

INSIGHTS

China's Energy Pivot: The Turning Point Investors Can't Ignore



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■ Insights based on a report by EMBER

For a decade (2012–2022), China drove **two-thirds of the rise in global fossil demand**. Now, it's approaching a peak, and potentially decline, in fossil energy use. That flips the global narrative. If the world's largest energy consumer bends its fossil curve, commodity exporters, investors, and policymakers everywhere will need new playbooks. The real story is not "China adds more renewables." It's that electrification + industrial scale + integration **are changing the structure of energy demand itself**. And once demand shifts, supply follows. That's the moment we should all be paying attention to.

China's Energy Transition: Decoding the World's Largest Shift in Power

China is no stranger to scale. It is the world's biggest energy consumer, the largest carbon emitter, and the largest builder of power infrastructure. But something profound is happening: the pace of its energy transition

is escaping forecasts, with consequences far beyond its borders.

Just as Gen Alpha is the first generation fully born into the 21st century, China's transition is the first energy system shift at true industrial scale. The China Energy Transition Review 2025 shows a story that isn't about incremental change — it's about transformation.

From "Add More" to "Change Everything"

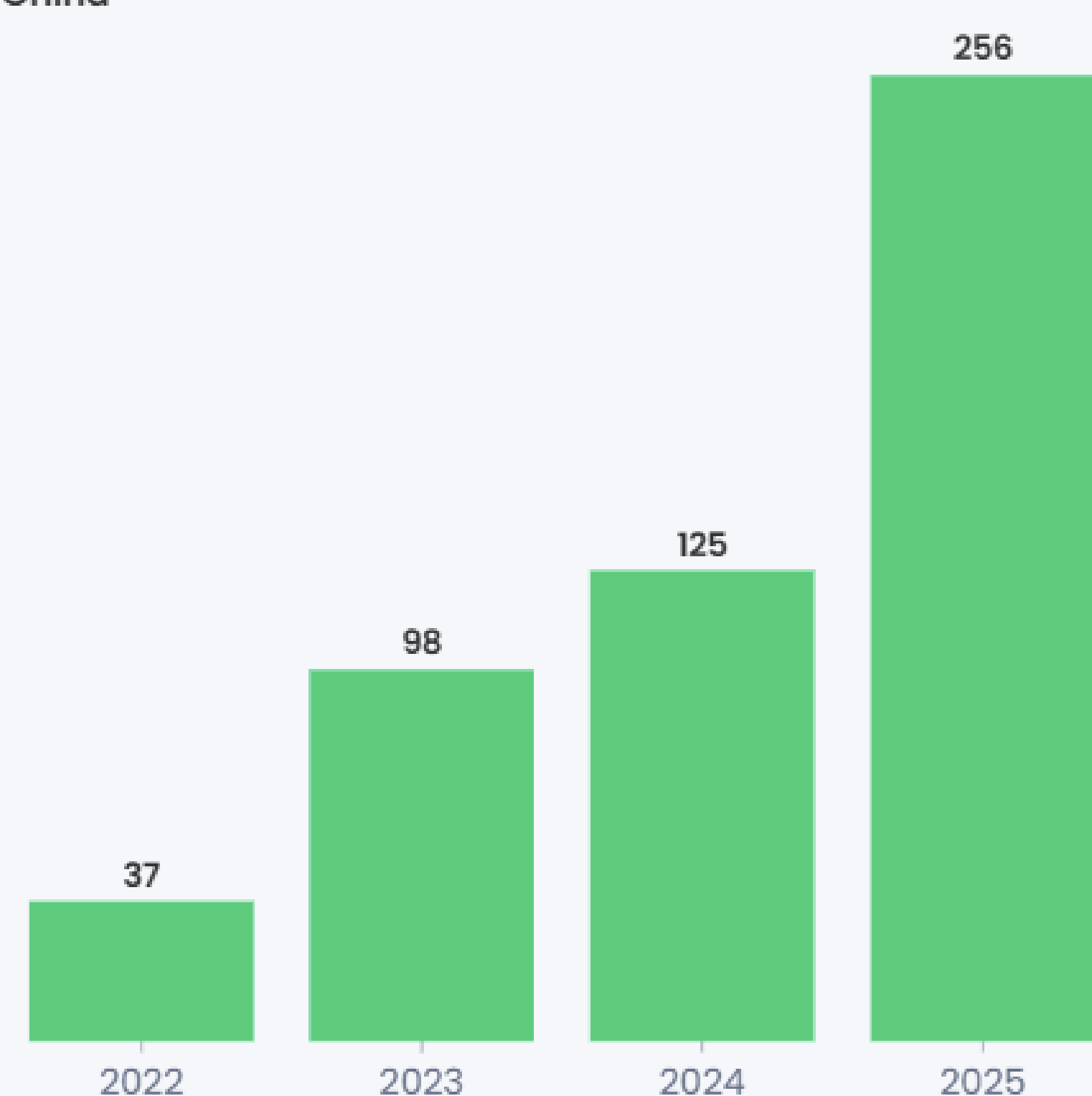
China's wind and solar output surged **+25% in 2024** and another **+27% in the first half of 2025**. For the first time, renewables didn't just add capacity; **they reduced fossil fuel power generation by 2%**, even as electricity demand kept climbing. Over the 12 months to June 2025, wind and solar produced **2,073 TWh of power** — surpassing all other clean sources combined. This is the pivot point: renewables are no longer an "add-on" but the backbone of growth.

