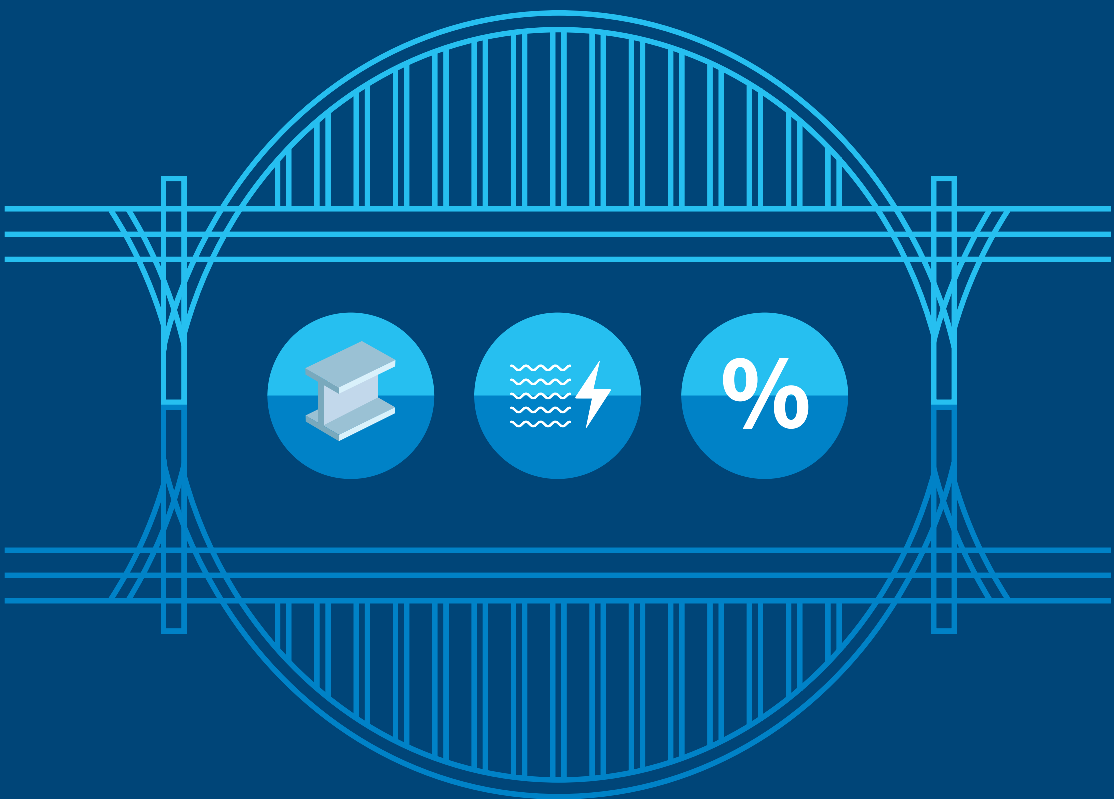
Financing the Decarbonisation of China's Steel Sector

Insights from the Transition Finance Pilot and Market Progress



Climate Bonds Initiative

Transition Asia

Prepared by Climate Bonds Initiative

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Climate Bonds Initiative

Climate Bonds Initiative (Climate Bonds) is an international organisation working to mobilise global capital for climate action. It promotes investment in projects and assets needed for a rapid transition to a low-carbon, climate resilient, and fair economy. The mission focus is to help drive down the cost of capital for large-scale climate and infrastructure projects and to support governments seeking increased capital markets investment to meet climate and greenhouse gas (GHG) emission reduction goals. Climate Bonds conducts market analysis and policy research; undertakes market development activities; advises governments and regulators; and administers a global green bond Standard and Certification scheme.

Transition Asia

Founded in 2021, Transition Asia is a Hong Kong-based, non-profit think tank that focuses on driving 1.5°C-aligned corporate climate action in Asia through in-depth sectoral and policy analysis, investor insights, and strategic engagement. Transition Asia works with corporate, finance, and policy stakeholders across the globe to achieve transformative change for a net-zero, resilient future. Visit transitionasia.org to learn more.

Acronyms and Abbreviations

BF-BOF: blast furnace-basic oxygen furnace
CCUS: carbon capture, utilisation, and storage
CCER: China certified emission reduction
DRI: direct reduced ironmaking
EAF: electric arc furnace
ETS: national emissions trading scheme
PBoC: People's Bank of China
SLL: sustainability-linked loan
SLB: sustainability-linked bond
SPT: sustainability performance targets
UoP: use of proceeds

The Climate Bonds Standard and Certification Scheme is a voluntary labelling scheme for investments and entities that addresses the challenge of climate change and is consistent with the goals of the Paris Agreement. Certification under the Standard confirms that debt instruments, assets, and entities meet assessment frameworks and Criteria required by the Climate Bonds Standard (CBS).

50%

China accounts for over 50% of global steel production

7-9%

Worldwide, steel production contributes 7–9% of total emissions

Report summary

China dominates global steel production by accounting for over 50% of the world's production.[1] Worldwide, steel production contributes 7–9% of total emissions, while China's steel sector alone is responsible for 15% of the country's overall carbon emissions.[2,3]

In view of the Paris Agreement and China's nationally determined contributions (NDCs) (to peak emissions by 2030 and achieve carbon neutrality by 2060), the steel sector must develop actionable strategies and credible plans to reduce its emissions.

To support this transition, Chinese financial regulators are actively developing guidelines to ensure the orderly growth of the transition finance market. A notable example is the December 2023 issuance by Hebei Province, China's largest steel-producing region, of its Guidelines for Transition Finance in the Iron and Steel Industry.[4] As the first subnational regulatory framework of its kind in China, the Hebei guidelines outline core principles, identify eligible technologies, and emphasise the need for robust supply chain collaboration across the steel sector, marking a key milestone in setting credible and sector-specific transition guidance.

This report analyses market instruments and development since the introduction of the Hebei guidelines by examining trends in bank lending and bond issuance within China's steel industry, incorporating interviews with market participants. The report offers actionable guides for steel companies to address decarbonisation challenges, strategies to secure financing for decarbonisation, and insights for policymakers and standard setters developing future market incentives and transition policies.

