DECEMBER 2025

CHINA ENERGY POLICY

NEWSLETTER

China Energy Transformation Programme

1. China energy transition updates

State Council releases white paper *Carbon Peaking and Carbon Neutrality China's Plans and Solutions*

In November 2025, the State Council Information Office officially released the white paper *Carbon Peaking and Carbon Neutrality China's Plans and Solutions* (CHN:《碳达峰碳中和的中国行动》白皮书).[1] The *White Paper* is a systematic summary of China's work over the past five years in addressing climate change and promoting green and low-carbon development, comprehensively elaborating on the strategic deployment, specific actions, and significant achievements in achieving the dual carbon goals. The *White Paper* highlights that energy consumption is the primary source of carbon emissions, while a green and low-carbon energy transition is crucial to achieving the goals of peak carbon dioxide emissions and carbon neutrality. Proceeding from its basic reality and development stage and conditional on ensuring energy security, China has taken vigorous measures to substitute renewables for fossil fuels and promoted a new energy and power system. This provides strong support for achieving the dual carbon goals.

Regarding key pathways to carbon emission reduction, energy conservation is key to reducing carbon emissions at source; the circular economy plays a crucial role in facilitating their reduction; and improving the carbon sink capacity of ecosystems is a vital path for emission reduction and carbon sequestration. China has yielded positive outcomes in its actions for saving energy, reducing carbon dioxide emissions, and improving efficiency; for facilitating further emission reductions through the circular economy; and for consolidating and improving carbon sink capacity.

[1] "国务院新闻办公室发布《碳达峰碳中和的中国行动》白皮书（附全文）," Ministry of Ecology and Environment, 8 November 2024, accessed at https://www.mee.gov.cn/ywgz/ydqhbh/qhbhlf/202511/t20251108_1132414.shtml; "Full text: Carbon Peaking and Carbon Neutrality China's Plans and Solutions," Xinhua News Agency, 8 November 2025, accessed at https://english.www.gov.cn/archive/whitepaper/202511/08/content_WS690ee812c6d00ca5f9a076cd.html.

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MEE releases 2024 data set of power carbon footprint factors

The Ministry of Ecology and Environment (MEE), the National Bureau of Statistics (NBS), and the National Energy Administration (NEA) jointly issued the *Announcement on the Release of 2024 Power Carbon Footprint Factor Data* (CHN: 关于发布2024年电力碳足迹因子数据的公告). This is the second time the Chinese government has released data on the carbon footprint factors of the power sector. The power carbon footprint factor refers to the life-cycle carbon emissions associated with electricity consumption; that is, it includes not only power generation but also raw material acquisition, equipment acquisition, construction engineering, and decommissioning and disposal. This is the basis for calculating the carbon footprint of various mid- and downstream products. The calculation method and data for the 2024 power carbon footprint factors are consistent with those for 2023, but compared to the *2023 Version*, the *2024 Version* adds carbon footprint emission factor data for power transmission and distribution (including line losses).[2]

National power carbon footprint factors in 2023 and 2024（kgCO2e/kWh）

	2024	2023
Average power carbon footprint factor	0.5777	0.6205
Power carbon footprint factors by power generation technology		
▪ Coal	0.9240	0.9440
▪ Gas	0.4503	0.4792
▪ Nuclear	0.0141	0.0065
▪ Hydro	0.0065	0.0143
▪ Wind	0.0324	0.0336
▪ Solar PV	0.0520	0.0545
▪ CSP	0.0312	0.0313
▪ Biomass	0.0404	0.0457
Power transmission and distribution (excluding line losses)	0.0046	0.0036
Power transmission and distribution (including line losses)	0.0327	-

Source: Ministry of Ecology and Environment (MEE), accessed in December 2025

MEE releases *China's Annual Report on Climate Change 2025*

In November 2024, the MEE released *China's Policies and Actions on Climate Change 2025 Annual Report* (CHN: 中国应对气候变化的政策与行动2025年度报告), summarising China's major achievements in addressing climate change in 2024 and reviewing new deployments and policy actions.[3] At the strategic deployment level, in September 2025, the Chinese government announced its Nationally Determined Contribution (NDC) target for 2035. This is the first time China has proposed absolute emission-reduction targets covering the entire economy and all greenhouse gases. At the legal and regulatory level, the government promulgated the *Energy Law of the People's Republic of China* (CHN: 中华人民共和国能源法), establishing a system for a green and low-carbon energy transition, and implemented the *Regulations on Ecological Protection Compensation* (CHN: 生态环保补偿条例), strengthening and standardising ecological protection compensation work. Meanwhile, positive progress has been made in the construction of the carbon emission system.