China installed more than twice as much solar capacity in the first half of 2025 as the rest of the world combined.

Solar capacity additions in first half of each year (GW)

India United States Germany Brazil Other countries

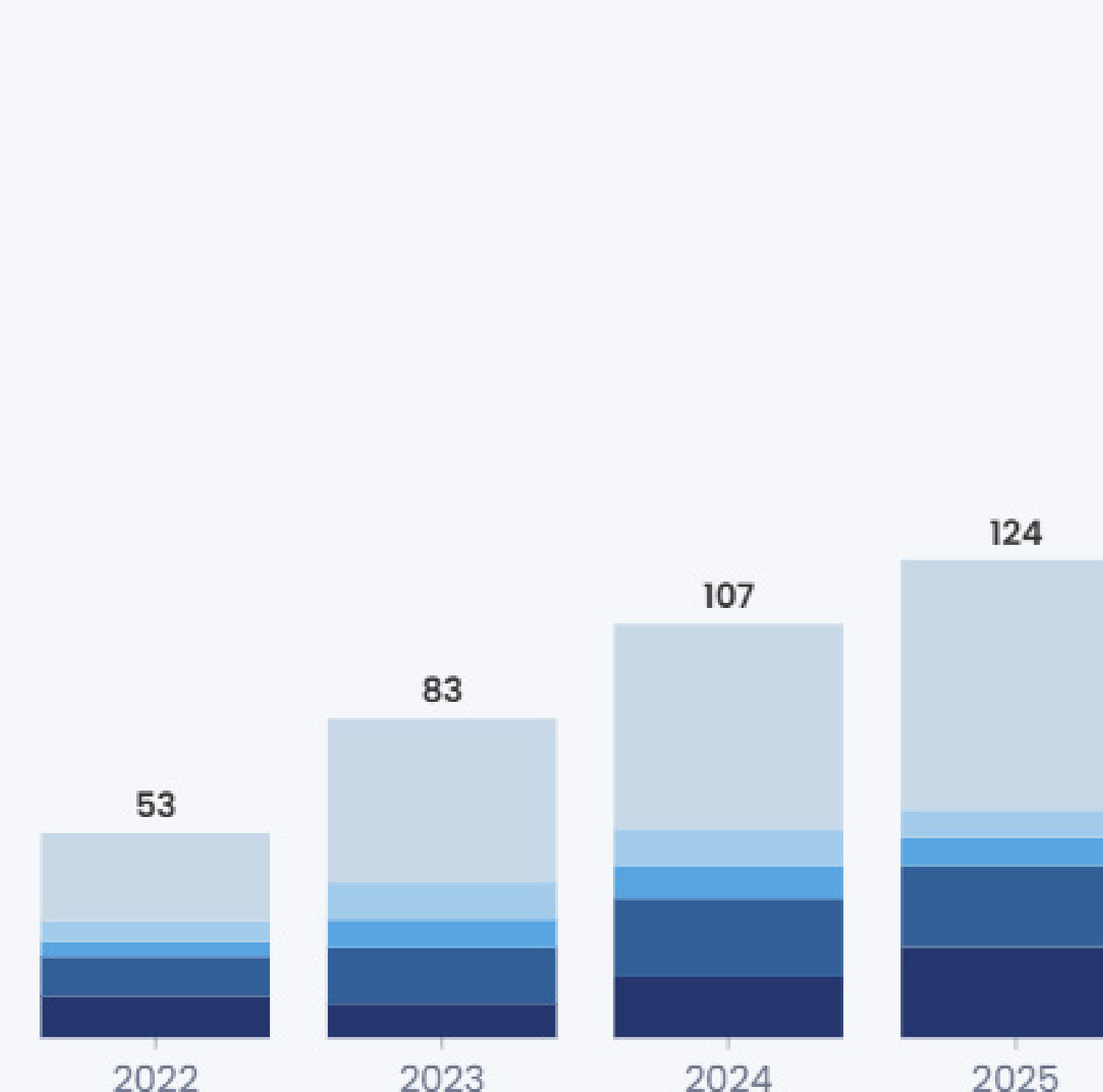
China



Source: Monthly wind and solar capacity, Ember

Capacity is in GW(DC); Data from countries reporting in GW(AC) was scaled in the calculation of global values.

Rest of world



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Capex at Industrial Scale

In 2024, China invested **\$625 billion in clean energy** - about **a third of global total**. Grid spending hit a record **608 billion RMB (~\$85 bn)**, while installed battery storage **tripled in just three years**. In 2025, that investment impulse accelerated again: battery storage up 69% year-on-year, grid spending up 22%. The world has never seen clean-energy deployment at this velocity.

Demand Side: The Silent Revolution

The supply story is dramatic, but the demand side shift is even more telling. Electricity now accounts for **32% of China's final energy consumption**, compared with ~24% in the US and Europe. Between 2015 and 2023, direct fossil use in transport, buildings and industry **fell 1.7%**, while electricity use in these sectors **grew 65%**. Electric vehicles, heat pumps, induction stoves, and industrial e-boilers are pushing fossil fuels out of daily life. This electrification wave means fossil demand isn't just plateauing - it's bending.

Manufacturing Scale Resets the Global Curve

