

China's Expanding Role in Electrification: Infrastructure, Innovation and the Evolution of NQGETS

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The latest reconstitution of the Nasdaq Global Electrification Technologies and Smart Grid Index™ (NQGETS™) significantly increases the index's exposure to China, with the weight of Chinese companies rising from approximately 3% to 22%¹. The increase follows the adoption of a new base universe, under which eligible securities must be constituents of the Nasdaq Global Disruptive Technology Benchmark2™ Index (NYDTB2™) as of the reconstitution effective date.²

As a result, Chinese companies now represent a larger share of the index, reflecting the country's importance across key electrification and smart grid technologies.

Beyond Generation: China's Next Phase of Electrification

China's growing importance within the electrification value chain is underpinned by the scale of its investments in electricity infrastructure. According to the IEA, clean energy investment in China exceeded USD 625 billion in 2024 - almost double the level recorded in 2015. This rapid expansion enabled the country to achieve its 2030 wind and solar capacity target six years ahead of schedule, highlighting the extraordinary scale of renewable deployment across the economy. However, the next phase of China's energy transition is increasingly focused on the infrastructure required to support renewable generation rather than on generation capacity alone.³

China's commitment to expanding and modernizing its electricity grid is evident in both the scale of its investment and the deployment of next-generation transmission infrastructure. In 2025, State Grid announced a record RMB 650 billion (USD 89 billion) investment program focused on grid upgrades, transmission networks, and renewable energy integration, while the IEA expects total grid investment in China to reach approximately USD 140 billion in 2026.⁴

¹Data based on EOD weights as of June 30, 2026 and on proforma weights as of July 20, 2026

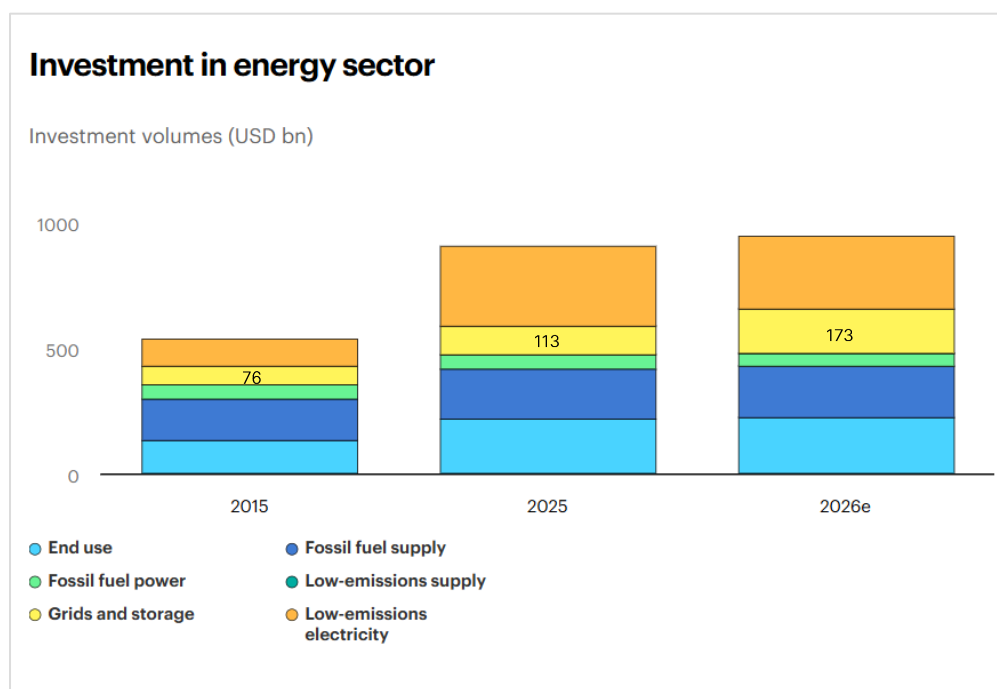
² Previous methodology: a security was eligible if it was either included in the Nasdaq Global™ Index (NQGI™) or listed on a Nasdaq, NYSE, or Cboe exchange. New methodology: a security must be included in the Nasdaq Global Disruptive Technology Benchmark2™ Index (NYDTB2™) as of the Reconstitution Effective Date. Securities eligible for inclusion in NYDTB2 include those that are constituents of the Nasdaq Global™ Index (NQGI™), listed on a Nasdaq, NYSE, or Cboe exchange, or are China A-Shares available through the Shanghai-Hong Kong or Shenzhen-Hong Kong Stock Connect programs.