- National ETS: For the first time, China has included the steel, cement, and aluminium smelting industries in its national carbon market (ETS), covering over 60% of the country's total CO_2 emissions. The range of greenhouse gases covered has been expanded to include CO_2, carbon tetrafluoride (CF_4), and carbon perfluoroethane (C_2F_6).
- CCER: China has restarted its national market of China Certified Emission Reduction (CCER), which, together with the national ETS, constitutes its carbon market system, forming a dual-engine structure.

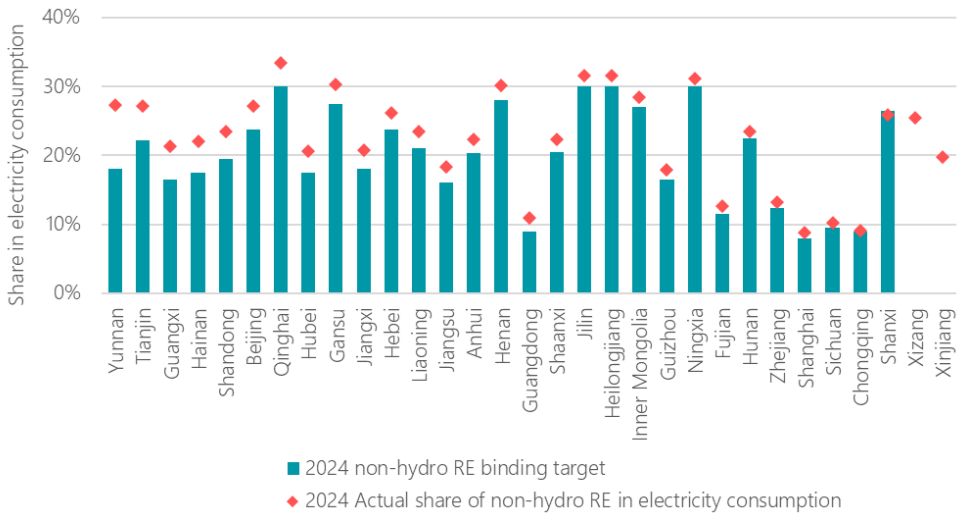
[2] "关于发布2024年电力碳足迹因子数据的公告, 公告 2025年 第19号" Ministry of Ecology and Environment, National Statistics Bureau, National Energy Administration, 28 September 2025, accessed at https://www.mee.gov.cn/xxgk2018/xxgk/xxgk01/202510/t20251024_1130734.html.
[3] "生态环境部发布《中国应对气候变化的政策与行动2025年度报告》," Ministry of Ecology and Environment, 29 October 2025, accessed at https://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202510/t20251029_1130962.shtml.

- Carbon measurement: The government issued the *Notice on the Action Plan for Further Strengthening the Construction of the Carbon Peak and Carbon Neutrality Standard Measurement System (2024-2025)* (CHN: 关于进一步强化碳达峰碳中和标准计量体系建设行动方案（2024—2025年）的通知) and the *Guidance Catalogue for Carbon Emission Measurement Capacity Building (2024 Edition)* (CHN: 碳排放计量能力建设指导目录（2024版）), promoting the improvement of carbon measurement capabilities.
- Carbon accounting: Officially launching the *National Greenhouse Gas Emission Factor Database*, establishing a mechanism for regularly releasing power system carbon emission factors; releasing the electricity carbon footprint factor, providing a vital data foundation for product carbon footprint accounting.