Key findings:

- **The market responds quickly to guidelines** and reacted swiftly to Hebei's introduction of transition finance standards, underscoring the pivotal role that well-defined guidelines play in catalysing capital flows. During the first year following the release of the steel transition guidelines, the labelled debt market provided crucial funding for initial market-driven decarbonisation efforts; notably, in 2024, Hebei's steel transition loan surpassed CNY20bn (USD2.8bn), and Chinese issuers launched 12 steel-related labelled bonds totalling USD3bn.

- **Decarbonisation ambition directs investment flows and creates financing** opportunities. The Chinese steel sector requires an estimated USD18bn in capital expenditure to invest in electric arc furnaces (EAF), direct reduced iron (DRI) shaft furnaces, and electrolysers. This investment is critical for aligning with the IEA's iron and steel net-zero pathway for primary production and for meeting national targets for EAF deployment. While China's robust debt market is well-positioned to deliver targeted financial support, issuers must maintain transparency and credibility in their financing strategies. Additionally, the introduction of incentives and ensuring a fair allocation of the green steel premium associated with low-carbon steel production is essential to fulfilling these financing demands.
- **Measures to scale up transition financing:** To move beyond pilot initiatives, the People's Bank of China and other regulators are expected to introduce additional incentives—such as interest subsidies, weighting adjustments, and supportive measures similar to the those implemented for the carbon emission reduction facility—and establish clear implementation targets for transition-financing providers to spur further investments in decarbonising the steel sector.

Introduction

Policy drivers and market dynamics behind China's steel decarbonisation

In 2023, China produced 1,019.1 million tons of steel, accounting for over 50% of the world's total steel production. Currently, more than 90% of China's steel is produced using the blast furnace (BF) process, while only 10% is derived from the electric arc furnace (EAF) process.[5] Since the BF process is heavily reliant on coal, the steel industry is a major contributor to greenhouse gas emissions (GHGs), responsible for approximately 15% of the country's total emissions, presenting a significant challenge to the decarbonisation mandate of the sector and the economy.[6]

China's overarching climate target is to peak carbon emissions by 2030 and achieve carbon neutrality by 2060. To accomplish this, Chinese steel-making companies must rapidly transition to low-carbon processes. Key strategies include enhancing steel scrap recycling, improving energy efficiency, and adopting breakthrough technologies including hydrogen direct reduced iron production (H2-DRI) and electrolysis of iron ore.[7] Downstream steel users, such as automobile manufacturers, have started to signal their commitment to low-carbon steel procurement by signing MOUs with steel companies.[8]

In line with decarbonisation targets and pathways, Chinese steel companies need to strategically plan their decarbonisation capital expenditures (capex) to align with national decarbonisation policies and evolving downstream market demands. Table 1 outlines the key policy and market factors that have the most influence on the decarbonisation process of China's steel sector.

Table 1. **Policy and market factors that affect the decarbonisation of the Chinese steel sector.**

Drivers	Trends
Steel capacity swap	Since 2021, China's Ministry of Industry and Information Technology (MIIT) has implemented swap rules to modernise the steel sector by phasing out low-grade, outdated steelmaking capacity in favour of newer production technologies. Under this policy, BF capacity must be swapped at a minimum ratio of 1.5:1, while EAF capacity maintains a 1:1 ratio.[9] As of August 23, 2024, approvals for new steel capacity swaps have been suspended to allow for a review and update of this long-standing measure. The revised policy aims to reduce overall pig iron and crude steel capacity while increasing the share of EAF capacity.
Scrap-based electric arc furnace (EAF) steel production	Switching from BF to scrap-based EAF is widely recognised as the most crucial step for rapidly decarbonising the steel industry. Under the Industrial Sector's Carbon Peak Implementation Plan, China aims to boost EAF steel production to 15% of total crude steel output by the end of 2025 and then to 20% by 2030.[10,11] Currently, with only 10% of production coming from EAFs, the market still falls short of these ambitious targets.
Capex required for decarbonisation	Decarbonising the steel sector demands strategic capex planning and secure financing for essential investments. According to the Rocky Mountain Institute (RMI), China's steel industry will require fixed asset investments of at least CNY1.6tn (USD220bn) by 2050 to achieve decarbonisation. This investment is projected to be allocated as follows: [12] • **33% for energy efficiency improvements,** • **23% for expanding EAF capacity,** • **18% for developing DRI facilities,** • **14% for carbon capture, utilisation, and storage (CCUS),** • **7% for integrating hydrogen injection in blast furnaces,** • **5% for modernising pellet manufacturing processes.**
Transition finance policies, standards, and market	The evolution of China's transition finance market has the potential to unlock essential funding for steel companies seeking to boost capex for decarbonisation initiatives. The People's Bank of China (PBoC) and relevant agencies are spearheading the development of a national transition finance catalogue targeting high-emitting industries, with the steel sector being a key focus. In December 2023, Hebei Province released its *Transition Finance Guidelines for the Iron and Steel Industry*, 2023–2024 edition (Hebei steel guidelines), marking the first subnational transition finance guidelines specific to the steel sector. Insights gained from the development and implementation of the Hebei guidelines are set to inform and shape the forthcoming national plan.[13]
Shifting downstream demand	The property sector has long driven growth in China's steel sector. However, the ongoing property crisis is reducing steel industry profitability, and signalling a shift in downstream demand. The steel sector now faces the challenge of peak consumption, and Fitch anticipates that Chinese steelmakers will adjust their product mix to decouple from property-dependent demand. Instead, growth is expected to be driven by the manufacturing, infrastructure, and renewable energy sectors.[14] Important downstream users from the auto industry, such as Beijing Benz and BMW, are increasingly demonstrating their commitment to sustainability by signing MOUs with steel companies such as Baosteel and HBIS for low-carbon steel procurement.[15]
Higher value-added products	The steel sector is expected to increasingly concentrate on higher value-added products, such as stainless steel, which command premium prices and offer greater profit margins.[16] This strategic shift not only enhances profitability but also creates opportunities to integrate decarbonisation measures directly into the production process.
Green steel prices and production premium	According to Transition Asia's pricing model, green steel is projected to cost between USD560 and USD750 per tonne of crude steel, amounting to a 5% to 40% premium over conventional BF-BOF production methods. This premium is primarily driven by elevated operating expenses for costly inputs, such as scrap and green hydrogen.
Hydrogen prices and hydrogen infrastructure	Policies, hydrogen infrastructure, prices, and the overall accessibility of hydrogen will significantly influence the capex decisions of steel corporates regarding hydrogen-based production. In December 2024, China released guidelines aimed at broadening the use of low-carbon hydrogen in industrial applications, including hydrogen-based steel production.[17]

