

An aerial photograph of an iron mine. The landscape is a vast, open-pit mine with multiple levels of terraced earth. A large yellow excavator is positioned in the center of the frame, its long arm extending towards the left. The ground is a mix of dark brown soil and lighter-colored rock. The overall scene is industrial and rugged.

China aims to 'fundamentally' solve iron ore shortages with 'cornerstone plan'

Feasibility Analysis and Realization Path of Cornerstone Plan

SMM bases on primary research, internal database and modelling, successfully help our client deeply understand China cornerstone plan and the realization path

Project Background

According to the cornerstone plan, by 2025, the domestic iron ore production, scrap steel consumption and overseas equity iron ore will reach 370 million tons, 300 million tons and 220 million tons respectively, an increase of 100 million tons, 70 million tons and 100 million tons respectively compared with 2020.

In March 2022, the cornerstone plan to break the monopoly of imported iron ore and increase the supply of China's own iron resources was launched. In November 2022, the Xi'an Shan Iron Ore project of Angang Steel started, marking the official start of construction of the country's largest single underground iron mine, and also a major progress of the cornerstone plan.

In early April 2022, NDRC organized an iron ore project promotion symposium. MIIT, MFPRC, MNR, MEE, NMSA, SATC, CISA and MMAC join. The meeting revolved around a topic, that is, how to promote the development of domestic iron ore.

SMM Methodology

Based on cornerstone plan, SMM has scoped the project into 3 modules:

1. China domestic iron ore supply (2022-2030)
2. China overseas equity mine supply (2022-2030)
3. China scrap steel consumption (2022-2030)

Main Research Methodology:

- **Desktop Research:** SMM databases, industry public reports, etc. to comprehensively understand China iron ore, equity mine and scrap market.
- **Primary Research:**
 - Industry level: conduct in-depth interviews with industry experts such as MIIT, CISA and MMAC, industry players such as iron ore mines, investors and steel mills.
 - Company level: conduct in-depth interviews with different departments of each benchmarking company, incl. procurement dept., sales dept., technology dept., project managers, etc.

China cornerstone plan study quarterly report (2022-2030)

1 China domestic iron ore supply (2022-2030)		3 China scrap steel consumption (2022-2030)
1.0 Summary	1.3.2 Regional-level plan of iron ore supply	3.0 Summary
1.1 Domestic iron ore supply in 2022	1.3.3 Mine-level plan of iron ore supply	3.1 Scrap demand and supply in 2022
1.1.1 Resource and reserves of China ROM	1.3.4 Key factors of Cornerstone Plan policy	3.1.1 2022 Scrap consumption in BF, BOF and EAF
1.1.1.1 Resource and reserves by province	1.3.5 CMRG progress	3.1.2 2022 Scrap steel supply
1.1.1.2 Resource and reserves by top 20 miners	2 China overseas equity mine supply (2022-2030)	3.1.3 Key factors in consuming scrap steel
1.1.2 China iron concentrate supply	2.0 Summary	3.1.3.1 Technical limitations of the furnace
1.1.2.1 China iron concentrate supply	2.1 Background of China's investment in overseas iron ore mines	3.1.3.2 Cost competitive analysis of scrap and hot metal
1.1.2.2 Key drivers of China iron ore supply	2.2 Timeline of China's investment in overseas iron ore	3.1.3.3 SWOT analysis of scrap and hot metal
1.1.2.3 Capacity and production by province	2.3 Development of China's investment in overseas iron ore mines	3.2 Scrap steel consumption forecast (2023-2030)
1.1.2.4 Capacity and production by top 20 miners	2.4 Distribution of China's overseas iron ore projects	3.2.1 Key driving factors of scrap steel
1.1.3 China iron ore cost curve (equivalent to 62%, CFR)	2.5 Analysis of China's investment in overseas iron ore projects	3.2.2 Scrap demand in BF, BOF and EAF
1.1.3.1 China iron ore cost curve	2.5.1 projects in operation	3.2.3 Method for BOF to increase scrap ratio
1.1.3.2 China iron ore cost breakdown	2.5.2 projects failed or suspend	3.2.4 EAF capacity and production forecast
1.2 China iron ore supply (2023-2030)	2.5.3 projects in planned	3.2.5 2023-2030 scrap steel supply
1.2.1 China iron ore new project	2.6 China overseas equity iron ore cost analysis	3.2.6 Key factors in consuming scrap steel
1.2.2 Capex and Opex of new projects	2.7 Opportunity and risk of China's overseas investment in iron ore projects	3.2.6.1 Standardization of scrap market
1.2.3 China iron ore supply in future		3.2.6.2 Improve tax policy
1.3 Cornerstone Plan policy		3.2.6.3 Reduce carbon emissions
1.3.1 Cornerstone Plan policy and progress		