2024 Renewable power consumption status published

The NEA released the *2024 Renewable Energy Power Monitoring and Evaluation Report* (CHN:2024年可再生能源电力监测评价报告), which summarises the development of renewable power in China in 2024.[4] In 2024, renewable energy accounted for 35.2% of national electricity consumption, an increase of 3.2 percentage points (pp) year-on-year. Of the 29 provinces assessed (Xizang and Xinjiang were exempt), 26 met their binding targets. Hubei, Chongqing, and Shanxi failed to meet, falling short by 3 pp, 1.9 pp, and 0.3 pp, respectively. Non-hydro renewable energy accounted for 20.8% of national electricity consumption, up 2.7 pp year-on-year. Only Shanxi failed to meet its binding target (falling short by 0.6 pp), while Yunnan and Tianjin exceeded their targets by 9.2 pp and 5 pp, respectively.

Completion status of non-hydro renewable power consumption by province in 2024



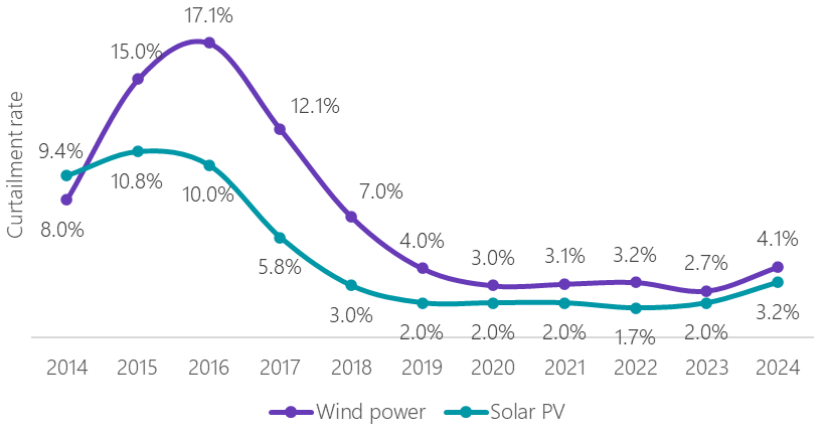
Source: National Energy Administration (NEA), December 2025

Wind and solar curtailment rates show an upward trend in 2024

The report also released data on renewable power utilisation rates, wind and solar PV full-load hours, and the share of renewable energy in ultra-high-voltage (UHV) power transmission lines. In 2024, the national average wind power utilisation rate was 95.9% (i.e., 4.1% of wind curtailment), a decrease of 1.4 pp year-on-year. By province, Xizang had the lowest wind power utilisation rate at 83%; Hebei, Qinghai, Xinjiang, Jilin, Inner Mongolia, Shaanxi, and Gansu were all below 95%. Xizang (-17 pp), Heilongjiang (-3.4 pp), Eastern Inner Mongolia (-2.7 pp), and Liaoning (-2.7 pp) recorded the largest declines. The national average solar PV utilisation rate was 96.8% (i.e., 3.2% of solar curtailment), a decrease of 1.1 pp year-on-year. By province, Xizang had the lowest solar PV utilisation rate at 68.6%; Qinghai, Gansu, Xinjiang, Western Inner Mongolia, and Shaanxi all had rates below 95%. As the share of wind and solar power generation gradually approaches 20%, curtailment of both is on the rise. By the end of 2024, 20 DC UHV lines have been built in China, with annual renewable power transmission increasing by 22.2% year-on-year, accounting for 56.8%. Among them, the share of renewable power transmission in the 16 DC UHV lines operated by the State Grid was 56.8%, and that of the Southern Grid was 100%.

[4] "国家能源局关于印发2024年度全国可再生能源电力发展监测评价结果的通知, 国能发新能〔2025〕92号," National Energy Administration, 28 October 2025, accessed at https://www.nea.gov.cn/20251113/cc1fb0298a2944f8bd5441f67c9be9b3/c.html.

