

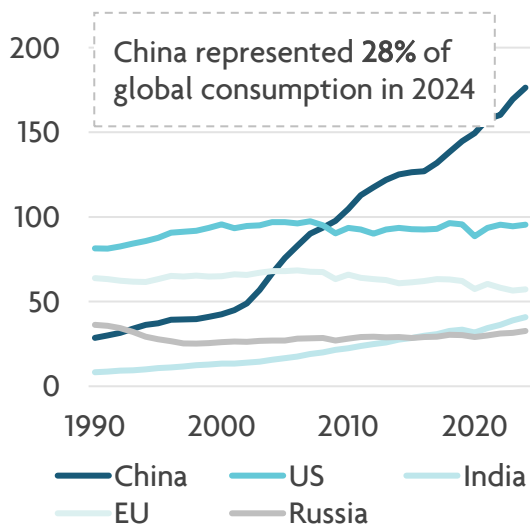
The implications of China's rise as the world's first 'electrostate'



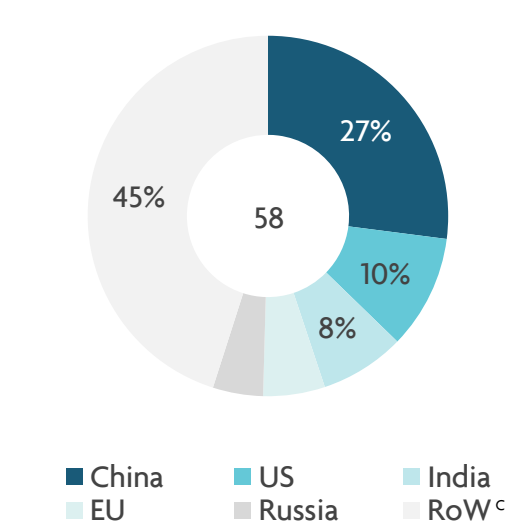
Following decades of coordinated industrial policy, large-scale manufacturing, and sustained cost declines, China is emerging as the **world's first electrostate**¹, leading global production and deployment of electricity-based technologies. While the country remains the largest consumer of fossil fuels globally, clean energy – in particular, solar PV, wind, electric vehicles (EVs), and batteries – has played an increasingly central role in shaping the Chinese economy and meeting its vast energy needs. Understanding the **drivers behind this transformation, how it evolved, and its broader global implications is essential to making sense of the 21st century energy landscape**

China is the largest energy consumer and GHG^a emitter globally, shaping both energy and climate agendas

Primary energy consumption^{2b}
EJ



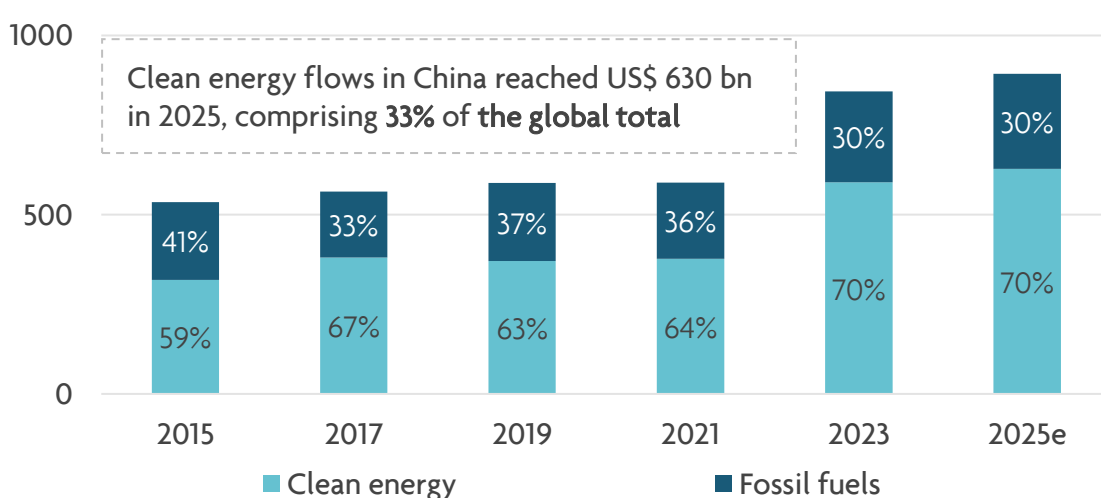
Share of global GHG emissions³
% (GtCO₂e), 2024



- China was the largest driver of global energy demand between 2003-2023, accounting for **over 50% of oil demand growth**⁴
- It has relied on fossil fuel imports to sustain consumption, with **net crude oil imports exceeding 70% of total demand in 2023**⁵

Large scale energy investments, particularly in renewables, have been driven by energy security and economic priorities

