

China Carbon Neutrality Tracker Newsletter



The bi-monthly China Carbon Neutrality Tracker (CCNT) newsletter provides information on the key climate actions being taken by China's state and non-state actors as it pushes forward in its dual-carbon goals, including new research driving carbon neutrality.

TOP NEWS: Highlights of climate progress across China

SUBNATIONAL UPDATES: Subnational and city-level official statistics, policies and actions related to dual-carbon goals

PERSPECTIVES: New reports and insights from the field

Top News

China releases policies to support the establishment of a mechanism for dual control over the amount and intensity of carbon emissions.

The State Council issued the [Work Plan for Accelerating the Construction of a Dual Control System for Carbon Emissions](#). The *Plan* aims to accelerate the establishment of a dual control system for carbon emissions (total amount and intensity). It proposes that:

- By 2025, the carbon emission statistics and accounting system will be further improved, and a series of industry-specific carbon emission accounting standards and product carbon footprint standards will be implemented. The national greenhouse gas emission factor database will be established and updated regularly.
- During the "15th Five-Year Plan" period, a dual control system with intensity control as the primary focus and total volume control as a supplement will be implemented.
- Following carbon peaking, a carbon neutrality target evaluation and assessment system will be established, reinforcing carbon emission control requirements for key regions, sectors, industries, and enterprises.

Following the issuance of the *Plan*, the NDRC and two departments published the [Action Plan for Further Strengthening the Standard and Measurement System for Carbon Peaking and Carbon Neutrality \(2024-2025\)](#) to deploy specific measures for establishing a dual control system focusing on measurement and standards. It specifies that:

- By 2024, 70 national carbon emission accounting standards for carbon accounting, carbon footprint, carbon reduction, energy efficiency, CCUS, and others will be issued, covering key industries and enterprises.
- By the end of 2025, 20 measurement standards will be developed, 25 key measurement technology research projects will be conducted, and 50 national measurement technical specifications in the dual-carbon field will be formulated.

China is promoting green and low-carbon development of data centers and the digital economy.

Data centers are a fast-growing energy-consuming area in China, with annual power demand expected to increase by [15% annually](#). To promote the green and low-carbon development of data centers, the National Development and Reform Commission (NDRC) and three other departments jointly released the [Special Action Plan for Green and Low-Carbon Development of Data Centers](#). It proposes that:

- By the end of 2025, the average power usage effectiveness (PUE, expressed as a ratio, decreasing toward 1.0 as overall efficiency improves) will be reduced to below 1.5, and an annual growth rate of 10% for renewable energy utilization will be achieved.

The proportion of green electricity in newly built data centers at the National Arithmetic Hub Node will exceed 80%.

- By the end of 2030, the average PUE, efficiency, and carbon efficiency per unit of computing power will reach internationally advanced levels. The waste heat utilization rate of newly built data centers above a specified large size in northern heating regions will be significantly improved.

Project Lead for Energy Transition and Analyst of iGDP, Li Xindi recently wrote a [policy brief](#) (in Chinese) regarding the *Special Action Plan*. This policy brief summarizes projection for the increasing electricity demand of China's data centers towards 2035, and three major approaches for low-carbon development of data centers based on the *Special Action Plan*.

To facilitate the integration of new technologies into the economy, China's Office of Central Cyberspace Affairs Commission and nine departments jointly issued the [Implementation Guidelines for Synergistic Transformation of Green and Digital Development](#). To promote the high-end, intelligent, and greening of traditional industries, and accelerate industrial digitization. the Guidelines propose:

- To promote green and digital transformation in nine key areas (mainly energy-intensive industries) such as the power industry, mining, smelting, petrochemicals, transportation, construction, cities, agriculture, and ecology.
- The PUE of newly built large scale data centers should be reduced to below 1.3, and the PUE of those in cold regions (which have fewer cooling needs) should be reduced to below 1.25.

Two additional energy-saving and emission-reduction action plans have been published, targeting energy-intensive sectors such as the aluminum electrolysis industry and coal-fired power plants.

