



● SEPTEMBER 2024

CHINA ENERGY POLICY NEWSLETTER

China Energy Transformation Programme

1. China energy transition updates

The government puts forward opinions on comprehensive green transformation of economic and social development

The CPC Central Committee and the State Council jointly issued the *Opinions on Accelerating the Comprehensive Green Transformation of Economic and Social Development* (CNH: 关于加快经济社会发展全面绿色转型的意见), which made deployment for the comprehensive green transformation of China's social and economic development and clarified the main goals and implementation paths. By 2030, China will witness the formation of a green production and lifestyle. The scale of the energy-saving and environmental protection industry will reach about 15 trillion RMB, the proportion of non-fossil fuel in primary energy consumption will increase to about 25%, the installed pumped storage capacity will exceed 120 GW, and the annual utilisation of bulk solid waste will reach 4.5 billion tons. Compared with 2020, the output rate of major resources¹ will increase by 45%, and the carbon emissions of the unit conversion turnover of business transport will decrease by 9.5%. By 2035, to establish a green, low-carbon and circular economic system, economic and social development will enter a green and low-carbon track in an all-round way. The document clarifies the following key tasks:

1. Establish a unified, clear, scientific, and efficient [national territorial spatial planning system](#), and improve the marine resource development and protection system
2. Create a new growth pole for [green and high-quality development](#)
3. Promote the [green upgrading of traditional industries](#), improve the capacity phase-out mechanism, and curb the blind commissioning of energy-intensive and emission-intensive projects
4. Build a [green manufacturing and service system](#), and accelerate the cultivation of competitive green enterprises
5. Promote the [construction of green digital infrastructure](#), such as cloudification
6. [Control fossil energy consumption](#), accelerate the energy saving, carbon emission reduction, and heating retrofit of coal-fired power units, and promote the construction of CCUS projects

¹ Output rate of major resources = GDP / physical consumption of major resources. Physical consumption of major resources = total production + imports - exports. Major resources include fossil energy, steel, nonferrous metals, non-metals, and biomass.

If you would like to subscribe to the newsletter, please send your full name, organisation and title to china@ens.dk



Danish Energy Agency



Norad

Norwegian Agency for Development Cooperation



CET
中国能源转型项目
CHINA ENERGY TRANSFORMATION PROGRAM



COLUMBIA | SIPA

Center on Global Energy Policy



中国宏观经济研究院
能源研究所
Energy Research Institute of Chinese
Academy of Macroeconomic Research

7. Promote the **construction of clean energy bases** and the development of the entire **hydrogen energy industry chain**
8. Improve the **regulation capacity of the power system**, accelerate the construction of pumped storage, microgrids, virtual power plants, and source-grid-load-storage integration projects, and deepen the **power market reform**
9. Build a number of **nearly-zero-carbon transportation infrastructures**, and vigorously promote new energy vehicles and zero-emission freight transportation
10. Promote **green transformation of urban and rural areas**, promote the large-scale development of ultra-low energy consumption buildings, and reduce the amount and increase the efficiency of agricultural products such as fertilisers and pesticides

China Energy Transformation White Paper (2024) released

The State Council released the *China Energy Transformation White Paper (2024)*², the fourth³ national-level white paper on China's energy policy. In 2014, the Chinese government proposed a new energy security strategy called "Four Revolutions and One Cooperation", namely promoting the energy consumption revolution, energy supply revolution, technological revolution, and institutional revolution, and strengthening international cooperation. The white paper summarises the practice and achievements of China's energy transformation under the guidance of the new strategy over the past decade. The main data summary can be found [here](#). Lyu Wenbin, director of the Energy Research Institute of China Macroeconomic Research Institute, interpreted the white paper (see the table below).

