



REthinking Hyundai's 'eco' steel: How fossil fuels threaten the brand

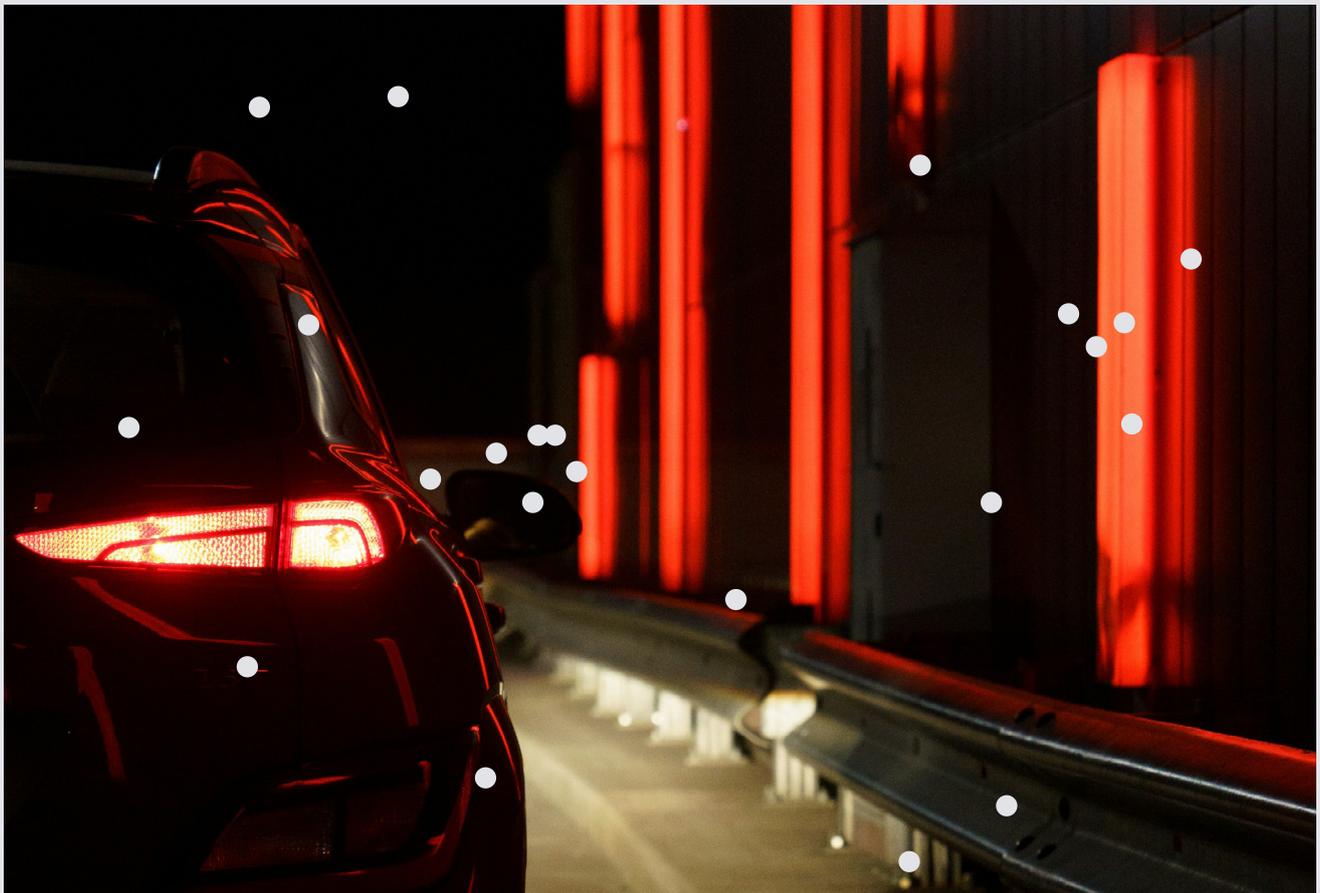
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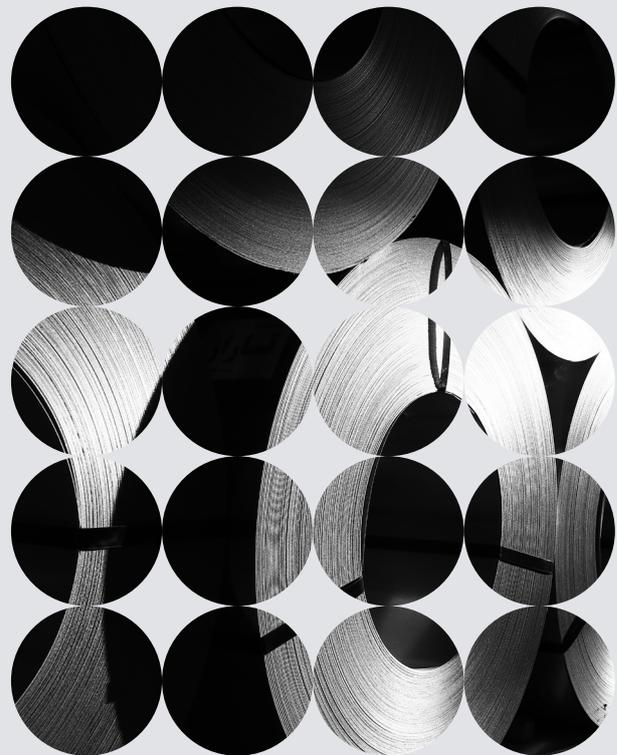


1 Introduction and Executive summary

For the steel industry to reach International Energy Agency (IEA) net zero projections for 2050, steel companies need to make a substantial investment in renewable energy. Abundant, affordable renewable energy is critical for the production of green hydrogen and iron, and for powering electric arc furnaces (EAFs).¹

This report analyzes Hyundai Steel's decarbonization commitments and provides recommendations for the company to match the emissions reduction targets of its Japanese, European and US competitors and progress towards net zero-aligned renewable energy, green hydrogen, and green iron commitments.

A recent analysis of major steel companies' direct renewable energy use² found two South Korean steel companies, Hyundai Steel and Dongkuk Steel, ranked last globally, with both companies declaring zero renewable energy use in 2022. Neither company provided evidence of operational renewable energy projects or power purchase agreements (PPAs). These findings prompted an investigation into the largest of the two companies, Hyundai Steel.



Hyundai Steel has received relatively little scrutiny of its decarbonization strategy, despite being one of South Korea's largest electricity users,³ the world's eighteenth largest steel producer,⁴ and part of a conglomerate with Hyundai Motor Company, one of the world's top 10 largest automakers by revenue in 2024.⁵

Executive summary

In 2023, Hyundai Steel released its Carbon Neutral Roadmap,⁶ which places its new HyECOsteel⁷ brand at the center of the company's decarbonization strategy. Given that Hyundai Steel has a higher percentage of EAF production capacity than most steelmakers (34.6% in 2024), the company was better positioned than many of its competitors to establish its leadership position in the green steel race.

Unfortunately, a look under the bonnet of Hyundai Steel's new brand reveals a failure on the part of the company to commit to renewable energy, green hydrogen or green iron, despite the undeniable necessity of these technologies in delivering net zero targets for 2050.

Instead, Hyundai Steel reports⁸ disclose its reliance on coal-fired blast furnaces and its backing of fossil fuels over renewable energy, to 2050 and beyond. This ongoing fossil fuel reliance is reflected in the role the company gives to carbon capture, utilization, and storage (CCUS). Despite being a costly and unproven technology,⁹ the latest Sustainability Report¹⁰ relies on CCUS for an undisclosed amount of emissions reduction up to 2050.

This failure to commit to proven clean technologies results in an emissions reduction target of just 12% by 2030, with no credible plan released for bridging the sizable gap between this 12% emissions reduction and a near-zero emissions reduction target in 2050.