The NDRC and other departments released the [Special Action Plan for Energy Saving and Carbon Reduction in the Aluminum Electrolysis Industry](#) to accelerate energy-saving and carbon reduction transformation and the renewal of energy-using equipment in the aluminum electrolysis industry. It proposes that:

- From 2024 to 2025, the industry will reduce energy use by approximately 2.5 million tons of standard coal and CO₂ emissions by around 6.5 million tons.
- By the end of 2025, 30% of the production capacity will be above the energy efficiency benchmark level. The proportion of renewable energy utilization in the industry will exceed 25%, and recycled aluminum production will reach 11.5 million tons.
- By the end of 2030, the industry will significantly reduce energy and carbon emissions intensity per unit product, with additional improvement in renewable energy utilization.

The NDRC and the National Energy Administration (NEA) jointly released the [Action Plan for Low-Carbon Transformation and Construction of Coal Power \(2024-2027\)](#) to improve clean and efficient utilization of coal. It proposes that:

- By 2025, the carbon emission per kilowatt-hour of electricity will be reduced by approximately 20% compared with the average equivalent coal power units in 2023.
- By 2027, as costs of low-carbon coal power generation are significantly reduced, the carbon emissions per kilowatt-hour of electricity will be reduced by about 50% compared with the average equivalent coal power units in 2023, approaching the emission levels of natural gas power units.
- Low-carbon transformation and construction technologies hereby include biomass co-firing, green hydrogen co-firing, and carbon capture utilization and storage.

China unveiled policies to address key issues regarding constructing a new type of power system in the near term.

The construction of a new type of power system is a part of China's policy drive under its dual-carbon goals, given the fast growth of renewables and the fact that its installed capacity has surpassed coal capacity. Recently, the NDRC and two other departments jointly issued the [Action Plan for Accelerating the Construction of a New Type of Power System \(2024-2027\)](#). It specifies nine special actions from 2024 to 2027, addressing issues such as power system stability and the large-scale transmission of high-proportion renewable energy. In regions with high peak demand or difficulties with renewable integration, the demand-side response capability will reach 5% or more of the peak load, and around 10% with enabling conditions.

A distribution network is an important segment of the new power system. To support the Plan, the NEA issued the [Implementation Plan for the High-quality Development of Distribution Networks \(2024-2027\)](#). It focuses on improving power supply capacity, resilience, and carrying capacity, with emphasis on advancing a series of construction and renovation tasks. These tasks include:

- Accelerating the upgrading and renovation of power distribution networks in areas with weak power supply;
- Implementing targeted projects to enhance disaster prevention and resistance capabilities;
- Improving the ability of integration and dispatch for distributed renewable energy;
- Exploring a batch of distributed smart grid projects.

The Plan also requires provincial energy administrations to submit their local power distribution network development plans by the end of October 2024 to the NEA.

A large-scale equipment renewal plan for the energy sector was issued, including the energy-saving transformation of coal power plants and distribution networks.

The NDRC and the NEA issued the [Implementation Plan for Large-scale Equipment Renewals in Key Areas of the Energy Sector](#) to promote equipment renewal and technological transformation in energy sectors. It proposes that by 2027, large-scale equipment investment in key energy sectors will increase by more than 25% compared with 2023. It will focus on promoting the implementation of the coal-saving, heating, and flexibility "three-in-one" transformation of coal-fired power units. It will also promote equipment renewal and technological transformation in power transmission and distribution networks, wind power, solar, and hydropower.

Subnational Updates

Four provincial regions issued work plans defining key tasks for methane emissions control, aiming to regulate methane emissions in key sectors.

Guangdong Province issued the [Work Plan for Methane Emissions Control in Guangdong Province](#), with emphasis on the waste sector. Pilot programs in monitoring methane emissions in waste and rice cultivation are highlighted. It proposes that:

- By 2025, the Pearl River Delta region, which accounts for over 60% of Guangdong's population by the end of 2023, will achieve "zero landfill", and the utilization rate of household waste will be no less than 60% for the whole province.
- The rate of harmless disposal of sludge in prefectural-level cities and above will exceed 95%, and that of other cities will exceed 90%.
- The utilization rate of livestock and poultry manure will be at least 80%, and the utilization rate of straw will stabilize at more than 86%.
- The intensity of methane emissions per unit of oil and gas will decrease by at least 40%.
- By 2030, the utilization rate of livestock and poultry manure will exceed 85%.

Shanxi Province issued the [Implementation Plan for Promoting Methane Emission Control](#) and highlighted key tasks regarding coal mine methane utilization. It proposes that:

- By 2025, the utilization rate of coal mine gas will reach 50%. Meanwhile, the province will promote pilot projects in management and utilization of abandoned coal mine methane.

