Progress Report of China's National Carbon Market (2025)

Ministry of Ecology and Environment of the People's Republic of China

September 2025

Contents

Foreword

Climate change is a challenge faced by all humanity. China has adopted a national strategy of actively responding to climate change. The carbon market serves as an essential policy tool that utilizes market-based mechanisms in addressing climate change and drives green transition in all aspects of economic and social development. It is also a powerful measure for achieving the goals of peaking carbon emissions and carbon neutrality. According to World Bank statistics, 37 emissions trading systems are currently operating worldwide. Jurisdictions comprising almost two-thirds of global GDP have a direct carbon price in place.

The Chinese government attaches great importance to the development of China's National Carbon Market. President Xi Jinping has called for creating a more effective, vibrant, and internationally influential carbon market, establishing a clear direction for the National Carbon Market growth. The 20th National Congress of the Communist Party of China and the Third Plenary Session of the 20th Central Committee of the Communist Party of China have outlined strategies to advance the National Carbon Market. China has designated the expansion of its National Carbon Emissions Trading System coverage to more sectors as a major priority, as outlined in the *Report on the Work of the Government*. Significant progress has been achieved since 2024. The General Office of the Communist Party of China Central Committee and the General Office of the State Council released the *Opinions on Advancing Green and Low-*

Carbon Transition and Strengthening the Construction of the National Carbon Market, which is the first central-level document issued. The State Council promulgated the *Interim Regulations for the Management of Carbon Emission Trading*. The National Carbon Emissions Trading System has expanded its sectoral coverage for the first time, while the National Voluntary Greenhouse Gas Emission Reduction Trading Market has continued to develop steadily, revealing further enhanced market vibrancy and continuously strengthened data quality management. The carbon market's role in promoting the energy transition and delivering society-wide cost-effective emission reductions has become increasingly evident. China's carbon pricing mechanism, with the National Carbon Market at its core, has been continuously improved.

To present a thorough overview of China's National Carbon Market's progress and key accomplishments since 2024, the Ministry of Ecology and Environment has organized the preparation of the *Progress Report of China's National Carbon Market (2025)*, which is hereby officially released. The Ministry looks forward to the continued attention and support from all sectors of society to further advance the development of the National Carbon Market.

1. The National Carbon Market is an essential policy tool in accelerating green transition in all aspects of economic and social development

China's commitment to tackling climate change is an active rather than a passive choice. The pursuit of achieving the "Dual Carbon" goals (peaking carbon dioxide emissions before 2030 and achieving carbon neutrality before 2060, hereinafter as the "Dual Carbon" goals) is a mandatory choice of China, not an external demand. No matter how the international landscape may evolve, China's action in responding to climate change will not slow down, efforts in international cooperation will continue to be strengthened, and dedication to building a community with a shared future for mankind will remain unwavering. The year 2025 marks the fifth anniversary since the "Dual Carbon" goals were proposed. China has put in place a National Emission Trading System (hereinafter as the National ETS) that requires key emitting entities to fulfill emissions-reduction obligations for compliance, and a National Voluntary Greenhouse Gas Emission Reduction Trading Market (hereinafter as the National Voluntary Market) that incentivizes society-wide voluntary emission reductions activities. After four years of operation, the National Carbon Market has become an essential policy tool in accelerating green transition in all aspects of economic and social development.

(1) Advancing the National Carbon Market development is a potent and cost-effective measure for achieving "Dual Carbon" goals

China's carbon peak is not a naturally occurring process, but a strategically planned target achieved through active institutional efforts. Current challenges include persistent rigid energy demand, high-carbon lock-in effects in industrial development, and significant disparities in development stages across regions and sectors. Compared with the Western developed economies, China confronts a more compressed timeline and larger scale of emissions reduction. Success requires coordinated action between government intervention and market mechanisms - combining proactive policy leadership with effective market mechanisms through flexible, policy instruments that create enabling conditions for decarbonization. Through accurate emissions accounting, science-informed reduction goals, and flexible abatement options, China's National Carbon Market ensures a cost-effective measure, adeptly governing the nation's majority emissions.

(2) Advancing the National Carbon Market development is a crucial task in deepening reform in the ecological conservation

In contrast to developed countries that shifted to strengthening carbon emission controls only after addressing environmental pollution, China's endeavor of building an ecological civilization faces the dual strategic tasks of achieving fundamental improvements in the ecological environment and meeting the goals of carbon peaking and carbon neutrality. This necessitates further improving ecological conservation systems and focusing on resolving prominent contradictions and

problems. The *Resolution of the Central Committee of the Communist Party of China on Further Deepening Reform Comprehensively to Advance Chinese Modernization* explicitly required building a high-standard socialist market economy and sufficiently manifesting the market's decisive role in resource allocation, to improve the construction of the National ETS and the trading system for voluntary greenhouse gas emissions reduction. On this basis, China will actively and prudently move toward reaching peak carbon emissions and carbon neutrality.

(3) Advancing the National Carbon Market development is a vivid practice of supporting high-quality development with high-level protection

Chinese modernization is the modernization of harmony between humanity and nature. High-quality development and high-level protection are mutually integrated, reinforcing, and complementary. A development with high quality cannot exist without green and low-carbon features. In general, the National ETS has, for the first time on a nationwide scale, embedded emissions-reduction responsibility directly on enterprises while simultaneously reducing society-wide abatement cost. Meanwhile, the National Voluntary Market has established channels for converting ecological assets into economic value, spurring the innovation and application of green technologies. With the joint efforts of the two markets, China's National Carbon Market has properly handled the relationships between high-quality development and high-level protection, cultivating green productive forces and the development of new quality productive forces.

2. Institutional framework of the National Carbon Market reached new heights

Since 2024, the Chinese government has accelerated the development of the National Carbon Market's institutional framework. The top-level design of the National ETS has undergone further improvement, while the institutional architecture for the National Voluntary Market has also been initially built. These efforts have established a multi-level legal and regulatory framework, providing a solid foundation for the sound and long-term development of the National Carbon Market.

(1) The Opinions on Advancing Green and Low-Carbon Transition and Strengthening the Construction of the National Carbon Market was officially released

To implement the guiding principles of the 20th National Congress of the Communist Party of China (CPC), execute the decision-making and deployment of the Third Plenary Session of the 20th Central Committee of the CPC on further deepening reform, and to actively and steadily achieve "Dual Carbon" goals while advancing a Beautiful China. In August 2025, the General Office of the CPC Central Committee and the General Office of the State Council

publicly released the *Opinions on Advancing Green and Low-Carbon Transition and Strengthening the Construction of the National Carbon Market* (hereinafter as the "*Opinions*"). As China's first central-level document dedicated to the carbon market, the *Opinions* provides a comprehensive roadmap for advancing the development of the National Carbon Market. It clarifies the National Carbon Market's fundamental role and overall requirements, outlining primary objectives and key tasks for 2027 and 2030, making a programmatic document for the market's construction. Amid a complex and challenging domestic and international environment, this programmatic document sends a clear and stable policy signal to external stakeholders, affirming China's image as a responsible major power and its unwavering pursuit of green, low-carbon development. The *Opinions* also serves a robust policy reference to guide the carbon market's next steps.

Column 1: Opinions on Advancing Green and Low-Carbon Transition and Strengthening the Construction of the National Carbon Market released by the General Office of the CPC Central Committee and the General Office of the State Council

The Opinions adopts problem-oriented and goal-oriented approaches, integrating systematic thinking throughout the entire process and aspects of the National Carbon Market development. It deploys reforms around key tasks in carbon market construction, improves top-level design, clarifies institutional frameworks, and meets the practical needs of carbon market advancement. It demonstrates a comprehensive strategy that balances the relationships between development and emission reduction, the whole and the part, long-term goals and short-term objectives, and the government and the market.

The Opinions requires adherence to the principle of seeking a balanced approach to progress and stability, carefully aligning green and low-carbon transition with economic growth. It reinforces the carbon market's core function as a strategic policy tool for controlling greenhouse gas emissions, accelerating the development of a national unified carbon market.

The Opinions also calls for expanding sectoral coverage and the range of participants in a planned and phased manner, fostering a more equitable, accessible, and transparent market environment. These measures will promote the deep transformation of traditional industries, cultivate new quality productive forces, and unleash the society-wide internal momentum of green and low-carbon development.

The Opinions outlined, by 2027, the National ETS will basically encompass all major industrial sectors, and the National Voluntary Greenhouse Gas Emission Reduction Trading Market will expand to include all key fields. By 2030, a National ETS based on total allowance control and combining free and paid allocations will be basically established; a National Voluntary Greenhouse Gas Emission Reduction Trading Market that is credible, transparent, unified in methodology, broadly participatory, and aligned with international standards will be established; and a carbon-pricing mechanism with significant emissions reduction effects, a sound rule system and reasonable price levels will be formed.

(2) The Interim Regulations on the Administration of Carbon Emission Trading entered into force

In January 2024, the State Council promulgated *the Interim Regulations for the Management of Carbon Emission Trading* (hereinafter as the "*Regulations*"), which entered into force in May 2024. The *Regulations* constitutes China's first specialized legislation in the field of addressing climate change. Based on the needs of the agenda for achieving the "Dual Carbon" goals and the current stage of the National Carbon Market, the *Regulations* further clarifies the main procedures of carbon emissions trading and the legal responsibilities of various entities involved. The *Regulations* also sets out penalties for acts such as falsifying carbon emissions data, failing to surrender allowances in full and on time, and manipulating or disrupting the market, thereby ensuring the stable operation of the National Carbon Market.