Energy consumption revolution

- Promote the transformation of energy consumption efficiency and electrification
- GDP per unit of energy consumption dropped by more than 26% from 2014 to 2023
- The electrification rate of end-use energy consumption reached 28% in 2023

Energy technology revolution

- Coordinated development of the energy industry chain and technological innovation
- Consolidate and extend advantageous industries. Emerging industries such as wind power, solar power, and new-type energy storage have established certain international competitive advantages
- Transform and upgrade traditional industries. Carry out clean and efficient use of coal, energy saving, carbon emission reduction, and heating retrofit of coal-fired power units, as well as the green transformation of oil and gas, so that conventional energy can play a supportive role in transitioning from the traditional energy system to the new energy system
- Accelerate the cultivation of future industries. Some clean energy technologies that have not yet been industrialised are the technical choices for the new quality productivity of the future energy sector

Energy supply revolution

- Transformation of energy supply to becoming cleaner and less carbon-intensive
- The proportion of clean energy in primary energy consumption increased by 10 percentage points from 2014 to 2023
- The proportion of green energy in the source of energy supply is increasing

Energy institutional revolution

- Provide effective market incentives and policy guarantees for energy transformation and create a good development environment
- Adhere to the combination of effective market and effective government
- Give full play to the decisive role of the market in resource allocation
- Better play the role of government

International Energy Cooperation

- Deepen international cooperation and help the world's low-carbon transformation
- Actively be a promoter and contributor to global energy transformation
- Adhere to joint consultation and joint construction

Source: Economy Daily, September 2024

² "《中国的能源转型》白皮书（全文）," State Council, 29 August 2024, accessed at https://www.nea.gov.cn/2024-08/29/c_1310785406.htm.

³ The first three are the *China Energy Development Status and Policy* (2007) (CHN: 《中国的能源状况与政策》（2007）), the *China Energy Policy White Paper* (2012) (CHN: 《中国的能源政策（2012）》白皮书) and the *China Energy Development in the New Era White Paper* (2020) (CHN: 《新时代的能源发展》白皮书（2020）).



NDRC releases dual carbon standards and measurement system development plan

China will implement national dual carbon emission control during the *15th Five-Year Plan* period (2026-2030)⁴ However, establishing dual carbon standards and measurement systems still needs to catch up. 2024-2025 is a critical period for consolidating basic work. In July 2024, the National Development and Reform Commission (NDRC), the State Administration for Market Regulation (SAMR), and the Ministry of Ecology and Environment (MEE) jointly issued a document proposing specific goals and requirements. **In terms of dual carbon standards**, in 2024, the government will issue 70 national standards for carbon accounting, carbon footprint, carbon emission reduction, energy efficiency and energy consumption, and carbon capture, utilisation, and storage (CCUS), basically achieving full coverage of enterprises in the key industry; in 2025, to form a basic carbon emission accounting and evaluation standard system for enterprises, projects, and products, and to build 100 enterprises and parks for carbon emission standard management pilots. **In terms of dual carbon measurement**, by 2025, to formulate 50 national measurement specifications in the dual carbon field, key energy-consuming and carbon-emitting units will be capable of carbon measurement. The document proposes eight critical tasks for dual carbon standards and dual carbon measurement, respectively.⁵

| Key tasks of dual carbon standards | Key tasks of dual carbon measurement |
|--|---|
| <ol style="list-style-type: none"> Carbon emission accounting standards for enterprises – Develop carbon emission accounting standards and technical specifications for key enterprises in the power, coal, steel, nonferrous metals, textile, transportation, building materials, petrochemical, chemical, and construction industries Product carbon footprint standards and labels – Develop national standards for the carbon footprint of new energy vehicles (NEV), solar PVs, and lithium batteries, as well as management methods and national standards of product carbon labelling certification Project carbon reduction standards – Develop emission reduction accounting standards for energy efficiency improvement, renewable energy, waste heat, and methane reduction and utilisation projects, and promote the inclusion of CCER project methodology into the national standard system Carbon reduction and carbon removal technology standards – Develop key carbon reduction technology standards for hydrogen metallurgy, raw material substitution, heat pumps, and solar PVs, and build a CCUS full-chain standard system Industrial energy consumption standards – Revise the energy consumption limit standards per unit product for the steel, oil refining, coal-fired power, pulp and paper, industrial caustic soda, and rare earth smelting industries | <ol style="list-style-type: none"> Fundamental capacity building – Establish a traceability system, measurement benchmark, measurement standard, and reference material list for dual carbon-related values Instrument development and application – Develop carbon accounting and carbon monitoring instruments, and conduct performance testing and evaluation of online continuous emission monitoring system (CEMS) Support carbon emission accounting – Formulate management specifications for carbon measurement instruments, and establish a national GHG emission factor measurement and verification platform Research on common key technologies – Research regional and city-level multi-scale carbon emission monitoring and measurement technology, flue gas CCUS measurement technology Research on technologies in key fields – Conduct comparison between direct carbon emission measurement and accounting methods, actual measurement of natural gas emission factors, and research on monitoring and calibration of thermal power flue gas emissions Capacity building – Formulate a guidance catalogue for carbon measurement capacity building, and guide measurement technological institutions and key emission units to strengthen capacity building |