Regardless of its emissions reduction target, Hyundai Steel's greenhouse gas (GHG) emissions have increased for the past three years,¹¹ while the portion of production the company derives from coal-fired blast furnaces has also increased. In March 2024, the company announced it will invest KRW 800 billion (approximately USD 580 million) in the construction of a new, 499 megawatt (MW) gas power plant at Dangjin Steel Works.

Hyundai Steel has claimed that its new liquefied natural gas (LNG) plant at Dangjin Steel Works will lead to an 8.8% reduction in its emissions.¹² However, analysis contained within this report conducted by Action Speaks Louder and Dangjin KFEM reveals that the plant's GHG emissions, once operational in 2028, will actually exceed the emissions generated from sourcing power directly from the grid. In fact, when applying the grid's carbon emissions factor derived from national electricity generation and total GHG emissions forecasts for 2030,¹³ the estimated additional emissions from Hyundai Steel's LNG plant would be 410,216 tonnes of carbon dioxide equivalent (tCO₂eq) per annum in 2030.

With a number of Hyundai Steel end users recognised as relative leaders in clean technology, including Volvo, Apple, and Microsoft, Hyundai Steel's lagging investment in renewable production technologies relative to its peers presents a brand risk for the company. This risk extends to its European shareholders, including Nordea Bank¹⁴ and Danske Bank,¹⁵ which have already excluded holdings in Hyundai Steel's major South Korean competitor, Posco, for issues including poor environmental, social, and governance (ESG) performance.¹⁶

Given the reliance of the Hyundai Motor Company and Hyundai Mobis on Hyundai Steel, this brand risk further extends to Hyundai Motor Group affiliates, particularly the luxury segments of the auto market that compete with European auto brands that perform better on employing climate-smart production technology.

Hyundai Motor Company is Hyundai Steel's largest customer in the auto market, giving it substantial influence over the steel supplier. Regrettably, Hyundai Motor Company has failed to announce a green steel target, exposing the company to risks associated with Hyundai Steel's weak performance in renewable energy, green hydrogen, and green iron initiatives.



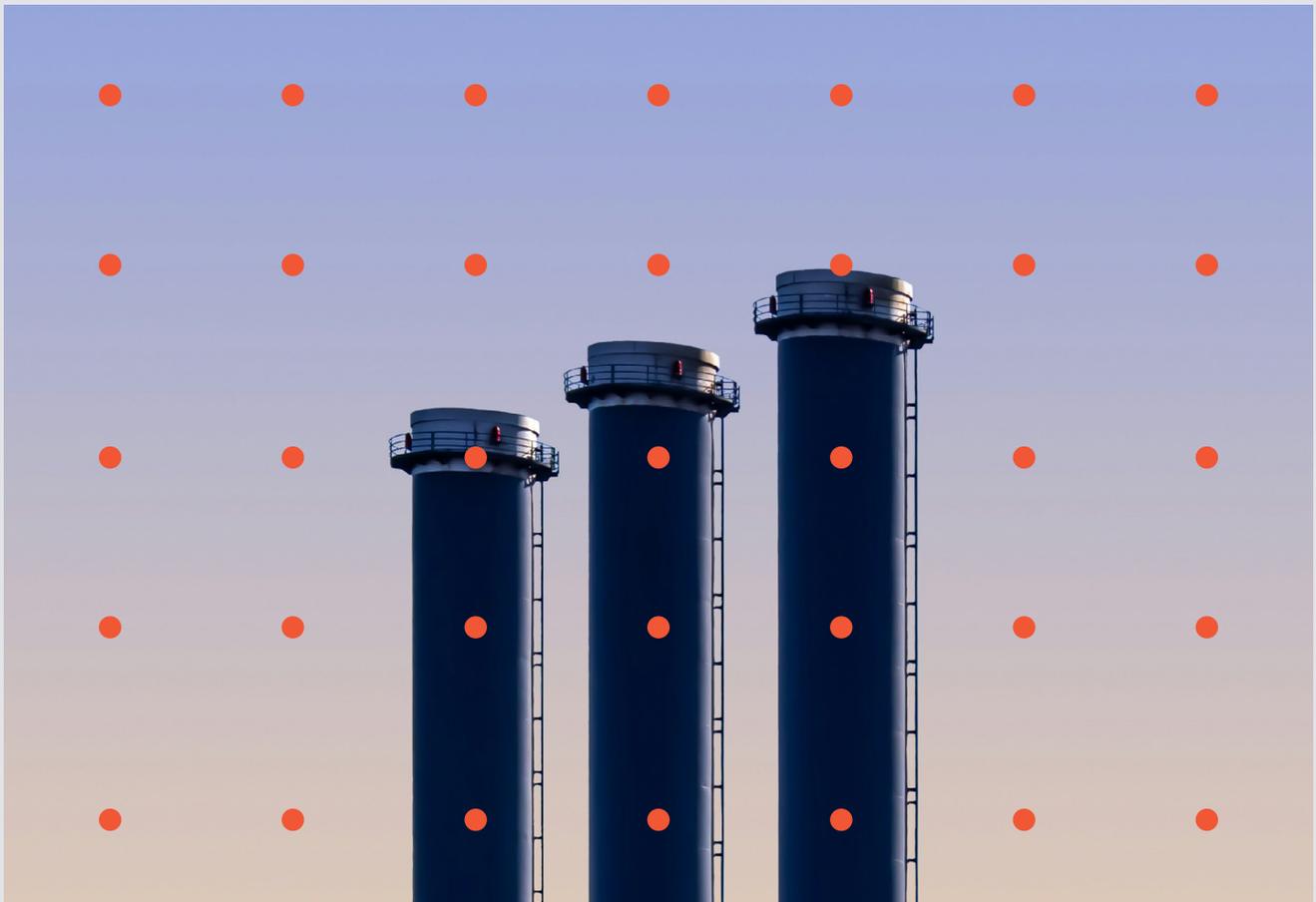
Recommendations

By announcing net zero-aligned renewable energy, green hydrogen, and green iron commitments, Hyundai Steel can remove the 'zero' ranking from its HyECOsteel brand.

Hyundai Steel must:

- Join RE100 and commit to powering current and future EAFs with wind and solar.
- Adjust emissions reduction targets to at least 30% by 2030 on a 2018 base year. Extend this target to include a Paris-aligned, near- and medium-term Scope 3 emissions reduction target.
- Release a public commitment to no new blast furnaces, no relining of existing blast furnaces, and no new fossil fuel infrastructure.
- Release a clear plan, with interim targets, for retiring existing blast furnaces to deliver on 2050 net zero commitments.
- Produce or source iron inputs made with 100% green hydrogen, rather than coal or gas, by 2050.

Hyundai Motor Group can drive this advancement, by committing to net zero-aligned green steel targets and recognizing that renewable energy and green hydrogen are critical for powering the green steel race.



2

Feeding the furnace: Hyundai Steel's increasing emissions, blast furnace reliance, and investment in new fossil fuel infrastructure

Hyundai Steel's GHG emissions have increased for the past three years.¹⁷ As shown in Table 1, the company's emissions increased from 28.5 million tonnes of carbon dioxide (CO₂) in 2021 to 29.3 million tonnes of CO₂ in 2023.

The key reason for Hyundai Steel's rising emissions is the increased operation of its coal-fired blast furnaces in steelmaking and supply of its auto market customers.

The company suggests that expanding EAF production will be the core of its decarbonization strategy. However, Table 2 shows that Hyundai Steel's share of EAF production has decreased in absolute terms and as a percentage of production from 38.3% in 2021 to 34.6% in 2023.