The Ministry of Ecology and Environment (MEE) has worked with relevant departments to ensure effective implementation of the Regulation. Together with the Ministry of Justice (MOJ), the *Explanatory Notes to the Interim Regulations for the Management of Carbon Emission Trading* was published to strengthen policy outreach and training for market participants, and initiated revisions to the *Measures for the Administration of Carbon Emissions Trading (Trial)* and related supporting policies and institutional framework. The Supreme People's Court (SPC) and the Supreme People's Procuratorate (SPP) issued the *Interpretation on Several Issues Concerning the Application of Law in Handling Criminal Cases of Environmental*

Pollution, bringing falsification of carbon emissions data by third-party technical service institutions into the scope of criminal regulation. The National Financial Regulatory Administration (NFRA) issued the *Guiding Opinions on the Development on Technology Finance, Green Finance, Inclusive Finance, Pension Finance and Digital Finance in the Banking and Insurance Industries,* proposing to develop pledge and collateral financing secured by environmental rights such as carbon emission allowances and pollutant discharge rights. The State Taxation Administration (STA) issued a clarification on the implementation guidelines for value-added tax (VAT) policies applicable to carbon emissions trading, thereby providing further clarity on the fiscal and tax treatment of carbon emissions trading. Through coordinated efforts and policy synergy among relevant departments, they jointly regulate and guide the healthy and orderly development of the National Carbon Market while providing necessary deterrence against illegal and non-compliant behaviors.

(3) Institutional framework for the National Voluntary Greenhouse Gas Emission Reduction Trading Market has been established

In January 2024, the National Voluntary Market was officially launched. To build a high-standard, high-quality, and highly transparent voluntary emission reduction trading mechanism, the MEE, together with relevant departments, issued the *Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Trading (Trial),* which established clear guidelines for the overall approach and workflow of the National Voluntary Market and the rights and obligations of all categories of

market participants. The MEE also released six project methodologies for voluntary greenhouse gas emission reduction projects, including forestation carbon sequestration, grid-connected solar thermal power generation, grid-connected offshore wind power generation, mangrove afforestation, utilization of low-concentration coal mine methane and ventilation air-discharged methane, and energy efficiency in highway tunnel lighting, thereby supporting the development of projects in forestation carbon sequestration, renewable energy, methane abatement, and energy-saving and efficiency-improvement.

MEE organized the compilation and promulgation of the *Implementation Rules for Validation of Voluntary Greenhouse Gas Emission Reduction Projects and Verification of Emission Reductions,* standardizing validation and verification activities for voluntary emission reduction projects; and guided the preparation of supporting technical documents, including the *Guidelines for Voluntary Greenhouse Gas Emission Reduction Project Design and Implementation, the Rules for Voluntary Greenhouse Gas Emission Reduction Registration (Trial)*, and the *Rules for Voluntary Greenhouse Gas Emission Reduction Trading and Settlement (Trial).* These documents provide technical specifications for voluntary emission reduction project design and implementation while enhancing and improving market management and service protocols. With these regulatory and technical specifications now in place, the institutional framework of the National Voluntary Market has been established.

(4) A multi-level regulatory and institutional framework has taken shape

To effectively ensure the healthy and orderly operation of the National Carbon Market, in recent years, the MEE has issued the *Measures for the Administration of Carbon Emissions Trading (Trial),* together with three sets of rules on registration, trading, and settlement. MEE has also successively released technical specifications for the accounting and verification of enterprise greenhouse gas (GHG) emissions for the 2019–2024 reporting years and has formulated corresponding implementation plans for total allowance setting and allowance allocation, among more than 30 supporting institutional documents. Collectively, these instruments have essentially put in place China's National Carbon Market regulatory and institutional framework covering central-level documents, administrative regulations, departmental rules, normative documents, and technical specifications.

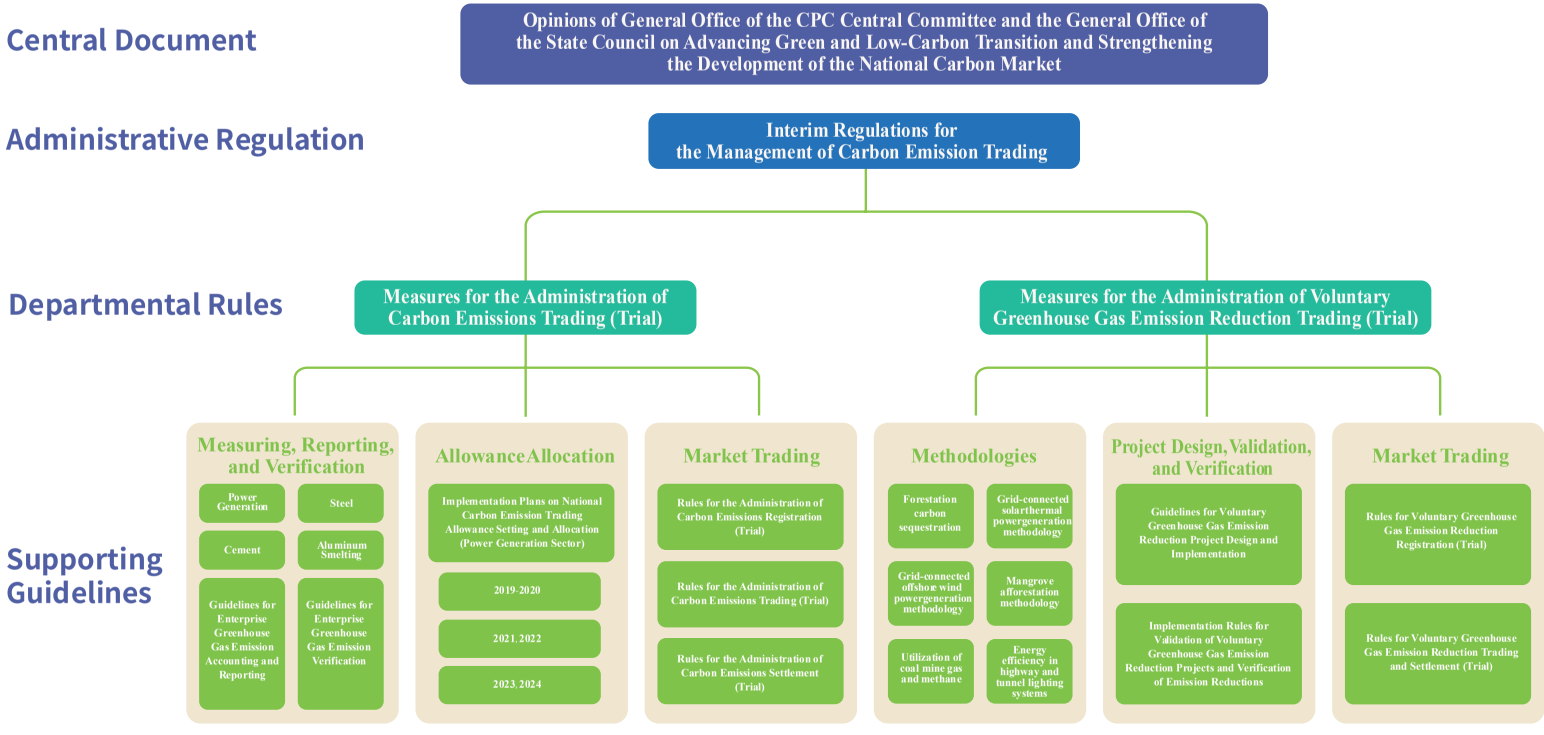


Figure 1 Institutional framework of the National Carbon Market

3. The National Carbon Emission Trading System accomplished the first expansion of sector coverage

The Chinese government attaches great importance to expanding the coverage of sectors through the National ETS. At the national conference on ecological and environmental protection, General Secretary of the CPC Central Committee, Xi Jinping, explicitly declared for further developing the National Carbon Market, improving the laws, regulations, and policies, and steadily expanding sector coverage. In March 2025, the State Council officially approved the inclusion of the steel, cement, and aluminum smelting sectors into the National ETS, adding to the original scope of industry covering the power generation sector.

(1)Institutional frameworks have been basically put in place in the three newly covered sectors

To implement the decisions and deployment of the CPC Central Committee and the State Council, and to include the steel, cement, and aluminum smelting sectors into the National ETS in an active, prudent and orderly manner, the MEE issued *the Work Plan for Including the Steel, Cement, and Aluminum Smelting Sectors into the National Carbon Emission Trading System* (hereinafter as the

Work Plan), with acting pursuant to the Regulations. The *Work Plan* sets out overall requirements and key tasks for the sector expansion, marking the commencement of the operational implementation phase of the first expansion. In addition, MEE has released six technical specifications for the steel, cement, and aluminum smelting sectors, including *Guidelines for Greenhouse Gas Emissions Accounting and Reporting and Technical Guidelines for Verification*. These specifications clarify the emission accounting and verification requirements for the enterprise-level sintering and ironmaking processes in the steel industry, clinker production in the cement industry, and aluminum electrolysis process in the aluminum smelting industry. At present, MEE is expediting, under established procedures, the development of sector-specific allowance setting and allocation plans for steel, cement, and aluminum smelting.