China aims to 'fundamentally' solve iron ore shortages with 'cornerstone plan'

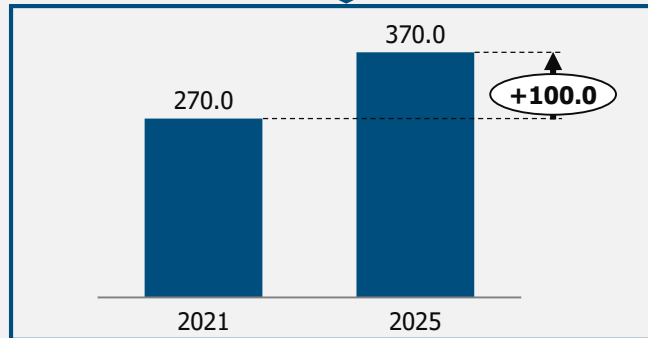
Cornerstone plan

Target

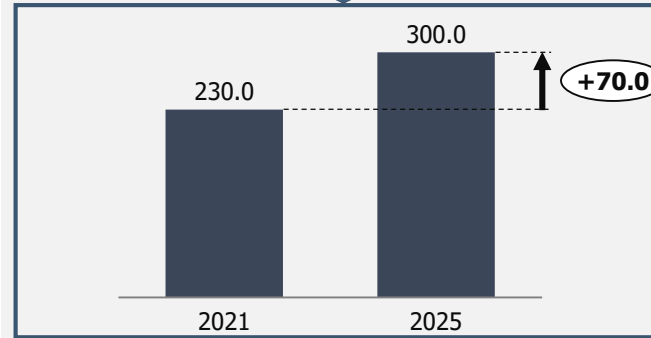
Accelerate the improvement of the resource guarantee ability of China's iron and steel industry
The goal of the "Cornerstone Project" is to effectively change the composition of China's iron resources in 10 to 15 years, to solve the problem of shortage resources in the steel industry chain.

Guidance

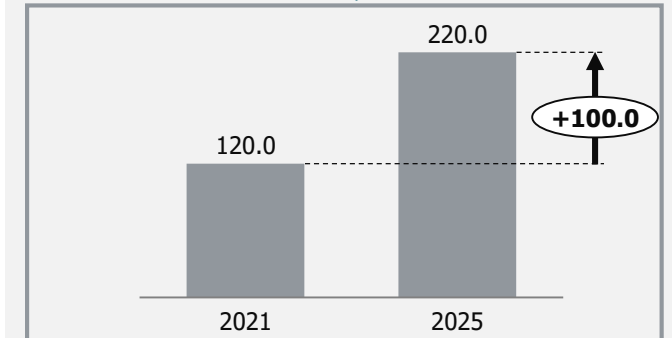
Domestic iron ore



Scrap



Equity iron ore



Difficulty

High investment costs for new mines
High operating costs of domestic mines
Price is the key driver

Improvement of scrap recycling process
Cost-effective with pig iron
Supply and cost-effective are the key drivers

high investment cost
Stable relationship
Overseas political stability is the key driver

Implementation subject

The establishment of **China Mineral Resources Group** is expected to solve various problems of the cornerstone plan

From the regional level and mine level, they all have aggressive plans

Mine-level iron ore supply plan



+XX Mt domestic iron ore

Baowu Resources said they will increase iron ore self-sufficiency from 36% to 50% and 140 mtpa of iron ore production capacity in the 14th Five-Year Plan, of which, 70 Mt from overseas and 70 Mt from domestic.



+XX Mt domestic iron ore

Ansteel will increase their concentrate production from 22 Mt to 30 Mt, Bengang will increase their concentrate production from 8 Mt to 12 Mt by 2025.