Table 1. Hyundai Steel's annual GHG emissions

	2018	2019	2020	2021	2022	2023
Scope 1	27,154	27,164	25,967	25,857	25,907	26,679
Scope 2	3,102	2,983	2,657	2,633	2,594	2,590
Total	30,256	30,147	28,624	28,489	28,501	29,269
Company target (Scope 1+2)*	-	-	30,692	29,266	29,268	29,162

(Unit: 1,000 tonnes of carbon dioxide equivalent (tCO₂eq))

*Hyundai Steel states that "the GHG emission and energy consumption targets have been set conditional to complying with the total emission allowances under the emission trading scheme (ETS) for that year."

Source: Hyundai Steel: Beyond Steel: Hyundai Steel Integrated Report 2024, 2024, p.123

Table 2. Hyundai Steel's annual steel production by process route

	2020	2021	2022	2023
BF-BOF	12,270	11,905	11,828	12,396
EAF	7,313	7,386	6,699	6,556
Total production	19,583	19,291	18,528	18,952
Share of BF-BOF (%)	62.7	61.7	63.8	65.4
Share of EAF (%)	37.3	38.3	36.2	34.6

(Unit: 1,000 tonnes)

BF-BOF: blast furnace and basic oxygen furnace; EAF: electric arc furnace

Source: Hyundai Steel: Beyond Steel: Hyundai Steel Integrated Report 2024, 2024, p.124



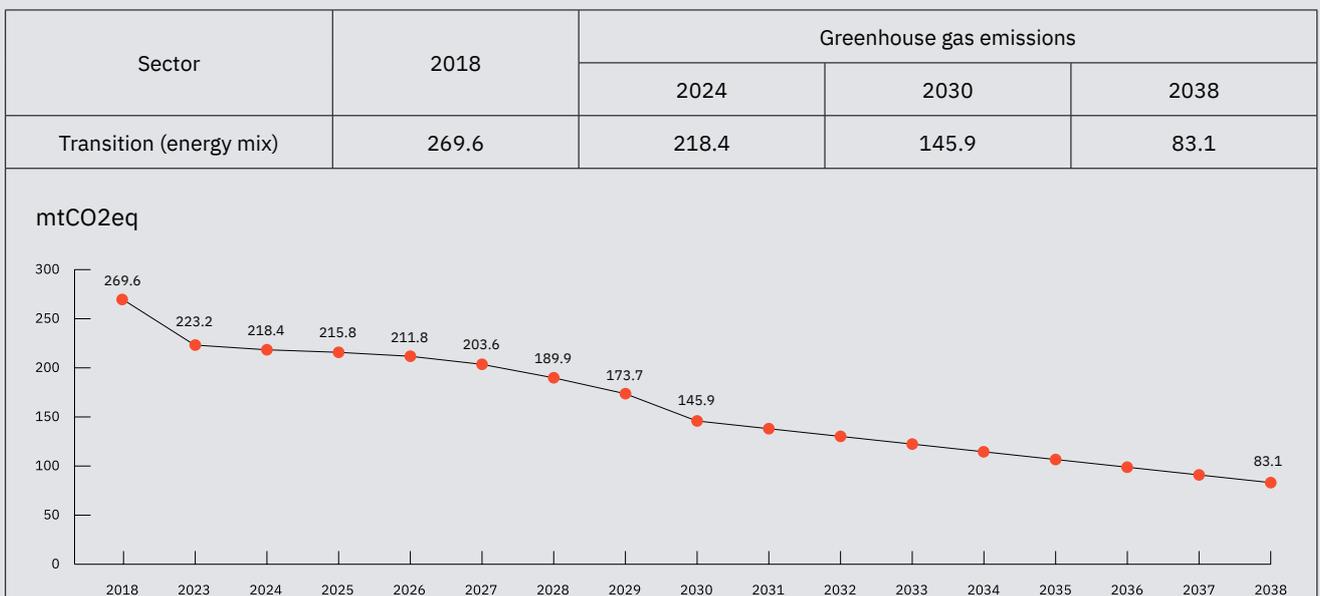
Hyundai Steel’s new LNG power plant will emit more greenhouse gas than the power grid in 2030

In March 2024, Hyundai Steel announced it would invest KRW 800 billion to build a LNG power plant with a 499 megawatt (MW) capacity.¹⁸ This decision came after the company released its Carbon Neutrality Roadmap in April the previous year. According to its plan, construction is due to commence in 2025, with the plant becoming operational in 2028.

Hyundai Steel claims the newly built power plant will decrease GHG emissions by 8.8% once operational.¹⁹ According to the company’s environmental impact assessment (EIA) report, the plant will reduce 131,408 tCO₂eq annually during 2028-50, which amounts to an 8.8% reduction in carbon emissions. The company also claims that hydrogen blending (30%) from 2050 could result in a reduction of 325,520 tCO₂eq per year, or 21.8%.²⁰

However, analysis conducted by Action Speaks Louder and [Dangjin KFEM](#) reveals that the plant’s GHG emissions, once operational in 2028, would exceed the emissions generated from sourcing power directly from the grid. This contradicts the company’s carbon reduction claims.

Table 3. GHG reduction pathways



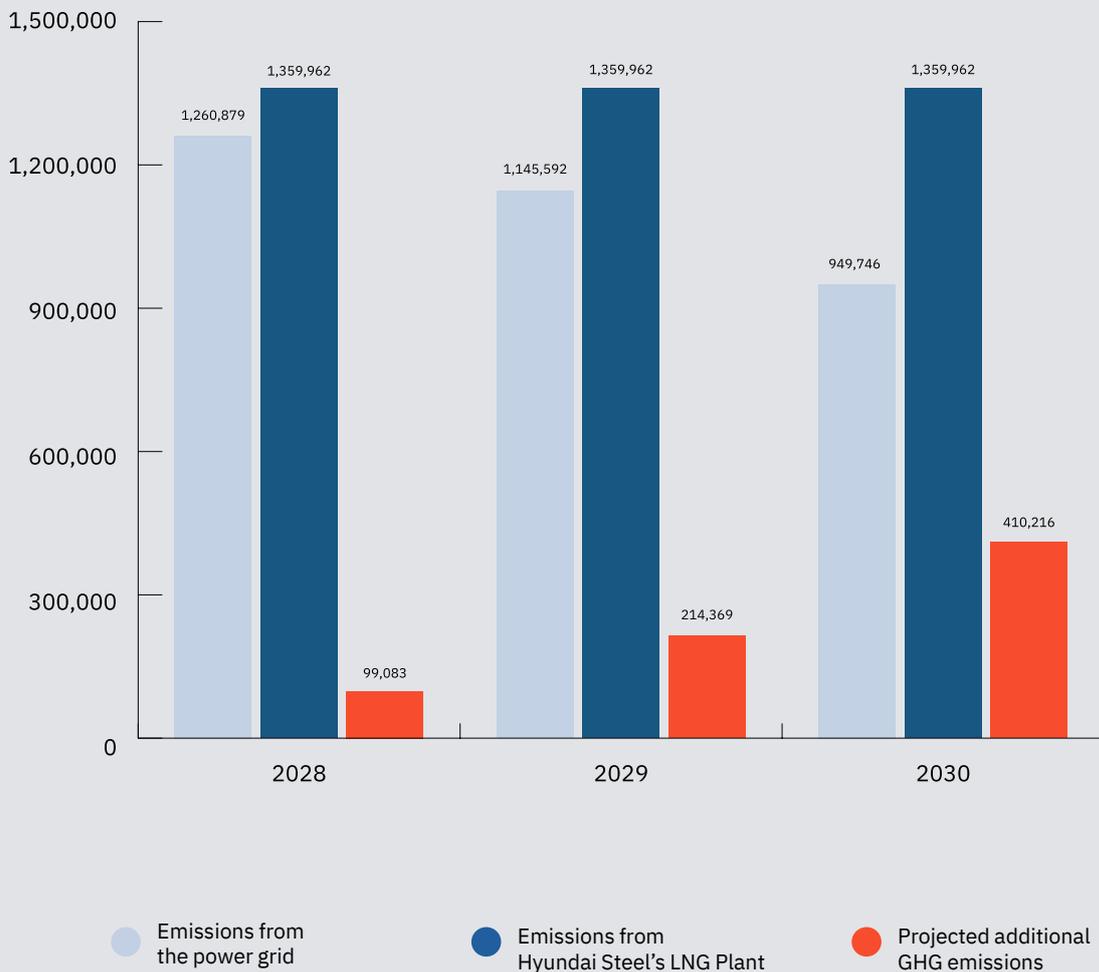
(Unit: million tonnes of carbon dioxide equivalent (mtCO₂eq))
Source: The working level draft of the 11th Basic Plan for Electricity Supply and Demand