Wind and solar curtailment rates from 2014 to 2024



Source: NEA, accessed in December 2025

NEA will promote new energy integrated development

Integrated development of new energy refers to the multi-dimensional integrated development of new energy sources, synergistic development of new energy with multiple industries, and new energy non-electric utilisation, aiming to enhance the reliable substitution capacity of new energy power generation, expand non-electric utilisation pathways, and improve the autonomy and market competitiveness of new energy. Compared with traditional new energy projects, the integrated development model requires complementarity of multiple energy sources, the integration of upstream and downstream industrial chains, and the synergy between production and consumption, to achieve an optimal development pattern.[5]

Integrated multi-dimensional development of new energy	▪ New energy bases in desert and Gobi areas: Develop CSP and molten-salt energy storage as key flexible resources, reasonably control supportive coal power capacity, and explore on-site coupling of coal power and green ammonia co-generation. ▪ Integrated hydro-wind-solar power bases: Leverage hydropower's fast reaction feature in power system regulation and construct pumped hydro and new-type energy storage systems. ▪ Utility-scale new energy projects: Guide siting toward desert areas, subsidence zones in mining regions, and offshore areas; encourage co-development of wind power and solar PV projects; promote clustered, intensive development of offshore wind power plants. ▪ Distributed new energy projects: Deepen integration with transport, buildings, rural areas, islands, and other end-use scenarios.
Coordinated development of new energy and multiple industries	▪ Green manufacturing: Advance green retrofit of raw-material extraction, processing, key component manufacturing, and production processes for the new energy industry. ▪ New energy industrial parks: Construct point-to-point green power supply projects, generation-grid-load-storage integrated projects and zero-carbon parks. ▪ Optimal spatial layout for new energy and traditional Industries: Guide energy-intensive industries to relocate toward regions with abundant new energy resources and strong environmental carrying capacity, to achieve lower energy costs, reduced carbon footprints, and higher renewable energy consumption efficiency. ▪ Synergistic development between new energy and emerging industries: Coordinate planning of new energy bases and computing power facilities; promote data centre clusters near offshore wind

[5] "国家能源局关于促进新能源集成融合发展的指导意见, 国能发新能〔2025〕93号," National Energy Administration, 31 October 2025, accessed at https://www.nea.gov.cn/20251112/79210278a3184efea9ccf2d546fdf1b7/c.html; "国家能源局有关负责同志就《关于促进新能源集成融合发展的指导意见》答记者问," National Energy Administration, 12 November 2025, accessed at https://mp.weixin.qq.com/s/YiOu8shfNa9bW6YZgZ7Ctw?poc_token=HLQ3MmmjmLa0XevU1WWeYSgQ3trIYmFP6lVoz_xe; "专家解读丨以集成融合引领发展理念和范式转型 立体多维打造新能源发展升级版," National Energy Administration, 12 November 2025, accessed at https://mp.weixin.qq.com/s/sjkBy3kH0Grdhh2R9D_A-g.

	bases; facilitate coordinated and cluster-based development of new materials, high-end equipment manufacturing, and energy-saving and environmental-protection industries with the new energy sector.
Diversified non-power utilisation of new energy	▪ Wind-solar-hydrogen-storage integration: Develop integrated systems that combine renewable power generation with hydrogen facilities; enhance coordinated control and self-balancing capabilities; and promote green hydrogen production under weak-grid connection or off-grid conditions. ▪ Hydrogen-based energy bases: Plan green hydrogen, ammonia, and methanol industries and related transport infrastructure; scale up hydrogen production in wind-solar-hydro bases; promote hydrogen-based energy applications in coal-chemical industry, metallurgy, and maritime transport sectors. ▪ New energy heating: Explore electric heating, heat pumps, PV-CSP integrated systems, and the cascade utilisation of geothermal energy to enhance the flexibility of heating systems.

China's first green hydrogen-coal chemical coupling project enters commercial operation

In November 2025, the Duolun 150 MW wind-solar-storage-hydrogen integrated demonstration project in Inner Mongolia commenced commercial operation. This is China's first project deeply integrating green hydrogen production with the coal chemical industry, with a total investment of RMB 1.3 billion, and is being invested in and constructed by China Datang Corporation Ltd. The project's power system includes a 120 MW wind farm, a 30 MW solar PV station, and a 22.5 MW/45 MWh energy storage facility. The hydrogen production system consists of twelve 1,000 Nm^3 alkaline electrolysers and a 2,000 Nm^3 alkaline electrolyser. The entire system has an annual power generation capacity of 400 GWh and a hydrogen production capacity of 70.59 million Nm^3/year. The produced hydrogen is directly supplied to the methanol synthesis unit of a local coal chemical plant via a dedicated pipeline, which is expected to replace 20% of the hydrogen demand and reduce carbon dioxide emissions by 138,800 tonnes annually.

