



# Investment opportunities from China's carbon neutral strategy

The RBC Asian Equity team

The energy industry is transitioning fast; innovative technologies and infrastructures are leading the way to carbon neutrality. We previously discussed how Asia overall is arguable more exposed to climate risks than any other region, advancing [Asia's decarbonisation opportunity](#). Within Asia we believe China has the political, economic and industrial resources to drive growth in the global renewable energy sector. While geopolitics and trade tensions remain a challenge, China's clean-energy companies are well positioned for long-term performance.

## China has a big role to play

Late last year, China – the world's biggest carbon dioxide (CO<sub>2</sub>) emitter – committed to carbon neutrality by 2060.<sup>1</sup> We believe China plays a crucial role in reducing global carbon emissions, driven by both domestic change and its role in the global supply chain for clean energy.

We study China's latest five-year plan (2021-2025) to understand how its carbon-neutral strategy is supporting this important investment theme.

## Near-term focus of China's decarbonisation strategy - increase energy efficiency and reduce emissions

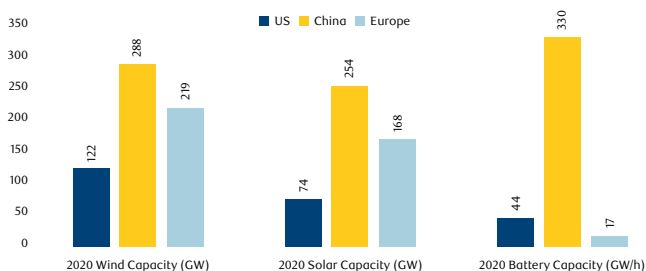
China's strategy for peaking carbon emissions will be an extension of its existing policies than any radical departure. In the near term, China still needs to balance

between economic growth and emissions reduction. The immediate areas of policy focus for the 14th Five-Year plan (14th FYP) will likely include the following:

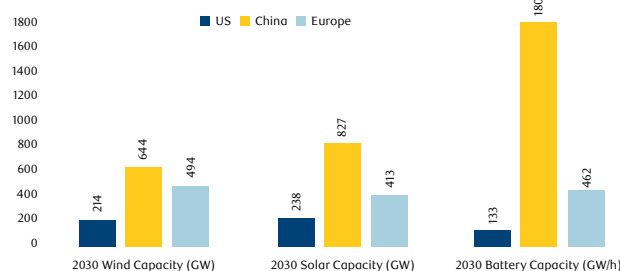
- **Increasing energy efficiency:** Given the size and growth pace of the Chinese economy, increasing energy efficiency will be a key focal point in the near future. The 14th FYP sets a target to reduce energy consumption per unit of GDP by 13.5% and carbon dioxide emissions per unit of GDP by 18%.
- **Restricting coal-fired power and using more renewable energy:** The government is planning to strictly control coal consumption during the 14th FYP before gradually reducing it during the 15th FYP (2026-30). China aims to raise the share of non-fossil fuel in its total energy consumption to 20% by 2025 and 25% by 2030.

## Exhibit 1: China has outpaced the EU and US in clean energy investment for the past decade and continues to dominate given scale advantage

China renewables capacity today is well ahead of the EU and US



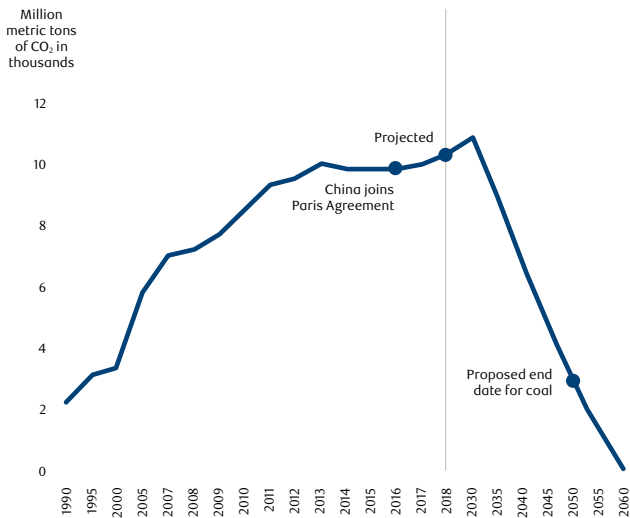
China's lead in renewables capacity is projected to widen even further



Source: BofA Global Thematic Research, BloombergNEF, GwEC, BP. RBC Global Asset Management. Data as at July, 2021.

