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CHINA STEEL INTELLIGENCE REPORT

China's tricky path to green steel

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CHINA'S TRICKY PATH TO GREEN STEEL

BY TOMAS GUTIERREZ

China has targeted carbon neutrality in 2060, and this is only possible with a significant shift in the steel industry. Currently, large steel companies led by Baowu Group and others are targeting neutrality in 2050, but they face a difficult road.

According to datasets published by the Carbon Emission Account & Datasets, China's carbon emissions reached 11 billion tonnes in 2022, accounting for 28.87% of the world's total. The steel industry contributed about 15% of total emissions, ranking first among all 31 manufacturing sectors. Therefore, steel production is and will be facing intense scrutiny from policy makers and end users as carbon neutrality rises on the global agenda.

The concept of green steel, which is widely circulated but not clearly defined, is spreading rapidly. But how green are current investments and what contribution will they make to carbon neutral targets?

Methods to cut emissions

Steel companies and research institutions are spending a lot of money at every stage of the industry chain to seek technological breakthroughs.

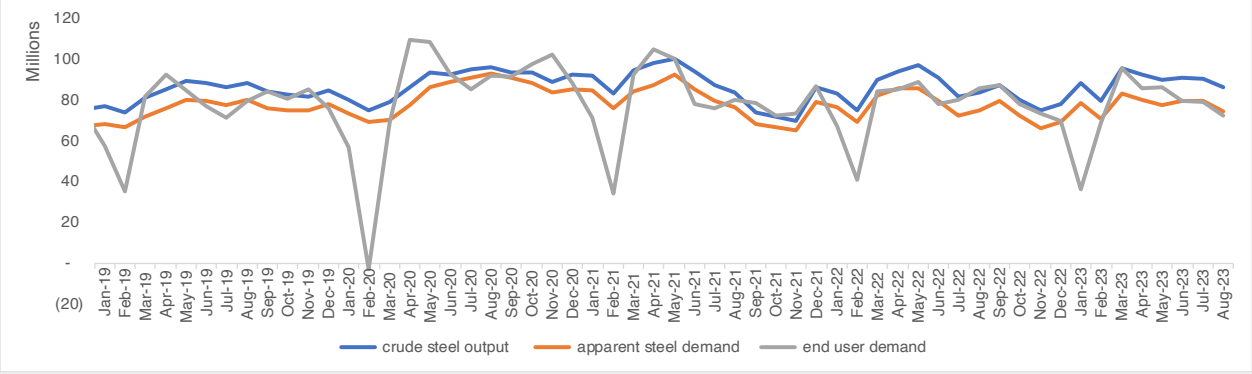
Before ironmaking, belt roasting pellets and sintering flue gas utilisation technologies are the short-term

TABLE 1. SUPPLY AND DEMAND

	2022	Jan-Aug 2023	Y-o-y	2023 Outlook	Y-o-y
Official crude steel output	1,015	713	2.60%	1,027	1.30%
Apparent consumption	913	623	-0.44%	927	1.70%
End user demand	918	603	-1.00%	924	0.90%

Source: Kallanish. Million Tonnes

FIGURE 1. STEEL PRODUCTION AND DEMAND 2019-2023



Source: Kallanish. Million Tonnes

wins being targeted. After steelmaking, high-efficiency casting and rolling technologies are spreading. The bulk of emissions however come from iron and steelmaking and low-hanging fruit up and downstream from these core processes are only likely to lead to marginal changes in total emissions.

EAF

Reducing carbon emissions in the ironmaking and steelmaking processes is crucial. With established technologies, the transition to from BF-BoF to electric arc furnace (EAF) is a clear focus. Carbon emissions from EAF steelmaking using 100% scrap are significantly reduced by 80% from the standard BF-Bof process. After a burst in investment in the late 2010s, EAF capacity growth has slowed sharply in recent years. The figure only increased from 186 million tonnes/year in 2021 to 190m t/y by the end of 2022, China Iron & Steel Association data shows.

The goals of provincial governments are not too ambitious either. Even Sichuan, which has the highest EAF ratio in China at 40% in 2022, expects this to grow to only 50% by 2027. The remaining top-ranking provinces only expect to reach a level of 20%-30% in 2025-2030. Many of these provinces have failed to achieve their previous goals many times before.

Since the start of 2022, 22 new EAF projects

TABLE 2. LOCAL GOVERNMENT EAF TARGETS

Province	Year	Target			
EAF's replacing both EAF & BoF	1	1	0.41M t/y	2 EAF, 1 BOF	0.46M t/y

Source: Company announcements since Jan' 2022

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