The project adopts a "green hydrogen production + surplus electricity to the grid" operation mode. When wind and solar have a big output, the electricity is generated first to produce hydrogen and charge energy storage; the surplus amount is sold to the grid. When wind and solar output are insufficient, the energy storage system begins discharging to maintain continuous hydrogen production.[6]

China's offshore wind turbine unit capacity reaches 26 MW

At the end of October 2025, a 26 MW offshore wind turbine independently developed by China's Dongfang Electric Corporation was connected to the grid in Dongying, Shandong Province. This is currently the world's largest single-unit capacity offshore wind turbine. The turbine's diameter exceeds 310 meters, and its swept area is equivalent to 10.5 standard football fields. Under full-load operation, each turbine can generate 62 kWh of electricity per rotation. With an average wind speed of 10 m/s, the annual power generation can reach 100 GWh, meeting the power demand of 55,000 households. It will save 30,000 tce of energy consumption and reduce CO_2 emissions by 80,000 tons annually.

The wind power equipment testing and certification innovation base, where the turbine is located, began operations in May of this year. The base, located in the coastal area of Dongying, Shandong Province, has planned and constructed 12 high-power wind turbine testing sites and supporting infrastructure, forming a complete wind power testing and inspection system. Currently, five Chinese wind turbine manufacturers and four testing institutions have settled in. This base will effectively shorten the certification cycle of offshore wind turbines and reduce the R&D costs for enterprises.[7]

[6] "国内首个！绿氢耦合煤化工开启新篇章," China Chemical Industry News, 24 November 2025, accessed at https://baijiahao.baidu.com/s?id=1849656372761191831&wfr=spider&for=pc; "多伦大唐15万千瓦风光制氢一体化示范项目," baike.baidu.com, accessed at https://baike.baidu.com/item/%E5%A4%9A%E4%BC%A6%E5%A4%A7%E5%94%9015%E4%B8%87%E5%8D%83%E7%93%A6%E9%A3%8E%E5%85%89%E5%88%B6%E6%B0%A2%E4%B8%80%E4%BD%93%E5%8C%96%E7%A4%BA%E8%8C%83%E9%A1%B9%E7%9B%AE/65328705.

[7] "全球最大！26兆瓦级海上风电机组在山东并网发电," Xinhua News Agency, 31 October 2025, accessed at https://www.xinhuanet.com/politics/20251031/5621d06b121d414e9fe0f7da4de286b3/c.html.

2. Policy monitoring

2025-11-21

https://zfxxgk.ndrc.gov.cn/web/iteminfo.jsp?id=20567

NDRC revises power transmission tariff pricing method

Notice on Issuing the Measures for Cost Supervision of Transmission and Distribution Pricing, the Measures for Provincial Power Grid Transmission and Distribution Pricing, the Measures for Regional Power Grid Transmission Pricing, and the Measures for Transmission Pricing of Inter-provincial and Inter-regional Special Projects, NDRC Pricing Regulations [2025] No. 1490

The government has revised the pricing rules for power transmission tariffs for provincial grids, regional grids, and inter-provincial specific transmission projects, clarifying that transmission tariffs are still determined by the principle of "permitted cost + reasonable profit." Costs of pumped hydro power plants, new-type energy storage stations, and power plants belonging to the power grid (e.g., power generation, fuel costs, and maintenance fees) are not included. For provincial grid transmission tariffs, fixed asset revenues unrelated to power transmission, such as pumped hydro, new-type energy storage, and power generation stations, and ancillary services like electric vehicle charging and swapping, are not accounted in the "reasonable profit" calculation. Regional power grid transmission tariffs are the prices for sharing transmission grids and providing reliable services within the regional power grid's operating area. The tariff should be determined through rigorous cost audits to encourage the power grid to strengthen management and reduce costs. Currently, inter-provincial specific transmission projects adopt a single electricity tariff for power transmission. For projects primarily transmitting clean energy or for interconnection, a two-part tariff (i.e., capacity tariff + electricity tariff) or a single capacity tariff can be explored.

