: A fuel without a future](#).

⁶ IEEFA. [Blue Hydrogen: Technology Challenges, Weak Commercial Prospects and Not Green](#). February 2022.

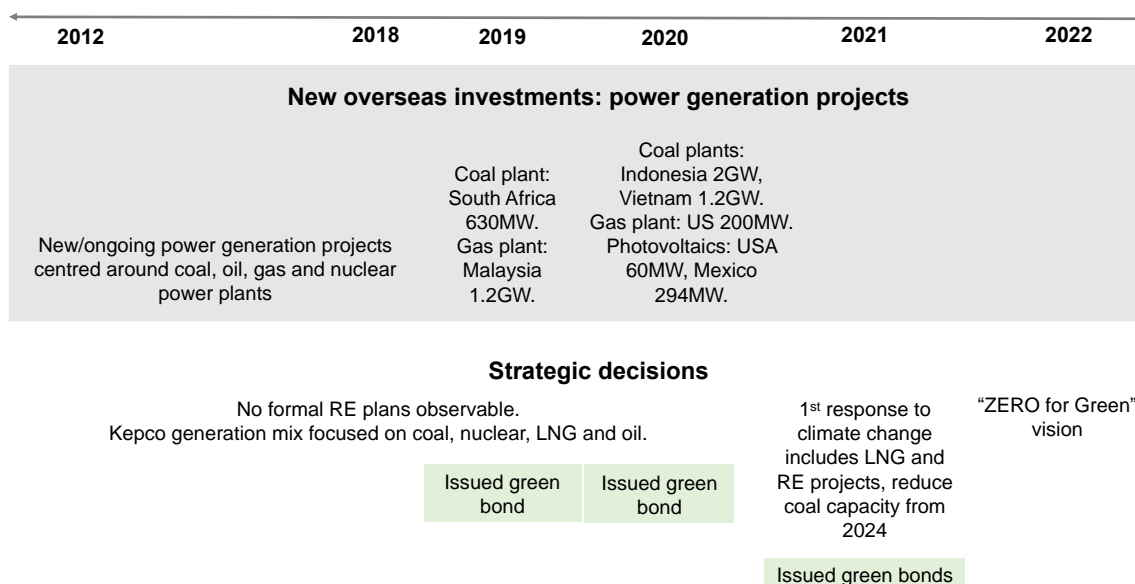
⁷ IEEFA. [Russia Sanctions and Gas Price Crisis Reveal Danger of Investing in "Blue" Hydrogen](#). May 2022.

⁸ Thomson Reuters database, 22 September 2022.

This drove KEPCO's announcement in May 2022 to sell coal and gas-fired power plants outside the country.⁹ Funds from the planned sale are intended to help improve KEPCO's financial status and pay off its debt, which includes electricity it purchased and owes.

The problem on KEPCO's hands is, who is going to buy these future stranded assets and would the plants still fetch a price that can pay down its debt?