Based on the plant’s capacity (499 MW) and operating rate (95.5%), calculations incorporating the carbon emission factor of the high-efficiency turbine specified in the EIA indicate that the facility will emit approximately 1,359,962 tCO₂eq of GHG annually from the start of operations in 2028.²¹

In contrast, the power grid’s GHG emissions for 2030, as projected in the working level draft of the 11th Basic Plan for Electricity Supply and Demand (BPE), show a significantly lower environmental impact. When applying the grid’s carbon emission factor (0.2275)—derived from national electricity generation and total Gw⁰²²—to Hyundai Steel’s LNG plant output, the estimated emissions would be 949,746 tCO₂eq per annum.

This analysis shows that the company’s LNG plant would emit an additional 410,216 tCO₂eq per annum in 2030 compared to grid-sourced power. Furthermore, as national carbon reduction policies continue to drive down the grid’s emission factor, the disparity between grid-sourced power and the LNG plant’s carbon footprint is expected to widen over time.

Figure 1. Projected disparity of GHG emissions per annum (Unit: tCO₂eq)



3
Hyundai Steel: Rated 'zero' on renewable energy

Hyundai Steel disclosed the purchase of zero renewable energy in its past three reports to the global disclosure platform, Carbon Disclosure Project (CDP).²³ Despite positioning itself as a major supplier of steel to the domestic and international offshore wind industry, Hyundai Steel has chosen not to support renewable energy use in its own operations through either onsite generation or PPAs, as the tables below show.

This makes Hyundai Steel the worst performing South Korean steelmaker in terms of clean renewable electricity use, despite being one of the largest electricity consumers in the country. However, at 1.1% (Posco) and 0.2% (Dongkuk Steel) in 2023, its South Korean competitors perform almost as poorly.

Table 4. Figure Hyundai Steel's energy consumption (excluding feedstocks) in 2022

	Renewable sources	Non-renewable sources	Total (renewable and non-renewable)
Consumption of fuel (excluding feedstock)	0	30,618,373	30,618,373
Consumption of purchased or acquired electricity	0	5,637,339	5,637,339
Consumption of purchased or acquired steam	0	36,653	36,653
Total energy consumption	0	36,292,364	36,292,364

(Unit: megawatt-hours (MWh))

Source: CDP: [Hyundai Steel: Climate Change 2023](#). Accessed July 30, 2024

Table 5. Comparison of top three Korean steelmakers in 2023

	Posco	Hyundai Steel	Dongkuk Steel
Steel production (million tonnes)	35.7	19.0	4.3
Share of EAF capacity	5%	49%	100%
Energy use (TJ)	399,525	167,803	25,543
Electricity use (TJ)	20,848	54,066	20,204
Renewable energy use (TJ)	233	0	38.6
Share of renewable energy in electricity	1.1%	0	0.2%

Source: Posco International: [Posco Sustainability Report 2023](#), 2024; CDP: [Posco: Climate Change 2023](#). Accessed 30 July 2024; Hyundai Steel: [Beyond Steel: Hyundai Steel Integrated Report 2024](#), 2024; and Dongkuk Steel: [Steel for Green](#), 2024

In terms of future use, the only planned renewable energy project announced by Hyundai Steel is through the Hyundai Motor Group in the US. Hyundai Motor Group signed a PPA with Matrix Renewables for 147 MW of generation capacity, with supply not due to commence until October 2025.

How Hyundai Steel's renewable energy procurement compares globally

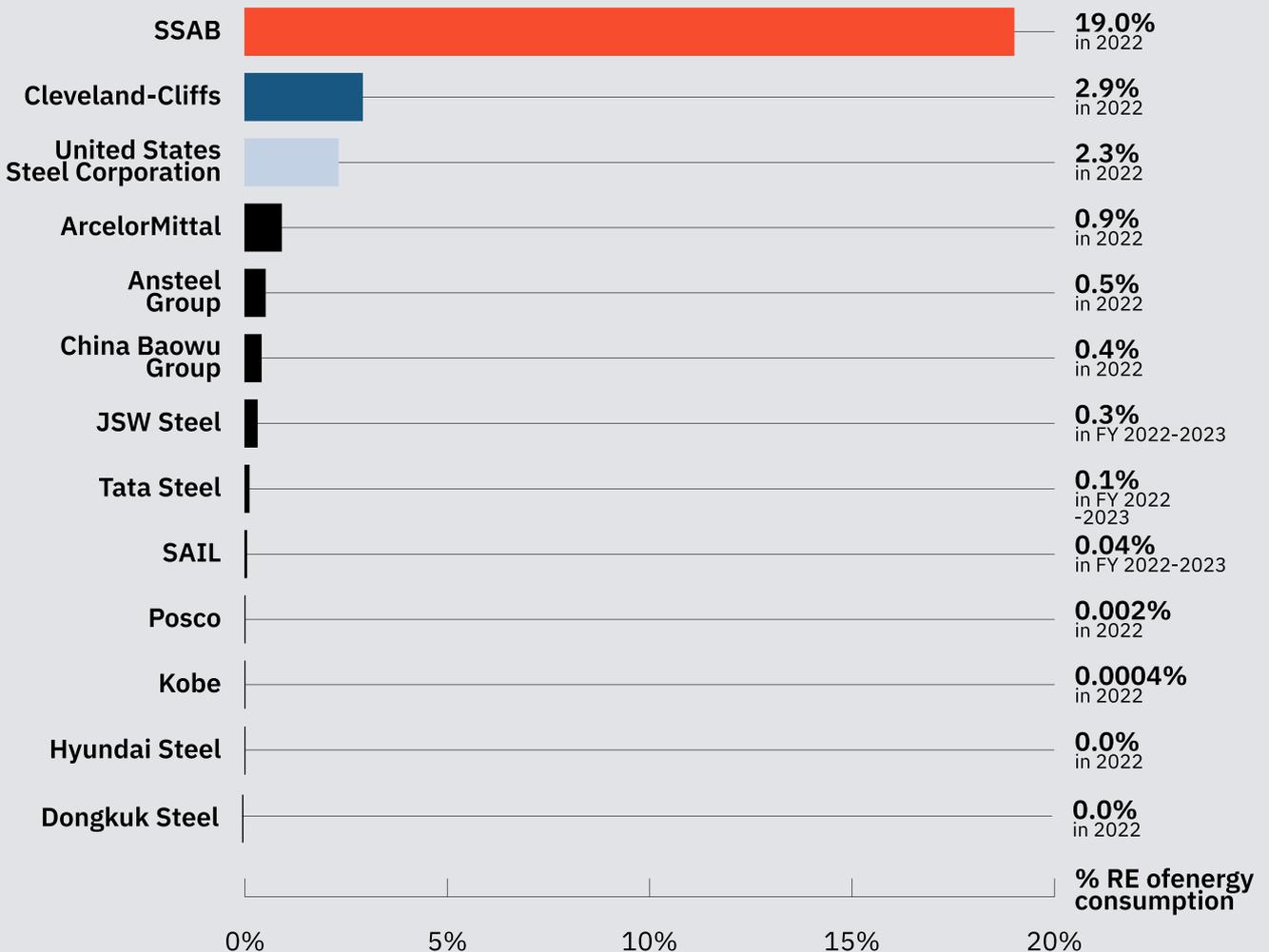
The steel industry generally lags behind sectors like technology when it comes to renewable energy (RE) procurement.²⁴ But even within the steel sector, an analysis of the three largest steel companies in the top six steel-producing regions highlights Hyundai Steel's poor performance in comparison to its global peers.