³ <https://www.iea.org/reports/world-energy-investment-2025/china>

⁴ <https://www.iea.org/reports/world-energy-investment-2026/regional-dashboards?region=China>

<https://www.reuters.com/business/energy/chinas-state-grid-outlays-record-887-bln-investment-2025-2025-01-15/>

The expansion and modernization of transmission and distribution networks are becoming critical as China seeks to accommodate the vast amounts of renewable capacity added in recent years. Stronger grid infrastructure is also essential for supporting the electrification of transportation, industry, and buildings, while enhancing the reliability and security of the country's energy system. As electricity demand continues to grow, modernized grids will play an increasingly important role in ensuring power can be transmitted, distributed, and balanced efficiently across the economy.



A key pillar of this strategy is the expansion of China's ultra-high-voltage (UHV) transmission network, which transports electricity from renewable-rich western regions to major demand centers in the east. By late 2025, China had 45 UHV transmission projects in operation and more than 40,000 km of UHV direct-current lines. State Grid plans to commission a further 15 lines between 2026 and 2030. According to the company, the new infrastructure is expected to support the integration of approximately 200 GWh of renewable electricity annually while increasing cross-provincial power transmission capacity by 35%.

Recent projects illustrate the scale of this buildout. The Longdong–Shandong UHV corridor, commissioned in 2025, is designed to transmit 36 TWh of electricity annually, with more than half sourced from clean energy. Similarly, the Ningxia–Hunan UHV line, which entered operation in October 2025, is expected to deliver more than 36 TWh per year from large-scale wind and solar bases, with at least 50% of the electricity generated from renewable sources.⁵