Figure 3: Timeline of KEPCO's Overseas Investment and Strategic Decisions



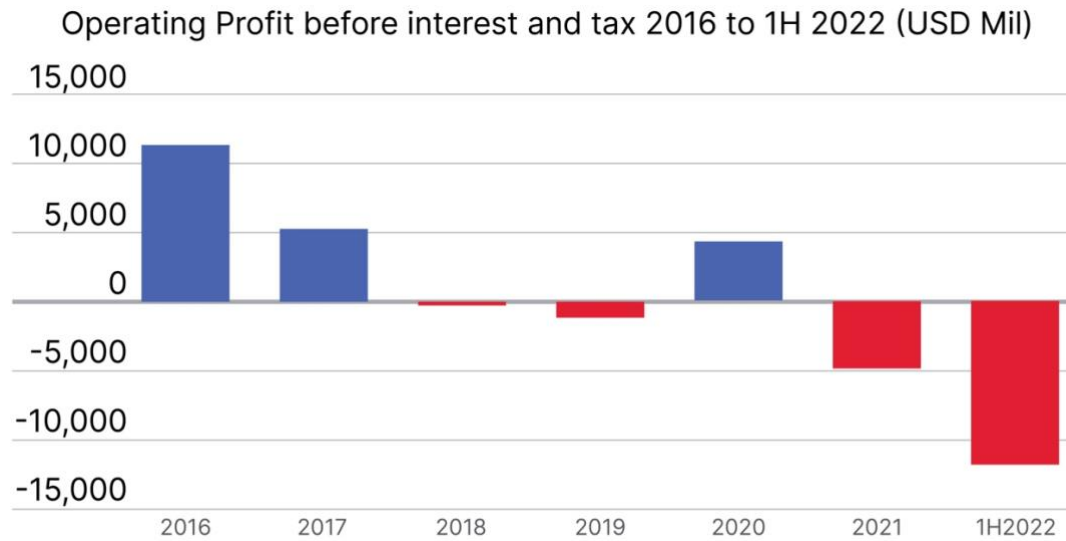
Source: IEEFA analysis based on KEPCO Investor Presentations

KEPCO Failed to Correct its Bad Investment Choices Despite Being Reflected in its Earnings

Generous investors might forgive management's inability to read market tea leaves. However, in parallel to continuous bad decision-making, KEPCO's earnings were hit and have been on a downward trend in the last six years, with the exception of financial year 2020 owing to low fuel prices in the pandemic-triggered economic slowdown.

⁹ Korea Times. [KEPCO to sell all overseas coal power plants following record losses](#). May 2022.

Figure 4: KEPCO Operationally Loss Making



Source: Thomson Reuters

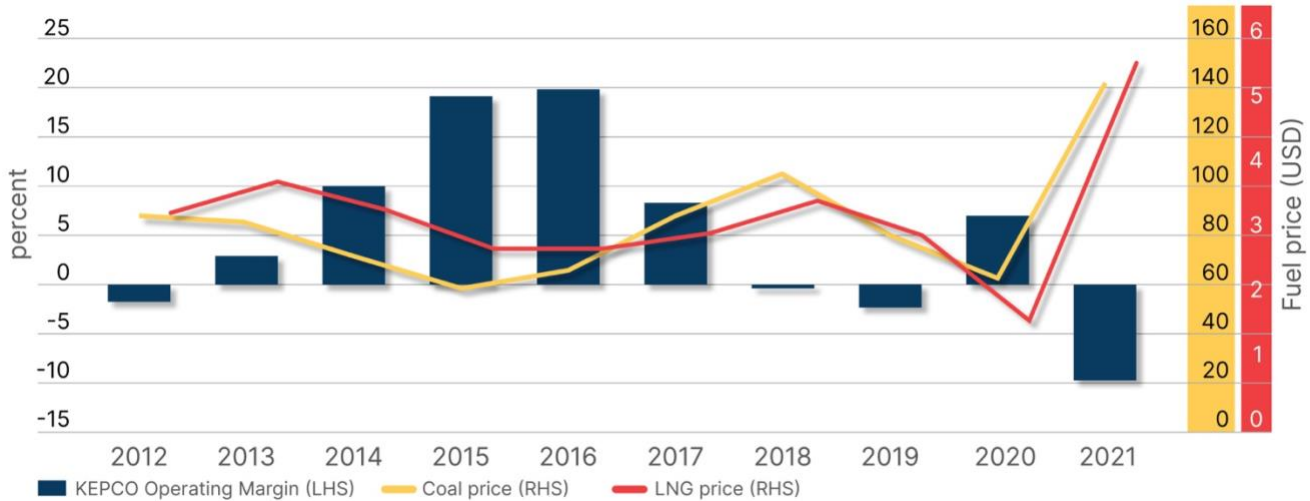
This should have prompted management and the board to revisit their investment choices.