<sup>1</sup> The World's Top 10 carbon Dioxide Emitters, Forbes, Robert Rapier.

## Exhibit 2: China's carbon neutrality timeline up to 2060



Source: International Energy Agency, Institute of Energy, Environment and Economy. RBC Global Asset Management. Data as at November, 2020.

## Exhibit 3: China launched its carbon trading market which is comparable to the EU

	China's ETS	EU's ETS
Covered emissions	4.5Gt	1.4Gt
Sectors	Power sector for now. More sectors to be included later	Power, industrial, aviation sectors, maritime sector to be fully included by 2026
Allocations method	Free allocation	Free allocation and auctioning
Trading	Spot trading	Spot, futures and other derivatives
Participants	Emitters only for now. Institutions and individuals fulfilling certain criteria will gradually be allowed to participate	Emitters, institutions and individuals

Source: Refinitiv. RBC Global Asset Management. Data as at July, 2021.

- **Targeting heavy emission industries:** Heavy emission industries such as steel and cement, will likely become the initial targets and see more stringent regulations and production capacity control in the near term.
- **Electrification:** The priorities could include replacing inefficient coal boilers, upgrading the household heating systems, and promoting electric vehicles. China targets to raise the share of new energy vehicles in new car sales to around 20% by 2025.

China's emissions trading scheme (ETS) should also help accelerate the country's decarbonisation process. China's

carbon market covers more than 2,200 companies in the power sector, accounting for around 50% of total emissions – more than three times that of the EU's ETS.<sup>2</sup> With other heavy industries set to join, the ETS mechanism should cover about 70% of China's CO<sub>2</sub> emissions (Exhibit 3).<sup>3</sup>

**“China plays a crucial role in reducing global carbon emissions, driven by both domestic change and its role in the global supply chain for clean energy.”**

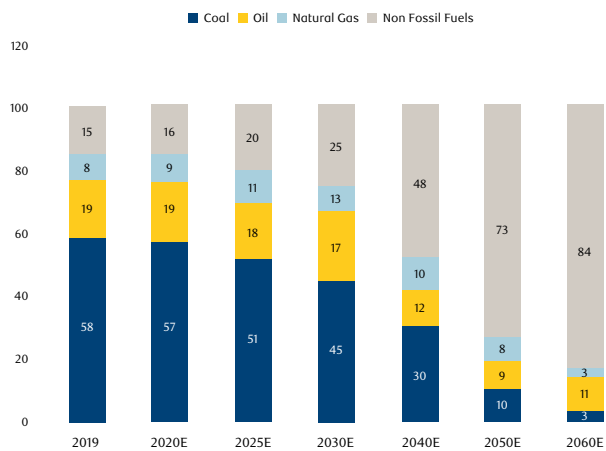


<sup>2</sup> Bloomberg, July 14, 2021 and Bloomberg July 16.

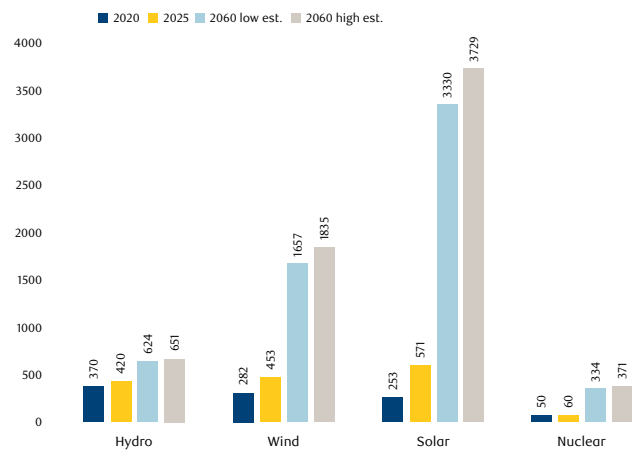
<sup>3</sup> BloombergNEF, July 22, 2021.

## Exhibit 4: China's cleaner energy mix target driving secular growth of solar and wind

Energy mix by year, forecast



Renewable power cumulative installed capacity, forecast



Source: J.P Morgan estimates, China Electricity Council. RBC Global Asset Management. Data as at July, 2021.

### Carbon neutrality strategy in the long term – focus on technology innovation and investments

While in the near term, the government will rely on tighter regulations to reduce carbon-intensive activities, long-term policy will need to focus on technology innovations and investments that can ultimately help to achieve net-zero carbon emissions.