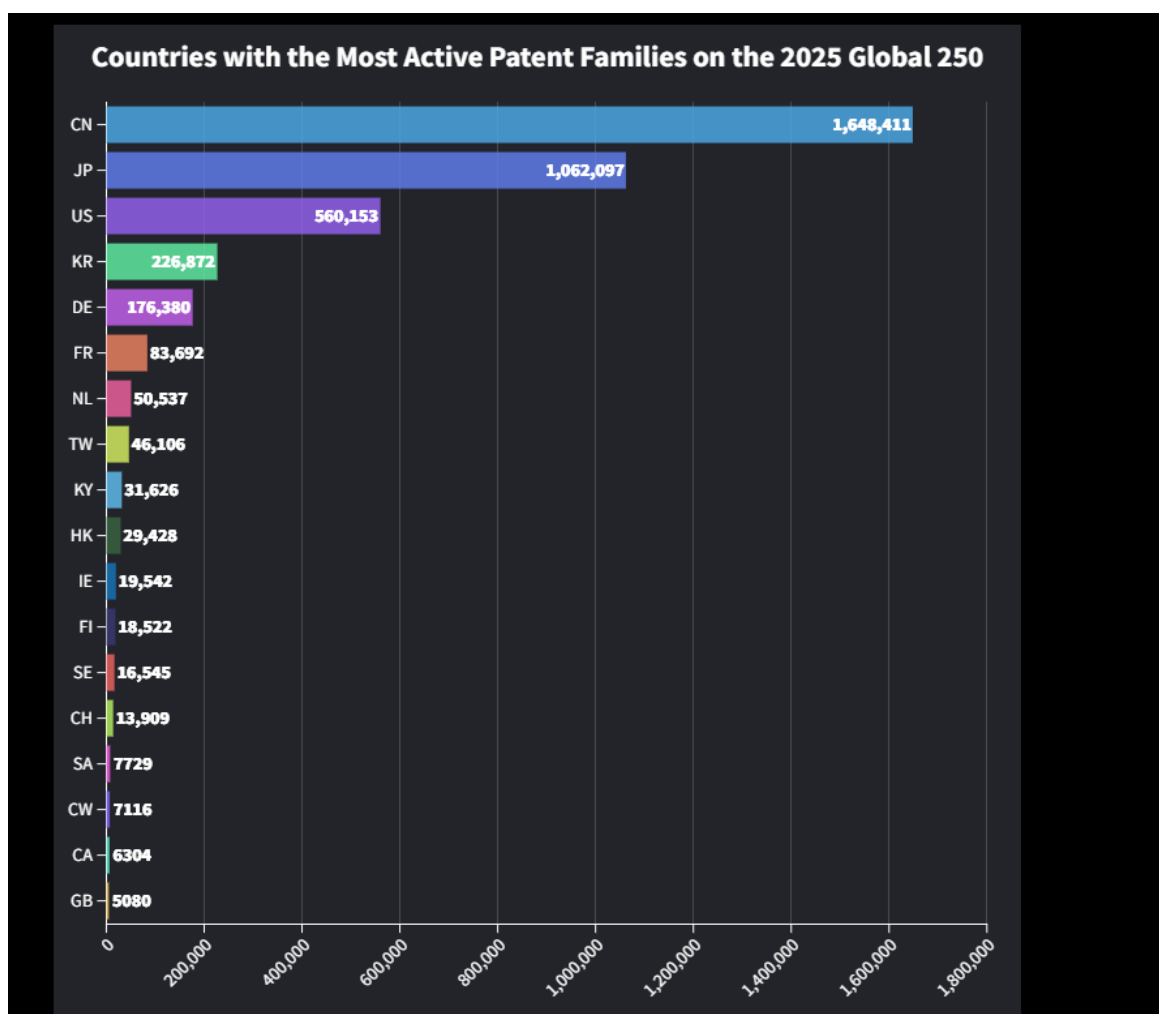
⁵ <https://www.reuters.com/business/energy/china-build-15-more-ultra-high-voltage-power-lines-over-next-five-years-2026-03-03/>
<https://en.people.cn/n3/2025/1030/c90000-20383967.html>

Several companies involved in China's ultra-high-voltage (UHV) transmission buildout are represented in the index, including TBEA, a major supplier of UHV transformers and transmission equipment; NARI Technology, which provides protection, control and automation systems for UHV projects; and XJ Electric, a supplier of converter valves and control systems used in UHVDC transmission networks.⁶

China's Rise as a Global Leader in Electricity-Grid Innovation

China has become one of the most dynamic centers of electricity-grid innovation globally, combining large-scale infrastructure deployment with rapidly growing technological leadership.

Before examining China's role in electricity-grid innovation, it is worth considering the country's broader position within the global innovation landscape. Patent data suggests that China has become one of the world's most significant innovation ecosystems.