Of the major steel companies by region listed in the table below, Hyundai Steel ranks joint last with Dongkuk Steel, disclosing zero renewable energy use in 2022, with no public details of current renewable energy projects. Swedish steel company, SSAB, disclosed the greatest renewable energy use, at 19% in 2022.²⁵

There is a significant issue with disclosure among steel companies. In FY 2022, five of the 18 companies analyzed failed to disclose sufficient energy related information to determine renewable energy use as a percentage of energy consumption, while seven companies failed to disclose electricity use figures.²⁶

Where companies failed on full renewable energy procurement disclosure,²⁷ reliable evidence of renewable energy purchases were taken into account, rating these companies above competitors for which there were no details of current renewable energy projects or PPAs.

Table 6. Major steelmakers' 2022 direct renewable energy procurement



Full data tables for each company can be found in Appendix 1.

Table 7. Major steelmakers' with incomplete disclosure in 2022

Companies with evidence of current renewable energy projects.	Companies with no evidence of current renewable energy projects.
HBIS Group	Dongkuk Steel
JFE Group	Hyundai Steel
Nippon Steel Corporation	
Nucor	
thyssenkrupp	

Table 8 provides electricity consumption data for the five largest EAF producers listed in the previous table, along with the percentage of their electricity reported as sourced from renewable energy. Based on these figures, all leading EAF steel producers have significant opportunities to substantially increase their renewable energy purchasing.

For instance, by converting its current, direct electricity use to renewable energy, Nucor could immediately increase its direct RE procurement by approximately 13 times; Dongkuk Steel could increase its direct RE procurement by 654 times; ArcelorMittal could increase its direct RE purchase by 60 times; and SSAB could quadruple its direct RE procurement. Hyundai Steel, with 49% EAF capacity, could make obvious improvements on its currently zero direct RE procurement.

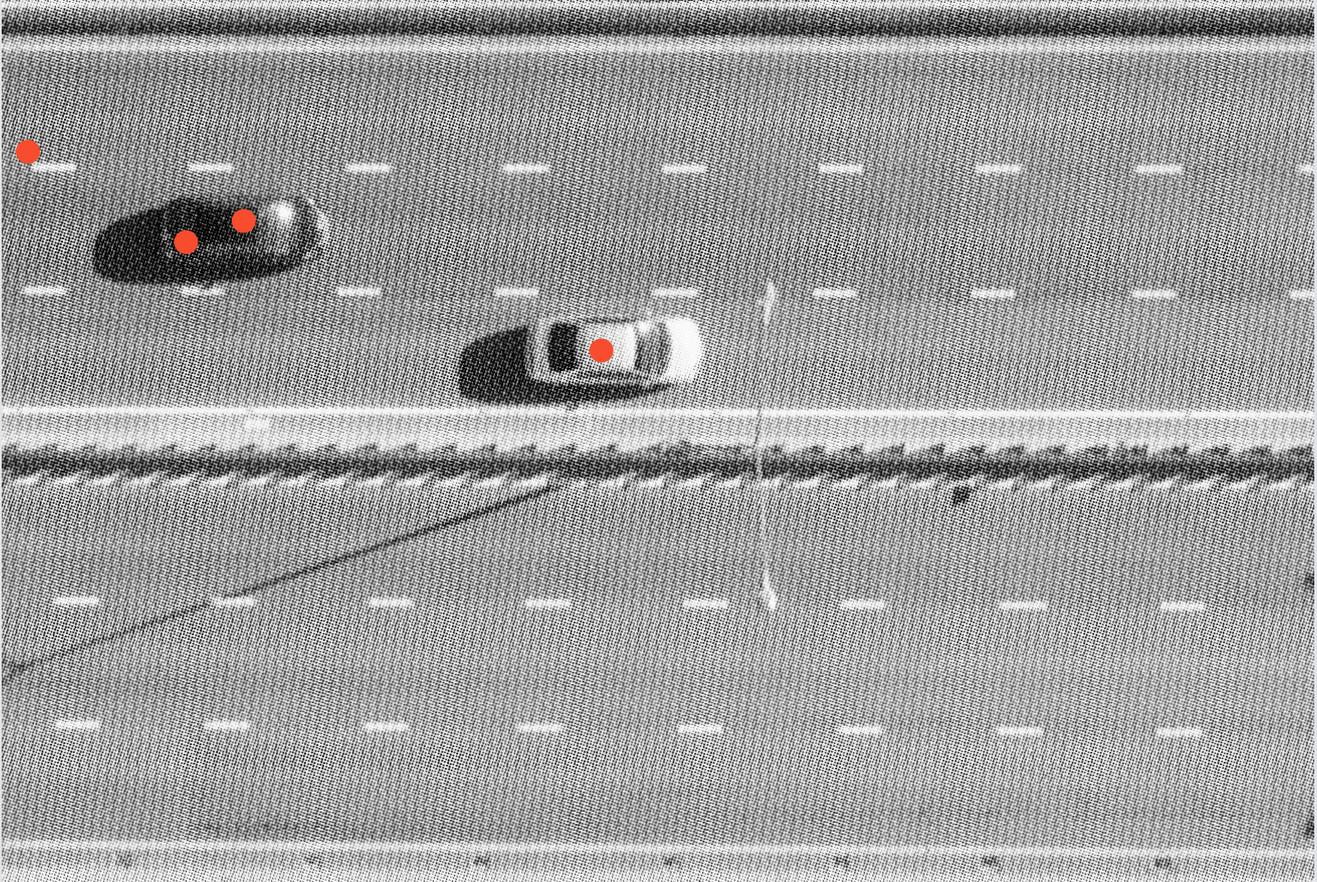
Table 8. Major EAF steelmakers' current use of renewable energy and their capacity to immediately pursue RE supply

Company*	% of EAF capacity	Total energy consumption (TJ)	Electricity consumption (TJ)	Electricity consumption (%)	RE use (TJ)	% of RE in energy	% of RE in electricity
Nucor (2023)	100%	116,778	56,304	48.2%	8,446	7.2%	15.0%
Dongkuk Steel (2023)	100%	25,543	20,204	79.1%	39	0.2%	0.2%
Hyundai Steel (2022)	49%	167,803	54,066	32.2%	0	0.0%	0.0%
JSW Steel (2023)	42%	517,691	12,700	2.5%	1,848	0.4%	14.6%
ArcelorMittal (2022)	34%	239,503	126,393	52.8%	2,097	0.9%	1.7%
SSAB²⁸ (2023)	28%	32,911	16,618	50.5%	4,321	13.1%	26.0%

*Nucor, Dongkuk Steel and SSAB data in 2023, JSW Steel data in FY 2023-2024 and Hyundai Steel and ArcelorMittal data in 2022

4

Lagging behind competitors on climate targets



Hyundai Steel is also at a competitive disadvantage in the energy transition when compared to its peers' emissions reduction targets. **The company's goal of a 12% absolute reduction by 2030 from a 2018 base year ranks third-lowest, with only South Korea's Posco and Dongkuk Steel having lower targets at 10%, followed by Chinese steelmakers with intensity-based targets.** In other words, Hyundai Steel's absolute target is lower than those set by its competitors in Japan, the EU, and the US,²⁹ leaving the company less equipped to compete in the green steel market and capitalize on the energy transition.