⁴ Dual carbon emission control includes control of carbon emission per unit of GDP and total carbon emissions.

⁵ “国家发展改革委 市场监管总局 生态环境部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，发改环资〔2024〕1046号,” National Development and Reform Commission, State Administration for Market Regulation, Ministry of Ecology and Environment, https://www.ndrc.gov.cn/xwdt/tzgg/202408/t20240808_1392292_ext.html; “一图读懂 | 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）,” 23 August 2024, State Administration for Market Regulation, https://www.samr.gov.cn/xw/tp/art/2024/art_2babb6ec17dd45a787165f440596c36a.html.

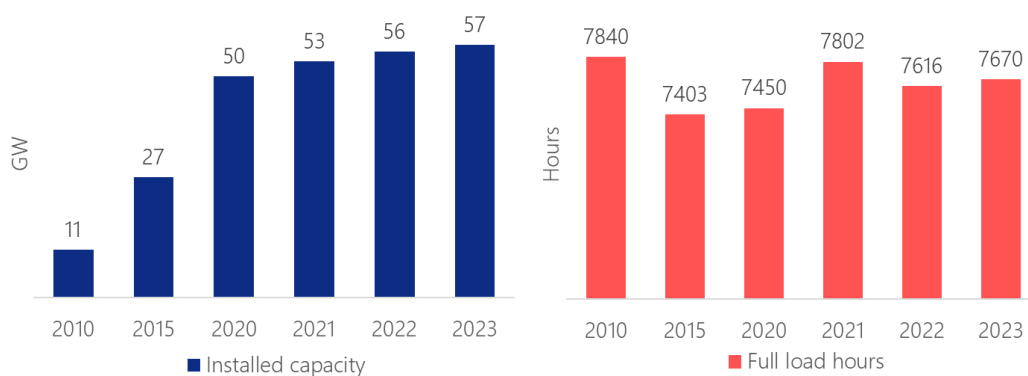


6. **Product energy efficiency standards** – Revise energy efficiency standards for industrial, cooling and heating, office, kitchen, and lighting equipment and products; develop energy efficiency standards for charging piles and 5G base stations, and issue detailed rules for energy efficiency labelling of data centres
7. **Recycling standards** – Develop recycling standards for retired wind and solar equipment and power batteries
8. **Green product evaluation standards** – Develop green certificates and green electricity consumption evaluation standards
7. **Technical specifications** – Prepare carbon measurement review specifications for key emission units
8. **Supervision and management** – Conduct energy measurement reviews in the construction and building materials, petrochemical, energy, and steel industries, as well as data centres and public institutions

Nuclear power development and policy trends in China

In August 2024, the State Council approved five new nuclear power projects with 11 units. The total installed capacity of nuclear power in operation and under construction in mainland China has reached 113 GW (112 units), of which 58 GW (56 units) are in operation and 55 GW (46 units) are under construction. Nuclear power accounts for less than 2% of the country's total installed power generation capacity, but it provides nearly 5% of total power generation. In recent years, it has fully played the role of baseload power supply. Nuclear power is one of the primary power sources in the eastern coastal areas, with nuclear power generation accounting for more than 20% of the total in Liaoning, Zhejiang, Fujian, Guangdong, and Hainan. The National Energy Administration (NEA) stated that in the future, China will adhere to the most stringent standards for the planning and approval of new nuclear power projects, ensure an orderly construction pace, steadily increase the proportion of nuclear power in energy and electricity consumption, and actively promote nuclear energy in heating.⁶