+XX Mt domestic iron ore

Macheng Iron Ore Mine will put into production in 2023, with the concentrate production capacity of 8 Mt.



+XX Mt domestic iron ore

They will increase iron ore concentrate production capacity from 7 Mt to 11 Mt



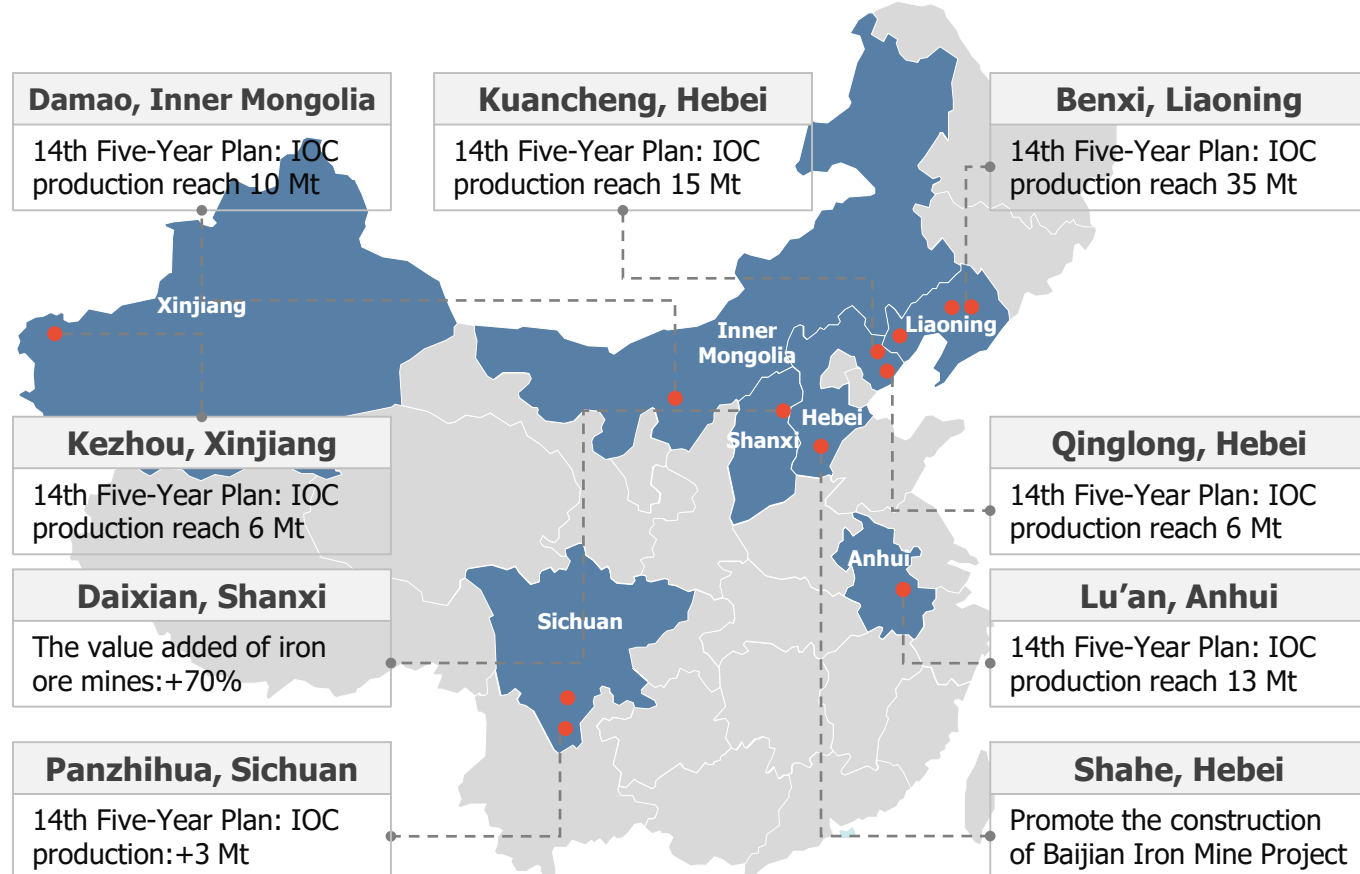
+XX Mt domestic iron ore

Sishanling Iron Ore project will put into production in the second half of 2022, with the concentrate production capacity of 5 Mt.