As fossil fuels dominate KEPCO's generation mix and fuel costs are not passed through to customers, high and volatile fuel prices have been the major culprit behind its deteriorating earnings over the last decade.

This ultimately led to a record-breaking US\$ 12 billion loss in 1H 2022, as seen in Figure 5, whereby high coal and LNG prices negatively impacted KEPCO's operating margins, and vice versa.

High and volatile fuel prices have been the major culprit behind its deteriorating earnings over the last decade.

Figure 5: KEPCO's Operating Margins Largely Influenced by Volatile Coal and LNG Prices



Source: Bloomberg, Thomson Reuters

The fuel cost for coal, LNG and oil between March and May 2022 surged by 64% from Q4 2021.¹⁰ In June 2022, the cost of electricity was chartered at 169.32 Won/kWh, up by 117% from last year, whereas its selling price averaged at 110.4 Won/kwh in 1H 2022.

Based on its current generation mix, it is therefore expected that KEPCO will continue to make operating losses for the rest of 2022.¹¹

Accepting LNG as a bridging fuel in its future generation mix, as indicated in its note to investors, would also succumb KEPCO to continuous high fuel prices and volatility, thus undermining future profits and exacerbating stranded asset risks for its new LNG projects.¹²

Bad Investment Choices Eroded KEPCO's Balance Sheet Strength

Figure 6 shows that KEPCO has been steadily incurring more debt despite being overleveraged and recording operating losses. As such, KEPCO's ability to service its debt has been weakening.

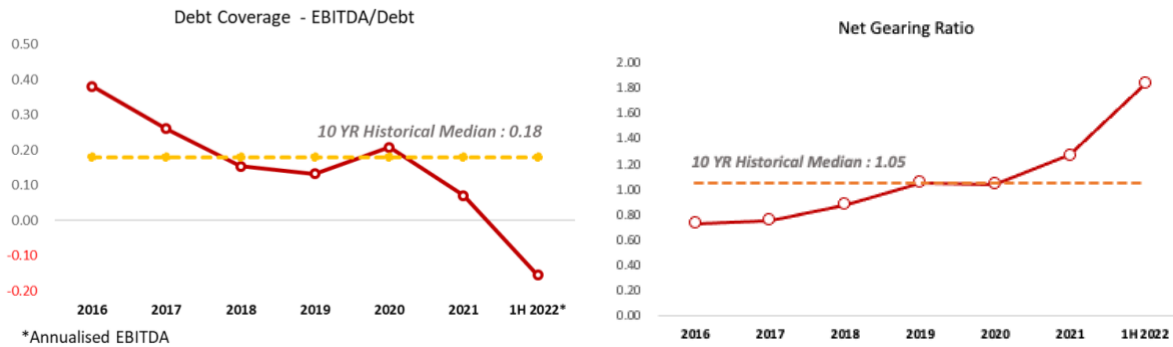
¹⁰ KEPCO website. Investor Relations: Monthly Electric Power Statistics (June 2022), Investor Presentation (2022.1H), Updates on Unit Price Fuel Cost Adjusted Charge.

¹¹ The Korea Economic Daily. KEPCO at record loss on fuel costs; wider losses seen in 2022. February 2022.

¹² IEEFA. Unaffordable LNG prices undermine rapid demand growth forecasts in key Asian markets. August 2022.

At half year 2022, with a debt service cover of -0.15, the company's earnings were insufficient to cover its annual debt payments.