In April 2025, MEE issued *the Notice on Advancing Relevant Work for the National Carbon Emissions Trading System in 2025*, which sets out requirements for the power generation, steel, cement, and aluminum smelting sectors, including management of the roster of key emitting entities, data-quality management, and allowance allocation and surrender. To date, 1334 newly covered key emitting entities in those sectors have been officially listed, the monthly digital recording of carbon emission-related data has been fully launched, and the opening of enterprise accounts is progressing steadily. In addition, the Civil Aviation Administration of China is actively drafting the guidelines on emission accounting and verification, and developing a work plan for the civil aviation sector, aiming to include civil aviation into the National ETS at an early date.

Column 2: Overall Considerations for the First Expansion of Sectoral Coverage

To ensure the sound preparation of the Work Plan, the MEE took two years to convene nearly sixty organizations to conduct in-depth research, solicite input broadly from relevant departments, industry associations, experts, and the public, and draw on lessons learned from other carbon markets and China's pilot ETSs. Adhering to the principle of "improve while implement", a scientifically grounded timeline and roadmap for expanding the National ETS have been formulated.

First, enterprises will enter the market in phases. *The initial implementation phase, from 2024 to 2026, will focus on cultivating market participants, consolidating the foundation of carbon emissions management, and refining market oversight, enabling the enterprise to be familiarized with and experience the carbon market, to gain a low-carbon awareness that "emissions come at a cost and reductions yield benefits". From 2027 onward, in the phase of further enhancement, stakeholders' capacity for market engagement will be reinforced, mechanisms for gradually tightening the total allowances will be explored, and the National ETS's functions will be fully leveraged.*

Second, the allowance surplus-deficit rate will be controlled within reasonable bounds. *In light of current economic and social development and the fact that China's total carbon emissions have not yet peaked, the three newly covered sectors will continue to adopt an intensity-based allocation approach, without constraining the enterprise production. In 2025, each enterprise will receive allowances equal to its verified emissions, resulting in no net surplus or deficit and no compliance costs. In 2026 and 2027, the three sectors' overall allowance balance will be maintained, with each enterprise's surplus-deficit rate kept within a narrow range so as not to impede industrial development. After the National ETS further matures in 2027, policy measures will be gradually strengthened.*

Third, the statistical accounting system will be optimized and refined. *The leading objective is to reduce data quality risks and ease reporting burdens for enterprises. On the one hand, focus on major emission sources, reduce the number of emissions-accounting parameters, and simplify calculation methods; on the other hand, implement tiered and category-based management, allow enterprises with weaker data quality management foundations or smaller emission scales to use default values for calculation.*

(2) The market infrastructure functions were continuously improved

To meet the requirements of expanding sectoral coverage and in view of the characteristics of the steel, cement, and aluminum smelting sectors, the MEE organized functional optimization and upgrades of the National Carbon Trading Market Management Platform, the National Carbon Emissions Registration System, and the National Carbon Emissions Trading System. Sector-specific market management modules were developed. Functions for intelligent early warning of abnormal data, risk identification and cross-verification, as well as intelligent referral of issue threads were strengthened, ensuring the smooth conduct of emissions accounting, reporting and verification, allowance allocation and surrender, and market trading. To reduce burdens on enterprises, a unified account opening function for the National Carbon Market was launched, significantly simplifying procedures and shortening account opening time by more than 70 %. Since February 2025, more than 900 enterprises in the steel, cement, and aluminum smelting sectors have been organized to conduct platform functionality tests. Through empirical drills, enterprises have become familiar with market rules.

(3) Capacity-building and training covered all market participants

Since 2024, relevant experts and industry associations have been organized to deliver more than ten specialized training sessions on expanding sectoral coverage of the National ETS. These sessions provided policy interpretation and guidance on the National Carbon Market management system, greenhouse gas data accounting and verification rules, and operational procedures to market participants including key emitting entities in the steel, cement, and aluminum smelting sectors, third-party verification bodies,

and local departments of ecology and environment. The training activities achieved full coverage of market participants.

After the National ETS expanded its sector coverage for the first time, over 1,300 new key emitting entities were added, with the total greenhouse gas emissions covered increasing by approximately 3 billion tonnes. The proportion of CO_2 emissions it covers in the national total has risen to over 60%, realizing a transformation from the previous three "singles" to three "diversities"—specifically, shifting from regulating a single sector to accommodating multiple sectors, from regulating emissions from a single energy activity to covering both energy activities and industrial process emissions, and from regulating a single type of greenhouse gas, i.e. CO_2, to regulating multiple greenhouse gases such as CO_2, CF_4, and C_2F_6.

	Before Expansion	After Expansion
Regulated Sectors	Power Generation	Power Generation, Steel, Cement, Aluminum Smelting
Regulated Greenhouse Gases	CO_2	CO_2, CF_4, and C_2F_6
Inclusion Threshold	Entities with annual greenhouse gas emissions of 26,000 tonnes CO_2 equivalent or more	
Number of Covered Enterprises	Approximately 2200	Approximately 3500
Scale of Covered Carbon Emissions	Approximately 5 billion tonnes CO_2 equivalent (about 40% of China's total carbon emissions)	Approximately 8 billion tonnes CO_2 equivalent (about 60% of China's total carbon emissions)

Figure 2 Comparison before and after the expansion of sectoral coverage in the National ETS

4. The market vibrancy of the National Carbon Emission Trading System was further enhanced

Since 2024, key emitting entities in the National ETS conducted trading in an orderly manner. Transaction volume reached a record high. Trading prices reflected supply and demand interaction. Willingness of trading entities to participate was enhanced, and trading varieties and methods were progressively enriched. Market vitality has further increased.

(1)Transaction value reached a record high

In 2024, the National ETS operated for 242 trading days. The average daily trading volume of China Carbon Emission Allowances (hereinafter as CEAs) increased by 43.55% compared with the previous compliance cycle. The annual cumulative trading volume totaled 189 million tonnes, with the fourth quarter of 2024 accounting for 79% of the full-year volume. Annual transaction value reached 18.11 billion yuan, setting a new annual record since the market launched in 2021. As of the end of August 2025, cumulative trading volume in the National ETS stood at 696 million tonnes, with cumulative transaction value of 47.83 billion yuan.

(2) Trading prices reflected supply and demand interaction

With the official implementation of the *Regulations* and the steady advancement of efforts to expand the sectoral coverage of the National ETS, enterprises' awareness of law-abiding and compliant participation in the market further strengthened. The market demand for CEAs was fully released, and transaction prices showed an upward trend in 2024. On April 24, the composite closing price exceeded 100 yuan/tonne for the first time, and reached the annual peak of 105.65 yuan/tonne on November 13. In the fourth quarter of 2024, the allowance banking policy initially demonstrated its effects in increasing allowance supply and alleviating enterprises' compliance pressure, generally stabilized the composite closing price between 97 and 106 yuan/tonne, with no rapid increase in carbon prices at the end of the compliance cycle. Throughout 2024, the annual composite closing price of the National ETS ranged from 69 to 106 yuan/tonne, with the year-end composite closing price at 97.49 yuan/tonne. This represented a 103.10% increase compared with the opening price on the first trading day when the market was launched in 2021, and a 22.75% increase compared with the closing price at the end of 2023, reflecting the market supply and demand interaction basically.

Consistent with other international carbon markets, the trading volume and the transaction price of the National ETS experienced a short-term decline after the compliance deadline. Due to the good compliance performance of enterprises in 2024, the rigid demand for allowances decreased from January to February 2025, resulting in a generally low

market trading volume. As the preliminary allocation of allowances for the new compliance cycle was launched sequentially, market trading gradually recovered from March onwards. In the second quarter of 2025, the trading volume and transaction value increased by 140% and 87% year-on-year respectively. As of the end of August 2025, the composite closing price was 69.30 yuan/tonne. Against the backdrop of a general decline in global carbon prices, the carbon price of the National ETS remained generally within a reasonable range.

Figure 3 Trading volume and transaction prices of the National ETS

(3) Market participants' willingness to trade was increased

In 2024, a total of 1,471 key emitting entities participated in trading in the National ETS, realizing a 1.38% increase compared with the previous compliance cycle. Throughout 2024, transactions were

conducted on each trading day, with the total number of transactions increasing by 18% year-on-year. Market supply gradually improved, trading vitality was steadily unleashed, and the phenomenon of reluctance to sell allowances has been substantially alleviated. In 2024, the number of key emitting entities selling allowances increased by 11.24% compared with the last compliance cycle.

Since 2025, key emitting entities have shown a stronger willingness to trade. As of the end of August, the total volume of buy and sell orders for listed agreement trading had increased by 232% compared with the same period last year. Following the inclusion of the steel, cement, and aluminum smelting sectors into the National ETS, enterprises in these three sectors actively opened trading accounts. As of the end of August 2025, a total of 1,277 trading accounts have been opened for key emitting entities in the newly included sectors.

(4) Trading products and trading modalities were progressively diversified

The trading product of the National ETS is spot allowances. Since 2023, the MEE has labelled allowances by their issuance year, with allowances of each year traded and circulated freely in the market as independent trading instruments. As of the end of August 2025, five categories of trading instruments have been released, including "CEA19-20", "CEA21", "CEA22", "CEA23" and "CEA24", with trading volumes of 287 million tonnes, 49.19 million tonnes, 194 million tonnes, 133 million tonnes and 32.28 million tonnes, respectively.

