MONTHLY CHINA ENERGY UPDATE

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China power statistics - April 2025

In the first fourth months of the year, wind and solar power generation capacity accounted for 89% of new capacity (see Figure 1 below). Solar continued to show significant growth during this period, with 105GW added, up 75% year-on-year. This was over 8 times more than thermal, and 5 times more than wind. **In the month of April alone, 45.2GW of solar was added, more than Australia's entire solar power capacity.**

Thermal capacity grew by 13 GW in the first four months of 2025, however, with renewable energy sources (including hydro) comprising 91% of new capacity additions so far this year and total combined wind and solar surpassing thermal in February 2025, coal's structural decline in the power system is clear and ongoing. No nuclear was added. The average coal plant in China ran for a record low 46.4% of the time in 4MCY2025. Put another way, China keeps adding idle new coal fired power capacity to enhance flexibility and grid stability, not add new generation.

Grid investment for the first four months of 2025 was US$20 billion, up 15% yoy. This indicates sustained infrastructure upgrades to support renewables growth as the 14th Five Year Plan 2021-2025 draws to a close this year.

Figure 1

New Capacity Installed in China in Jan-Apr 2025

		Jan-Apr 2025	% Share of new adds	% yoy change	Apr-25	% Share of new adds
Thermal Power	GW	13.0	9%	42%	3.7	7%
Hydropower	GW	2.7	2%	-3%	0.5	1%
Nuclear Power	GW	-	0%	0%	-	0%
Wind Power	GW	20.0	14%	19%	5.3	10%
Solar Power	GW	104.9	75%	75%	45.2	83%
Total capacity added	**GW**	**140.5**	**100%**	**58%**	**54.8**	**100%**
Renewable Energy adds	GW	127.5	91%	60%	51.1	93%
Zero Emissions Capacity Adds	GW	127.5	91%	60%	51.1	93%
YTD power grid investment	US$bn	20		15%		

Source: National Energy Administration

Total installed power capacity as at April 2025 reached 3,487GW, up 16% yoy (see Figure 2 below). Again, wind and solar continue to show outsized growth, rising 18% and 48% respectively, compared with thermal's 4% growth.

CEF expects coal generation to plateau over 2025, possibly also 2026, which would see China deliver early on its pledge to peak national emissions well before 2030 (in fact, possibly back in March 2024, as Lauri Myllyvirta discussed this month in Carbon Brief).

Put another way, this means that new zero emissions electricity generation in China in the first four months of 2025 more than covered all new electricity demand growth (which was +3.8% yoy to 3,218TWh, including distributed energy, e.g behind the meter solar).

Figure 2

Total Installed Capacity in China as of April 2025

		As of Apr-2025	Share of Capacity	Change (yoy %)	As of Apr-2024
Thermal Power	GW	1,455	42%	4%	1,398
Hydro Power	GW	438	13%	3%	425
Nuclear Power	GW	61	2%	7%	57
Wind Power	GW	541	16%	18%	458
Solar Power	GW	992	28%	48%	671
Total Installed Capacity	**GW**	**3,487**	100%	16%	**3,010**
Renewable Energy Capacity	GW	1,971	57%	27%	1,555
Zero Emissions Capacity	GW	2,032	58%	26%	1,612

Source: National Energy Administration

Beyond covering all new demand growth, this means new zero emissions generation eats into thermal power's contribution in absolute terms. This was led by solar generation +42.9% yoy to 350TWh (a record high 11% share for solar in China, including rooftop and distributed solar systems), a world record for any four months for any country. China's wind generation was up 16% yoy to 412TWh (a 13% share of total generation). Nuclear generation also contributed, up for 4MCY2025 +12.7% yoy to 159TWh (a 5% share of total generation) due to the 3.9GW of new capacity added over CY2024.

Figure 3

China's Power Generation Mix in Jan-Apr 2025

		Jan-Apr 25	% Change yoy	Share of generation	Apr-25	% Change yoy
Thermal Power	TWh	1,931	-3.6%	60%	438	-1.7%
Coal	TWh	1,837	-3.6%	57%	416	-1.7%
Gas	TWh	89	-3.6%	3%	20	-1.8%
Other Thermal	TWh	5	-3.7%	0%	1	-1.7%
Bioenergy	TWh	61	-3.6%	2%	16	8.4%
Hydropower	TWh	306	3.5%	9%	79	-5.7%
Nuclear Power	TWh	159	12.7%	5%	41	12.4%
Wind Power	TWh	412	16.0%	13%	105	19.5%
Solar Power	TWh	350	42.9%	11%	96	38.4%
TOTAL POWER GENERATION	**TWh**	3,218	3.8%	100%	775	5.0%
Variable Renewable Generation	TWh	762	27.0%	24%	201	27.8%
Zero Emissions Power Generation	TWh	1,287	17.1%	40%	337	15.3%