Drivers	Trends
Carbon price fluctuation	Rising carbon prices will drive steel companies to adopt more rigorous carbon accounting and management practices. According to Transition Asia's estimate, if prices reach between USD30 and USD50 per ton, the green H_2-DRI-EAF process will become increasingly competitive and eventually achieve cost parity with the conventional BF-BOF method even at higher hydrogen prices.[18] In March 2025, China expanded its national compliance emissions trading system (ETS) to include the steel sector.[19] Originally launched in 2021 as a mandatory programme covering over 2,000 major power sector emitters, with an average price of CNY98 (USD13) per ton recorded in 2024, the ETS will now impose emission limits on steel production.[20] Under China's evolving ETS market, regulated entities can now purchase China Certified Emission Reduction (CCER) credits from the voluntary market to offset up to 5% of their liable emissions.[21] In March 2025, CCER carbon credits surged to CNY107 (USD14.8) per ton, about 21% higher than the mandatory carbon allowance. The emerging CCER market is expected to promote clean energy and emission reduction initiatives within the steel sector.[22] In October 2023, the EU Carbon Border Adjustment Mechanism (CBAM) entered its transitional phase where traders have to report their emissions. The full implementation of CBAM will start to apply from 2026 when traders have to purchase certificates equivalent to EU carbon prices. As steel is among the products covered by CBAM, importers must now bear equivalent carbon emission costs to domestic producers.[23]

Developments in China's steel transition finance catalogue and guidelines

Robust financial support is crucial for fast-tracking the steel sector's low-carbon transition. China's burgeoning transition finance market offers promising funding opportunities and serves as a catalyst for steel decarbonisation. This section explores the latest developments in China's transition finance policies and standards relevant to the steel industry's low-carbon transition, assessing both the successes achieved and the barriers that remain.

China's transition finance policy and market development

Transition finance plays a critical role in supporting high-emission sectors such as steel that have traditionally been excluded from conventional green finance instruments and often struggle to secure standard bank loans.

Organisations such as Climate Bonds view transition finance as an integral component of the broader green investment ecosystem. This approach underpins initiatives aligned with the Paris Agreement goal of limiting global temperature to well below 2°C and pursuing efforts to limit it to 1.5°C. By expanding the landscape of available investments, transition finance effectively channels capital into industries that are essential for achieving climate objectives.

Since 2022, Chinese financial regulators have proactively introduced supportive guidelines to foster the development of the country's transition finance market. At the national level, the PBoC, in collaboration with relevant departments, is leading the drafting of a comprehensive transition finance catalogue targeting high-emitting industries, with the steel sector highlighted as a key focus area. At the regional level, subnational governments, including those in Huzhou, Chongqing, Tianjin, Shanghai, and Hebei, have rolled out transition finance policy guidance and catalogues since 2022.[24] While these regional guidelines vary in scope and granularity, they serve as pilots for broader policies and regulations. Additionally, they establish clear criteria for market participants to determine transition eligibility, with some regions providing incentives tied to these benchmarks. For instance, banks in Huzhou are offering transition loans with a 50-basis point interest subsidy for companies that achieve their scheduled transition targets.[25] The insights gained from these regional initiatives, particularly regarding market credibility and alignment with international standards, will be instrumental in refining the national transition finance framework.

20%

Hebei is the centre of steel production, accounting for 20% of China's total steel production

Hebei transition finance guidelines for the steel sector

The Hebei steel guidelines were released in December 2023 and were the first Chinese subnational transition finance guidelines specific to the steel sector.[26] As Hebei is the centre of steel production, accounting for 20% of China's total steel production, the Hebei steel transition guidelines are a crucial development in setting credible sectoral guidelines for high-emitting sectors.

The Hebei steel guidelines feature a comprehensive framework designed to accelerate the green transition of the steel sector, which include the following:

- **Whitelisted activities.** The guidelines list 176 technologies eligible for support under the provincial transition finance guidance. This approach is similar to the China Green Bond Endorsed Projects Catalogue (2021 edition), which identifies green or near-green technologies for market adoption.
- **Transition plans and emission targets.** Companies are encouraged to develop detailed transition plans. The guidelines also set a clear timeframe for emissions reduction, with short-term (2025), medium-term (2030), and long-term (by 2060) targets.
- **Downstream incentives:** In addition to measures for steel producers, the guidelines extend to downstream industries (e.g., the automotive sector) by incentivizing the purchase of green steel. This measure is crucial for stimulating demand for low-carbon steel.

This report presents an initial evaluation of the impact of Hebei's steel transition guidelines. It analyses bank lending, bond issuances, and other market responses following their release, while incorporating insights from banks, steel companies, external reviewers, and research institutions on implementation challenges and future prospects.

1 Leveraging transition finance instruments for the Chinese steel sector

The financial instruments supporting the decarbonisation of the steel industry are diverse, including loans, bonds, insurance products, equity funds, among others. Each instrument offers distinct advantages in terms of capital support, risk diversification, maturity, and cost optimisation, allowing steel companies to tailor their financing strategies to their unique transition pathways and needs.

- **Bank loans** offer flexibility by providing project financing and working capital support for steel enterprises. However, they generally come with shorter-term repayment schedules, which may not perfectly align with the longer timelines of transition projects.
- **Bonds** enable large-scale, long-term financing. However, they often require meeting high issuance thresholds that include rating requirements, stringent transition planning, KPI setting, and information disclosure, making the process more demanding for some issuers.
- **Insurance** products help mitigate risks during the transition, such as property damage or environmental liabilities but they can be expensive, especially for projects incorporating new technologies that may trigger premium surcharges.
- **Equity Funds** attract long-term investments from public and private capital, facilitating the development of innovative transition projects while easing corporate debt burdens. However, the guidelines for green equity investment in the steel sector are still unclear, while managing the complex exit strategies for this capital can present challenges.