In 2024, the National ETS adopted two trading modalities: listed agreement trading and bulk agreement trading, with annual trading volumes of 37 million tonnes and 152 million tonnes respectively. To further enrich the range of trading modalities of the National ETS and enhance market vitality, the National ETS introduced the one-way bidding trading modality in July 2025. The first three one-way bidding sessions were successfully completed on July 16, 2025, with a total trading volume of 130,000 tonnes and a total turnover of 9.77 million yuan. This has met the diversified trading needs of market entities and better reflected the market supply and demand interaction.

5. The Carbon Emission Allowances allocation and surrender in 2024 were completed successfully

CEAs allocation and surrender are important and fundamental management mechanisms in the National ETS. The National ETS adopts an intensity-based benchmarking method for free allowances allocation, without setting an upper limit on enterprises' carbon emissions. This approach aligns with the pace and efforts to achieve the "Dual Carbon" goals, effectively balancing the relationship between carbon emission reduction and economic development. The compliance rate ranks among the highest of major carbon markets worldwide.

(1) The CEAs allocation plan was optimized

The allowance allocation plans for 2023 and 2024, compared with the previous two compliance cycles, have generally maintained policy continuity and stability. On this basis, adjustments and optimizations have been made to the plans, taking into account the new carbon emission characteristics of the enterprises, as well as the policy orientation and management needs of the National ETS.

First, CEAs allocation benchmark values were further refined. The basis for determining allowances was adjusted from "supplied electricity" to "generated electricity" to prevent data quality risks at the source, enhance the scientific rigor and rational basis of allocation methods, and ensure consistency with the revised accounting and verification technical guidelines. Indirect emissions from purchased electricity are no longer subject to control. Under the same standard, the 2023 allocation benchmark values decreased by 1% year-on-year, which maintains appropriate emission abatement pressure on enterprises and preserves the market's incentive function, ensuring stable market operation.

Second, the allocation adjustment factors were modified. The adjustment factors for the amount of heat supply and for the cooling methods of installations were removed. Reasonable incentives for the heating supply from combined heat and power installations are now directly achieved through optimized benchmark values. The upper limit of the compensation load rate under the peak-shaving adjustment factor was adjusted to 65%, providing more effective encouragement for the installations undertaking peak-shaving tasks.

Third, the allowance banking policy was introduced. It stipulates that enterprises with surplus allowances must sell a specified portion of that surplus from the 2019–2024 period during 2024 and 2025, before the remaining portion can be carried over for use as 2025 allowances. This measure effectively addresses issues such as enterprises hoarding allowances, inactive market trading, and high compliance pressure on enterprises facing allowance shortage. At the same time, it provides enterprises with sufficient time to develop trading plans, avoiding concentrated transactions within a short period that could lead to abnormal carbon price volatility.

(2) The supply and demand of CEAs were generally balanced with a slight deficit

The National ETS was designed under the principle of generally maintaining a balance between allowance supply and demand across sectors with a slight deficit. This ensures that while enterprises are encouraged to reduce emissions, they are not subject to excessive compliance pressure. A total of 5.22 billion tonnes of CEAs for 2023 were issued, while the verified emissions (CEAs obligated to surrender) amounted to 5.24 billion tonnes. This resulted in a total deficit of 29 million tonnes, representing 0.55% of total CEAs obligated to surrender, which was consistent with the policy expectation goal. 58 key emitting entities across 18 regions used 6.47 million tonnes of China Certified Voluntary Emission Reductions (hereinafter as CCERs) to offset their compliance obligations, an increase of 74.12% compared to the amount in the second compliance cycle. Additionally, some enterprises also used CEAs labeled in the vintage of 2022, 2021, and 2019-2020 for compliance.

(3) The CEAs surrender mechanism has been continuously improved

First, the compliance schedule was optimized. Instead of complying on a two-year basis, the compliance deadlines for 2023 and 2024 have been set at the end of 2024 and 2025, respectively, thereby changing to an annual compliance cycle. This effectively alleviates the problem of concentrated trading around compliance deadlines.

Second, compliance responsibilities have been comprehensively enforced. For key emitting entities that face significant compliance risks or failed to fully surrender allowances in the previous compliance cycle, the provincial-level ecology and environment departments can now authorize the National Carbon Emissions Registration Institution

to perform a mandatory compliance on their behalf. Any remaining allowances are released to the key emitting entity's account after the current year's compliance obligation is fulfilled.

Third, compliance assistance continues to be provided. Multi-level departments of local ecology and environment authorities actively encourage enterprises to begin their compliance procedures early, guiding those with allowance deficits to promptly formulate purchasing plans, and helping enterprises with compliance difficulties to improve their compliance strategies. In cases where entities were willing to comply but unable to purchase allowances due to objective reasons such as frozen bank accounts, arrangements were made for other enterprises to provide allowances, thereby facilitating the completion of their surrender obligations.

Fourth, a dynamic compliance risk monitoring mechanism has been established. By closely tracking enterprises' trading activities and leveraging data from the National Carbon Emissions Registration System, including current holdings, account balances, and compliance obligations, the provincial-level departments of ecology and environment are provided with updates on the compliance risk status of key emitting entities within their jurisdictions. This helps to effectively prevent compliance risks.

By the end of 2024, the compliance rate for 2023 reached 99.98%, improving from the second compliance cycle and achieving a historic high. Among them, 28 provincial-level regions across the country achieved a 100% compliance rate, a significant increase compared with the previous two compliance cycles. Only four key emitting entities failed to fully comply on time. For those key emitting entities that did not surrender allowances in full and on time, local departments of ecology and environment handled the cases in accordance with the *Regulations* and relevant disciplines.

6. The National Voluntary Greenhouse Gas Emission Reduction Trading Market evolves steadily

The National Voluntary Market is another important policy tool launched by China to support the achievement of the "Dual Carbon" goals, following the National ETS. It generates internationally recognized high-quality carbon credits and enriches the channels for realizing the value of ecological products.

(1) Administration measures were elevated

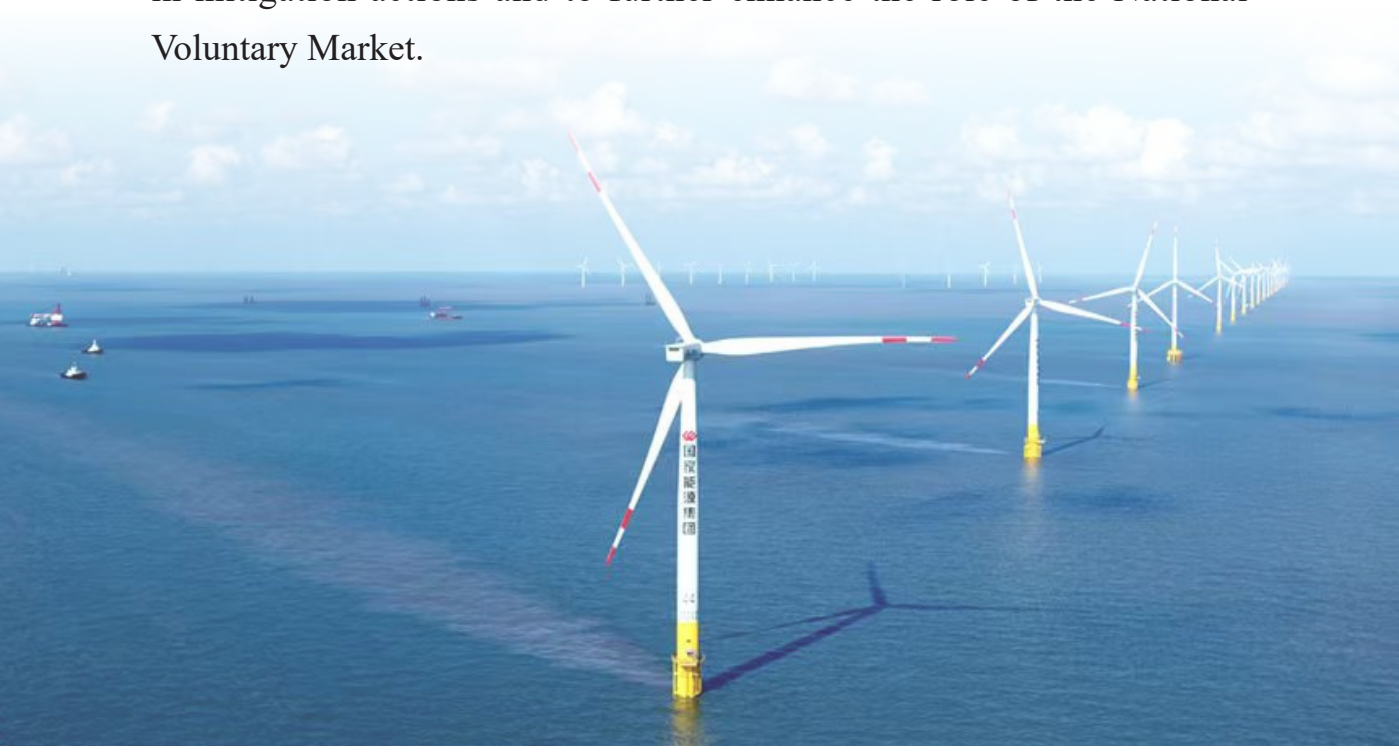
Since the launch of the National Voluntary Market, a comprehensive system composed of three dimensions featuring "administration measures, technical methods, and fundamental infrastructure" was preliminarily constructed, which covers the whole operation chain, including validation and verification, registration, and trading, etc. On this basis, the management systems for voluntary emission reduction projects and emission reductions have been continuously optimized and improved, with requirements for project validation and emission reduction verification further standardized. Meanwhile, market entities, trading modalities, and trading fee standards have been basically clarified.