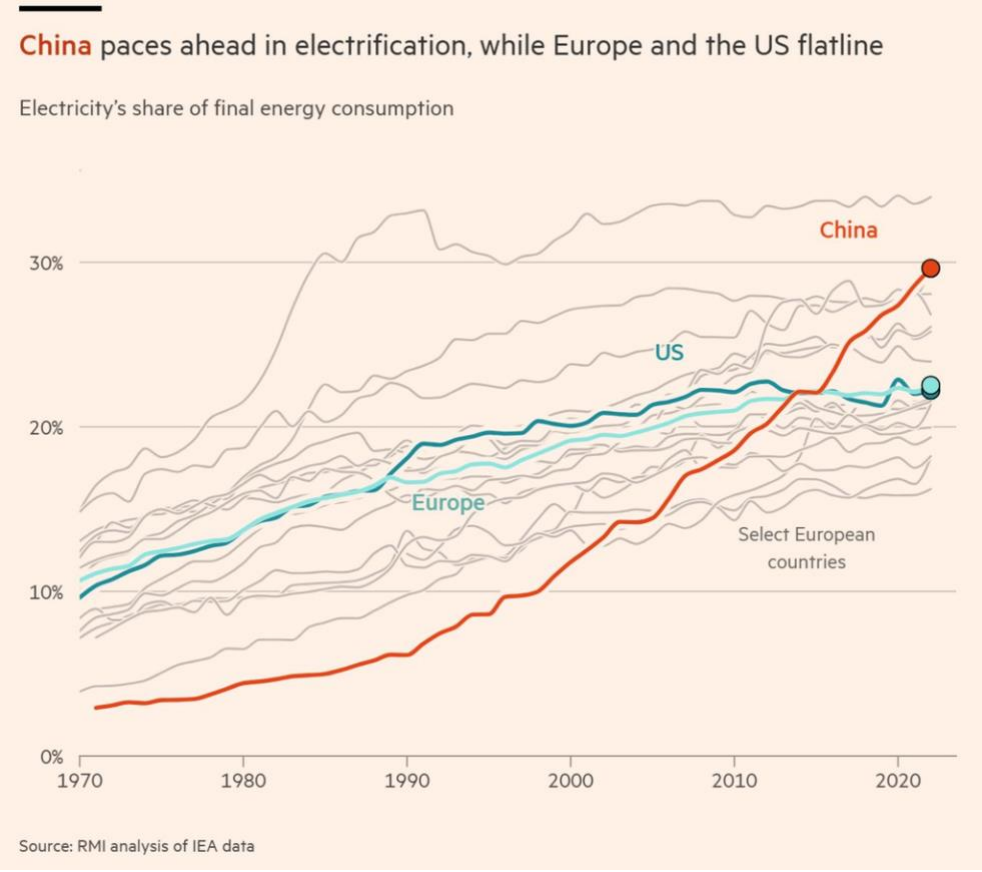
Source: National Bureau of Statistics, Ember, CEF Estimates

China is the world's first electrostate

A recent Financial Times article by Nassos Stylianou, Jana Tauschinski and Edward White published spotlights the reality that "China is the world's first major "electrostate", with a growing share of its energy coming from electricity and an economy increasingly driven by clean technologies". The article quotes CEF's Director Tim Buckley, stating Trumps "trade war has really emphasised the whole point of energy security and electrification because one of the most-traded commodities in the world is fossil fuels." China's rapid electrification trend has leapfrogged the West since the mid-2010s (see Figure 4 below).

RMI analysis notes scale and innovation drove down domestic prices — now exports are booming. CEF has tracked that Chinese companies have, since the start of 2023, committed $156bn in outbound foreign direct investment worldwide across more than 200 clean technology transactions, with the majority of this investment going into the Global South.

Figure 4



Policy and economic developments

China will release its 2035 NDC before COP30

China will release its 2035 NDC targets before COP30. Under the Paris Agreement, countries must update their Nationally Determined Contributions (NDCs) every five years. China's targets from 2015 and 2020 pledge to peak carbon emissions before 2030 and reach carbon neutrality before 2060. Although the deadline for the next round of NDCs was February 10, 2025, only 17 countries met it.