The Australasian Centre for Corporate Responsibility (ACCR) reviewed the climate commitments of 16 major steelmakers based on two pathways: the Net Zero Emissions by 2050 (NZE) Scenario from the International Energy Agency (IEA), which focuses on reductions in absolute emissions, and the 1.5°C carbon intensity-based reduction pathway from the Science Based Targets Initiative (SBTi)'s.³⁰ According to the [IEA's NZE 2023 update](#), the absolute emissions from the iron and steel sector need to fall 19% by 2030 and 91% by 2050 to be in line with the 1.5°C goal, accounting for increases in steel production from a 2022 baseline.

Our analysis reviews the absolute emissions reduction targets of Hyundai Steel and Dongkuk Steel based on the ACCR's methodology. Table 9 shows that Hyundai Steel is rated 'red' for both its short-term and medium-term targets, which lag significantly behind its Japanese and European competitors' plans to reduce emissions by between 30% and 48% by 2030. This raises serious questions about the company's ability to reach its goal of net zero by 2050 in line with a 1.5°C pathway.

Table 9. Assessment of steelmakers' climate commitments

Company	Base year	Short-term target (-2026)	Medium-term target (2027-2035)	Long-term target (2036-2050)	SBTi- aligned	Target type
China Baowu Group	2020	NA	30% by 2035	Net zero 2050	No	Peak, intensity
Ansteel Group	2025	Peak in 2025	30% from peak by 2035	Net zero 2060	No	Peak, absolute
HBIS Group	2022	10% from peak by 2025	30% by 2030 from peak	Net zero 2050	No	Peak, absolute
ArcelorMittal	2018	NA	25% by 2030	Net zero 2050	No	Intensity
thyssenkrupp	2018	NA	30% by 2030	Net zero 2045	Yes ³¹	Absolute
SSAB	2018	NA	48% by 2033	Net zero 2045	Yes ³²	Absolute
Tata Steel	2018	NA	UK: 30% by 2030 EU: 30-40% by 2030 Group-wide: NA	Net zero 2045	No	Absolute
JSW Steel	2005	NA	42% by 2030	NA	No	Intensity
Nippon Steel	2013	NA	30% by 2030	Net zero 2050	No	Absolute
JFE Steel	2013	18% by 2024	30% by 2030	Net zero 2050	No	Absolute
Kobe Steel	2013	NA	30% by 2030	Net zero 2050	No	Absolute
Nucor	2015	NA	35% by 2030	Net zero 2050	No	Intensity
Cleveland-Cliffs	2017	NA	30% by 2035	Net zero 2050	No	Intensity
United States Steel	2018	NA	20% by 2030	Net zero 2050	No	Intensity
Posco	2017-2019 average	NA	10% by 2030 30% by 2035	50% by 2040 Net zero 2050	No	Absolute
Hyundai Steel	2018	NA	12% by 2030	Net zero 2050	No	Absolute
Dongkuk Steel	2018	5% by 2025	10% by 2030	Net zero 2050	No	Absolute

Source: Based on data from ACCR: [Forging Pathways: insights for the green steel transformation](#), March 2024; this analysis updates thyssenkrupp, SSAB, Posco, Hyundai Steel and Dongkuk Steel

Note:

- : Leader - Company target ahead of the NZE pathway or is SBTi-aligned
- : Neutral - Company target in line with the NZE pathway
- : Laggard - Company target behind the NZE pathway or not SBTi-aligned

5

HyECOsteel?

Hyundai Steel has announced that it will address its increasing emissions, zero renewable energy use, and increasing blast furnace reliance by producing a separate steel brand with a lower 'carbon intensity', called HyECOsteel.

Hyundai's stated strategy for its 'eco' steel brand is to decrease the percentage of inputs from coal-powered blast furnaces over time, while increasing recycled scrap inputs, hot briquetted iron (HBI), and hydrogen direct reduced iron (DRI) inputs to eventually reach net zero by 2050.³³

However, these 'eco' commitments only apply to 5 million tonnes, or approximately a quarter of the company's production, up to 2030. This leaves a very significant proportion, approximately 75% of Hyundai Steel's products based on current production levels, with no clear pathway to net zero. The decision to exclude such significant amounts of production from its decarbonization strategy is reflected in the company's emissions reduction target of just 12% by 2030.

The details of Hyundai's Steel's decarbonization strategy, for the quarter of the company's production to which it applies, also raises significant concerns. It describes the strategy of mixing scrap with HBI produced using fossil fuels and molten iron from blast furnaces³⁴ as an attempt to create "synergy between the blast furnace and electric furnace sectors."³⁵ However, the company makes no commitment to retiring its blast furnaces, nor does it make any commitment on the use of renewable energy to produce HBI or hydrogen DRI inputs, which are currently produced with fossil gas and coal.

Hyundai Steel further fails to disclose the quantities of fossil fuels it is reliant on for production of its HBI and hydrogen DRI inputs. Additionally, it makes only a vague reference to "transitioning to clean energy,"³⁶ compounding existing concerns regarding its current use of zero renewable energy, and its failure to make any commitment to hydrogen DRI powered by renewable energy.

The company's long-term, post-2050, plan for its 'eco' steel brand also fails to include a targeted production volume, claiming this is "under review."³⁷ The decarbonization pathway to 2050 further relies on carbon capture, utilization, and storage (CCUS) for an unspecified amount of emissions reduction, which indicates that even beyond 2050 the company will most likely continue to rely on fossil fuels to produce its 'eco' brand, rather than making the necessary transition to EAFs run on renewable energy and to green hydrogen DRI.

Table 10. Hyundai Steel's low-carbon steel production plan

	Phase 1 (2025)	Phase 2 (2030)	Long term (2050)
Annual production	4 million tonnes (1 million tonnes of EAF + 3 million tonnes of BF-BOF)	1 million tonnes	Under review
Carbon intensity (tCO2 per tonne of product)	1.8 (20% less than normal flat products)	1.4 (40% less than normal flat products)	0.2 (90% less than normal flat products)
Technology development	Re-operation of an existing EAF to pre-melt scrap and HBI produced with fossil gas, to be used in blast furnaces.	New EAF installation and casting machine; combining scrap, HBI, and DRI, with no details of ratios or commitment to using renewable energy for DRI production.	Hydrogen-based DRI-EAF, with no commitment to using green hydrogen and a continued reliance on CCUS, indicating continued reliance on fossil fuels.

Source: Hyundai Steel: Beyond Steel: [Hyundai Steel Integrated Report 2024](#), 2024, p.19

6

Exposed: Hyundai Steel's high-tech end users and 'climate-conscious' investors

In June 2024, Hyundai Steel announced it had signed a supplier memorandum of understanding (MOU) with Czech auto parts maker Tawesco.^{38,39} Tawesco supplies top European auto brands including **Volvo**, which is the industry leader on fossil-free steel. Volvo has a target of reducing CO2 emissions per car by 75% by 2030 compared to a 2018 base year, and a net-zero steel value chain by 2050.⁴⁰

Hyundai Mobis also supplies major European automakers including Volvo, as well as **Mercedes-Benz**, which has a target to reduce CO2 emissions per car by at least 50% in all stages of the value chain by 2030.⁴¹ Hyundai Mobis's main raw materials are steel and petrochemicals, and its steel suppliers are Hyundai Steel and Posco.⁴²

It is difficult to see how Hyundai Steel can continue to effectively market its products to European automakers with green steel targets, given the combined factors of its steel production using zero renewable energy, the company's increasing reliance on blast furnaces, and the lack of a credible strategy for transitioning away from fossil fuel-based primary steelmaking.