The State Administration for Market Regulation (SAMR) has approved the first batch of five validation and verification bodies in the fields of energy, forestry, and other types of carbon sinks, started the qualification validation process for the second batch. It also released the *Requirements for Greenhouse Gas Validation and Verification Bodies* as an industry standard. The China Certification and Accreditation Association promoted the registration of verifiers for voluntary greenhouse gas emission reduction projects, further enriching the composition of market participants. With these developments, the entire operation chain of measures for the National Voluntary Market, including registration, validation and verification, and trading, has been fundamentally established.

(2) Methodology evaluation and selection were conducted unceasingly

Voluntary greenhouse gas emission reduction project methodologies serve as the primary basis for guiding the design, implementation, validation, and verification of voluntary greenhouse gas emission reduction projects, playing a crucial role in identifying baselines, justifying additionality, calculating emission reductions, and developing monitoring plans for potential projects. To build a high-quality National Voluntary Market and encourage broad and deep participation in greenhouse gas reduction actions across society, the MEE has strengthened the evaluation and selection process for proposed methodologies, publicly soliciting voluntary greenhouse gas emission reduction project methodology proposals. The Ministry of Natural Resources has been advancing the participation of ecosystem carbon sinks in the National Voluntary Market and has provided guidance on the development of several carbon sink project methodologies.

Since 2024, the MEE has further expanded the supporting areas on the basis of the first batch of four project methodologies. In December 2024, the second batch of two project methodologies was released by MEE, covering utilization of low-concentration coal mine gas and ventilation air-discharged gas with methane, and energy efficiency in highway tunnel lighting systems. Work is underway to develop methodology in additional areas. In August 2025, the MEE released four new draft methodologies for public consultation: grid-connected power generation and combined heat and power from pure agricultural and forestry biomass, recovery and utilization of test production flaring gas from onshore gasfields, recovery and utilization of associated gas from offshore oilfields, and recovery and utilization of low-volume associated gas from onshore oilfields. These efforts aim to mobilize broader participation of industries and enterprises in mitigation actions and to further enhance the role of the National Voluntary Market.



Column 3: The Public Solicitation Requirements for Voluntary Greenhouse Gas Emission Reduction Project Methodology

The MEE regularly solicits, selects, and evaluates voluntary greenhouse gas emission reduction project methodology proposals to support the need of China's climate actions. The MEE encourages broad participation from all sectors across society in market development, widely drawing on the wisdom of talent from all industries. To this end, a Methodology Submission module has been established within the National Voluntary Greenhouse Gas Emission Reduction Registry System and Information Platform.

Entities such as project owners, industry associations, research institutions, universities are all eligible to submit proposals. All submissions must comply with the Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Trading (Trial), align with relevant national industrial policies, and reflect current trends in green and low-carbon technology. Proposed methodologies should contribute to ecological and environmental protection, support the achievement of the "Dual Carbon" goals and be able to avoid or reduce greenhouse gas emissions or achieve greenhouse gas removals.

The methodologies and additionality demonstrations should be clear, practical, convenient for validation and verification, and ensure that emission reductions generated by projects are authentic, accurate, and conservative. Entities are encouraged to submit methodology proposals for sectors and activities with substantial mitigation potential, strong public support, reliable data quality, and social and ecological co-benefits, and can be effective supervised. In such cases, these proposals may be exempt from additionality or subject to simplified justifiction procedures. Proposed methodologies cannot cover sectors and areas that are already subject to mandatory greenhouse gas reduction obligations under existing laws and regulations. Proposals may introduce entirely new methodologies or revisions to those already published by the MEE.

(3) The registration of voluntary greenhouse gas emission reduction projects and emission reductions has made steady progress

In August 2024, the National Voluntary Greenhouse Gas Emission Reduction Registration System began accepting applications for project registration and emission reduction registration. In accordance with the requirements for completeness and standardization, it conducted strict reviews of application materials, including project design documents, project validation reports, emission reduction calculation reports, and emission reduction verification reports. As of the end of August 2025, a total of 106 projects had been publicly disclosed, among which 29 projects had completed registration; a total of 5,975 accounts had been opened, covering legal entities such as project owners, key emitting entities, and financial institutions.

In March 2025, the first batch of CCERs from 7 grid-connected offshore wind power generation projects and 2 grid-connected solar thermal power generation projects in Jiangsu, Gansu and other regions completed registration. A total of 9.48 million tonnes of CO_2 equivalent of CCERs were registered for the 9 projects. It is expected that these projects will achieve a total greenhouse gas emission reduction of approximately 36 million tonnes of CO_2 equivalent in the next 10 years. In August 2025, the second batch of 3.22 million tonnes of CCERs and the first afforestation carbon sequestration project completed registration.

(4) The voluntary greenhouse gas emission reduction trading has developed orderly

In March 2025, the first batch of newly registered CCERs was traded on

the National Voluntary Greenhouse Gas Emission Reduction Exchange, with a trading volume of 748,800 tonnes of CO_2 equivalent, a turnover of 60.24 million yuan, and an average price of 80.45 yuan/tonne on that day. As of the end of August 2025, the cumulative trading volume in the National Voluntary Market reached 2.71 million tonnes, with a cumulative turnover of 229 million yuan. The average price has exceeded 100 yuan/tonne multiple times. A total of 90 market entities have participated in trading in the National Voluntary Market. Among them, project owners accounted for 71% of total trading volume, providing additional emission reduction revenues for carbon emission reduction projects and technological innovation and development.

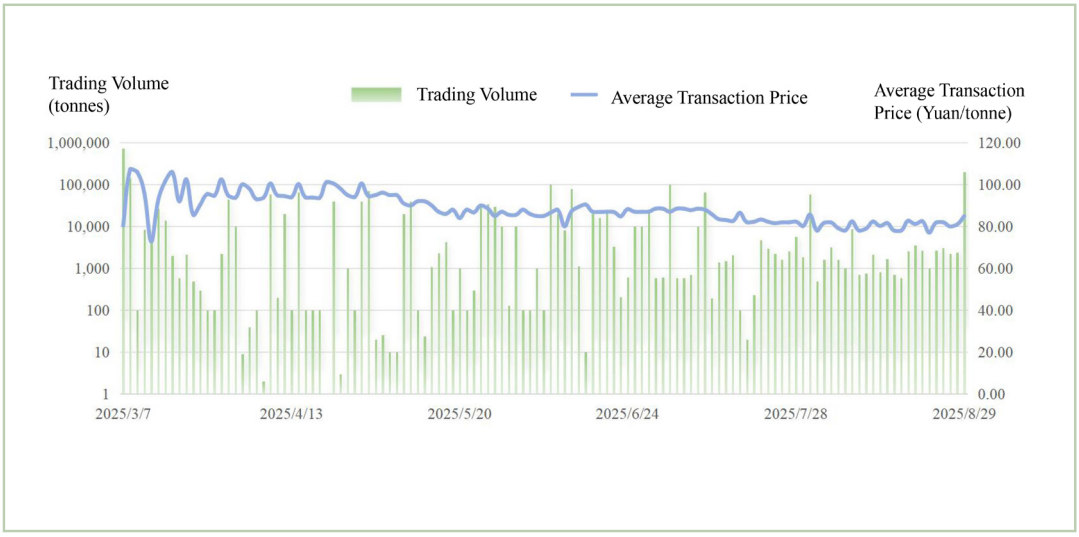
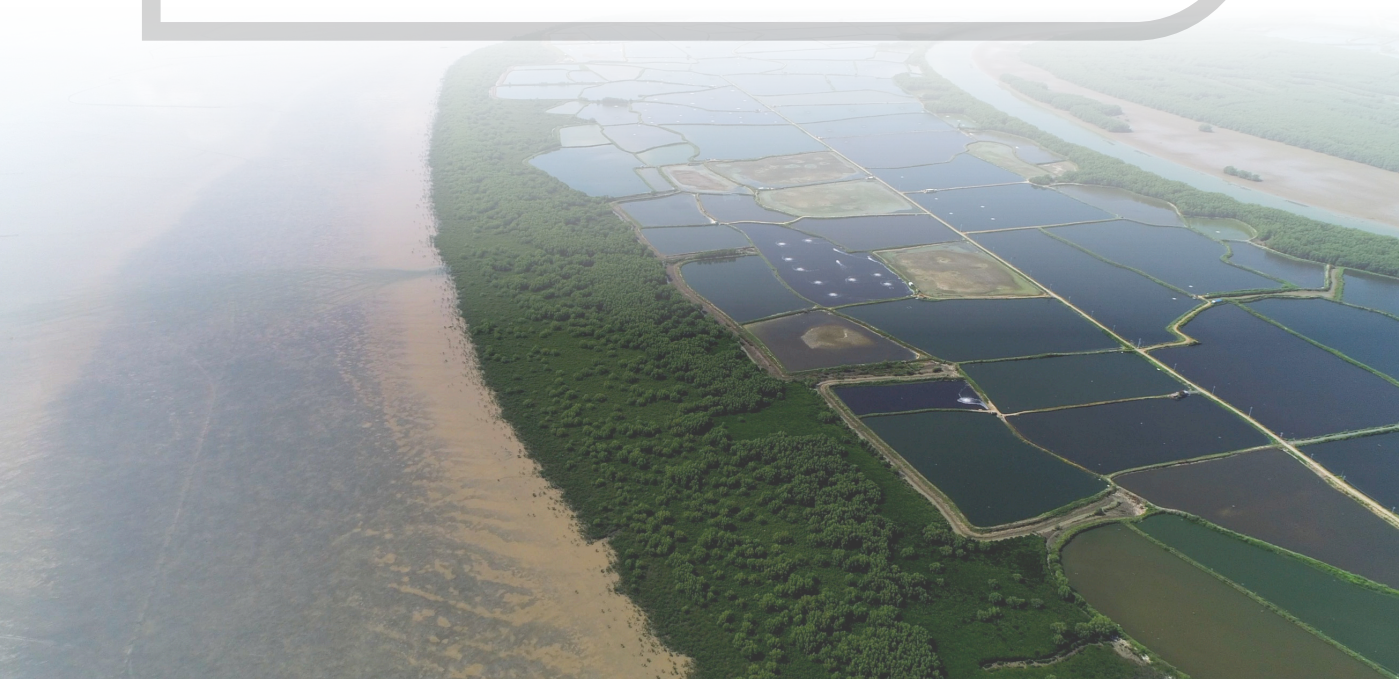