We believe state-owned enterprises (SOEs) will lead the energy transition initiative in the short term, such as R&D in advanced technology or infrastructure. Between 2020 to 2030, total solar capacity in China is expected to grow at a 16% compound annual growth rate (CAGR) and total installed capacity for wind is expected to grow at 10% CAGR (Exhibits 4).<sup>4</sup> State-owned power companies will benefit from this robust industry growth, given their low cost of capital and long investment horizons.

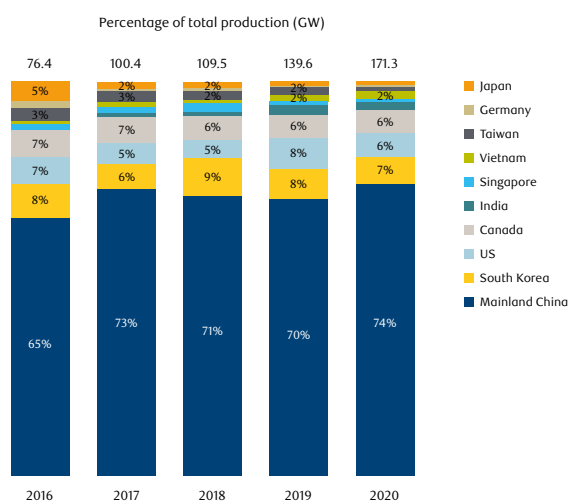
However, we believe non-SOE companies will establish themselves over the long term with R&D leadership, creating greater job opportunities and delivering economic benefits beyond climate change. Chinese companies have gained global leadership in solar, wind and EV supply chains over the past two decades as the government has prioritised investing in renewable energy since 1990. With new technologies and applications emerging more recently, the government is spending aggressively to subsidise sales and incentivise R&D.

### What does the renewable industry landscape look like in China?

**Solar:** Chinese companies are leading product efficiency and consolidating the industry in solar with faster

technology adoption and end-to-end supply chains. In 2020, 73% of photovoltaic (PV) modules globally were made in China (Exhibit 5).<sup>5</sup> We believe technology and cost leadership should be reinforced with the economies of scale and bargaining power that comes with such market dominance. Even as investment cycles create volatility, these companies should maintain higher and more stable profitability levels compared to global peers.

### Exhibit 5: China is the world's largest solar supply chain manufacturer



Source: BloombergNEF. Note Numbers above the bars indicate total global module production (in GW) from the given year. RBC Global Asset Management. Data as at July, 2021.

<sup>4</sup> Source: J.P Morgan estimates, NEA, Tsinghua University, China Electricity Council.

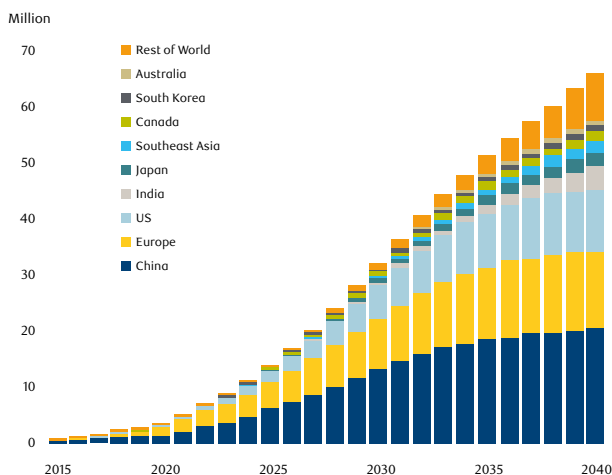
<sup>5</sup> BloombergNEF.

**Electric vehicles and charging infrastructure:** China is the largest end-user market for EVs, accounting for 39% of global EV sales in 2020.<sup>6</sup> To reach the goal of 25% EV penetration by 2025 (from 6% in 2020), the government

highlighted the importance of investment in public charging infrastructure; EV charging stations are expected to grow at a CAGR of 36% until 2030 (Exhibit 6).<sup>7</sup>

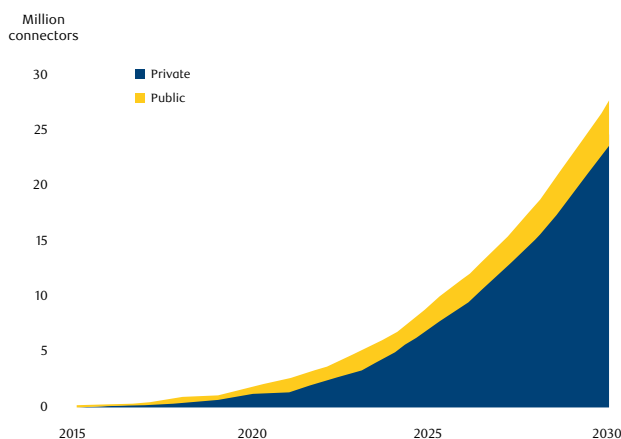
### Exhibit 6: China is the largest end-user market for EVs

Annual passenger EV sales by market



Source: BloombergNEF. RBC Global Asset Management. Europe includes EU, U.K., EFTA. EV includes BEVs and PHEVs. Data as at June, 2021.