- The province aims to have at least 80% of manure in the livestock sector utilized, 60% of household waste utilized, 70% of municipal sewage collected, and 90% of sludge harmlessly disposed of by 2025.
- By 2030, the utilization rate of livestock and poultry manure will reach 85%, while the utilization rate of household waste will rise to 65%.

Hubei Province issued the [Action Plan for Methane Emission Control in Hubei Province](#), addressing methane emission reduction in the agriculture and waste management sectors. It proposes that:

- By 2025, the quantity of fertilizer used will be reduced by more than 4% compared to the 2020 level and the utilization rate of livestock and poultry manure will increase to at least 80%.
- The utilization rate of domestic waste will reach 70% by 2025.
- By 2030, the utilization rate of livestock and poultry manure will exceed 85%.

Tianjin Municipality issued the [Action Plan for Methane Emissions Control in Tianjin](#), with emphasis on the oil and gas industry and the waste management sector. It proposes that:

- By 2025, the utilization rate of livestock and poultry manure will reach 90% and stabilize at 90% by 2030.
- 100% of household waste will achieve "zero landfill" and receive harmless treatment while the utilization rate of household waste will reach 80%. The rate of harmless disposal of sludge will be at least 97%.

During the 15th FYP period and after, gradually achieve zero conventional flaring for onshore oil and gas extraction.

Shandong and Guangdong Province issued policies to accelerate new energy storage industry development and support clean energy generation projects.

Shandong has [topped](#) the new energy storage capacity in China for two consecutive years. Multiple departments in Shandong Province jointly issued the [Guiding Opinions on Accelerating the High-Quality Development of the New Energy Storage Industry](#). The *Opinions* specify that:

- By 2030, the scale of the new energy storage industry will further increase, attaining a national leadership position in terms of industry competitiveness.
- Expand application scenarios for new energy storage on the power generation side, the grid side, and the user side, and diversify integration of new energy storage.

Guangdong Province issued the [Notice on Adjusting the Energy Storage Configuration for New Energy Power Generation Projects](#) to strengthen the demand response capacity of Guangdong Province's power system and enhance the grid integration of new energy generation. It requires that new energy storage be configured with a capacity of no less than 10% of the installed generation capacity and a duration of two hours for certain

offshore wind, onshore wind, and photovoltaic generation projects. Rules apply when those projects have an installed capacity of more than 30 MW and are connected to the grid for the first time in 2025 and beyond. Cross-city configuration is allowed since the day of the *Notice*'s issuance.

Several subnational regions released policies regarding renewable energy industry development, and for both distributed and centralized renewables.

Shandong Province issued the [Action Plan for High-quality Development of the Photovoltaic Industry in Shandong Province](#) to improve the efficiency and quality of its photovoltaic industry. It proposes that:

- By 2025, the industry will achieve mass production and application of panels with a solar-cell efficiency of 25% (most commercial panels have efficiencies from [17% to 20%](#)).
- A total capacity of 3,000 MW of "photovoltaic +" will be built in the southwestern Shandong coal mining subsidence area and integrated into the grid.

Shanxi Province issued the [Notice on the Implementation of the 2024 Wind-riding Action to Aid Rural Revitalization Project](#) to promote distributed wind power generation projects in the province. It identifies a total of 33 pilot projects with a total scale of 1,517 MW capacity for the year 2024.

Shanghai Municipal DRC issued the [Construction Plan for Offshore Photovoltaic Development by "Co-Locating Offshore Wind and Solar"](#), aiming to optimally use offshore Shanghai to generate clean power by adding solar panels to existing wind farms. It proposes that:

- In 2024, the first round of competitive allocation of offshore photovoltaic projects will be launched, with a scale of no less than 1,000 MW. These projects will be integrated into the grid with guarantee.
- In 2025, the remaining projects will be competitively allocated and built, with a requirement for investors to configure a new energy storage system with an output of no less than 20% of the installed capacity of offshore photovoltaic power generation (rated at charging and discharging time of no less than 2 hours).

Rollout of national carbon peaking pilots is forging ahead in cities and industrial development zones.

[Yantai City \(Shandong Province\): Implementation Plan for National Carbon Peaking Pilot](#)

- By 2025, build a new type of energy system with multiple and complementary energy sources such as "nuclear, wind, solar, hydrogen, storage, and LNG", with photovoltaic and offshore wind power generation capacity reaching 9,000 MW and 3,000 MW respectively (account for 16% and 12% of Shandong's renewable targets respectively). The installed capacity of energy storage facilities will reach 800 MW.