...

+XX Mt

Regional-level iron ore supply plan

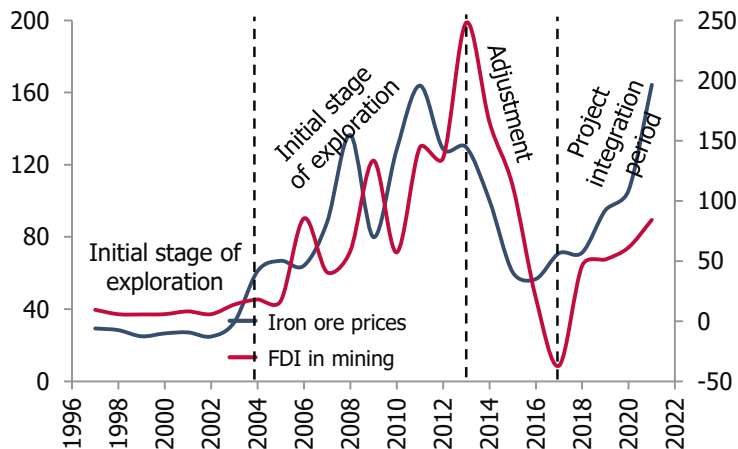


Note: The above map lists the iron ore information of the 14th five year plan in some areas.

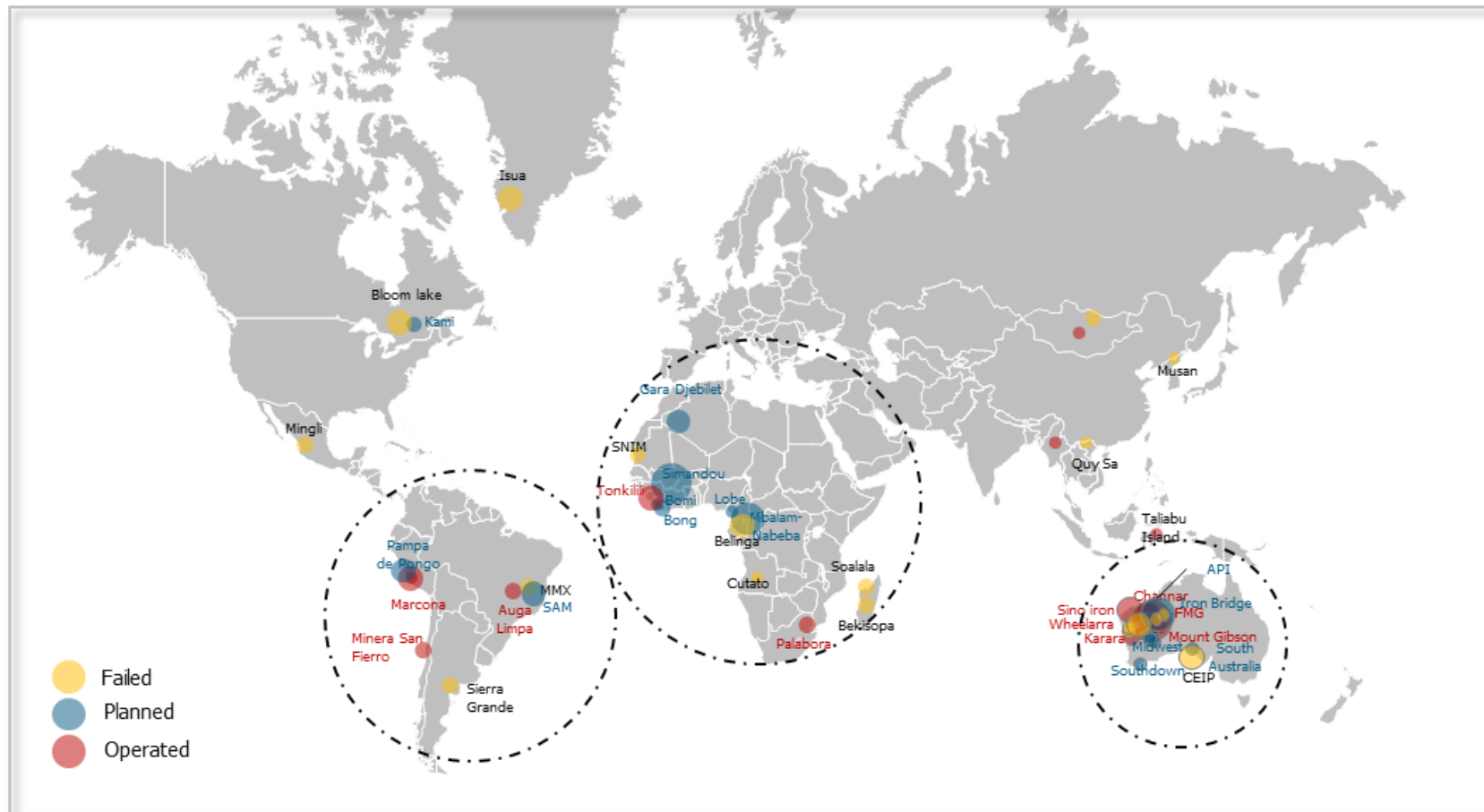
- ✓ SMM has tracked more than 100 greenfield and brownfield projects, with a production capacity of nearly XX million tons.
- ✓ Based on new projects, depletion rate remaining life and resource reserves, future supply will be projected.