China's industrial capacity in solar, batteries, and wind is rewriting the global cost structure:

- By 2030, Chinese factories could produce **1,255 GW of solar modules annually** far exceeding the **761 GW** the IEA says the world will need that year.
- Battery capacity of **2,500 GWh in 2024** could rise to **6,300 GWh by 2030**.

When manufacturing scale outpaces global scenarios, costs collapse faster, and adoption accelerates worldwide.

Invention, Not Just Production

This isn't just "Made in China." By 2022, Chinese firms filed **~75% of global clean-energy patents**, up from just 5% in 2000. R&D plus deployment creates a flywheel of innovation, embedding knowledge advantages alongside industrial dominance.

Provinces Acting Like Countries

Several provinces now generate more than a quarter of their electricity from wind and solar - levels comparable to or higher than OECD averages. At these shares, systems are forced to solve real-time challenges in flexibility, dispatch, and market design. China's provinces are effectively becoming living laboratories for the next phase of energy systems.

The Economic Logic

This transition isn't framed only as climate policy. It's about energy security, system costs, jobs, and industrial upgrading. In 2024, clean energy added **13.6 trillion RMB (~\$1.9 trillion) - nearly 10% of GDP**- and grew **three times faster** than the overall economy.

China calls this an "ecological civilisation." In practice, it's a development strategy with geopolitical consequences.