China's financial market instruments dedicated to green and wider sustainability-related purposes have grown significantly. By the end of 2024, the balance of China's green loans reached CNY36.6tn (USD5.1tn), reflecting a year-on-year increase of 21.7%.[27] Simultaneously, China's green bond market has evolved into one of the largest globally, with China GSS+ bond issuance amounting to USD143.1bn in 2024 according to the Climate Bonds dataset. Although green loans represent 13% of total outstanding loans, with green bonds accounting for less than 2% of overall bond issuance, these figures underscore the growing importance of labelled debt instruments. Meanwhile, insurance, equity financing, and other diversified financial instruments still require further innovation and promotion.

Bank lending

Following the release of the Hebei transition guidelines by the PBoC Hebei in December 2023, the banking sector responded swiftly and started providing targeted financing to the decarbonising efforts of corporates in the steel industry. However, transparency in bilateral loan issuance remains limited, with varying levels of public disclosure. This report aggregates information on steel-related transition loans from various news sources. The findings indicate that by the end of 2024, the total volume of steel transition loans exceeded CNY20bn (USD2.8bn), with these loans generally offering price benefits ranging from 5 to 150 basis points.

Financial institutions have extended their pilot programmes for transition-related loans to steel companies in regions beyond Hebei. For instance, similar initiatives have been observed in Tianjin, Heilongjiang, and Jiangsu, indicating that market players across various regions are increasingly embracing steel transition financing.

Table 2. **Steel transition-related loans after the release of the Hebei steel guidelines (the list is non-exhaustive).**

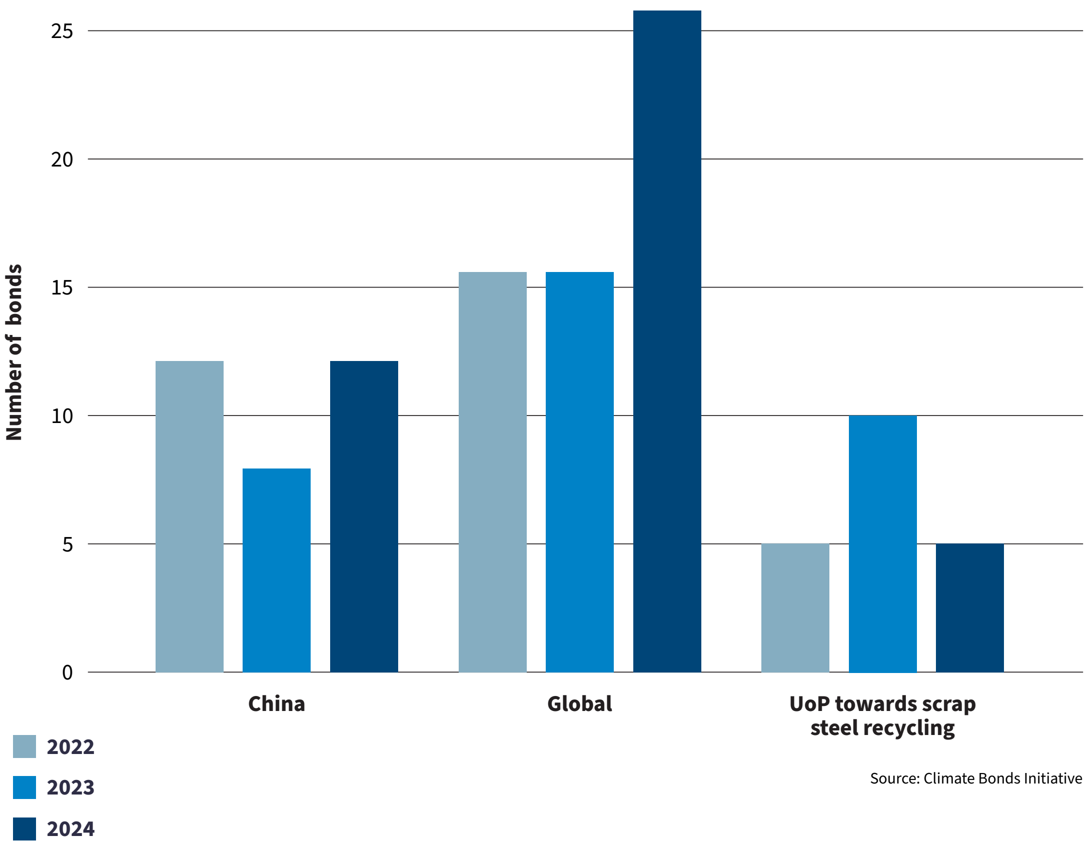
Region	Market action
Hebei	In June 2024, the Bank of China and HBIS Group jointly promoted the transition plan and issued Hebei province's first transition finance loan of CNY1.5bn (USD210m), linking the loan interest rate to the carbon emission indicators of the investment projects.[28] In September 2024, the Bank of Communications, Hebei branch approved a transition finance credit line of CNY3bn (USD410m) and provided project loans and medium-term working capital loans totalling CNY1.2bn (USD170m) for a steel company.[29] As at the end of 2024, steel companies in Hebei province had obtained a total of CNY26.3bn (USD3.6bn) in transition finance credit, of which CNY10.7bn had been invested, with a weighted average interest rate of 3.77%. The loan is 5–150 basis points lower than similar non-transition finance products, which can save steel companies more than CNY30m (USD4.1m) in interest expenses each year.[30]
Tianjin	Since November 2024, Tianjin Rongcheng Steel Group and its affiliated companies have secured a total of CNY170m (USD23.5m) in transition loans. The interest rates on these loans are linked to carbon reduction performance, with the initial deals featuring rates that are 35–70 basis points lower than the average interest rates for similar loans.[31]
Heilongjiang	In November 2024, PBoC, Heilongjiang branch and Harbin Bank, Shuangyashan branch issued a transition finance loan of CNY15m (USD2.1m) for energy-saving and carbon reduction projects. Heilongjiang Jianlong Steel obtained an execution interest rate of 25 basis points lower than the weighted average interest rate of corporate loans.[32]
Jiangsu	In December 2024, Xu Steel applied for entity-level transition finance from PBoC, Jiangsu branch. Jiangsu Bank, Xuzhou Branch formulated a transition financing plan for the steel company and issued a transition finance loan of CNY100m (USD13.8m) with an interest rate discount of 30 basis points.[33]

Bond market development

Following the release of the central bank's green catalogue in December 2015, China's green bond market has experienced substantial growth, emerging as one of the largest globally. In 2024, the issuance of green, social, sustainability, and sustainability-linked (GSS+) bonds in China reached USD143.1bn, underscoring tremendous potential for issuers.