Figure 6: Overleveraged and yet Debt Issuance Increased

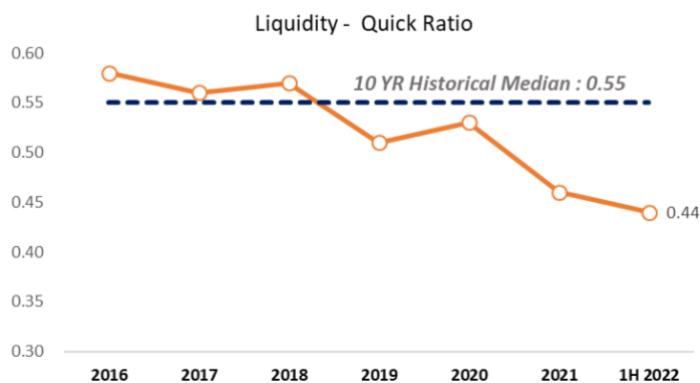


Source: Thomson Reuters

It comes as no surprise then that the company's liquidity is also on a decline, as shown in Figure 7.

At the end of 2021, KEPCO's internal cash sources were insufficient to cover its debt maturing in the next 12 months and capital spending. This has placed KEPCO at risk of defaulting on its obligations in the near term.

Figure 7: KEPCO's Short-term Obligations and Investment Plans at Risk



Source: Thomson Reuters

KEPCO has also fallen short on every metric compared to India's National Thermal Power Corporation (NTPC), Malaysia's Tenaga Nasional Berhad (TNB), Hong Kong's China Light Power (CLP) and China's Huaneng Power, as shown in Figure 8. This demonstrates that its management and board's strategy has put KEPCO at severe financial risk.

Figure 8: How KEPCO Fared Compared to Regional Peers in FY2021

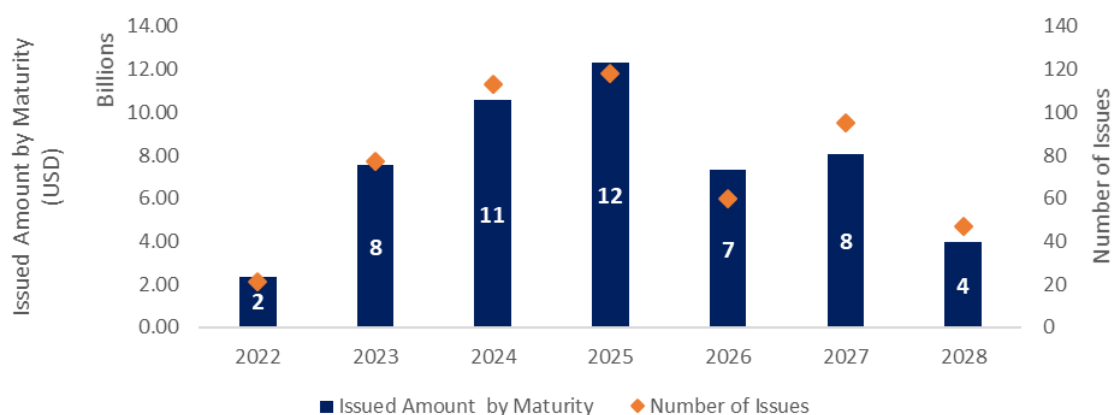
	Earnings margin (%)		Debt service cover		Liquidity
NTPC	32.8	CLP	0.36	TNB	0.92
TNB	27.0	TNB	0.24	CLP	0.74
CLP	20.6	NTPC	0.18	NTPC	0.63
Huaneng Power	12.3	KEPCO	0.07	KEPCO	0.46
KEPCO	-4.9	Huaneng Power	0.05	Huaneng Power	0.41
Peer average	20.6	Peer average	0.18	Peer average	0.63

Source: Thomson Reuters based on financial year 2021 financials

Its debt outlook appears equally distressing. KEPCO's bond financing makes up a majority of its total debt. Figure 9 shows that while KEPCO has a reasonable spread of bond maturing through to 2028, it has not hit its peak maturity.

KEPCO is also expected to take on more debt given its capital expenditure plans and modest operating cashflow. This indicates that the worst of its problems is yet to come if KEPCO is unable to refinance.