Total installed nuclear power capacity (left) and utilisation hours (right) from 2010 to 2023



Source: China Electricity Council (CEC), accessed in September 2024

Pumped storage industry development status in 2023

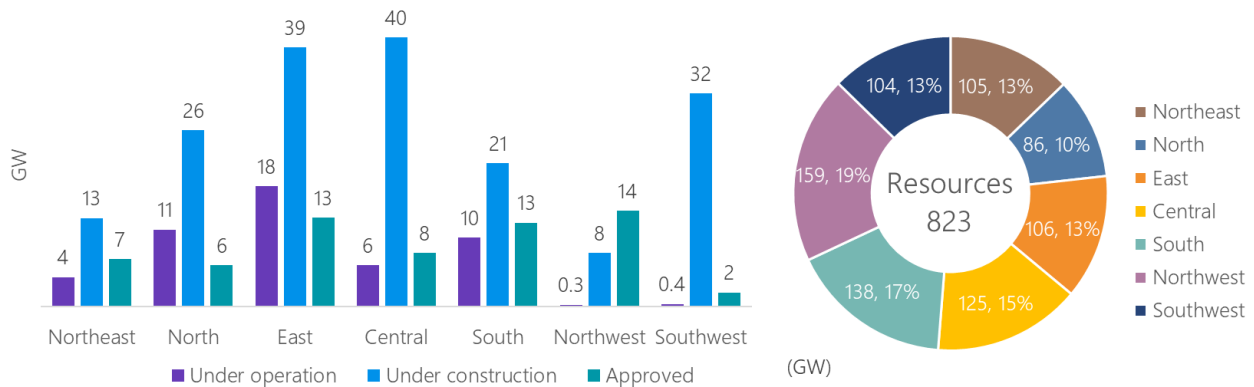
As an essential flexibility resource for a power system in China, pumped storage has accelerated development since the *14th Five-Year Plan* period (2021-2025). In 2023, the newly installed pumped storage capacity reached 5.2 GW in China, and the total installed capacity reached 50.9 GW, accounting for 6.2% of the total pumped storage resources included in the national planning. Pumped storage projects are mainly distributed in East China (17.9 GW), North China (11.5 GW), and South China (10.3 GW), accounting for a total of 78%. These projects mainly serve the local power supply, enhance new energy consumption, and increase power import capacity. By the end of 2023, the scale of pumped storage projects under construction nationwide reached 179 GW; the scale of newly approved projects reached 63.4 GW, with a significant increase in Northeast China and South China compared to 2022. In 2024, freshly commissioned pumped storage capacity is expected to reach about 6 GW, and the total installed capacity will reach 57 GW.

⁶ “国新办举行《中国的能源转型》白皮书新闻发布会图文实录,” State Council, 29 August 2024, accessed at <http://www.scio.gov.cn/live/2024/34563/tw/>.



In 2023, the NDRC issued a document to determine the capacity tariff of 48 pumped storage plants, including all operating projects and new projects planned to be put into operation by the end of 2025 in China. The third round of power transmission and distribution tariff policy (June 2023-June 2026) issued in the same year included capacity tariff charges in the system operation fee of industrial and commercial electricity prices⁷. The two policies have released clear electricity price signals for pumped storage projects and implemented the transfer path of capacity tariff charges, which is conducive to forming stable industry expectations and promoting the construction of new pumped storage plants.⁸

Total installed pumped storage capacity by region in 2023 (left) and total pumped storage resources by region that have been included in the national planning in 2023 (right)



Source: China Renewable Energy Engineering Institute (CREEI) and China Pumped Storage Association (CPSA), August 2024

Carbon footprint database established for the solar PV industry

To accelerate the construction of a dual-control system for carbon emissions, the Ministry of Industry and Information Technology (MIIT) guided the China Electronics Technology Standardisation Institute to jointly establish the *Fundamental Database and Accounting Platform for Solar PV Product Carbon Footprint*. This platform provides the required standard basis, emission factor data, accounting software, and other full-chain technical support for carbon footprint accounting of the solar PV industry. It is of great significance for solar PV enterprises to carry out accurate and efficient carbon footprint accounting of solar PV products and promote the low-carbon development of the industry. It also marks the establishment of a carbon footprint accounting system for the solar PV industry in China.⁹