Cumulative number of EV charging connectors in China, forecast



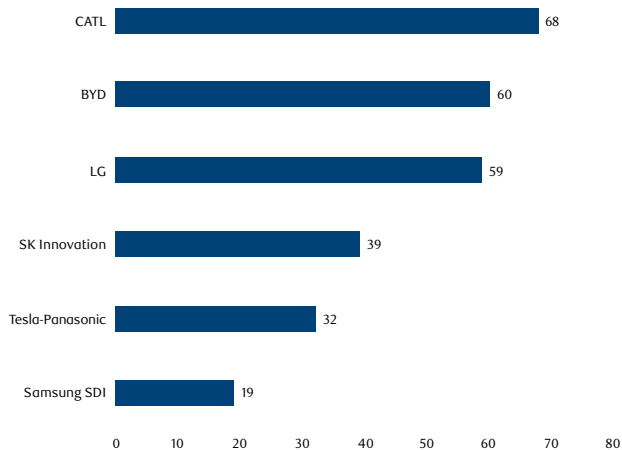
Source: BloombergNEF Long-Term Electric Vehicle Outlook 2021. RBC Global Asset Management. Data as at June, 2021.

**Battery and energy storage:** The global lithium-ion battery industry is dominated by five players – Panasonic, Samsung SDI, LG Chem, BYD and CATL. LG and Samsung are the most advanced in cell chemistry and battery

developments, but Chinese companies are catching up in R&D spending to stay competitive in this fast-growing market (Exhibit 7).

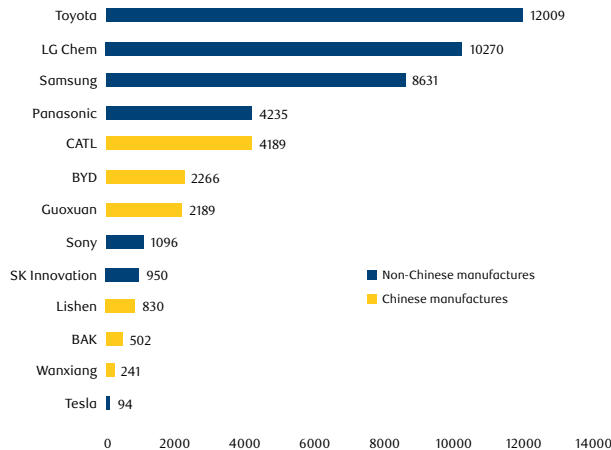
### Exhibit 7: China is already a global hub for battery manufacturing and is catching up on R&D

Battery manufacturing capacity, top-6 industry leaders



Source: Bloomberg. RBC Global Asset Management. Data as at July, 2021.

Patents for lithium-ion battery technology



Source: WIPO, Bernstein analysis. RBC Global Asset Management. Data as at March, 2020.

<sup>6</sup> BloombergNEF, Long-Term Electric Vehicle Outlook 2021, June, 2021.

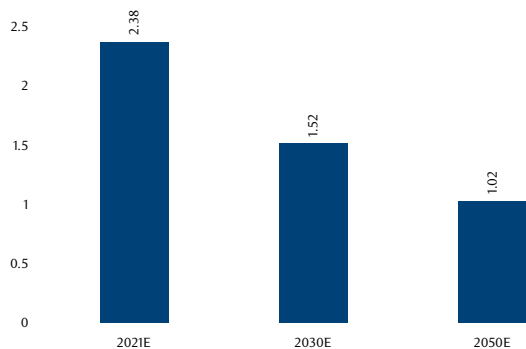
<sup>7</sup> BloombergNEF, China Policy Bulletin: National Carbon Market Kickoff, July, 2021.