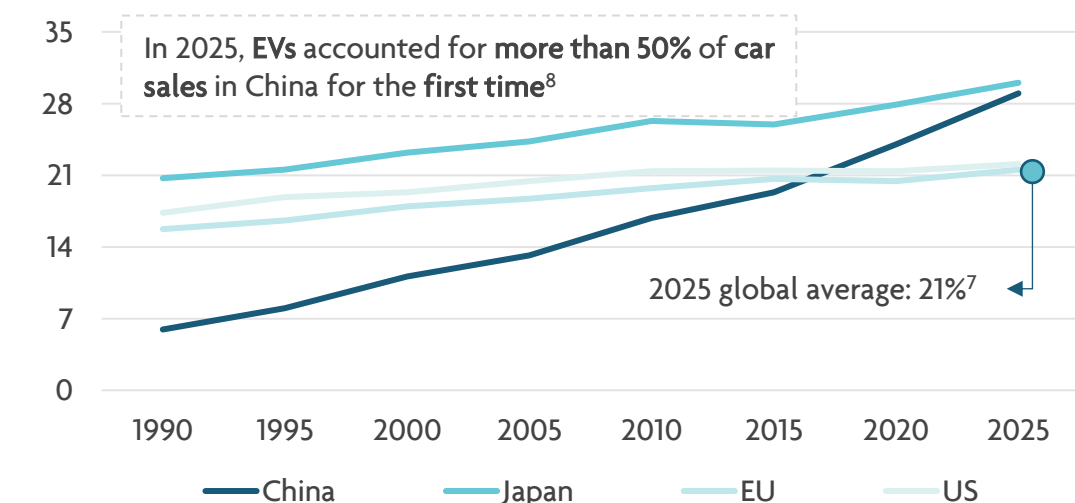
China accounts for over 25% of energy investment worldwide⁶
US\$ bn (MER^d, 2024)



- While it invests 6x more in clean power than in fossil fuels, China is the world's **largest fossil fuel investor** (US\$ 265 bn in 2025)⁶
- In 2022, Chinese companies accounted for around **75% of clean energy patent applications globally** (vs. 5% in 2000)⁷

Electrification of energy demand has accelerated in tandem with the major expansion of clean power supply

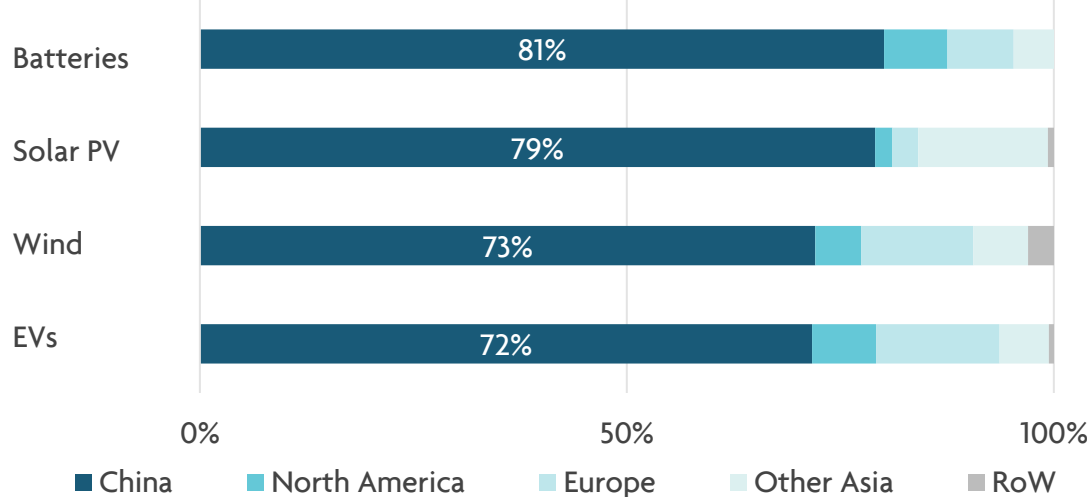
China's electrification rate surpassed 27% in 2025⁷
Share of electricity in final energy consumption



- Wind and solar generation **increased by 474 TWh in 2025** (+26% y-o-y), covering 94% of the China's demand growth⁹
- Despite 95 GW¹⁰ of added coal capacity in 2025, **coal generation fell by 71 TWh** (-1.2% y-o-y)⁹, marking its first decline since 2015¹¹

Through its manufacturing-led approach, China has established a dominant role across most clean energy value chains