Figure 4 Trading volume and transaction prices of the National Voluntary Market

Column 4: CCER Trading Generates Emission Reduction Benefits for Project Owners

Revenue from CCER trading can provide additional funding, which incentivizes enterprises to continue investing in projects with strong carbon reduction impacts but may have otherwise been financially challenging. It helps to better support ongoing technological innovation and large-scale deployment, thereby lowering mitigation costs across sectors and society as a whole.

China Energy Investment Corporation's offshore wind power generation project in Dongtai, Jiangsu, was among the first batch of projects to complete CCER registration, with a total of 857,000 tonnes of CO_2 equivalent approved. At a price of 80 yuan/tonne, it is expected to generate nearly 70 million yuan in revenue from the market. According to the company, participation in the first round of voluntary greenhouse gas emission reduction trading enabled its offshore wind power project to gain an additional 0.039 yuan in revenue per kilowatt-hour of electricity generated.



7. Data quality management of the National Carbon Market has been strengthened continuously

Since the launch of the National Carbon Market, China has unceasingly improved emissions accounting and verification methodologies and strengthened the supervision mechanisms. A series of comprehensive approaches integrating routine supervision, big data screening, supervision and assistance, unannounced inspection have been adopted. Capacity building has been continuously carried out. Meanwhile, the data quality of voluntary greenhouse gas emission reduction projects and their emission reductions have been enhanced. The data quality could meet the needs for the sound and orderly operation of the National Carbon Market.

(1)The technical guidelines for carbon emissions data accounting and verification are being improved

Guided by the objectives of eliminating oversight blind spots, enhancing scientific rigor, rationality, and applicability, while taking into account of the emission characteristics of the power, steel, cement, and aluminum smelting sectors, the MEE has adhered to the principle of reducing complexity and seizing the key issues. Actions included appropriately simplifying technical procedures in emissions accounting, streamlining

accounting formulas for the power generation sector, and reducing the number of parameters required for steel, cement, and aluminum smelting. Specifically, the power generation sector's emission accounting formulas were reduced from 27 to 12. The steel sector only retained nine key parameters, such as the output of carbon-embedded products, and crude steel production. The cement sector has streamlined the 15 parameters to 4, keeping parameters such as clinker production, consumption of non-carbonate alternative raw materials. The aluminum smelting sector, reduced its parameters from 11 to 2, keeping anode consumption and molten aluminum output. These adjustments both eased the data-reporting burden on enterprises and improved the granularity of emissions management. Sector-specific technical verification guidelines have been issued, clarifying procedures and mandatory inspection content, unifying benchmarks and boundaries, and introducing verification methods such as cross-checks and threshold parameters, thereby further enhancing the practicality and operability of technical verification guidelines.

(2) The role of carbon emissions data routine supervision was fully leveraged

Through the National Carbon Trading Market Management Platform, authorities organized digital monthly recorded data for the power generation sector. A three-tier joint review system at the national, provincial and municipal levels has been established. In 2024, over three million power generation sector data entries were reviewed, with issues identified in random checks promptly escalated to the appropriate local departments of ecology and environment for further action. The number of issues identified in provincial and municipal reviews of enterprises' 2024 emissions reports declined by about 30% compared to the previous

year, while the number of nonconformities identified during verification fell by about 24% year-on-year, indicating steady improvement in the quality of annual emissions reports.

(3) Service and guidance on enterprise carbon emissions management have been continuously provided

In 2024, drawing on prior experience in supervision and assistance, the MEE worked with the SAMR and the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) to deploy cross-provincial teams of experts and enforcement personnel to carry out targeted supervision and assistance on carbon emissions data quality management for selected key emitting entities. Enterprises were required to rectify problems identified during supervision and assistance. The rectification task was almost fulfilled before the 2024 compliance deadline. In addition, to understand enterprises' actual carbon emission situations and improve regulatory efficiency and precision, inspection teams composed of relevant experts, enforcement personnel, and technical specialists conducted five unannounced inspections targeting typical issues such as abnormality in composite indicators and insufficient rectification of issues identified in routine supervision. These measures have continually advanced the enterprises' data quality.

(4) Project and emission reduction data quality management have been enhanced constantly

Taking reference from the international experience and grounded in China's national circumstances, the Chinese government has strengthened data quality management for voluntary greenhouse gas

emission reduction projects and corresponding emission reductions. When registering these projects and relevant emission reductions, the role of market participants has been emphasized, and integrity management has been reinforced. A "dual commitment" system has been implemented, whereby both project owners and validation and verification bodies are required to make formal commitments that follow the principle of transparency.

Market participants are required to disclose information timely and accurately, implementing comprehensive information disclosure protocol and accepting public oversight, effectively enhancing project quality. The supervision procedures prioritize in-process and post-process oversight, and have developed a set of comprehensive checklists to evaluate the completeness and compliance of project and emission reduction registration materials. Based on these checklists, strict preliminary review, re-examination, and verification are conducted on the project and emission reduction application materials. Big data, Internet of Things, and other digital and intelligent technologies are fully utilized to ensure data to be measurable, verifiable, and traceable. The responsibilities of competent departments of provincial and municipal authorities have been clearly defined to strengthen local oversight of voluntary greenhouse gas emission reduction projects, enhancing supervision effectiveness through multiple measures.

On capacity building, market participants are provided with clear technical guidance to improve data quality. The supporting organization provides in-person technical assistance to relevant project owners and validation and verification bodies, thereby directly enhancing practitioners' competencies.

8. The digital and intelligent infrastructure of China's National Carbon Market was optimized

The National Carbon Market has established key infrastructure, including the National Carbon Trading Market Information Network website and official social media account, the National Carbon Trading Market Management Platform, the National Carbon Emission Registration System, and the National Carbon Emission Trading System. This infrastructure has enabled online management across all segments, centralized process data across the entire workflow, and enhanced comprehensive and scientific decision-making.

(1)The National Carbon Market Information Website and an official social media account were publicized

The National Carbon Market Information Website and the official social media account serve as key information platforms within China's carbon market system, which aim to provide market participants, research institutions, and the public with authoritative information on carbon emissions trading and policy updates. Since 2024, the information website has been continuously optimized, including the addition of a real-time trading section that displays live updates on both the National

ETS and the National Voluntary Market. The information website has continuously published carbon market news updates. As of the end of August 2025, the website had published 855 articles and recorded nearly 2.37 million visits. The official social media account had published 780 articles, which were shared over 52,000 times, with followers reaching 19,200 and visits reaching 640,000.

(2) The National Carbon Trading Market Management Platform was constantly upgraded

Centered around key carbon market stakeholders, including key emitting entities, competent authorities, and the general public, as well as functions including emissions reporting and third-party verification, the National Carbon Trading Market Management Platform has been built to cover all stakeholders, encompassing all operations, and integrating end-to-end workflows, supporting efficient online operation of all processes of the carbon market.

Leveraging next-generation digital and intelligent technologies, the platform established a closed-loop digital management system for measuring, reporting and verification, featuring standardized pre-submission report filling, intelligent in-process real-time alerts, and checklist-based post-event reviews. An intelligent validation model was built, with more than 100 built-in validation protocols across four categories, including theoretical extreme values, thresholds, standard values, and logic checks, enabling real-time assessment of data quality through validation of all parameters. Based on knowledge graph technology, a data-logic correlation chain is established among

data from emissions, verification, trading, and compliance processes, supporting precise identification of anomalous data through parameter tracing. Artificial intelligence is used to create a comprehensive online knowledge base for the carbon market, enabling competent authorities with intelligent information retrieval and enhancing the capabilities of both management personnel and enterprise employees. Information such as lists of key emitting entities, evaluations of third-party technical service institutions, and compliance completion status is disclosed in a unified manner to support public oversight of data quality, driving substantial improvements in data quality and digital-intelligent management capabilities for the National Carbon Market.