2025-11-02

https://www.forestry.gov.cn/lyj/1/szxx/20251108/648549.html

The State Council proposes suggestions for large-scale application in new scenarios

Implementation Opinions on Accelerating the Cultivation and Opening of Scenarios and Promoting the Large-Scale Application of New Scenarios, State Council General Office Development [2025] No.37

In the clean energy sector, the State Council calls for promoting the large-scale application of clean energy in railways, public transport, sanitation, heavy trucks, agricultural machinery, and logistics; constructing clean energy vehicle transportation corridors and deploying energy supply stations, to create new scenarios for the entire clean energy industry chain. It also aims to promote a clean, low-carbon transition in the energy industry. It advocates innovative scenarios, including digital and intelligent energy production, operation, and management, smart grids, point-to-point green power supply, virtual power plants, and vehicle-to-grid interaction, while advancing the establishment of international standards and certification mechanisms for green energy.

2025-10-29

https://www.ndrc.gov.cn/xxgk/zcfb/tz/202511/t20251110_1401469.html

NDRC sets 2035 targets for new energy consumption and regulation

Guiding Opinions on Promoting the Consumption and Regulation of New Energy, NDRC Energy [2025] No. 1360

By 2030, the new power system's adaptability aims to be significantly enhanced, ensuring continuous grid integration, diversified utilisation and efficient operation of new energy sources. Incremental power demand will be primarily met by incremental new energy power generation with smoother inter-regional transactions. This will accommodate the annual consumption requirements of above 200 GW of new energy capacity. By 2035, a new power system adapted to high-share renewable energy will be established. The national unified power market system will play a foundational role, enabling the optimised allocation and efficient integration of new energy across the country.

2025-10-28

https://www.nea.gov.cn/20251107/8b990f43dc774fc88c643614205e383d/c.html

NEA encourages new energy-coal integrated development

Guiding Opinions on Promoting the Integrated Development of Coal and New Energy, NEA Development of Coal [2025] No. 89

By the end of the *15th Five-Year Plan* period (2030), China aims to establish a mature development model for solar PV and wind power in coal-mining areas, significantly increase the level of electrification and new energy penetration, and build several clean and low-carbon mining zones. Key tasks include: 1) Accelerating the development of solar PV and wind power projects in mining areas, especially new models that combine solar PV with crop cultivation, animal husbandry, and aquaculture. 2) Promoting electrification in coal production processes, including charging and battery-swap stations, hydrogen refuelling stations, and integrated PV-storage-charging facilities. 3) Advancing renewable energy-based heating and cooling systems in mining areas, such as large-scale geothermal heating and distributed solar heating systems. 4) Enhancing point-to-point green power supply projects and energy-saving and carbon emission reduction retrofits in mining areas, developing several low-carbon and zero-carbon industrial parks. 5) Supporting coal enterprises in expanding investment in clean and efficient coal power and new energy industries, and in developing innovative products such as carbon-based speciality fuels and coal-based biodegradable materials.

2025-09-02

https://www.ndrc.gov.cn/xxgk/zcfb/tz/202509/t20250912_1400454.html

NDRC releases guidelines for the continuous operation of spot power markets

Notice on Issuing the Guidelines for the Construction of Electricity Markets in Regions with Continuous Electricity Spot Market Operation, NDRC Energy [2025] No.1171

The document sets out detailed requirements for the continuous operation of the spot power market, the ancillary services market, and the retail market. First, it calls for implementing new energy to fully participate in the market, adopting the "volume-and-price" bidding mechanism for emerging market entities, ensuring the continuous operation of D-2 medium- and long-term trading, and gradually aligning the price caps of short-period medium- and long-term contracts, such as monthly and intra-month contracts, with those of the spot power transactions. Second, it requires continuously increasing the variety of ancillary services, expanding market participation, and establishing a capacity price mechanism for various power sources to address fixed-cost recovery. Third, it calls for building a standardised and transparent retail market, enriching trading methods and improving cost transfer.