Despite the overall expansion of the labelled bond market, steel-related bond issuance remains relatively modest (Figure 1). According to Climate Bonds data, as of 2024, a total of 27 steel-related GSS+ bonds have been issued worldwide, totalling USD17.5bn. Of these, 12 bonds (amounting to USD3bn) originated in China, of which only 7 of these Chinese steel-related bonds (USD1.1bn) meet the Climate Bonds methodology standards and are included in its dataset. Globally, steel industry-aligned GSS+ bonds issued under the Climate Bonds methodology reached USD15.5bn in 2024, highlighting a significant opportunity for the steel sector to further tap into the GSS+ market for financing.

Figure 1. **The number of steel-related GSS+ bonds originated from China, global issuance, and global use of proceeds towards scrap-steel recycling.**



Source: Climate Bonds Initiative

Use of proceed (UoP) earmarked for scrap use and EAF production

Scrap-based EAF production is a low-carbon production method. The global average of scrap-based EAF is 0.7 tCO_2/t steel but can reach under 0.1 tCO_2/t steel if renewable electricity is used.[34,35] Utilising UoP earmarked for scrap steel and EAF processing is an effective strategy to mobilise financing for low-carbon steel production, facilitating the transition from carbon-intensive BF to low-carbon scrap-EAF methods.

In 2024, HBIS, China's third largest steel company, issued six UoP bonds with a total amount of CNY9bn (USD1.3bn). Four of these six bonds have UoP earmarked for waste steel purchasing and are included in the Climate Bonds dataset.

Hunan Iron and Steel also issued one bond, CNY1bn (USD138m), with UoP also earmarked for waste steel purchase.

Sustainability-linked bond (SLB)

In 2024, Anyang Iron & Steel was the only SLB issuer from China's steel sector. This SLB was CNY600m (USD82.9m) and included an SPT linked to the self-generated electricity rate, targeting 53% by 2025.

Chinese steel issuers have issued GSS+ bonds to raise funding for low-carbon steel production. Earmarking UoP for scrap-based EAF and hydrogen-based DRI production marks an important step in demonstrating the industry's commitment to shifting toward low-carbon manufacturing. Overall, the GSS+ bond market can supply the necessary capital for the steel sector transition. In the future, issuers are encouraged to price deals with recommended transparency and credibility to access financing.

Largest GSS+ bond from a steel sector issuer

Baowu, China's top steel company, priced one low-carbon belt and road bond with an issue amount of CNY10bn (USD1.4bn) in 2024. According to its bond framework, the bond is for debt repayment, replenishment of working capital, and project construction with no less than 70% UoP used for low-carbon transition and belt and road initiative.

The bond is for iron ore mining from the northern block of the Simandou in Guinea, to support the company's strategic hydrogen DRI of steel production. The Simandou iron ore mine has adopted hydrogen DRI technology, and the region has high-grade iron ore with an average grade of more than 65%. As the hydrogen DRI requires an iron grade of more than 68% and hydrogen DRI production is the deep decarbonisation method with the potential to reduce 90% of emissions, the issuer believes the investment in high-grade iron ore will benefit its corporate low-carbon transition. [36]

Equity and other financial instruments

Although a wide range of insurance products could support the steel industry's transition, their practical applications remain limited. In 2023, the China Insurance Industry Association introduced the Green Insurance Classification Guidelines (2023 edition), which features products directly relevant to the steel sector. These include low-carbon transition insurance for the industrial sector, environmental pollution liability insurance, green loan insurance, and other green financing solutions. For instance, in Tangshan, a Hebei province steel industry hub, insurance companies actively provide comprehensive risk coverage. In 2023, insurers in the region offered risk protection worth CNY40bn (USD5.5bn) through products such as environmental pollution liability insurance, property insurance, and cargo transport insurance, with claims payments amounting to approximately CNY640,000 (USD88,000).[37] Nevertheless, China has yet to develop mature and specialised insurance products tailored to the steel industry's decarbonisation. There is still an unmet need for coverage addressing technology innovation risks, project demonstration guarantees, and credit risk protection for transition financing.

Equity financing is increasingly playing a crucial role in fostering the steel industry's transition, particularly for innovative projects that require long-term capital investment. It delivers the flexibility needed for high-risk, high-reward ventures, such as breakthrough technologies and scaling up low-carbon solutions within the sector. Baowu, a leading Chinese steel producer, launched the Baowu Green Carbon Fund in collaboration with the National Green Development Fund, China Jianxin Financial Asset Company, and other major state-owned enterprises and financial institutions. By December 2023, the fund had successfully closed with committed capital exceeding CNY10bn (USD1.4bn).[38] The fund is designed to drive the decarbonisation of the steel and related sectors by targeting low-carbon investments across the steel value chain and within the Yangtze River economic belt region. However, specialised equity funds for steel remain relatively scarce, underscoring the need for continued collaboration among industry leaders, public capital, and private investors to accelerate the steel sector's transition.

The response of wider actors to the potential of transition finance

Financing demand for decarbonising China's steel sector

Large companies dominate the Chinese steel landscape. The nation's top 10 steel producers collectively manufacture 431 million tons annually, accounting for 42% of China's total steel output. Notably, Baowu Group alone produces 131 million tons per year, representing 13% of the national total, while more than 80% of steel companies, each with a production scale of less than five million tons, together contribute 40% of the overall steel production.[39]

The financing needs within the industry are equally diverse. Large, state-owned firms typically secure low-cost bank loans based on their established credentials and expansive production capacities. One company even noted that accessing low-cost loans negates the need for additional bond market financing. For these organisations, transition or green finance policies primarily offer branding and reputational enhancements rather than substantial financial savings.

