China's Climate Challenge: A Brief Summary

BRIEFING PAPER

MAY 2022

Since 2006, China has been the world's largest CO_2 emitter. The 11 billion metric tons of carbon dioxide it released in 2020 accounted for about 30% of global emissions that year. There have been urgent demands in China for measures and initiatives to tackle climate change. The latest five-year plan covering 2021-2025 puts decarbonization and the "construction of a green development engine" at the center of policymaking. China has committed to reach peak CO_2 emissions in 2030 and have net-zero carbon emissions by 2060.

The World Economic Forum, in partnership with Oliver Wyman, recently published *Financing the Transition to a Net-Zero Future*, a report that considered the approaches required for industries with significant emissions to finance the transition to net zero. While this report was global in nature, the critical role that China will play in this transition merits its own deep-dive. To form a meaningful view of the starting point, challenges and strategies to deliver on the commitment, the World Economic Forum, in partnership with Oliver Wyman, ran 15 workshops and held discussions with more than 60 member organizations. This paper offers a preview of key findings from the full report, which is due to be published on June 2022.

Why is China unique?

China's circumstances are unique. With manufacturing and construction being the major contributors of its GDP, the country's path to net zero will require huge investment and financial innovation to support substantial technological advances. The uniqueness of the Chinese circumstances stems further from China's economic governance model in which the central government and state-owned enterprises can be expected to play a far more prominent role in handling the country's transition to net zero than in most other economies.

Public funding, in turn, will also play a more significant role in China than elsewhere. The overall funding requirements will exceed supply, leading to a finance gap. Mismatches in funding, including between the types of instruments, deal structures and tenors available are another issue. Bank lending is the backbone of corporate finance in China. Banks, however, being risk adverse, target large state-owned and private enterprises, leading to inadequate financial support for SMEs, which account for 65% of total CO_2 emissions in China.

Data comparison	Current supply	Ideal case
Green financing	2.4 TN RMB, 2020-2060 annually expected under current policy	>3.5 TN RMB, 2020-2060 annually (> 1.1 TN RMB/year gap)
Financing structure	<3% equity Debt are short-term (<3 years)	>10% of equity More long-term (> 5 years) debt
Emission reduction focus	Mainly Scope 1	Further attention on Scope 2 & 3

The report looks at sectors core to achieving net zero: construction and real estate, steel and mobility are responsible for 15%, 13% and 11%, respectively, of CO_2 emissions in China, according to the International Energy Agency (IEA). Energy, although accounting for the largest share of emissions today (45%), has a relatively clear decarbonization pathway (e.g. renewables, nuclear and biomass, alongside with carbon capture, utilization and storage adoptions). The other three, however, will require substantial technology breakthroughs for their transitions to be realized. The graph below shows the major technology breakthroughs and their expected contributions to China's 2060 net-zero plan, in terms of their potential CO_2 emission reduction, compared to China CO_2 emissions reduction by 2060.

Industry	Technology breakthroughs		Expected contribution to 2060 net zero in China
Construction and real estate	Green cement	Using waste or green materials and more efficient technologies in cement production	3-5%
	Building energy management	Efficient in-building energy management, renewable energy production (e.g. rooftop PV), etc.	2-3%
Iron and steel	Long process to minimill	Using electric furnaces which have shorter processes and lower emissions, using scrap steel as raw materials	8-10%
	Hydrogen metallurgy	Using hydrogen as reducing agent instead of coal for metallurgy	1-2%
Mobility	Electrification of automobile	Using electric vehicles to replace fuel vehicles	3-5%
	Green auto factories	Using recycled materials and components, efficient processes and energy management tools	1-2%

For China to achieve net zero, the following issues will also need to be addressed:

- Data granularity and quality
- Funding mismatch
- Lack of clear policy support
- Lack of cross supply chain collaboration

Data granularity and quality

Tracking and reporting emissions is fundamental to China's net-zero transition. China has established national-level Carbon Emission Accounts and Datasets (CEADs). However, further efforts are required to be able to collect and make available all the granular, standardized data that will be needed. More than 70% of those interviewed for the report raised concerns about China's still underdeveloped emission information infrastructure. For example, regarding emission measurements, further clarity is needed if China's data is to match the requirements of international standard such as the Partnership for Carbon Accounting Financials (PCAF) and the Paris Agreement Capital Transition Assessment (PCATA).

Funding mismatches

Funding support for net-zero transition efforts has been mainly offered through bank loans, characterized by shorter tenors, rigid collateral requirements and pricing mechanisms, and more basic structures. To support net-zero targets, the market needs to respond with longer-dated, blended equity and debt structures. Providing adequate financial support for the net-zero transition of small and medium-sized enterprises (SMEs) will also be critical, given the size of CO_2 emission by the SMEs considering their Scope 1, 2 and 3 emissions.

