POSCO: greener steel elsewhere

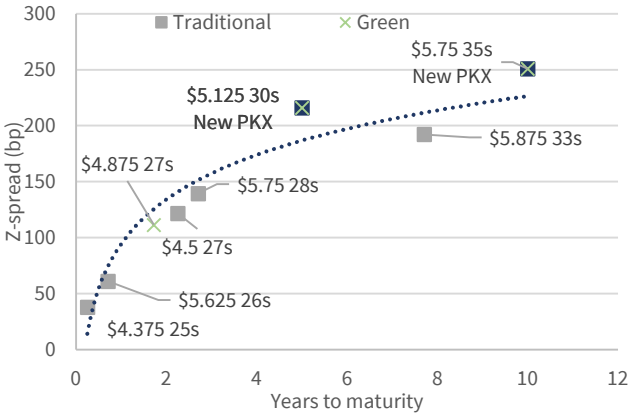
Rose Choy [(*)]

POSCO HOLDINGS Inc. tapped the dollar bond market on 28 Apr, issuing $700mn across 5- and 10-year green tranches. The bonds were issued under POSCO HOLDINGS Inc (ticker: "PKX"), whereas earlier bonds were placed by POSCO, the company's steel subsidiary (ticker: "POHANG"). There is no cross guarantee between PKX and POHANG for liabilities incurred post spin-off of POHANG (Mar 2022), which means the latest bonds are structurally subordinated to the POHANG notes.

Only $36.4mn of the $500mn of POHANG's last green bond issuance in 2024 has been allocated, to finance a new electric arc furnace (EAF)in Gwangyang, South Korea.[1] The use of proceeds for the new green bonds, according to market talk, is earmarked for POSCO HOLDINGS' battery material business and other green projects under its Sustainable Financing Framework.

92.2% of POSCO HOLDINGS' carbon emissions came from its steel segment in its base year (2017-19).[2] Most of POSCO's steel production is stubbornly reliant on coal-based furnace technology, and this is likely to remain the case until at least 2035. This will continue to influence the company's business and financial strategies as it pursues its net zero by 2050 target. The company is exposed to substantial stranded asset risk via POSCO, and also to scrutiny from investors who maintain climate exclusion lists.

Figure 1. POHANG/PKX US$ bond curve. Traditional bonds issued from POHANG. Source: Bloomberg, accessed 6 May 2025.



- **POSCO HOLDINGS' new green bond proceeds are to be deployed for its battery material segment, but 92.2% of its carbon emissions are from its steel segment.**
- **With POSCO's focus on maximising the utility of its existing coal blast furnace plants, its decarbonisation strategy risks being too little, too late. A delay in transitioning blast furnaces will leave the company and bond investors with stranded assets as demand for green steel ramps up.**
- **POSCO HOLDINGS/POSCO may also be increasingly exposed to investors' climate exclusion lists, which could affect demand for new and outstanding bonds and present near-term price risk for bondholders.**

[1] "POSCO Green Bond Report", POSCO, Dec 2024.
[2] "POSCO HOLDINGS 2023 Sustainability Report", POSCO HOLDINGS, 27 Jun 2024.

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POSCO's decarbonisation strategy

POSCO Steel's decarbonisation plan in the short term relies firstly on improving the efficiency of its existing coal-based furnaces. Secondly, POSCO is investing, on a smaller scale, in an EAF for its Gwangyang Steelworks with 2.5 Mt capacity. The use of EAFs is one of the steel industry's most widely used emissions reductions strategies. However, according to Global Energy Monitor's Global Iron and Steel Tracker, POSCO's current EAF capacity is only 4.7% of total production capacity.[3] This compares to Hyundai Steel, another Korean steelmaker that produces 50% of its steel using EAF.[4] Thirdly, the company is investing in Carbon Capture and Utilization (CCU) technology to reduce emissions at its blast furnaces.

In the medium-to-long term, POSCO is developing hydrogen-based steelmaking technology ("HyREX") to replace coking coal. This uses green hydrogen for the ironmaking process to reduce emissions. If successful, it could become commercially viable by 2030, with the company transitioning its coal-based furnaces to the new technology by 2050. See timeline in Figure 3 (Appendix).

In previous research, we analysed POSCO's decarbonisation strategy and highlighted that prior to 2030, it lacks significant efforts to reduce coal-based production.[5] **POSCO's focus on utilising existing blast furnace facilities to the fullest extent for cost effectiveness could backfire.** Its low carbon "bridge technology", used by its existing blast furnaces, was only able to reduce carbon emissions by 5%.[6] If POSCO continues to delay a material decarbonisation, it could lose out as demand for green steel grows.

Table 1 below shows the details of POSCO's current and announced steel projects.

Table 1. List of POSCO's steel plants (BOF is Basic Oxygen Furnace, EAF is Electric Arc Furnace, ttpa is thousand tonnes pa). Source: Global Energy Monitor.