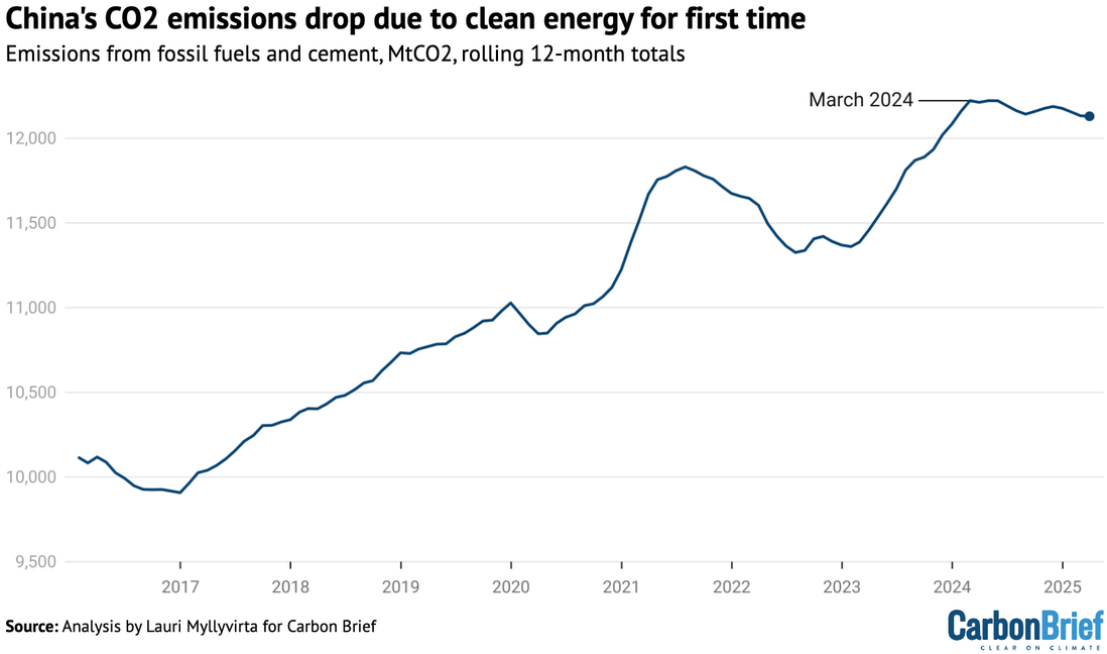
On 23 April 2025, President Xi Jinping reaffirmed China's climate goals in a speech at the Leaders Meeting on Climate and the Just Transition, announcing the upcoming release of its economy-wide, all-GHG 2035 NDC before COP30 in Belém. He concluded: "No matter how the international situation changes, China will not slow down its efforts to address climate change, promote international cooperation, or stop building a community with a shared future for mankind".

China's emissions decline for the first time due to clean power

Clean energy caused China's CO_2 emissions to fall in the first quarter of 2025 for the first time, despite rapid power demand growth, according to a recent analysis by CREA's Lauri Myllyvirta writing for *Carbon Brief* (see Figure 5 below). This **historic emissions decline** was **driven by the massive surge in renewable deployment**, with solar, wind, hydropower, and nuclear meeting **more than 100% of new electricity demand**, thereby displacing fossil fuels.

Having positioned themselves at the forefront of the global energy transition, Chinese firms are "already quietly leapfrogging to the front of the development race" of the next critical frontier - industrial decarbonisation, which will "bridge its carbon peaking and carbon neutrality milestones, reshaping global climate technology markets in the process", according to comprehensive testimony by Shanghai-based energy expert David Fishman before a recent U.S.- China Economic and Security Review Commission hearing.

Figure 5



Source: Carbon Brief

China's new energy storage capacity expected to exceed 200GW by 2030

China's 14th Five-Year Plan for Modern Energy System explicitly lists "new energy storage" as a strategic industry for energy security and carbon neutrality. The China Energy Storage Alliance (CNESA) released the *Energy Storage Industry Research White Paper 2025* during this year's International Energy Storage Summit, reviewing 2024 developments and projecting trends to 2030.

The White Paper showed that by the end of 2024, China's new energy storage— with lithium-ion accounting for 98.5% of this, along with other technologies like compressed air and gravity storage—reached 78GW, nearly triple the national 2025 target of 30GW. New energy storage also surpassed pumped hydro for the first time to become the dominant energy storage type (57%).

Following the cancellation of mandatory installation policies, CNESA forecasts 2025 additions are expected to drop below 2024's 44GW but still exceed 30GW, taking total capacity to 112–126GW. From 2026 to 2030 (15th Five-Year Plan), growth is expected to shift from policy to market-driven, with annual additions averaging 26–36GW and total capacity projected to reach 236–391GW by 2030.

CEF is more bullish on China's likely BESS installs trajectory, and notes that far from declining, BYD stationary storage shipments in 1QCY2025 were a record 52.6GWh, up 77% yoy.

NEA releases Hydrogen Energy Development Report (2025)

On 30 April, the NEA released China's *2025 Hydrogen Energy Development Report,* outlining a strategic roadmap to establish the country as a global leader in hydrogen energy. China now accounts for a world-leading **50% of global green hydrogen production capacity**. The plan aligns with China's broader 2030/2060 carbon neutrality goals, positioning hydrogen as a pillar of its clean energy transition. Further analysis can be found in this S&P article.

Ministry of Transport releases new policy to accelerate decarbonisation

China's Ministry of Transport and nine other departments released the Guiding Opinions to Facilitate the Integrated Development of the Transport Industry and the Energy Sector, Transport Planning and Development to accelerate the integration of transport and energy systems for decarbonisation. It targets a 10% share of electricity in transport energy use by 2027 and a clean, low-carbon energy system by 2035. Key measures include coordinated infrastructure planning, promotion of clean energy and new energy vehicles, development of green fuels, and adoption of smart technologies, supported by financial incentives and regulatory frameworks.

CEF's discussions with China's XCMG heavy equipment OEM indicate China will readily deliver on this new ambitious target, as XCMG is now possibly the world's largest mine and haulage electric vehicle supplier, with a target of 20,000 unit sales in 2025.