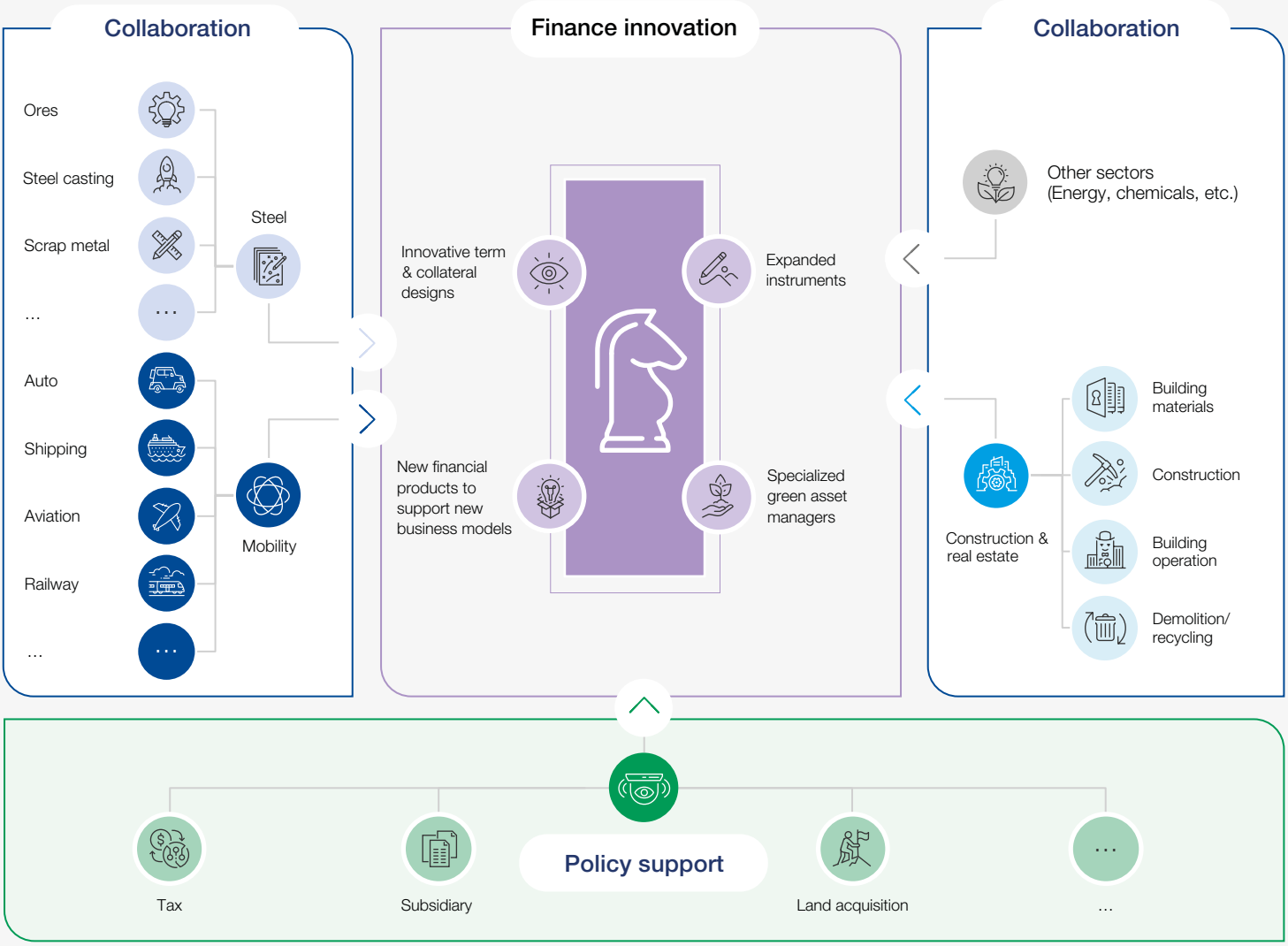
Lack of clear policy support

China's net-zero policy framework needs to be enhanced. First, standards need to be aligned for all regions, industrial sectors, business types and sizes. At present, production limits for blast furnace steels vary widely, with large-scale state-owned enterprises in East China tending to have more flexibility than SMEs in north-east China. Second, long-term production and investment plans require consistent policies to be put in place and maintained. Currently, many steelmakers are reluctant to invest in minimills because of concerns about possible future caps on production.