China's first high-temperature waste heat power generation device for offshore oil and gas fields goes into operation

Offshore oil and gas platforms generally provide electricity through self-produced oil and gas while emitting a large amount of high-temperature flue gas, one of the platform's primary carbon emission sources. In August 2024, China National Offshore Oil Corporation (CNOOC) put into operation a 5 MW high-temperature flue gas waste heat device on its offshore oil and gas platform in Tianjin. This is China's first time carrying out high-temperature waste heat power generation applications on offshore platforms. It is estimated that its annual power generation can reach 40 GWh (i.e. yearly electricity consumption of 30,000 households), and it can save 300 million cubic meters of natural gas consumption and reduce carbon dioxide emissions by 800,000 tons in 20 years of operation. The overall energy efficiency of the power station is expected to increase by 7%, which is of great significance to promoting the low-carbon development of offshore oil and gas fields.¹⁰

⁷ Industrial and commercial electricity price = feed-in tariff + feed-in grid loss + power transmission and distribution tariff + system operating cost (ancillary service fee + capacity tariff of pumped storage, etc.) + government fees and surcharges

⁸ “重磅关注 | 《抽水蓄能产业发展报告2023年度》全文PPT来了!”, General Institute of Hydropower and Water Resources Planning and Design, 2 September 2024, accessed at <https://news.bjx.com.cn/html/20240902/1398069.shtml>.

⁹ “光伏行业产品碳足迹基础数据库及核算平台”正式发布, Ministry of Industry and Information Technology, 28 August 2024, accessed at https://www.miit.gov.cn/jgsj/dzs/gzdt/art/2024/art_25f489fd095e4a40b1e80b1adf315f73.html.

¹⁰ “全球首套海上高温烟气余热发电装置交付”, Science and Technology Daily, 14 August 2024, accessed at https://www.ncsti.gov.cn/kjdt/kjrd/qtrd_kjrd/202408/t20240814_175230.html.



2. Policy monitoring

2024-08-26

https://zfxgk.nea.gov.cn/2024-08/26/c_1310785819.htm

NEA releases green certificate issuance and trading rules

Notice on Issuing the Rules for the Issuing and Trading of Renewable Energy Green Power Certificates, NEA Development of New Energy Regulations [2024] No.67

The document puts forward requirements for the issuance, trading, transfer, verification and unsubscription, information management, and supervision of green certificates (GECs). The document adds the details of GEC verification and unsubscription regulations compared to the policy draft, i.e. all expired GECs and verified GECs for green electricity consumption must be unsubscribed from the system. The document also clarifies the responsibilities of relevant institutions and account management requirements. GECs are issued monthly by the NEA's Electricity Business Qualification Management Centre (CHN: 国家能源局电力业务资质管理中心). GEC trading takes voluntary participation by the whole society, and all renewable power projects filed can become sellers. The price of GECs is formed through market-oriented means, and no unit may interfere with the pricing mechanism or restrict the trading area. The National Green Certificate Issuance and Trading System (CHN: 国家绿证核发交易系统) accurately and securely records the data of the entire life cycle of GECs and can provide traceability and anti-counterfeiting query services.

2024-08-19

https://www.gov.cn/zhengce/zhengceku/202409/content_6972409.htm

MIIT promotes low-carbon transformation of IT infrastructure

Notice on Promoting the Coordinated Development of New Type of Information Infrastructure, MIIT [2024] No.165

The government requires the information and communications industry to establish a low-carbon development statistical indicator system and a carbon management information platform and to carry out low-carbon rating assessments for data centres. Support the coordinated construction of data centre clusters and new energy bases, and promote the coordinated development of computing infrastructure, energy, and water resources. Strengthen the application of energy-saving technologies through server room renovation and communication equipment updates. Encourage local governments to introduce policies for enterprises to use green electricity, and support using their sites to build green energy facilities.