In contrast, smaller steel companies, which often face a greater financing gap, might be incentivised by the pricing advantages presented by the emerging Chinese transition finance market. However, these firms also grapple with the challenges of adapting to a shifting market environment, declining total capacity and demand, evolving product requirements, and rising carbon costs. Moreover, while low-cost financial instruments can facilitate financing, they are not a stand-alone solution for deep decarbonisation. Important capital expenditure factors, such as the cost-competitiveness of BF, limited scrap availability, hydrogen costs, and market demand for low-carbon steel, all play a critical role in investment decisions. For instance, one firm plans to build a new, more efficient BF with integrated decarbonisation measures, whereas another is focusing on EAF planning, citing the high cost of hydrogen-based DRI as a current barrier. The following sections summarise insights from stakeholder interviews on how banks assess and evaluate steel companies to support their decarbonisation financing needs.

How do banks screen eligible projects and companies?

The steel sector has experienced declining growth over the years, resulting in increased pressure on profit margins. Consequently, financial institutions tend to support only the best-performing companies. For instance, one bank noted that it typically includes only industry leaders, such as Baowu, HBIS, and Ansteel, in its financing portfolio, which as the sector consolidates, provides these leading companies with enhanced access to capital.

When evaluating lending opportunities, banks focus on the overall business and operational strength of steel companies, particularly their ability to repay both principal and interest. In some cases, banks even adjust interest rates to offer pricing benefits, taking into account a company's operational performance, the quality of its green or transition credentials, and internal green/transition key performance indicators.

How do banks evaluate transition progress?

While the national transition finance taxonomy for the steel sector is still under development, several subnational guidelines are currently being piloted. For example, many financial institutions refer to the Hebei transition guidelines when evaluating projects. These taxonomies help banks identify and screen eligible projects, distinguishing them from those requiring further internal risk control measures.

In practice, bank account managers often find it challenging to differentiate among complex low-carbon technologies and various transition pathways. More familiar concepts, such as scrap steel, EAF, and green electricity, are easier to evaluate, which may explain why many transition finance cases are associated with these methods. For banks employing additional internal transition plan assessments, steel companies must meet established net-zero standards and methodologies. These assessments typically focus on the company's set targets, overall transition strategy, and credibility in executing its decarbonisation plan.

Steel decarbonisation financing challenges and outlooks

Currently, the steel transition is primarily driven by regulatory and policy initiatives, with the level of ambition in these policies playing a critical role. Many steel companies, particularly private ones, struggle to take the initiative on decarbonisation, whereas large state-owned enterprises such as Baowu and HBIS often lead with advanced decarbonisation actions and transition plans.

Additionally, green steel continues to come at a premium, which discourages companies from investing in green technologies. The high costs associated with green steel mean that these products cannot yet compete effectively with conventional steel, and the downstream demand for green steel in China remains uncertain. Given that the steel industry is both highly emission intensive and affected by overcapacity, banks maintain a cautious stance, choosing to finance only top-performing companies or projects that meet strict eligibility criteria.

Decarbonisation progress among China's top 10 steel companies – insights from corporate disclosure

In 2023, China produced 1,019.1 million tons of steel, accounting for over 50% of global production. Leading companies dominate this output: the top ten steel producers generated 431 million tons, representing 42% of the nation's total, with Baowu Group alone contributing 13%. Given their market share and more robust public disclosures, this chapter examines and summarises the low-carbon transition progress of these top ten companies.

Key Findings:

- **Carbon emission targets.** Among the top ten steel producers, seven have established and disclosed carbon emission targets that align with China's 2030 carbon-peaking and 2060 carbon-neutrality goals.
- **Decarbonisation initiatives.** Similarly, 70% of companies have already initiated decarbonisation measures, including energy efficiency improvements, the adoption of electric arc furnace (EAF) technology, and pilot projects exploring hydrogen-based steel production.
- **Transition plans.** Two industry leaders, Baowu Group and HBIS, have disclosed elements of comprehensive transition plans.
- **Emissions data transparency.** Group-level GHG emissions data (scopes 1, 2, and 3) remains unavailable in the available annual and sustainability reports.

Table 3. **Decarbonisation progress of the world's top steel companies**

Corporate Name	Headquarters	Production Mt (2023)	Target	Plan	Action	Scope 1	Scope 2	Scope 3
China Baowu Group	China	130.77	Y	Y	Y	N	N	N
ArcelorMittal	Luxembourg	68.52	Y	Y	Y	Y	Y	N
Ansteel Group	China	55.89	Y	N	Y	N	N	N
Nippon Steel Corporation	Japan	43.66	Y	Y	Y	Y	Y	Y
HBIS Group	China	41.34	Y	Y	Y	N	N	N
Shagang Group	China	40.54	Y	N	Y	N	N	N
POSCO Holdings	South Korea	38.44	Y	Y	Y	Y	Y	Y
Jianlong Group	China	36.99	Y	N	Y	N	N	N
Shougang Group	China	33.58	Y	N	Y	N	N	N
Tata Steel Group	India	29.5	N	Y	Y	Y	Y	Y
Delong Steel	China	28.26	N	N	Y	N	N	N
JSW Steel Limited	India	26.15	Y	Y	Y	Y	Y	Y
Hunan Steel Group	China	24.8	Y	N	N	N	N	N
Fangda Steel	China	19.56	N	N	N	N	N	N
Shandong Steel Group	China	19.45	N	N	N	N	N	N

Note: The list contains the top ten Chinese and top five non-Chinese steel-producing companies. The information is from 2024 and 2023 corporate sustainability, ESG, annual reports, and company websites. Production is from the World Steel Association.