- By 2030, the installed capacity of clean energy in the city will account for about 58%. The installed capacity of energy storage facilities will reach 1,100 MW.

[Shenzhen City \(Guangdong Province\): Implementation Plan for National Carbon Peaking Pilot](#)

- By 2025, the CO₂ emissions per unit of regional GDP will maintain a leading level (lower level) among megacities in China.
- The newly installed capacity of solar PV will reach 1,500 MW and the virtual power plants' (VPP) flexible capacity will reach 1,000 MW during the 14th FYP. By 2030, they will reach 2,400 MW and 1,500 MW respectively.
- The city will build more than 10 pilot projects for photovoltaics, energy storage, high efficiency direct current power, and flexible loads (PEDF) systems and over 100 integrated photovoltaic building and PEDF projects by 2025 and 2030.

[Chifeng Hi-tech Industrial Development Zone \(Inner Mongolia Autonomous Region\): Implementation Plan for National Carbon Peaking Pilot](#)

- By 2025, the CO₂ emissions per unit of industrial added value will decrease by 24% (4 percentage points higher than the national target).
- By 2030, energy consumption will be dominated by electricity and low-carbon energy, and the CO₂ emissions per unit of industrial added value will decrease by 52% compared to 2020.

[Dalian City \(Liaoning Province\): Implementation Plan for National Carbon Peaking Pilot](#)

- By 2025, at least 60% of total installed capacity will come from non-fossil fuel-based energy (3 times of the national target) and more than 60% of new urban buildings will be prefabricated buildings (2 times of the national target).
- By 2030, over 70% of the electricity will be generated from non-fossil energy.

[Taiyuan City \(Shanxi Province\): Implementation Plan for National Carbon Peaking Pilot](#)

- By 2025, CO₂ emissions per unit of GDP and CO₂ emissions per unit of industrial added value for enterprises above a designated size will decrease by 18.5% and 25% respectively, compared with the 2020 level.
- The carbon emission intensity per ton of steel will decrease by 5% and 10%, by 2025 and 2030, compared with 2020.
- The installed capacity of renewable power generation will reach 2,300 MW and 3,000 MW by 2025 and 2030.

[Yancheng City \(Jiangsu Province\): Implementation Plan for National Carbon Peaking Pilot](#)

- By 2025, the energy efficiency of key industries should reach advanced levels both domestically and internationally. The proportion of non-fossil energy consumption will be at least 35% (15 percentage points higher than the national target).
- By 2030, the city aims to reach advanced energy efficiency standards at the international level in key energy-consuming industries.

[Huzhou City \(Zhejiang Province\) Implementation Plan for National Carbon Peaking Pilot](#)

- By 2025 and 2030, the balance of green loans should account for 25% and 27% of the total loan balance respectively.
- The proportion of green electricity consumption should reach 25% in 2025 and 40% in 2030. Meanwhile, the share of coal power capacity in installed capacity will decrease to 23.2%.
- 2-star and above green buildings should account for more than 40% of new buildings by 2025 (10 percentage points higher than the national target).

The 1+N policy framework at the city level is showing stronger ambition towards the dual-carbon goals.

[Huangpu District \(Shanghai Municipality\): Implementation Plan for Key Carbon Peaking Projects in Huangpu District](#)

- By 2025, more than 70% of the newly built buildings will achieve 2-star and above standards and 6 of them are expected to achieve 3-star green building standards.
- The renewable energy substitution rate for new buildings will reach 10% in 2025 (25% higher than the national target) and 15% in 2030.
- By 2025, Huangpu District will build 2,000 charging piles, and construct at least five charging pile demonstration communities.
- By 2025, add an additional 10 MW of solar PV capacity. The VPP flexible capacity will reach 80 MW in 2025 and 100 MW in 2030.

[Changzhou City \(Jiangsu Province\): Implementation Plan for Carbon Peaking in Changzhou City](#)

- By 2025, 2-star and above green buildings should account for more than 40% of new buildings. Over 50% of the newly built public buildings and 100% of the newly built residential buildings will have solar PV installed.
- By the end of 2026, the city will have completed 30 pilot demonstration projects of smart microgrids.