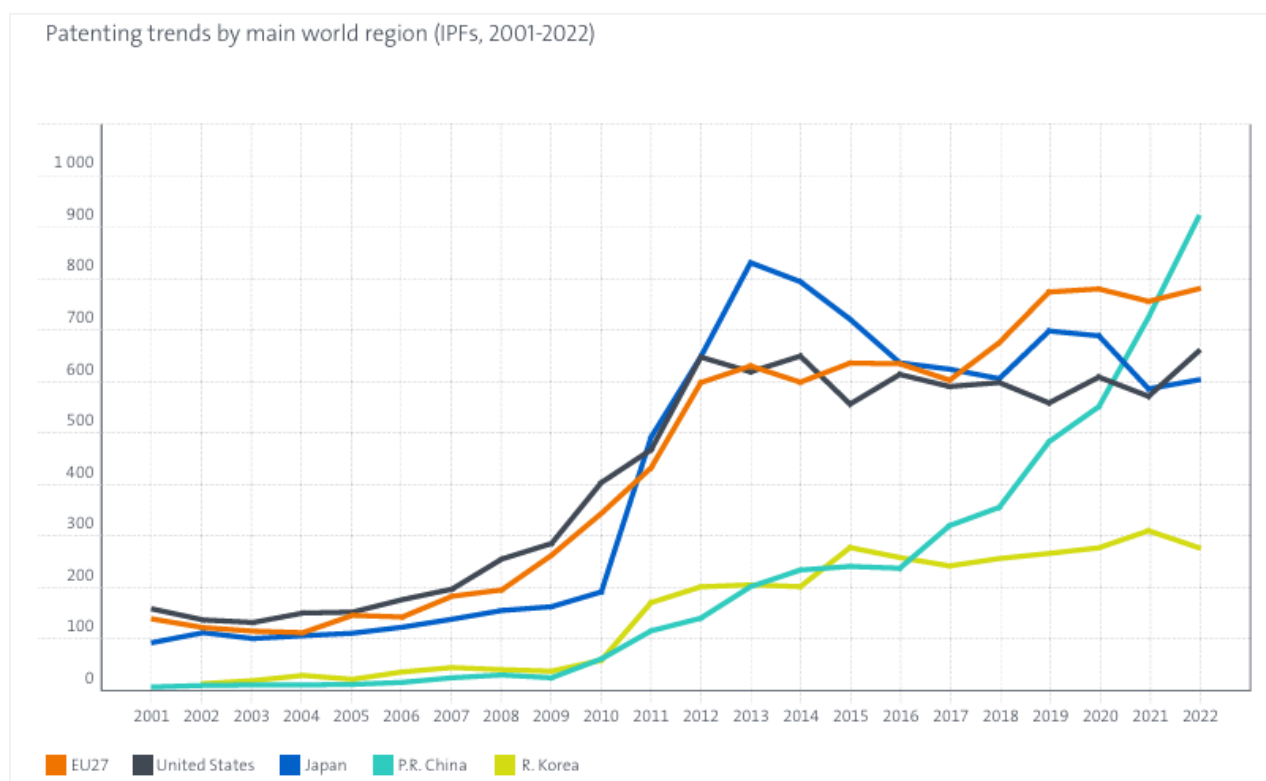


Source: IFI Claims

⁶ https://en.tbea.com/solution_detail/13.html
<https://www.xuchang.gov.cn/English/20260205/8b5692a0-f867-4aa3-a29e-2fcc09f3dab.html>
https://www.pfannenbergl.com/fileadmin/Redakteur/Subsites/Files_Know-How/Files_Case_Studies/Case_Study_NARI_EN.pdf

In IFI CLAIMS' 2025 Global 250 ranking, Chinese organizations hold seven of the ten largest active patent portfolios worldwide and collectively account for 41% of the active patent families represented in the ranking. While Japan has a slightly larger number of companies in the Global 250, China's much larger share of patent families reflects the scale at which its corporations and research institutions are developing and protecting new technologies.⁷ This broader innovation ecosystem has increasingly translated into leadership across strategic infrastructure technologies, including electricity networks and smart-grid systems.

A joint 2024 study from the International Energy Agency (IEA) and the European Patent Office (EPO) provides further evidence of China's growing role in electricity-grid innovation. The study tracks International Patent Families (IPFs), a commonly used measure of higher-value inventions that are protected across multiple jurisdictions, rather than domestic patent filings alone. While Europe, Japan and the United States led the first wave of grid innovation during the early 2010s, China has emerged as the main driver of growth in recent years. According to the EPO-IEA report, China's share of global grid-related patent applications increased from 7% in 2013 to 25% in 2022, allowing it to surpass the European Union and rank among the world's largest source of grid-related patent filings in 2022.⁸



Source: EPO

⁷ <https://www.ificlaims.com/rankings/global-250-2025/>
<https://www.ificlaims.com/rankings/2025-global-trends-insights/>

⁸ <https://iea.blob.core.windows.net/assets/a1d20b0d-fd3f-442f-8067-6e5ac6c93521/PatentsforEnhancedElectricityGrids.pdf>