Incentivising steel decarbonisation through transition finance

15%

The country has set clear targets: by 2025, EAF steel should represent 15% of total crude steel production

Estimated capex for transitioning to hydrogen DRI and scrap steel production

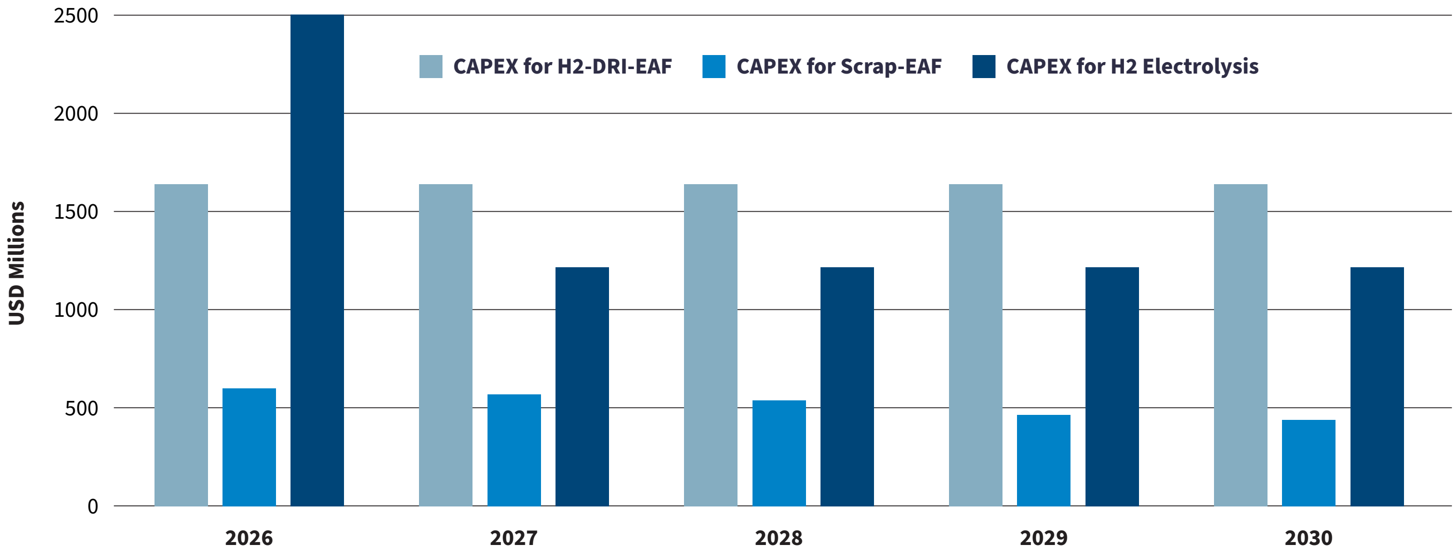
When China announced its dual carbon goals in 2020, the 14th Five-Year Plan (2021–2025) initiated the steel industry's low-carbon transition. China has implemented policies supporting the transition from BF-BOF to scrap-EAF and drafted plans to include the steel sector in its carbon emissions trading system. The country has set clear targets: by 2025, EAF steel should represent 15% of total crude steel production, and by 2030, this share should exceed 20%, alongside advancements in hydrogen metallurgy.

Transition Asia has developed a scenario that integrates these EAF targets with enhanced H_2-DRI capacity, aligning with established net-zero pathways for steel production during the 15th Five-Year Plan period. This scenario includes estimates for the required capex investments to build greenfield capacities for green steel production and to support green hydrogen production infrastructure.

The analysis indicates that the steel sector will need at least USD18bn in capex over the next five years. Approximately 14% of this investment will support the transition from BF-BOF to scrap-based EAF, while 41% will be allocated to H_2-DRI-EAF development. This investment is expected to boost China's H_2-DRI-EAF capacity by about 3 million tons per year, reaching a total of 15 million tons by 2030.

Additionally, investments related to hydrogen electrolysis, accounting for another 41% of the total infrastructure, remain a significant cost component, even before incorporating renewable energy expenses. Although China benefits from having the lowest electrolyser stack costs globally, high hydrogen production costs continue to pose a substantial challenge to achieving more affordable green steel production.[40,41]

Figure 2: **Estimated capex for hydrogen electrolysers, DRI-EAF, and scrap-EAF based on current policies.**



Source: Climate Bonds Initiative

An estimated USD18bn in capex is needed over the next five years, and this funding can largely be sourced from the labelled debt market. In 2024, banks in Hebei province provided USD2.8bn in steel transition loans, while Chinese issuers raised USD3bn through 12 steel-related GSS+ bonds; both making significant contributions to annual financing efforts. In addition to debt instruments, equity financing is expected to play a critical role, particularly in supporting emerging hydrogen technologies. Furthermore, anticipated incentives from both central and regional governments should further stimulate market participation, channelling substantial financial flows toward the steel sector's decarbonisation initiatives.

Options to access financing for low-carbon steel production

China's steel industry remains predominantly reliant on traditional BF-BOF processes (90%), with only 10% based on EAF technology. Despite its global maturity, EAF expansion in China is challenged by issues including scrap availability and high costs. Meanwhile, hydrogen DRI is emerging as a promising alternative, with several companies already piloting hydrogen-based steel production. However, high hydrogen costs and supply instability continue to be significant obstacles.

Looking toward the future, approximately 78% of China's coal-based blast furnace capacity will require reinvestment by 2030, creating a substantial opportunity for low-carbon upgrades.[42] To facilitate this transition, financing for BF should be contingent on achieving carbon reduction targets. This approach would promote ongoing decarbonisation efforts while preventing the construction of new BF facilities or the prolonged use of coal. Table 4 outlines common financing challenges identified by stakeholders and proposes potential solutions and strategies to secure funding. This table serves as a practical guide for Chinese steel companies as they explore and access financing options for low-carbon steel production.