China overseas mining investment has experienced 4 stages along with iron ore price swings

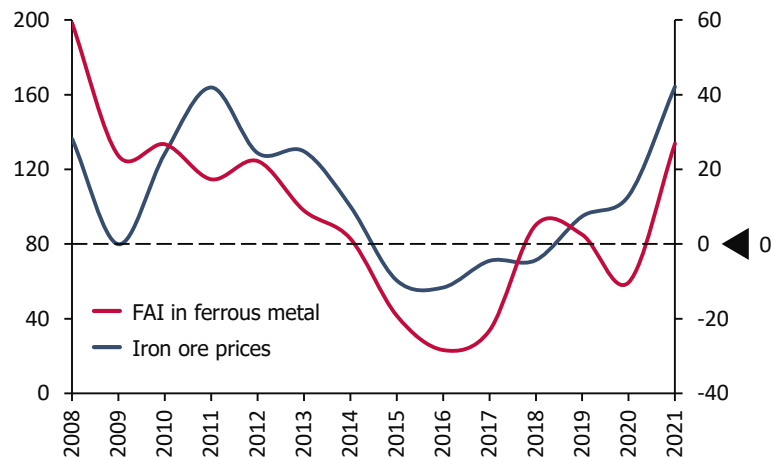
China FDI in Mining and Iron Ore Prices



China Oversea Equity Mining Projects Distribution