(3) The National Carbon Emission Registration System and Trading System have been continuously improved

The National Carbon Emission Registration System and Trading System provide key emitting entities with services, including carbon emissions trading products registration, transaction settlement, and organization of centralized and unified allowance trading. Since 2024, the National Carbon Emissions Registration System and Trading System have steadily advanced system operations and security assurance. Key developments include constructing the Beijing disaster recovery center to ensure stable platform operations, realization of real-time synchronization of core operation data; maintaining regular security measures such as cybersecurity compliance assessments, penetration tests, offensive and defensive exercises, vulnerability scans and remediation, routine inspections to reinforce system defenses; promoting data sharing across

the National Carbon Trading Market Management Platform, the National Carbon Emission Registration System, and the National Carbon Emission Trading System; and formulating data interface protocols to prevent and control compliance risk. As of the end of August 2025, the National Carbon Emission Registration System has accomplished 20 major upgrades focusing on improving the quota trial calculation function and establishing a rapid response mechanism. The National Carbon Emission Trading System has cumulatively optimized 198 functions in aspects such as improving the one-way competitive bidding transaction method, and strengthening management. Together, the two systems have accepted

and cumulatively processed over 3,300 cases of changes related to the list of key emitting entities, as well as the registration and trading account information. The two systems have also responded to more than 32,000 service inquiries from market participants.

(4) The National Voluntary Greenhouse Gas Emission Reduction Registration System and Trading System have demonstrated stable operation

The National Voluntary Greenhouse Gas Emission Reduction Registration System and Trading System offer market participants registration and cancellation of voluntary emission reduction projects and emission reductions, and they organize the centralized and unified trading of China Certified Voluntary Emission Reductions (CCERs). The two systems maintained ongoing daily operation, continuously improved the competences of system security and support, and ensured stable operation. As of the end of August 2025, the two systems had completed multiple rounds of system testing and regular functional upgrades, and provided forceful support for project owners in project application, emission reduction registration and trading. The systems also provide query and response services, deploy market information through the National Carbon Trading Market Information Network website, share information with the national Green Electricity Certificate (GEC) issuance and trading system, and timely follow up with relevant information regarding corresponding renewable energy projects.

9. International cooperation on the National Carbon Market has been increasingly deepened

The Chinese government attaches great importance to international cooperation on the national carbon market. Focusing on institutional framework design, market regulation, and capacity building, China engages in extensive exchanges and cooperation with relevant countries and international organizations through bilateral and multilateral dialogues, implementation of international cooperation projects, and participation in international negotiations. China has fully drawn on international best practices while contributed China's wisdom to innovation in global carbon market mechanisms.

(1) Bilateral and multilateral exchanges and dialogues have been constantly tightened

China has actively advanced high-level climate diplomacy. In June 2024 and July 2025, the 5th and 6th China-EU High-Level Environment and Climate Dialogue (HECD) were successfully held, further strengthened the China-EU green partnership. The two sides signed a new *Memorandum of Understanding to Enhance Cooperation on Emissions Trading between the European Commission and the Ministry of Ecology and Environment of the People's Republic of China,* once again setting the direction for

sustained cooperation going forward. China also initiated the establishment of multilateral negotiation mechanisms such as the BASIC Ministerial Meeting on Climate Change and Ministerial on Climate Action (MoCA), which have played an important role in supporting developing countries to tackle climate change and to develop carbon pricing mechanisms.

Note: In June 2024, during the 5th China-EU High-Level Environment and Climate Dialogue, Minister of Ecology and Environment of China, Huang Runqiu signed an updated Memorandum of Understanding to Enhance Cooperation on Emission Trading with the European Union Delegation which will continue to have effect for a period of 5 years.

The "China Carbon Market Conference 2024 · Wuhan" was held, with over 390 representatives in attendance, including those from related countries, international organizations, relevant departments of the State Council, responsible comrades from provincial-level ecological and environmental departments, as well as representatives from domestic and foreign enterprises, financial institutions, and experts and scholars.

These participants shared practical experiences and cutting-edge concepts of carbon markets from various countries. China also hosted the International Dialogue on Voluntary Carbon Market during the 2025 National Low-carbon Day. Institutional representatives from the United Kingdom, Japan, Thailand, Singapore, Malaysia, and other countries engaged in thorough discussions regarding emerging trends in the global voluntary carbon markets and China's potential paths for participation.

Since 2024, the Chinese government has organized visits to the European Union, the United Kingdom, Norway, Switzerland, New Zealand, Australia, Japan, and the United States to learn about the latest developments in carbon markets and carbon pricing and to draw on advanced experiences and best practices. Delegations from the United Kingdom, Vietnam, Turkey, and Brazil have visited China to exchange views on key issues in carbon market development, including institutional framework design and data quality management.

Column 5: Supporting Developing Countries in Building Carbon Market Capacity

While advancing the National Carbon Markets China has vigorously deepened South-South cooperation on climate change. In July 2024, a seminar on China's Carbon Market Development Progress and Global Carbon Market Cooperation was held, covering global carbon market progress and trends in global voluntary carbon markets, China's strategy and progress in developing its carbon market, operation of carbon market trading platforms, and China's voluntary carbon market. 28 government officials, experts, scholars, and technical personnel from 15 countries, including Cuba, Cambodia, Malaysia, Jordan, Nigeria, and Iran participated in the seminar.

(2) International cooperation projects were effectively promoted

The Chinese government has actively advanced international cooperation projects with relevant countries and international organizations, organizing and participating in more than ten international seminars since 2024. Since 2014, China and the European Union have implemented the EU-China Emission Trading Capacity Building program and the EU-China Dialogue and Cooperation on ETS-related Policies and Measures, conducting studies on measuring, reporting, and verification, allowance allocation, and market supervision, training a cohort of carbon-market technical professionals, and achieving solid cooperation outcomes. Since 2019, together with the Norwegian government, China has advanced the Sino-Norwegian emissions trading system project, organizing relevant institutions to carry out policy research on system design and market supervision. The team reported research results and project progress to both governments on a regular basis, and held at least one formal meeting each year, thereby providing strong support for China's carbon market development. In 2012, China became a member of the World Bank's Partnership for Market Readiness (PMR) and, through PMR projects, conducted forward-looking research on carbon markets and sent officials to multiple international trainings to share China's carbon market experience with developing countries. In 2024, the Partnership for Market Implementation (PMI) project was launched to conduct joint research on key issues in developing the National Carbon Market, enhance carbon market functions, and promote alignment with international practices.

Note: In September 2025, Vice Minister Li Gao met with Cuban Vice Prime Minister Eduardo Martinez Diaz. The two sides had in-depth exchanges on issues such as the development and construction of carbon markets and strengthening cooperation in addressing climate change.

(3) China contributes great wisdoms during international negotiations

At the 29th Conference of the Parties (COP29) to the United Nations Framework Convention on Climate Change (UNFCCC), China engaged extensively with all parties, maintained continuous communication and coordination, and actively facilitated the negotiations on the implementation guidelines for the market and non-market mechanism framework under Article 6 of Paris Agreement. China has worked to improve the implementation framework and technical specifications for cross-border carbon trading under the Paris Agreement, and promoted

the full implementation of the market mechanisms under the Agreement.

In accordance with the relevant arrangements and requirements of the Paris Agreement, work has been carried out to study and formulate cross-border carbon trading administrative measures that is in line with China's national circumstances and features Chinese characteristics. This method will standardize the management requirements for the conversion of emission reductions from other voluntary mitigation mechanisms, such as the Clean Development Mechanism, to those under Article 6. China is dedicated to exploring ways to better promote the fulfillment of China's international carbon reduction commitments through cross-border carbon trading and provide support for carbon reduction efforts of a wide range of developing countries.

President Xi Jinping clearly stated at the Leaders Meeting on Climate and the Just Transition held in April 2025: "The United Nations Framework Convention on Climate Change and its Paris Agreement are the legal cornerstone of international climate cooperation. It is important for all countries to champion the rule of law, honor commitments, prioritize green and low-carbon development, and jointly respond to the climate crisis through multilateral governance." China has always held the view that we should adhere to the principles on which the international community has long reached consensus, such as equity, common but differentiated responsibilities and respective capabilities. China rejects the adoption of unilateral, punitive and discriminatory protectionist measures that are inconsistent with international law under the pretext of climate issues.

10. Effectiveness of China's National Carbon Market development has become increasingly evident

In July 2021 and January 2024, China successively launched the National ETS and the National Voluntary Market. With the joint efforts on all fronts, the National Carbon Market has managed to operate in a stable and orderly manner; its institutional framework has been continuously improved; market vibrancy has further increased; key emitting entities' awareness of emissions reduction has continued to strengthen; compliance status of allowance surrender has improved across the board; diverse market participants have actively engaged in the voluntary development and implementation of emission reduction projects; and the functions of the carbon market have become increasingly clearer.