**Hydrogen:** China aims to widely use hydrogen energy in sectors such as steel, chemicals, construction and transportation. China is driving down the levelised cost of hydrogen (LCOH) by increasing economies of scale, reducing production costs and making costs at hydrogen refilling stations cheaper (HRG). By 2030, it is targeting

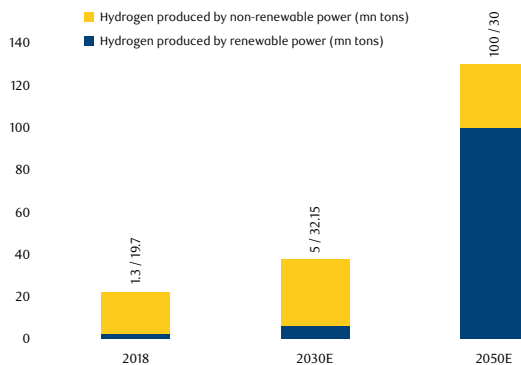
one million on-the-road fuel cell vehicles (from 2000 vehicles in 2020), 10% hydrogen-based power and 40GW of electrolyzer capacity.<sup>8</sup> The cost of green hydrogen is falling quickly due to renewables – it is expected to fall to US\$1-US\$2/kg and become cost competitive relative to alternative fuels by 2030 (Exhibit 8).

### Exhibit 8: Hydrogen advancements are key to China’s clean energy development

Levelised cost of hydrogen (LCOH) in China, \$/kg-H<sub>2</sub>, 2019 real, forecast



Hydrogen production by power source, forecast

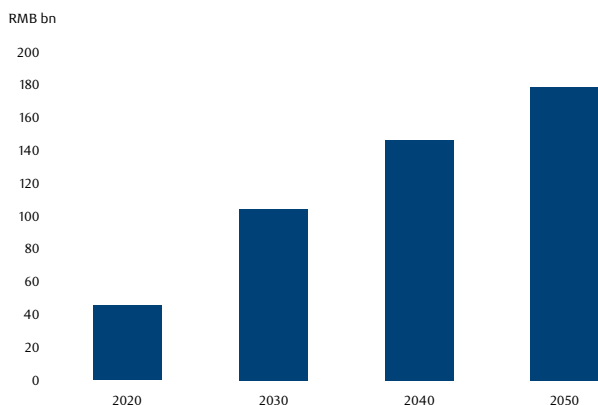


Source: LHG BNEF & RHG China Hydrogen Alliance data and estimates. Bernstein estimates and analysis. RBC Global Asset Management. Data as at June, 2021.

**Smart power grid:** Grid investment is set to grow over the next 15 years to support higher electricity consumption in China. This will include investment in hardware to accompany the increasing length of transmission and distribution lines, as well as digital investment to upgrade grids to facilitate renewable dispatch (Exhibit 9).

### Exhibit 9: State grid investment in China will increase with electricity consumption

China’s annual digital grid investments



Source: BNEF, J.P Morgan estimates. RBC Global Asset Management.

### Conclusion

China’s 2060 carbon neutral goal is meaningful because it not only serves as a roadmap to drive change in the world’s biggest CO<sub>2</sub> emitter, it also pushes the technology frontier for the global renewable energy industry. The government has proven itself to be adept at setting long-term economic policies and executing them with continuity. Leading Chinese corporates are innovating to speed up the global race to net zero. Geopolitical tension and potential restructurings of global trade are emerging risks as these companies see greater revenue mix from exports. However, as the energy industry transitions away from fossil fuels and investments in clean energy accelerate, both in China and globally, we see great long-term investment opportunities for fundamental stock pickers in China’s clean energy companies.

For more information on how the team’s unique investment approach aims to support their findings in this report, visit the [RCB Asian Equity team page](#).

<sup>8</sup> BNEF & China Hydrogen Alliance data and estimates. Bernstein estimates and analysis.

## ABOUT THE AUTHOR

### Selina Lu, CFA

**Senior Analyst,  
RBC Global Asset Management (Asia) Limited**

MBA (2018), Rotman School of Management; AFM (2016); CFA (2015); FRM (2013);  
BBA (Accounting) (2010), University of Toronto, Canada.

Selina is a Senior Analyst on the RBC Asian Equity team at RBC GAM. She is the team's commodities, utilities and consumer specialist. Selina joined the organization in 2018 as a part of a graduate program that allowed her to work in a variety of roles within Toronto and Hong Kong, across North American equities and Asian equities. Prior to this, she gained experience in corporate banking, credit risk and finance at a major Canadian financial institution. Selina began her career in the financial industry in 2010.



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