Hyundai Steel also supplies leading tech companies with ambitious targets for decarbonizing their supply chains, including **Apple and Microsoft**. AJU Steel, Hyundai Steel's eighth-largest customer, derives 6.5% of its revenue from **Samsung Electronics**, whose major customer is Apple (6.7% of Samsung revenue). Apple has a target of carbon neutrality across its entire value chain by 2030 and has called on its suppliers to decarbonize all Apple-related operations.⁴³

Additional Samsung Electronics customers supplied by Hyundai Steel and AJU Steel include Dell (2.03% of revenue), which has an absolute scope 3 GHG emissions reduction target for purchased goods and services of 45%, Deutsche Telekom (1.95% of revenue), which aims to reduce scope 1-3 emissions by 55% by 2030,⁴⁴ and Microsoft (1.02% of revenue), which aims to be 'carbon negative' across its supply chain by 2030.⁴⁵

As leading financial institutions seek to align their investment portfolios with more ambitious decarbonization strategies, carbon intensive sectors such as steel hold both opportunities and risks. The rollout of tighter climate regulations including the Carbon Border Adjustment Mechanism (CBAM) and Sustainable Finance Disclosure Regulation (SFDR) in the European Union (EU) has accelerated the process of financial entities reassessing their investment decisions on steelmakers.

Between 2022 and 2023, at least 15 EU-based institutional investors excluded Posco, the seventh-largest steelmaker and Hyundai Steel's major South Korean competitor, for issues including poor ESG and climate performance.⁴⁶ **Danske Bank**, for example, excluded Posco and its subsidiary in 2022 due to "Activities Resulting in Significant Negative Impact on the Climate: Fossil Fuels". **Storebrand Asset Management** also excluded Posco based on its fossil fuel criteria in 2022.⁴⁷

Given Hyundai Steel is sourcing **zero** renewable energy, has made no commitment to green hydrogen or green hydrogen DRI and is planning to construct a new 499 MW gas power plant, the company is exposed to potential exclusion by investors that have already excluded Posco based on its ESG and climate performance.

7

The risk Hyundai Steel poses within the Hyundai Motor Group

Hyundai Steel is a steelmaking unit within the Hyundai Motor Group, a conglomerate with affiliates including **Hyundai Motor Company and Kia Corporation**. Hyundai Motor Company is Hyundai Steel's largest customer, providing it with 6.44% of revenue in 2023.⁴⁸ Kia Corporation is Hyundai Steel's fourth-largest customer, making up 3.24% of its revenue in 2023. According to the CEO's remarks in 2023, Hyundai Steel supplied over 80% of the automotive steel to Hyundai Motor Company and Kia Corporation, while supplying 17% to overseas automakers.⁴⁹

But the company's poor climate performance is a risk to both the Hyundai Motor Company and Kia Corporation brands, particularly where the automakers compete with better performing European brands, like Volvo and Mercedes-Benz.

While Hyundai Motor Company and Kia Corporation have made some efforts to signal their readiness for the energy transition through joining initiatives like RE100 in 2021, both automakers have unambitious emissions reduction targets. Hyundai Motor Company and Kia Corporation share interim supply chain emissions reduction targets of just 10% below 2019 by 2030.⁵⁰

Table 11 demonstrates that Hyundai Motor Company's steel consumption has increased from 1 million tons in 2021 to 1.2 million tons in 2023, and that its reliance on steel products made with coal-fired blast furnaces is increasing.

Table 11. Hyundai Motor Company's steel use (Unit: ton)

	2021	2022	2023
Steel (amounts used)	1,054,056	1,151,624	1,231,958
Steel (scrap)	395,597	393,419	410,665
Non-scrap steel (%)	62.5%	65.8%	66.7%

Source: Hyundai Motor Company: [Road to Sustainability: 2024 Sustainability Report](#), 2024, p. 98



Neither Hyundai Motor Company nor Kia Corporation have announced a green steel target.⁵¹ This places Hyundai Motor Company and Kia Corporation behind leading competitors Volvo and Mercedes-Benz, and behind Tesla, Ford, GM, Geely, and Volkswagen, according to ratings by Lead the Charge.⁵²

Mercedes-Benz, for example, has set an interim target for 2030 to reduce CO2 emissions per passenger car in its new vehicle fleet by up to 50% compared to 2020 along all stages of the value chain, committing to achieving net zero in its value chain by 2039.⁵³ By 2030, Volkswagen aims to emit 30% less CO2 on average per vehicle along the full value chain when compared to 2018 figures.⁵⁴ BMW has released science-based targets for scope 3 carbon emissions reductions in its supply chain, with a reduction based on a 2019 base year of at least 20% per vehicle by 2030. To achieve this, BMW includes the use of green electricity as a key criteria when awarding contracts to suppliers.⁵⁵

Unless Hyundai Motor Group addresses the lagging targets of its affiliate and major steel provider, it is difficult to see how the company can compete with more climate-tech advanced competitors in Europe and the US, particularly in its higher-end market segments that compete directly with Volvo, Mercedes-Benz, Tesla and Volkswagen.

8

Conclusion: From laggards to leaders

Hyundai Steel's failure to embrace renewable energy, alongside its deepening reliance on fossil fuels, fundamentally undermines the credibility of its HyECOsteel brand. While the company has promoted HyECOsteel as a central element of its decarbonization strategy, a closer look reveals an alarming lack of commitment to the clean technologies essential for meeting global net-zero goals. The absence of renewable energy in its operations, combined with ongoing investments in coal and gas infrastructure, signals a strategic misalignment with the green steel transition that its competitors are pursuing.

Indeed, Hyundai Steel's decision to focus only on a small portion of its production for low-carbon initiatives, while continuing to rely on carbon-intensive blast furnaces for the majority of its output, exacerbates this disconnect. This limited approach not only hampers the company's ability to reduce emissions, but also threatens its ability to remain competitive in a market increasingly driven by sustainability requirements.

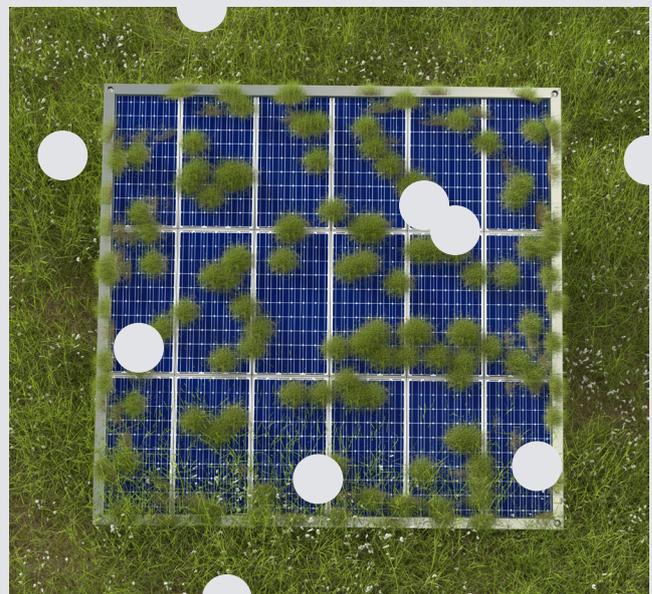
Furthermore, Hyundai Steel's reliance on unproven technologies such as CCUS as a key component of its long-term decarbonization pathway raises further concerns. Without a clear strategy to transition to EAFs powered by renewable energy or to adopt green hydrogen in its iron production processes, Hyundai Steel is at risk of falling behind its peers in the green steel race.

The reputational risk extends beyond Hyundai Steel to Hyundai Motor Group, its largest customer, which is increasingly exposed to the demands of climate-conscious investors and end users, especially in Europe and the US. As leading automakers and technology companies set ambitious green steel targets, Hyundai Steel's lagging performance poses a significant challenge to the broader group's ability to compete in markets shaped increasingly by sustainability metrics.

Unless Hyundai Steel makes a decisive shift towards renewable energy, green hydrogen, and sustainable steel production technologies, its HyECOsteel brand risks being exposed to claims of greenwashing. To remain relevant in the global steel industry's transition, Hyundai Steel must commit to ambitious, net zero-aligned targets, and take immediate steps to implement the clean technologies needed to achieve them.