2024-08-03

https://www.gov.cn/zhengce/zhengceku/202408/content_6969773.htm

NDRC clarifies key energy equipment renewal plan

Notice on Issuing the Implementation Plan for Large-Scale Equipment Renewal in Key Energy Fields, NDRC Office Energy [2024] No.687

China will focus on promoting energy conservation, heating, and flexibility retrofit of coal-fired power units, as well as equipment renewal and technological retrofit in power transmission and distribution, wind power, solar PV, hydropower, and clean heating. By 2027, the scale of equipment investment in key energy fields will increase by more than 25% compared with 2023. Key tasks include: 1) Reduce energy consumption and carbon emissions of coal-fired power plants through three technical reforms and biomass hybrid burning, and accelerate the construction of intelligent coal power plants; 2) Promote the renewal of power transmission and distribution equipment in areas prone to extreme weather and disasters, and improve the carrying and operation capacity of distribution grids, old community substations and rural power grids; 3) Encourage the replacement of wind turbines with sizeable single-unit capacity and advanced technology, and improve the efficiency of wind power-land-grid resource utilisation by using low-carbon, land-



Danish Energy Agency



Norad

Norwegian Agency for Development Cooperation



CET
中国能源转型项目
CHINA ENERGY TRANSFORMATION PROGRAM



COLUMBIA | SIPA
Center on Global Energy Policy



中国宏观经济研究院
能源研究所
Energy Research Institute of Chinese
Academy of Macroeconomic Research

saving and intelligent wind turbine components; 4) Encourage the improvement of solar power-land use efficiency through the renewal of high-efficiency solar PV components, inverters and other equipment and the optimisation of construction layout; 5) Increase local financial support for the renewal of clean heating equipment; 6) Accelerate the formulation of V2G and high-power charging technology standards, and improve the standard system in the field of new-type energy storage and hydrogen energy.

2024-08-02

https://www.gov.cn/zhengce/zhengceku/202408/content_6969919.htm

NEA releases 2024-2027 distribution grid development guidelines

Notice on Issuing the Implementation Plan for High-Quality Development of Distribution Networks (2024-2027), NEA Development of Electricity [2024] No. 59

NEA requires local governments to formulate development and retrofit plans for distribution grids and proposes to focus on four tasks. 1) Increase the upgrade and retrofit of distribution grids in old residential areas, urban villages, and other areas with weak power supply; 2) Improve regional planning, design and disaster prevention standards of distribution grids in disaster-prone areas; 3) Targetedly improve the distribution grid's access and regulation capabilities for distributed new energy facilities, to meet the electricity demand of electric vehicle charging facilities; 4) Build distributed smart grids in villages and parks with a high proportion of new energy. The 2026-2027 projects should be included in the local *15th Five-Year Plan (2026-2030)* for distribution grid development.

2024-07-24

https://www.gov.cn/zhengce/zhengceku/202407/content_6970133.htm

NDRC releases fundamental rules for national green power trading

Notice on Issuing the Basic Rules for Medium and Long-term Electricity Transactions - Special Chapter on Green Electricity Transactions, NDRC Energy [2024] No. 1123

China has achieved full grid coverage of green power trading pilots. However, some provinces have not actually started or normalised green power trading due to significant differences in trading rules and price mechanisms by region. Therefore, the government has issued a document to clarify the unified rules for all aspects of green power trading. In the early stage of the green power market, only wind power and solar PV projects participate in electricity sales; contract types include intra-provincial and inter-provincial medium and long-term contracts, and prices are determined through bilateral negotiations or listing. Unless otherwise specified by the government, price caps or specified prices shall not be imposed; the electricity price and environmental premium in the green power price shall be settled separately to avoid double counting. The NEA will issue green certificates based on the monthly settled electricity volume, and green certificates shall not be double counted or sold.



Danish Energy Agency



Norad

Norwegian Agency for Development Cooperation



中国能源转型项目
CHINA ENERGY TRANSFORMATION PROGRAM



COLUMBIA | SIPA

Center on Global Energy Policy



中国宏观经济研究院
能源研究所
Energy Research Institute of China
Academy of Macroeconomic Research