China's growing role is particularly evident in digital grid technologies. According to the EPO-IEA study, grid-related AI patenting increased by more than 500% during the five years to 2022, making it the fastest-growing enabling technology within electricity networks. China and the United States emerged as the two leading innovation centers in this area, accounting for 23% and 24% of AI-related international patent families, respectively. Much of this activity is focused on forecasting, decision-making, microgrids and outage management, reflecting the increasing importance of software and data-driven technologies in modern electricity systems.⁹

Broader clean-energy patent data reinforces this picture. Ember's China Energy Transition Review 2025, based on IRENA's INSPIRE database, reports that Chinese entities accounted for approximately 75% of global clean-energy patent applications in 2022, up from just 5% in 2000. The concentration is particularly high in the technologies most closely tied to the electricity transition: China now files around 90% of global patent applications in solar and wind, 85% in energy storage, and more than 70% in batteries and electromobility.¹⁰

A recent example of innovation in clean energy is U.S. Patent No. 12,651,909, granted in June 2026 to Sungrow Power Supply, one of the world's largest solar inverter manufacturers. The patent covers a new design for solar inverters - the devices that convert electricity from solar panels into a form usable by the grid. Sungrow's design combines two functions that traditionally required separate hardware: protecting solar panels from long-term degradation and continuously monitoring the system's electrical safety. By integrating both into a single circuit, the new design reduces hardware cost, simplifies installation, and improves compliance with international safety standards. It is a good example of the type of incremental engineering progress that is helping to make solar power cheaper, safer, and more reliable as it takes a larger share of the electricity mix.¹¹

China Is Rising, but Europe, the U.S., and Japan Remain Grid-Innovation Leaders

While China's rise has attracted considerable attention, the patent data suggests that Europe remains a leading force in electricity-grid innovation. According to the IEA's Patents for Enhanced Electricity Grids report, between 2011 and 2022 the EU accounted for 22% of all grid-related patent families, matching Japan and ahead of the U.S. (20%) and China (12%).

This leadership is clearly reflected at the corporate level. European companies dominate the top of the global ranking of grid-technology patent applicants, with ABB and Schneider Electric both featuring among the top 15 worldwide.¹²

These innovation trends are also reflected in the composition of the Nasdaq Global Electrification Technologies and Smart Grid Index, which provides exposure to companies that combine strong intellectual-property portfolios with established positions in key electrification markets. For example, GE Vernova continues to benefit from strong demand for grid infrastructure, reporting a \$163 billion backlog in Q1 2026, while its Electrification segment recorded \$7.1 billion of orders (+86% YoY).¹³

⁹ <https://iea.blob.core.windows.net/assets/a1d20b0d-fd3f-442f-8067-6e5ac6c93521/PatentsforEnhancedElectricityGrids.pdf>

¹⁰ <https://ember-energy.org/app/uploads/2025/09/China-Energy-Transition-Review-2025.pdf>

¹¹ <https://patents.justia.com/patent/12651909>

¹² <https://iea.blob.core.windows.net/assets/a1d20b0d-fd3f-442f-8067-6e5ac6c93521/PatentsforEnhancedElectricityGrids.pdf>

¹³ https://www.gevernova.com/sites/default/files/gev_webcast_transcript_04222026.pdf

Conclusion

China's increased representation within NQGETS reflects the country's growing importance across the electrification value chain, from transmission infrastructure and grid modernization to power electronics, energy storage and digital-grid technologies. Supported by large-scale investment and an increasingly active innovation ecosystem, Chinese companies are playing an expanding role in the development of next-generation electricity networks.

At the same time, the electrification opportunity remains global. Europe, the U.S., and Japan continue to be home to many of the world's leading innovators in grid technologies, highlighting the breadth of the ecosystem represented within NQGETS. As electricity demand continues to rise and power systems become more complex, the companies enabling a smarter, more resilient and increasingly electrified energy system may continue to be monitored by market participants.

This dynamic has been reflected in NQGETS performance, with the index gaining 49.42% total return as of June 30, 2026.¹⁴

¹⁴ YTD as of June 30, 2026. Bloomberg

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