Lack of cross supply chain collaboration
The indirect emissions in a company's value chain – usually known as Scope 3 emissions – can be significant for industries with long value chains. (automakers' Scope 3 emissions, for example typically account for more than one-third of their total emissions). Reducing these emissions calls for collaboration along a company's value chain. Scopes 2 emissions arising from the purchase of electricity, heat and steam will also need to be addressed through partnerships with power generators. Most companies surveyed, however, are focusing mainly on cutting their Scope 1 emissions, directly generated in the production process, such as through their own vehicles, or the use of boilers on their facilities.

How can these challenges be overcome?

Due to the scale of change needed, China's green transition will call for continuous efforts from its major carbon-emitting sectors combined with support from government policy, finance and value chain collaboration. Innovation will be required in all these areas.



Policy support
Top-down support led by the Chinese government is crucial given the important role played in the Chinese economic governance model. The support can be both financially and non-financially. Comprehensive government support, including tax, land, approvals and financing, are effective in promoting green transition, given the strong influence of the central government. Tax incentives are in particular powerful tools for accelerating the transition similar to carbon taxes in Europe.

State-owned enterprises should also lead from the front given their prominent role in the economy. However, their efforts need to be broader than Scope 1, with the right incentives to drive standards across their supply chains targeting Scope 2 and 3 emissions, where SMEs are key participants. It is also important to ensure the right market intermediaries are in place. Carbon trading could play a key role in achieving net-zero targets similar to those in Europe. While China has launched carbon trading, progress is in its early days and needs an increasing push from

the central government to gain traction – liquidity, participation and innovation. China should also consider the role of dedicated "green" banks to support and set the standards in green finance and pioneer innovation in industry transition.

Underpinning these efforts should be an ongoing effort to develop and enforce consistent and unified rules and regulations across regions and sizes of companies, as mentioned in its recent "unified national market" strategy as well.

BOX 1 Fujian's comprehensive support for minimills

The minimill electric arc furnace (EAF) is essential technology that will allow the steel industry to achieve the net-zero transition. Minimills, however, are both expensive to buy and install. To encourage take-up of minimills, local governments, such as in Fujian, have rolled out a wide range of policies, among them tax exemptions, a special site in a suburban industrial park, and backing for the provision of funding and other resources.

Financing innovation

Financial institutions need to introduce innovative new products and services tailored to the needs of China's net-zero transition. These could be pioneered by state-owned enterprises in addition to a dedicated "green bank". Innovation will require a new term structure, collateral requirements, instrument archetypes and portfolio strategies to ease the shortage of equity green financing and long-term green loans in China.

To enable the industry to transition, it will be critical to develop one-stop solutions that bring together supply chain support for Scope 3 with new deal structure that integrate different instruments and tenors for Scopes 1 and 2. These efforts need to be in lockstep with private equity and venture capital, ensuring effective risk reward tradeoffs for equity financing and asset managers covering longer-term loans and banks covering the short terms.

There are opportunities to leverage policy support in financial innovation, such as leveraging carbon trading to support innovation in collateral design (e.g. carbon credit-backed loans), state guarantees to provide additional security to lenders and borrowers to better mobilize private capital, and regulatory incentives to encourage supply side innovation (e.g. green deposits to address the huge financing gaps in China).

BOX 2 Walmart and HSBC motivate upstream suppliers

To drive down emissions in its supply chain, Walmart is setting its suppliers targets to cut their own emissions. Suppliers that achieved their emission goals will not only benefit through increased procurements, but also by better financing terms provided HSBC, which is the partner bank of this initiative. The initiative can also be an effective approach to motivate SMEs that are the upstream of the anchors.

Ecosystem collaboration

Industry players need to connect with their value chain partners to establish holistic emissions goals, especially when it comes to reducing their Scope 3 emissions. This will require anchors setting the standard and driving it through their supply chains and ecosystem participants. This collaboration will extend beyond standard setting and into the commercial structure to ensure incentives and verification motivates the right outcomes.

Financial institutions should seek to foster ecosystem collaboration working closely with anchors, regulators and the industry as advisers and partners in the transition; there are mutual benefits in collaboration to achieve joint net-zero goals. The most significant financiers in China are expected to take the lead in coordinating different parties and institutions by serving industrial customers with more sophisticated products and services propositions looking holistically across their supply chains. To do this, financiers need to accelerate internal and external innovation and expand ecosystem networks – be it products, data sharing, reporting and tracking and/or commercial incentives to ensure viable win-win strategies with the industry.

While the road ahead is steep, if China gets this right, it could position itself to drive the next green revolution globally given the country's scale and its position in the global economy and supply chains. However, this will require greater innovation in financing, policy support and industry collaboration.

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