Recommendations to Hyundai Steel

- Join RE100 and commit to powering current and future EAFs with wind and solar.
- Adjust emissions reduction targets to at least 30% by 2030 on a 2018 base year. Extend this target to include a Paris-aligned, near- and medium-term Scope 3 emissions reduction target.
- Release a public commitment to no new blast furnaces, no relining of existing blast furnaces, and no new fossil fuel infrastructure.
- Release a clear plan, with interim targets, for retiring existing blast furnaces to deliver on 2050 net zero commitments.
- Produce or source iron inputs made with 100% green hydrogen, rather than coal or gas, by 2050.



Appendix 1 Major steelmakers' 2022 declared direct renewable energy (RE) use

Company	% RE of energy consumption	% RE of current electricity consumption	RE commitment	Project details if gaps in disclosure	Under development	% of EAF capacity ⁶⁶	% of electricity in energy consumption
SSAB	19.0% in 2022 ⁵⁷	32.7% in 2022 ⁵⁸	Not disclosed	Not applicable	Not applicable	28%	58.1%
Cleveland-Cliffs	2.9% in 2022 ⁵⁹	18.2% in 2022 ⁶⁰	Purchasing 2 million megawatt hours (MWh) of renewable power annually that is newly developed or additional power to the grid ⁶¹	Not applicable	Not applicable	13%	16.0%
United States Steel Corporation	2.3% in 2022 ⁶²	17.3% in 2022 ⁶³	Not disclosed	Not applicable	Not applicable	25%	13.5%
ArcelorMittal	0.9% in 2022 ⁶⁴	1.7% in 2022 ⁶⁵	ArcelorMittal Nippon Steel (AMNS) India aims to source 100% of grid electrical energy requirements through renewable electricity by 2030. ⁶⁶	In March 2022, ArcelorMittal announced a partnership with the Greenko Group in India to develop a 'round the clock' energy project with 975 MW of solar and wind capacity. In May 2023, ArcelorMittal Brazil formed a joint venture partnership with Casa dos Ventos, one of Brazil's largest developers and producers of RE, to develop a 554 MW wind power project. ⁶⁷	Not applicable	34%	52.8%
Ansteel Group	0.5% in 2022 ⁶⁸	Not disclosed	Not disclosed	According to BNEF, Ansteel was ranked as China's fourth-largest clean energy buyer in 2022. ⁶⁹ The reported total transaction of green power reached 790 GWh, accounting for 10.2% of the transacted electric quantity in 2023 and marking a year-on-year increase of 250 GWh. ⁷⁰	Not applicable	15%	Not disclosed

Company	% RE of energy consumption	% RE of current electricity consumption	RE commitment	Project details if gaps in disclosure	Under development	% of EAF capacity ⁸⁶	% of electricity in energy consumption
China Baowu Group	0.4% ⁷⁴ in 2022	Not disclosed	Cumulative installed capacity of 470MW in-plant renewable energy by 2024. ⁷²	Not applicable	Not applicable	5%	Not disclosed
JSW Steel	0.3% in FY 2022-2023 ⁷³	11.3% in FY 2022-2023 ⁷⁴	Installation of 10 GW RE capacities by 2030. ⁷⁵	Not applicable	Not applicable	42%	2.6%
Tata Steel	0.1% in FY 2022-2023 ⁷⁶	1.5% in FY 2022-2023 ⁷⁷	Not disclosed	Not applicable	Not applicable	3%	7.8%
Steel Authority of India Ltd. (SAIL)	0.04% in FY 2022-2023 ⁷⁸	0.16% in FY 2022-2023 ⁷⁹	Not disclosed	4 MW of floating solar was installed at IISCO Steel Plant in June 2024. ⁸⁰	Installation of a 15 MW floating solar project at Bhilai Steel Plant. ^{81,82}	2%	23.7%
POSCO	0.002% in 2022 ⁸³	0.034% in 2022 ⁸⁴	Not disclosed	Not applicable	Not applicable	5%	6.2%
Kobe Steel, Ltd	0.0004% in 2022 ⁸⁵	0.0016% in 2022 ⁸⁶	Not disclosed	Not applicable	Not applicable	0%	22.9%
HBIS Group	Not disclosed ⁸⁷	Not disclosed ⁸⁸	Aims to achieve a renewable energy capacity of 350 MW by 2025. ⁸⁹	A total of 32.25 MW of distributed renewable energy projects have been completed and put into operation. ⁹⁰	BMW Group will start to use low-carbon steel from Chinese steelmaker HBIS Group in vehicle production at its plants in China from mid-2023. From 2026, BMW's car plants in China will begin to use HBIS green steel, which is produced via electric-arc furnaces with renewable-source electricity, with carbon dioxide emissions cut by about 95%. ⁹¹	25%	Not disclosed
thyssenkrupp	Not disclosed	Not disclosed	Not disclosed	thyssenkrupp Hohenlimburg, a subsidiary of thyssenkrupp Steel, started using wind electricity for the Hagen plant, Germany in June 2024. ⁹²	thyssenkrupp signed a PPA contract with Germany-based electricity generator RWE for the supply of offshore wind electricity for "the first direct reduction plant," planned to be online in 2026. ⁹³	1%	Not disclosed

Company	% RE of energy consumption	% RE of current electricity consumption	RE commitment	Project details if gaps in disclosure	Under development	% of EAF capacity ⁹⁶	% of electricity in energy consumption
Nippon Steel	Not disclosed	Not disclosed	ArcelorMittal Nippon Steel (AMNS) India aims to source 100% grid renewable electricity by 2030. ⁹⁴	In 2023, JCAPCPL (a joint venture between Tata Steel & Nippon Steel) entered into a 25-year PPA with AMPIN Energy Transition, a renewable energy independent power producer (IPP) and energy transition platform, to supply 2.8 megawatt peak (MWp) of solar energy for its plant in Jamshedpur. ⁹⁵	ArcelorMittal has invested in its RE power business, supplying 250 MW of RE power per annum for the next 25 years to the ArcelorMittal/Nippon Steel Hazira Steel Mill in India, as well as other facilities (full-scale supply to start in 2024). ⁹⁶	14%	Not disclosed
JFE Group: JFE Steel and JFE Shoji.	Not disclosed	Not disclosed	Not disclosed	Steel processing subsidiary JFE Shoji Coil Center Corporation (JCC) has a PPA with Urban Energy Corp. a subsidiary of JFE Engineering, for 100% renewable electricity used at the JCC Shizuoka Works. ⁹⁷	Not applicable	10%	Not disclosed
Nucor Corp.	Not disclosed	Not disclosed	Not disclosed	Nucor signed a PPA for a 250 MW solar project in 2020 and a PPA for a 100 MW wind project in 2021. ⁹⁸ It announced a PPA for a 250 MW solar project in 2023. ⁹⁹ Nucor's Vulcraft plant in New York installed 2.2 MW of rooftop solar in 2022. ¹⁰⁰	Not disclosed	100%	Not disclosed
Dongkuk Steel	0.0% in 2022 ¹⁰¹	0.0% in 2022 ¹⁰²	Not disclosed	Dongkuk Steel installed 10 MW of rooftop solar at the Pohang steelworks in 2023. ¹⁰³	Not disclosed	100%	79.9%
Hyundai Steel	0.0% in 2022 ¹⁰⁴	0.0% in 2022 ¹⁰⁵	Not disclosed	Not disclosed	Hyundai Motor Group signed a 15-year power purchase agreement (PPA) with Matrix Renewables for the Hyundai Motor Group Metaplant America (HMGMA). The Group will purchase 147 MW of generation capacity from Matrix Renewables' with supply to commence in October 2025. ¹⁰⁶	49%	32.9%

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