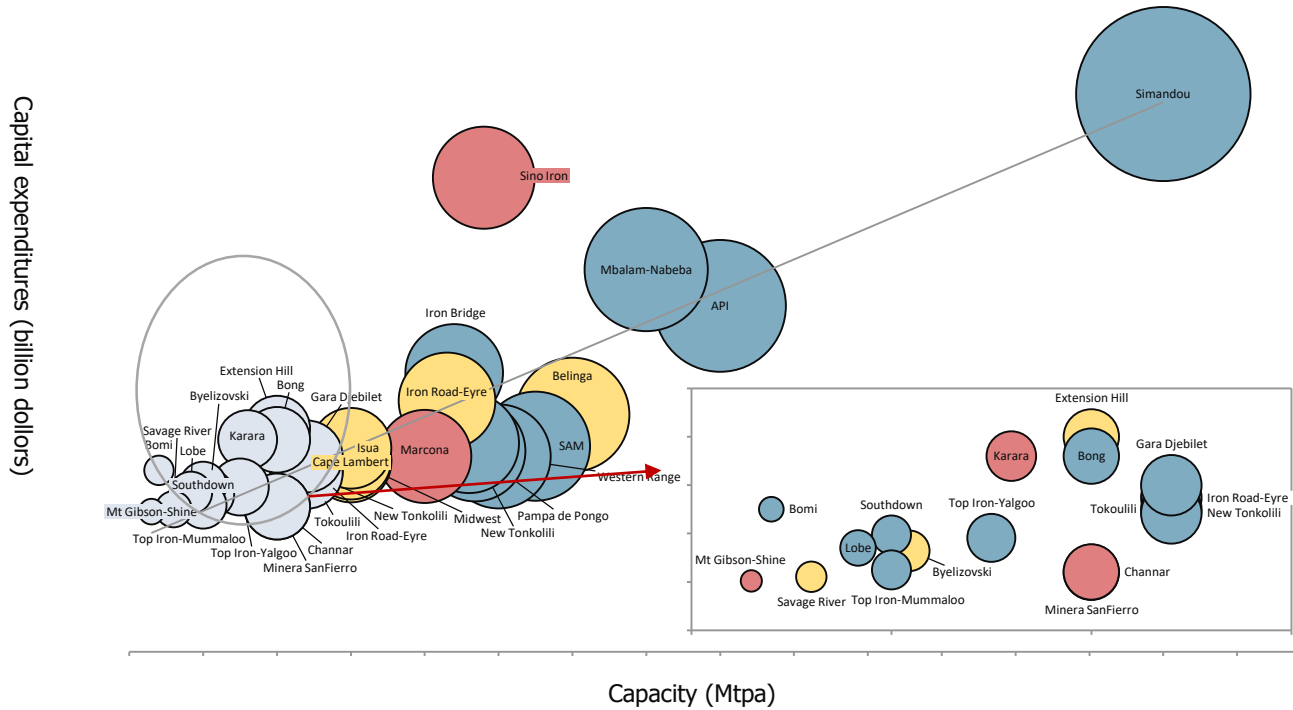


China FAI in Ferrous Metal and Iron Ore Prices

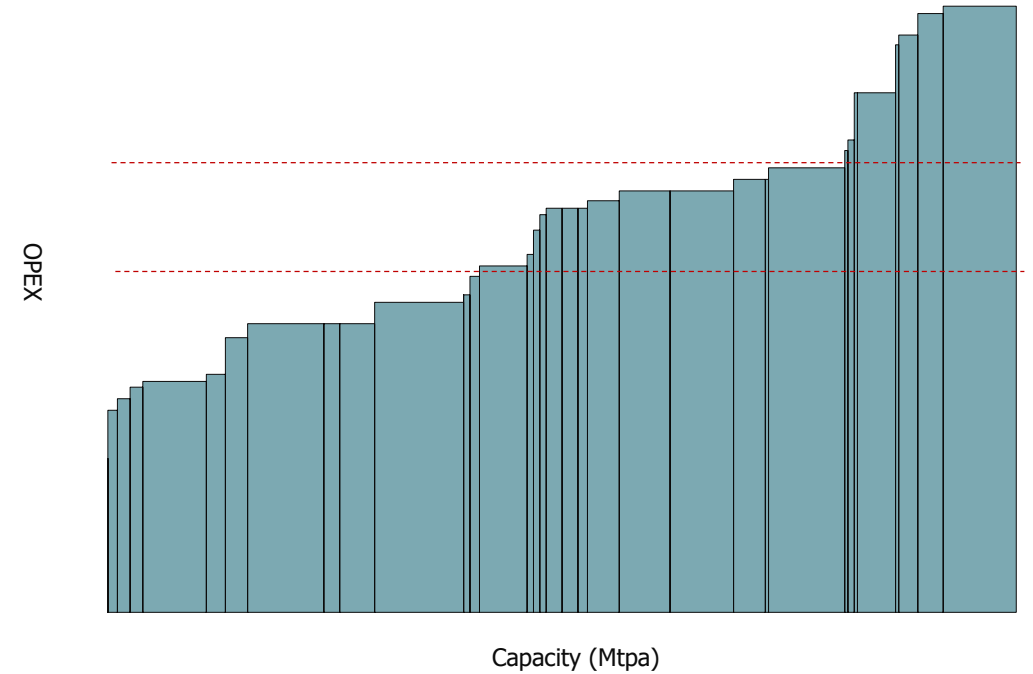


The capital expenditure intensity of China's overseas investment projects is about xx/mt, and OPEX is about xx/mt