Figure 9: KEPCO's Bond Maturity Profile



Source: Thomson Reuters based on September 2022 data

High Credit Ratings Underplay Risks

As a state-owned enterprise, KEPCO's credit ratings are based on implied sovereign guarantees, which are often not acknowledged publicly.

As a result, KEPCO has benefited from the sovereign ratings umbrella and received a rating that is six to eight notches higher than its baseline credit assessment, despite having difficulties with cash flows and debt service. This has enabled KEPCO to have good financing options despite weak underlying financial fundamentals.

Interpreted another way, KEPCO's final rating was reliant on a government "bailout" and not its own business fundamentals or a strong income, which is counterintuitive

of a high credit rating issuer. This suggests the need for a rethink in the way sovereign-linked entities are assessed.

Figure 10: KEPCO Gets Multiple Notches Uplift Despite Underperformance

Agency	Baseline Credit Assessment							Final Credit Rating	Notches upgrade
	2016	2017	2018	2019	2020	2021	2022		
Moody's	Baa1	Baa1	Baa2	Baa2	Baa2	Baa2	Baa2	Aa2	+6 notches
Fitch	BBB	BBB+	BBB+	BBB	BBB	BBB	BBB-	AA-	+6 notches
S&P	BBB+	BBB+	BBB	BBB-	BBB	BBB-	BB+	AA	+8 notches

Source: Respective credit rating agencies

Implications for KEPCO and its Debt Investors

In a regulated sector, whereby tariffs are decided by the government, KEPCO's main responsibility is to ensure a cost-efficient and effective power supply in keeping with the strict tariff environment.

For many years at KEPCO, coal has been deemed as a reliable earnings generator. It failed to anticipate surging coal purchase price, despite its impact on KEPCO's earnings and overall market trends.

This has led KEPCO to take its time with renewable buildout, even as renewable power generation costs dropped significantly over the last decade.

Its highly leveraged business and operating losses have not prevented its fixation with coal, which led it to take on more debt.

Despite KEPCO's reasonable spread of bond maturing through to 2028, it has not hit its peak maturity, and is expected to take on more debt given its capital expenditure plans and modest operating cashflow. Its ability to repay its debt is therefore questionable, since it will likely continue to operate at a loss.

KEPCO's plan to offload its coal and gas assets raises questions as to who will buy these stranded assets and at what price?

While there seems to be a reorientation towards renewable energy in 2022, it is concerning that LNG appears to be playing a key role in KEPCO's future generation mix.

It failed to anticipate surging coal purchase price, despite its impact on KEPCO's earnings and overall market trends.

This simply replaces one fossil fuel for another without addressing a fundamental problem: high and volatile fuel prices will continue to undermine profits and exacerbate stranded asset risks for KEPCO's new LNG projects.

Investing in technologies that have not been proven credible, such as CCUS and blue hydrogen, is also alarming given that KEPCO is not in any position to splurge, nor is it known to have the expertise in these technologies. This creates additional risks for KEPCO's investors and the South Korean market.

Conclusion

A series of short-sighted missteps that have weighed on profitability and business viability have exposed the lack of aptitude of KEPCO's management and board. This indicates that KEPCO has become overconfident of government bailout and raises the issue of its corporate governance.

KEPCO's inability to service its debt fundamentally warrants it not bankable. Yet investors have continued to buy KEPCO's bonds. It is therefore hard not to contemplate the role that bondholders have played in financing and enabling KEPCO's emissions.

Moreover, KEPCO's negligible renewable generation assets to date and questionable future generation mix suggest that its green bond issuances were merely tokenism¹³ and puts its green bondholders at risk of greenwashing.

This makes KEPCO's capability to decarbonize uncertain. Unless there's a marked overhaul that involves a complete change in KEPCO's management and board, and significant capital injection or intervention from government, KEPCO's bonds deserve more scrutiny—particularly those that are due to be refinanced.

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¹³ IEEFA. [KEPCO's Green Bond Failed the ESG Market Test](#). November 2020.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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