Plant	Country	Status	Start date	Nominal crude steel capacity (ttpa)	Nominal BOF steel capacity (ttpa)	Nominal EAF steel capacity (ttpa)	Notes
POSCO Gwangyang steel plant	Korea	operating	1987	22,999	22,999	N/A	
POSCO Gwangyang steel plant	Korea	construction	2026	2,500	N/A	2,500	
POSCO Pohang steel plant	Korea	operating	1973	17,701	17,401	300	
POSCO Pohang steel plant	Korea	announced	2027	2,500	N/A	2,500	
POSCO Yamato Vina Phu My steel plant	Vietnam	operating	2020	1,000	1,000	N/A	Joint Venture
Posco Zhangjiagang Stainless Steel	China	operating	1995	1,100	1,100	N/A	Joint Venture
KS Posco Cilegon steel plant	Indonesia	operating	2013	3,000	3,000	N/A	Joint venture
POSCO Port Hedland Steel Plant	Australia	announced	2028	12,000	N/A	N/A	JV; HRI (feeder for EAF)
POSCO JV (US)	US	announced	2028	2,700	N/A	2,700	Minority investment
JSW POSCO Keonjhar steel plant	India	announced	2028	18,000	N/A	N/A	50% JV; No details on technology

[3] "Global Iron and Steel Tracker", Global Energy Monitor, Mar 2025.
[4] "2024 Hyundai Steel Integrated Report", Hyundai Steel, Jul 2024.
[5] "POSCO plays Blast and loose with its decarbonisation commitment", AFII, 23 May 2024.
[6] "POSCO HOLDINGS 2023 Sustainability Report", POSCO HOLDINGS, 27 Jun 2024, Pg. 20.

The table on the previous page shows that the majority of production in South Korea uses coal-fired blast furnaces (see the BOF steel capacity column) and only a relatively small amount of steel is created using EAFs. **POSCO appears to exhibit no urgency to transition existing facilities or commit to more EAFs other than the announced 5mn tonnes of capacity at its Korean plants.**

In POSCO's Q1 2025 earnings report, the company highlighted its overseas growth strategy, which is focused on India. POSCO is investing in a 50% equity joint venture (JV) with JSW Steel (the top steelmaker in India) to build upstream capacity in an integrated steelwork plant with a starting capacity of 5mn tonnes. However, future expansion of the plant could increase capacity to 18mn tonnes per year, with the total investment estimated at up to Rs 65,000 crore (US$7.7bn).[7] No details of the steel facility have been provided, but sources mention that POSCO and JSW plan to launch a renewable energy project to power the steel plant with green energy.[8] More transparency is needed on the JSW JV in order to assess the new plant's role in POSCO's decarbonisation strategy.

Given that POSCO has no concrete plans to transition the majority of its steel plants in Korea until its HyREX technology becomes commercially viable in the mid-2030s (if successful), investors are exposed to the coal-fired furnace plants for the foreseeable future, plants that could become stranded assets as green steel demand increases.

Investor exclusions – a growing trend

Given POSCO's decarbonisation plans entail a slow phaseout of its blast furnace technology, the company could find itself on those investor exclusion lists with strict climate requirements. Exclusions by pension funds and asset managers will impact the demand for PKX and POHANG bonds, which in turn could widen spreads and lead to potential losses for existing bondholders, not to mention higher costs-of-capital for the issuers themselves.[9] In the Financials Exclusion Tracker database we have found that POSCO HOLDINGS and some of its subsidiaries have been excluded by certain investors for climate and environmental reasons. Table 2 overleaf shows an updated summary of exclusions by investors. This follows AFII's previous detailed analysis on investor exclusions in 2024.[10]

Figure 2. POHANG and PKX bonds in USD. Source: Bloomberg, accessed 2 May 2025.

Description	ISIN	Issue Date	Maturity	Currency	Amount Outstanding	ESG Label
POHANG 5 7/8 01/17/33	US73730EAE32	17-Jan-23	17-Jan-33	USD	300,000,000	
POHANG 5 3/4 01/17/28	US73730EAD58	17-Jan-23	17-Jan-28	USD	1,000,000,000	
POHANG 4 7/8 01/23/27	US73730EAG89	23-Jan-24	23-Jan-27	USD	500,000,000	Green
POHANG 5 5/8 01/17/26	US73730EAC75	17-Jan-23	17-Jan-26	USD	700,000,000	
POHANG 4 3/8 08/04/25	US73730EAA10	04-Aug-22	4-Aug-25	USD	700,000,000	
POHANG 4 1/2 08/04/27	US73730EAB92	04-Aug-22	4-Aug-27	USD	300,000,000	
PKX 5 1/8 05/07/30	USY70750CB13	07-May-25	28-Apr-30	USD	400,000,000	Green
PKX 5 3/4 05/07/35	USY70750CC95	07-May-25	28-Apr-35	USD	300,000,000	Green

[7] "JSW Steel, Posco plans to invest $7.7 billion in Odisha steel plant", Business Standard, 5 Nov 2024.
[8] "Posco, JSW team up to build integrated steel facility in India", The Korea Herald, accessed 29 Apr 2025.
[9] "Does ESG Negative Screening Work?", SSRN, 30 Apr 2022.
[10] "POSCO plays Blast and loose with its decarbonisation commitment", AFII, 23 May 2024.