[Taishan City \(Guangdong Province\): Implementation Plan for Carbon Peaking in Taishan City](#)

- 32% and 35% of energy consumption will come from non-fossil energy in 2025 and 2030, respectively.
- By 2030, the cooling efficiency of large public buildings will improve by 20% compared to 2020.
- By 2030, at least 40% of newly added vehicles will be new energy and clean energy-vehicles, with the sales volume of EVs striving to reach 30% of new passenger car sales.

[Qingyuan City \(Guangdong Province\): Implementation Plan for Carbon Peaking of Urban and Rural Development Sector in Qingyuan City](#)

- By 2030, the proportion of electricity consumption in building energy consumption will exceed 85% (national target is 65%), and the proportion of newly built public buildings that are fully electrified will reach 30% (national target is 20%).

Perspectives

[Optimizing Container Ports' Transportation and Distribution Systems Toward a Low-Carbon Future: A Shenzhen Port Case Study](#) (World Resources Institute)

- Large container ports in China still rely heavily on diesel heavy-duty trucks (HDTs) for transportation and distribution. This study analyzes the fundamental reasons behind strong reliance on HDTs and roadway transportation and explores the potential for optimizing the transportation system by transportation modes shifting and the adoption of zero-emission HDTs. Taking the third largest container port globally, Shenzhen port, as an example, the study also evaluates if Shenzhen port could meet the low-carbon targets in its *Master Plan*.

[Climate and Air Quality Benefits from Accelerating Electrification for Guangdong's On-Road Transportation](#) (The International Council on Clean Transportation)

- Guangdong is one of the leading provinces for new energy vehicles (NEVs), especially zero-emission vehicles (ZEVs). This report demonstrates that faster electrification of Guangdong's on-road transportation is essential for Guangdong to reduce greenhouse gas emissions, improve air quality, and achieve its environmental targets by 2035. Additionally, this report provides policy recommendations including setting sales targets for ZEVs and infrastructure development.

[Air Quality Benefits of an Accelerated Transition to New Energy Vehicles in Hainan Province, China](#) (The International Council on Clean Transportation)

- This study explores the environmental benefits of accelerating the transition to new energy vehicles (NEVs), especially HDVs in Hainan, which are not regulated in Hainan's NEV development plan. The analysis highlights how faster NEV adoption can help Hainan improve its local air quality by 2035.

[Transitioning East and South China to Low-Carbon Power with Jiangsu and Guangdong in the Lead](#) (Natural Resources Defense Council)

- Supported by the Natural Resources Defense Council, the Electric Power Development Research Institute of the China Electricity Council (CEC) conducted a study on the low-carbon power transition pathways in East and South China. This study establishes a regional low-carbon power transition index system and applies it to analyze these two regions. Additionally, the study assesses the medium- to long-term trends of low-carbon power transition in these regions and their impact on the national power landscape and provides recommendations for synergistic low-carbon power transition between the two regions.

About the Institute for Global Decarbonization Progress (iGDP)

The Institute for Global Decarbonization Progress (iGDP) is a non-profit think tank focusing on green and low-carbon development with offices in China and Europe. Established in Beijing in 2014, iGDP is dedicated to supporting China's green and low-carbon practices, contributing to the global effort to address climate change, and providing decision-makers, investors and local communities with forward-thinking solutions. Through interdisciplinary, systematic, and empirical policy research, iGDP promotes robust energy and climate solutions with high implementation and investment feasibility. iGDP works with its partners to promote a zero emissions future and tell the story of China's green and low-carbon development.

About China Carbon Neutrality Tracker (CCNT)

China Carbon Neutrality Tracker (CCNT) is an online database and interactive platform that tracks China's national and sub-national carbon neutrality actions by collecting and sorting publicly available policy documents with an impact on GHG emissions. It offers an overview and structural classification of China's climate actions and serves as a comprehensive compendium of the specific policies and actions of various government departments and key non-state entities. CCNT includes all policies and actions with a climate impact and classifies them by region and sector. It gathers policy information primarily from authoritative government sources at national, regional, provincial and municipal levels. CCNT currently has national and provincial webpages. The database is continuously updated to include new provincial and city-level actions, and CCNT regularly issues short policy briefings.

For the latest national and subnational carbon neutrality actions, please visit the CCNT database at <https://ccnt.igdp.cn>.

If you have any suggestions or feedback, please email us at ccnt@igdp.cn.

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