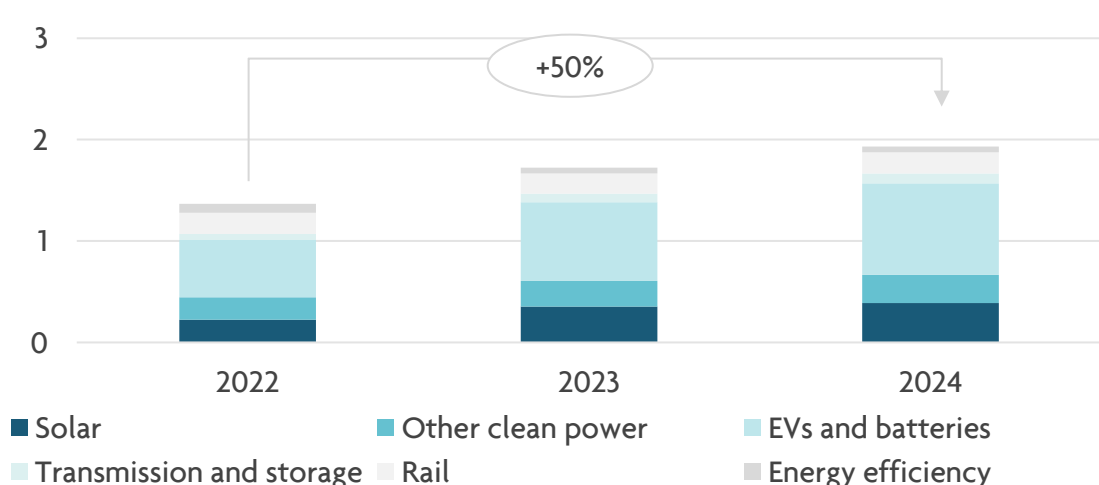
Production of clean energy technologies is heavily reliant on China¹²
Share of global production by region, 2024



- China is the **largest refiner of 19 out of 20 key energy-related critical minerals**, holding an average market share of around 70%¹³
- A 1-month halt in Chinese battery supply chain exports would lead to a **loss in output of US\$ 17 bn** from EV factories globally¹²

Domestically, China's drive for clean energy and electrification has brought economic benefits, but at a significant cost

Low carbon sectors accounted for 10% of Chinese GDP growth in 2024¹⁴
Clean energy contribution to Chinese GDP, US\$ tn^e



- According to the IMF, the **fiscal cost of energy-related industrial policies in China exceeded 4% of its GDP in 2021**¹⁵
- Solar PV manufacturing capacity is 3x larger than domestic demand and is set to exceed global needs in the NZE^f by 65% in 2030**^{16,17}

From a geopolitical perspective, the Chinese clean energy model presents new opportunities and trade-offs



Clean energy gains competitiveness – China's scale-driven model has contributed to lowering global costs (e.g., average battery prices fell 13% in 2025¹⁸), accelerating deployment, technology diffusion, and investment



Replication remains challenging – a unique mix of long-term planning, coordinated industrial policy, ample financing, a large domestic market, and cost advantages has allowed China to dominate low carbon manufacturing



New dependencies may emerge – while clean energy reduces dependence on imported fuels, China's central role in supply chains may shift international exposure toward concentrated production of critical inputs



China's coordinated effort to develop low carbon supply chains has put it on track to **lead manufacturing and innovation in the emerging global energy system**. Nevertheless, it has only been able to achieve so due to its **unique political and economic structure**, which cannot be replicated in most market-oriented democracies. System constraints from clean power expansion also persist, including curtailment, grid integration challenges, and rising storage needs. Therefore, as geopolitical tensions rise and countries seek to reduce fossil fuel dependency, China is strategically positioned, but **recognizing its trade-offs and emerging energy security risks remains crucial**

^a GHG = greenhouse gases; ^b Primary energy comprises commercially-traded fuels, including modern renewables used to generate electricity; ^c RoW = Rest of the World; ^d MER = market exchange rate; ^e Converted to billion dollars, using annual not seasonally adjusted exchange rate, available on Chinese Yuan Renminbi to U.S. Dollar Spot Exchange Rate (FRED); ^f NZE = Net Zero Scenario

1 / Eurasia. Top Risks of 2026. 2026; 2 / Energy Institute. Statistical Review of World Energy. 2025; 3 / UNEP. Emissions Gap Report. 2025; 4 / CGEP. China's Oil Demand, Imports and Supply Security. 2025; 5 / IEA. China - Oil - Countries & Regions. 2023; 6 / IEA. World Energy Investment. 2025; 7 / IEA. Electricity 2026. 2026; 8 / IEA. Global EV Outlook 2025. 2025; 9 / Ember. Global Electricity Review 2026. 2026; 10 / Carbon Brief. 'Rush' for new coal in China hits record high in 2025 as climate deadline looms. 2026; 11 / IEA. Global Energy Review. 2026; 12 / IEA. Energy Technology Perspectives 2026. 2026; 13 / IEA. Global Critical Minerals Outlook 2025. 2025; 14 / CREA. Analysis: Clean energy contributed a record 10% of China's GDP in 2024. 2025; 15 / IMF. World Economic Outlook Chapter 3: Industrial Policy: Managing Trade-Offs to Promote Growth and Resilience. 2025; 16 / IEA. Energy Technology Perspectives 2026. 2026; 17 / Ember. China Energy Transition Review. 2025; 18 / BNEF. New Record Lows for Battery Prices. 2025