Table 2. List of institutional investors that have excluded POSCO Holdings and/or its subsidiaries for climate or fossil fuel reasons. Source: Financial Exclusions Tracker.

Year	Category	Investor	Companies
2025	Deforestation, Climate change	Storebrand (Norway)	POSCO
2025	Climate, Coal power expansion	Robeco Institutional Asset Management	POSCO HOLDINGS, POSCO International Corp
2025	Harmful environmental practices	Danske Bank (Denmark)	POSCO HOLDINGS, POSCO International Corp
2025	Fossil expansion	Nykredit Group (Denmark)	POSCO International Corp
2024	Fossil fuel	Laerernes Pension (Denmark)	POSCO International Corp
2024	Severe environmental damage	Norges Bank Investment Management (Norway)	POSCO HOLDINGS, POSCO International Corp
2024	Fossil fuel (Coal)	Caisse de Pensions de L'Etat de Vaud (CPEV) Switzerland	POSCO HOLDINGS
2024	Fossil fuel (Coal)	Pensionskasse Stadt Zurich (PKZH) Switzerland	POSCO HOLDINGS, POSCO International Corp
2024	Climate	Menzis, Netherlands	POSCO HOLDINGS, POSCO International Corp
2024	Thermal coal	ASR Asset Management (Netherlands)	POSCO HOLDINGS
2022	Biodiversity	ATP Group, Denmark	POSCO HOLDINGS

We note that since our last update, a few other investors have added POSCO HOLDINGS or POSCO International Corp to their exclusion lists. These include CPEV, PKZH, and Nykredit Group. It is possible that the companies will be added to more investor exclusion lists if they continue with a strategy of maintaining coal-based blast furnaces and do little to reduce emissions in the medium term. This presents a risk to bondholders and could be aa negative driver of bond spreads.

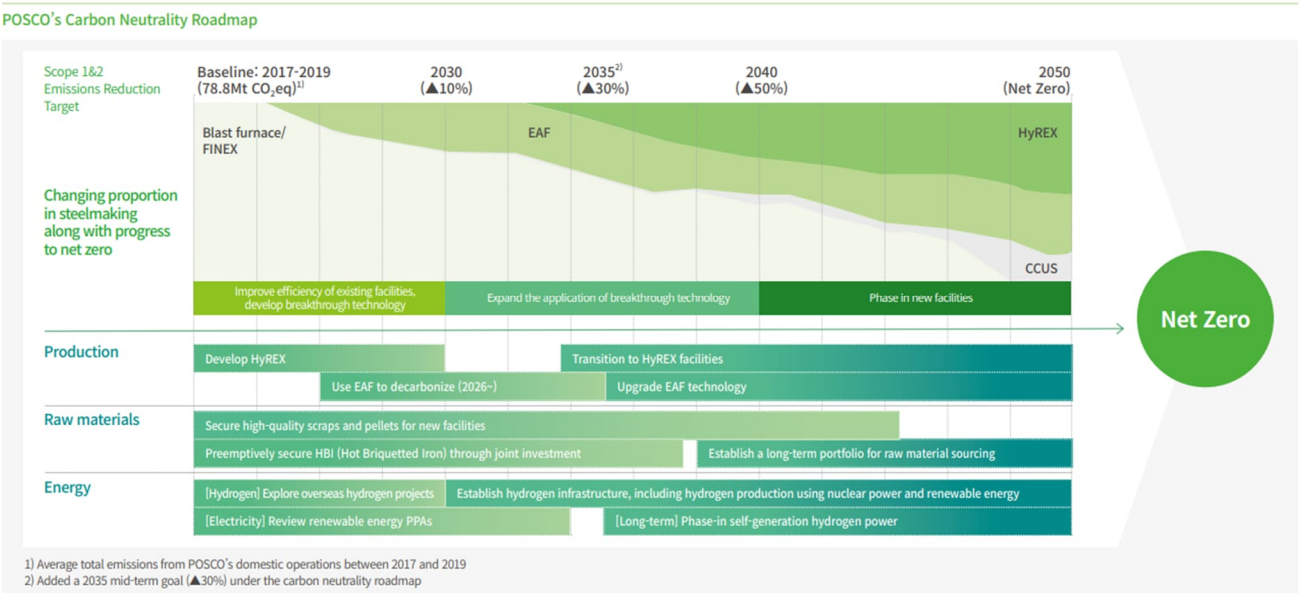
Conclusions

POSCO HOLDING's steel subsidiary is an integral part of the company's transition strategy. However, this subsidiary's approach to its 2050 net-zero goal is to ensure cost competitiveness by maximising usage of its existing blast furnace steel facilities. The success of the company's transition in the longer term, beyond 2035, hinges on the commercial viability of HyREX technology, which is still untested.

Ultimately, POSCO's decarbonisation strategy may be too little, too late. Because of this, green bond investors in POHANG and PKX should be aware of potential stranded asset risks associated with its steel facilities over the longer term. They should also keep in mind the risk to bond spreads and performance from POHANG and PKX bonds appearing on an increasing number of investors' climate exclusion lists.

Appendix

Figure 3. POSCO's Carbon neutrality roadmap. Source: POSCO HOLDINGS INC.



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