Table 4. **Challenges and financing solutions for low-carbon steel production**

Challenges according to the stakeholders	Potential solutions for steel companies	Options to secure financing
Scrap steel availability: The limited availability of scrap steel is restricting the expansion of EAF technology in China.	**Maximise scrap utilisation:** Optimise the recovery and sorting of obsolete scrap to fully utilise the available resources.	**Leverage financing guidelines:** Utilise financing instruments from the China Green Bond Catalogue and Hebei Steel Guidelines to fund EAF projects, including investments in scrap recycling, processing, and distribution.
Electricity supply instability: Steel companies face difficulties in securing a stable and affordable electricity supply for EAF operations.	**Secure long-term agreements:** Negotiate long-term power purchase agreements (PPAs) or develop captive electricity solutions.	**Follow best practices:** Implement measures outlined in the Hebei Steel Guidelines that focus on electricity-saving and generation projects.
High hydrogen costs: The adoption of hydrogen DRI is hampered by high hydrogen prices and supply instability.	**Site strategically:** Build hydrogen DRI plants in regions with abundant renewable energy to help reduce costs.	**Explore green finance:** Tap into China's green finance market via the China Green Bond Catalogue for funding dedicated to renewable energy, hydrogen production, transportation, and storage. **Target green investors:** Focus on attracting green investment, such as funds under SFDR Articles 8 and 9, to support emerging technologies such as hydrogen-based steel production.
Carbon-intensive production: While the BF-BOF process remains the most common and cost-competitive steel production method, it is significantly carbon-intensive.	**Continuous decarbonisation:** Prioritise decarbonisation for existing BF-BOF operations. Funding should be conditional on meeting carbon reduction targets to prevent the construction of new BF or extended coal use. **Enhance efficiency:** Explore and finance projects to continuously improve energy efficiency and reduce carbon emissions. **Plan for retirement:** Avoid relining outdated BF and instead invest in plans that phase them out over time.	**Embed emission metrics:** Ensure that traditional financing options incorporate specific carbon emission reduction targets and transition plans.
High production cost: Green steel often lacks a competitive price advantage, which can deter investment.	**Secure offtake contracts:** Establish memorandums of understanding (MOUs) and offtake agreements with downstream buyers. For example, European steel company Stegra successfully secured offtake contracts for its green steel produced via hydrogen DRI and EAF routes.[43] **Strengthen carbon management:** Enhance corporate carbon management practices to better align with the China ETS market and upcoming CBAM requirements. Improved carbon management can reduce exposure to rising carbon costs and increase market appeal for low-carbon steel products.	**Attract institutional investors:** Offtake contracts and carbon management can boost the confidence of institutional investors, making steel companies more attractive for financing.

2 Discussion and recommendations

The report presents a comprehensive analysis of market instruments and financing trends within China's steel industry following the release of the Hebei steel transition guidelines at the end of 2023. Drawing on detailed interviews with market participants, it examines bank lending, bond issuance, and other emerging financing mechanisms, providing actionable strategies for steel companies to tackle decarbonisation challenges. Notably, in Hebei province alone, steel transition loans surpassed CNY20bn (USD2.8bn) by the end of 2024, and 12 steel-related labelled bonds worth USD3bn were priced by Chinese issuers. While insurance and equity funds remain in the early stages of development compared to loans and bonds, the report underscores significant growth potential to support a net-zero transition, offering clear guidance for policymakers, financial institutions, and industry stakeholders.

Looking ahead, the report outlines a roadmap aimed at securing at least USD18bn in capex over the next five years. This plan focuses on deep decarbonisation strategies, including hydrogen-based DRI-EAF, scrap-EAF, and linking existing BF-BOF production to carbon reduction targets. Building on these insights, the report concludes with three strategic recommendations to propel the industry toward a sustainable, low-carbon future.

Recommendation 1: Governments provide incentives for market actors and promote low-carbon steel ecosystems

Governments must expedite the transition to a low-carbon steel ecosystem by deploying targeted incentives and robust policy frameworks built on proven solutions, especially the GSS+ bond market. For example, the PBoC can introduce tailored transition finance measures (such as interest subsidies and weighting adjustments) to encourage banks to extend preferential financing for projects such as EAF, enhanced scrap steel recycling and utilisation, low-carbon hydrogen DRI, and green steel procurement initiatives.

In parallel, fostering transparent discussions on how to share green steel's premium costs across the value chain and embracing strategic policies, such as investing in low-carbon hydrogen DRI, launching green procurement programmes, and enhancing scrap steel recovery, will provide a solid foundation for decarbonisation efforts.

Recommendation 2: Financial institutions explore diverse financing options and focus on deep decarbonisation options

Financial institutions should swiftly scale up their financing initiatives to drive the shift from BF to scrap-based EAF projects within China's steel industry. Leveraging established transition financing instruments such as loans and bonds has already paved the way for broader market adoption. By continuously identifying and underwriting emerging opportunities in EAF and scrap steel projects, financial institutions can further amplify proven financing mechanisms, ultimately accelerating decarbonisation across the entire steel sector.

Beyond these matured channels, financial institutions must innovate by diversifying their financial products to support deep decarbonisation initiatives. A successful industry transition will require a tailored mix of instruments, including loans, bonds, insurance, and specialised funds, to address both significant capital needs and complex risk management challenges. Additionally, refining business models through streamlined project sourcing, enhanced internal controls, and rigorous transition plan assessments will enable support for emerging technologies, ultimately optimising financing structures and ensuring a smoother, more sustainable shift toward low-carbon steel production.

Recommendation 3: Steel companies must proactively drive decarbonisation efforts to secure financing for low-carbon steel production

Steel companies should take proactive steps in aligning with established transition finance frameworks, such as the Climate Bonds Steel Sector Criteria and Certification Scheme, the Hebei guidelines, and the forthcoming PBoC transition finance catalogue, to secure the financing essential for decarbonisation. Then develop transition plans and implement actions to secure financing for their decarbonisation efforts in order to tap into a broad range of financial instruments and support initiatives including EAF projects, scrap recycling, and hydrogen-based DRI plants.

Furthermore, securing offtake contracts with downstream buyers and strengthening carbon management practices will enhance project bankability and mitigate the risks associated with rising carbon prices under China's ETS and CBAM, driving further decarbonisation across the sector.

To remain competitive, steel companies must transform their operations to adapt to evolving market dynamics and attract both downstream customers and investors. Initiating transition planning and implementing decarbonisation initiatives now is crucial, as delaying these actions will only result in increased long-term costs and diminished competitiveness.

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