The CAPEX of equity iron ore project



Equity iron ore CFR cost curve



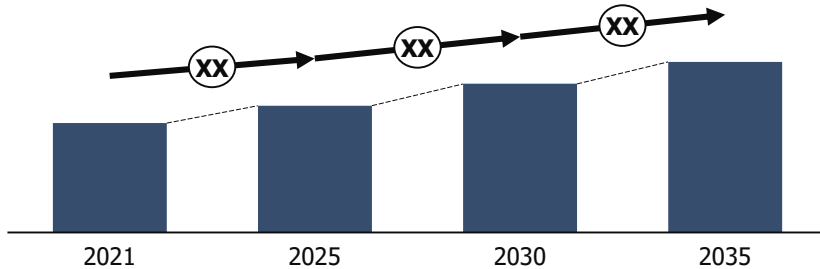
Data source: SMM

Low-carbon economic and cornerstone plan, accelerated the development of scrap steel market

Reduce external dependence on raw materials

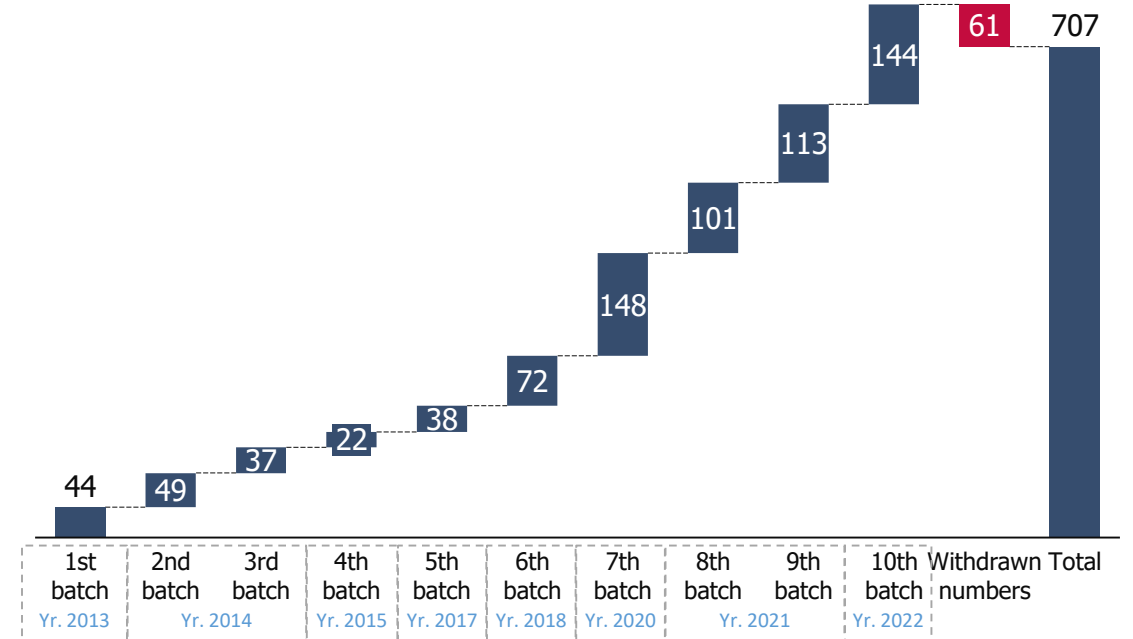
★ **Cornerstone plan:** "support the development of scrap industry and accelerate the recycling of scrap resources", scrap will be taken as an important measure to ensure the safety of steel resources.

Scrap steel supply will increase



Data source: SMM, CAMU

- **Cornerstone plan:** To ensure the safety of China's steel industry chain, strengthen the stable of supply and price of raw materials.
 - Develop new domestic iron ores;
 - Develop new oversea equity iron ores;
 - **Develop scrap resources.** Scrap steel has been promoted to the strategic height of steel industry safety.
- China aims to increase scrap consumption in the next few years as China tries to reduce both heavy reliance on iron ore and carbon emissions



- MIIT ("White List") enterprises refers to the enterprises that meet the access requirements of the scrap steel processing industry and approved by MIIT. Enterprises on the list can enjoy a 30% VAT refund. In recent years, with the increasing supply and widespread use of scrap steel, more and more scrap steel processing capacity are added, incl. new-built and expansion.
- From 2013 to 2022, ten batches of "white lists" have been announced. There are 707 enterprises with a total capacity of more than **XX million mt**. By 2025, scrap processing capacity will be more than **XX million mt** announced by MIIT.