(1)Market incentives and constraints continued to take effect

The market mechanism has played a role in incentivizing advanced entities and restraining backward ones. Enterprises' awareness of low-carbon development under the principle that "carbon emissions come with costs and carbon reduction brings benefits", has been continuously enhanced, and their carbon emission management and control capabilities have been significantly improved. At present, all key emitting entities in the power

generation sector have established internal control systems for carbon emissions management, integrating carbon asset management into their daily production and operation activities. Over the past four years, a total of 564 key emitting entities in the power generation sector have shifted from allowance deficits to surpluses through measures such as low-carbon technological retrofits and production process optimization, with a total surplus of 58.25 million tonnes of China Carbon Emission Allowances (CEAs). Based on the average closing price of 68.72 yuan per tonne since the launch of the National Carbon Emission Trading System (as of the end of August 2025), the surplus CEAs of these enterprises are equivalent to approximately 4 billion yuan. While promoting emission reductions, the National Carbon Emission Trading System has also created emission reduction revenues for enterprises.

Column 6: Central SOEs Continue to Strengthen Enterprise Carbon Asset Management

Since 2024, under the guidance of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), central state-owned enterprises (central SOEs) have actively participated in building the National Carbon Market, treating emissions trading as an important lever for green and low-carbon transformation and upgrading; progressively strengthened capacity for carbon asset management; and ensured that relevant enterprises could complete allowance surrender on schedule. According to statistics, all central SOEs subject to allowance management have achieved 100% compliance for three consecutive cycles. 72 central SOE subsidiaries used CCERs to offset allowance surrender obligations, optimizing their carbon asset portfolios and promoting a more diversified market.

(2) Green and low-carbon transitions across sectors were accelerated

Compared with mandatory production and emission restrictions, the National ETS provides enterprises with greater flexibility and autonomy to reduce emissions, and is more conducive to facilitating low-cost emission reductions across sectors. Guided by policy incentives to advance low-carbon transformation of the energy structure, and on the premise of ensuring the rapid development of the power generation sector and the security of energy supply, China's national power sector carbon emission intensity (CO_2 emissions per unit of power generation) in 2024 decreased by 10.8% compared with 2018. The proportion of power generation by large-scale units continued to rise: the share of power generation by generation units with a capacity of 600MW and above in total thermal power generation increased from 48% in 2020 to 53.8% in 2024. The supported areas of the National Voluntary Market have been continuously expanded, the public's capacity to participate in emission reduction and their awareness of low-carbon development have been significantly enhanced, and the development of low-carbon, zero-carbon and negative-carbon technologies has been further promoted. This has realized the transformation of "lucid waters and lush mountains" into "invaluable assets".

Column 7. Carbon market drives green and low-carbon technological innovation in power generation enterprises

The National ETS has consolidated enterprises' primary responsibility for carbon emission reduction, fully exerted its guiding role in advancing the clean and low-carbon transformation of the power industry, and driven enterprises to effectively reduce carbon emission intensity through technological innovation. In 2021, China Huaneng Yimin Coal and Electricity Co.Ltd. launched the construction of a heating project with the longest distance in China's alpine regions. After the official commissioning of the project, it replaced numerous previous scattered coal-fired boilers. Additionally, with the application of technologies such as waste heat utilization in low-parameter power plants, large temperature difference transmission, and linkage of multi-stage relay circulation pumps, energy utilization efficiency has been improved, and the total carbon emissions have been reduced by 979,500 tonnes cumulatively over two years.

Datang Group Qinling Power Plant has achieved a cumulative surplus of 510,000 tonnes of carbon allowances in recent years through energy conservation, carbon reduction, and in-depth peak shaving transformation. The innovative development of China's carbon market is incentivizing market participants to pursue green and low-carbon technological innovation with higher efficiency and at lower cost, providing inexhaustible driving force for the development of new quality productive forces.

(3) The fundamental role of carbon pricing has gradually emerged

The asset attributes of CEAs and CCERs have been increasingly recognized by society, with application scenarios continuing to expand. The price discovery function of the National ETS and the expected returns from CEAs are gradually becoming an important basis for

enterprises to formulate mitigation strategies, and provide price signals for financial support to green and low-carbon development. Competent financial authorities, including the People's Bank of China (PBOC), the National Financial Regulatory Administration (NFRA), and the China Securities Regulatory Commission (CSRC), have proactively guided financial support for carbon market development. The price trend in the National ETS has gradually emerged as a "wind vane" for the prices of local pilot carbon markets. Through its price discovery function, the National Voluntary Market has better guided capital into green and low-carbon sectors such as ecosystem carbon sinks, renewable energy, methane emission reduction, and energy conservation and efficiency enhancement, thereby incentivizing more sectors and enterprises to participate in emission reduction actions.

(4) Capacity for carbon emissions accounting has been continuously strengthened

Since the launch of the National ETS, the Chinese government has persisted in prioritizing data quality management as a fundamental task in market development. Through unremitting efforts, the carbon emission statistics and accounting capabilities of key emitting entities have been rapidly improved, and the development of talent teams has been continuously strengthened. Specialized technical support teams have been established to fully implement various data quality management tasks. At present, the standardization, accuracy, and timeliness of carbon emissions accounting in the National ETS have been significantly enhanced, meeting the needs of the market's stable operation. In addition, carbon market data has provided critical support for formulating and

releasing annual power emission factors, regional power grid baseline emission factors, and establishing and improving the carbon footprint management system.

(5) Third-party sectors develop in a standardized manner

The expansion of sectoral coverage of the National ETS and the launch of the National Voluntary Market have further promoted and standardized the diversified development of the carbon services market. From 2022 to 2024, a total of 139 verification institutions have been cultivated in the National Carbon Market, and more than 4,500 technical personnel have been trained. In 2024 alone, over 50 consulting institutions, more than 450 inspection and testing institutions, and nearly 100 verification institutions provided services to key emitting entities, including the preparation of annual emission reports, coal quality inspection and testing, and verification of annual emission reports. Further, 5 institutions obtained the qualification of verification institutions for greenhouse gas emission reduction project validation and emission.

Column 8. Continually Enhancing the Competence of Carbon Emissions Management Personnel

The Ministry of Human Resources and Social Security (MOHRSS) has supported the organization of advanced training programs on green transformation and the "Dual Carbon" goals, and has formally included the occupation of carbon emissions administrator in the Chinese Occupational Classification Encyclopedia, bringing it into the national occupation classification. In 2024, the final of the 15th National Vocational Skills Competition for Power Generation Sector (Carbon Emissions Administrator L), jointly hosted by China Electricity Council and China Employment Training Technical Guidance Center was successfully held in Shandong. This was the first national-level competition for carbon management profession, which integrates the monitoring, accounting, trading, compliance, and other work scenarios of electric power enterprises in the national carbon market into the skill competition projects, enabling carbon emission management talents in the power generation industry to refine their skills and improve their abilities in actual combat.

China Huadian Corporation has taken the professional training ability evaluation of carbon emissions administrators as the core focus, constructed a multi-tiered talent cultivation system centered on the construction of the National ETS. In accordance with the National Vocational Skill Standards for Carbon Emissions Administrator, China Huadian Corporation has conducted training and assessment for three consecutive years, achieving 100% certification coverage for senior-level carbon emission administrators across all its affiliated key emitting entities.

(6) International influence has been enhanced continuously

As the National ETS progressively incorporates energy-intensive sectors—such as steel, cement, and aluminum smelting, and as the National Voluntary Market enables a wider range of low-carbon projects to participate in the trading, the influence of the National Carbon Market price signals on global carbon price levels and the effectiveness of carbon trading mechanisms continue to strengthen. China's explorations in ETS design—such as an intensity-based approach to allowance allocation, align with the tasks and requirements of the current stage of China in achieving its "Dual Carbon" goals. The practices in voluntary greenhouse gas emission reduction trading mechanisms, such as applying digital tools like interconnected monitoring data systems and the strengthening of mid- and post-event mechanisms, fully reflect the policy philosophy of high-integrity and high-quality carbon credits. These efforts have been highly recognized by the international community, offering experiences and reference for developing countries and emerging economies in building and improving carbon markets. Countries including Brazil, Indonesia, and Vietnam have engaged in dialogue and exchanges with China on carbon market development.

Outlook

At present, a transformation not seen in a century is accelerating across the world, intense rivalry takes place between multilateralism and unilateralism, and global governance is undergoing profound adjustments. Green transition is a prevailing trend of global development and the fundamental solution to climate change. China's high-quality production capacity, as exemplified by its manufacturing of electric vehicles, lithium batteries, and photovoltaic products, provides a significant boost for the green development of the world and important support for addressing climate change.

China's carbon market is an important policy tool for implementing the national strategy of proactively addressing climate change and for achieving the "Dual Carbon" goals. It also represents the principal form of the country's carbon pricing mechanism. Moving forward, the Chinese government will adhere to the fundamental role of the carbon market as a policy tool for controlling greenhouse gas emissions, continue to improve the supporting policies and systems related to the National Carbon Market, expand the scope of industries covered by the National ETS and the support areas of the National Voluntary Market in a phased and step-by-step manner, constantly enrich the trading varieties, trading entities, and trading methods of the National Carbon

Market, create a more fair, open, and transparent market environment, and strive to optimize the efficiency of carbon emission resource allocation and maximizing benefits.

China will further deepen pragmatic climate cooperation across multiple fields and through multiple channels, strengthen the mutual recognition of technologies, methods, and standards in the carbon market field with relevant countries, regions, and international organizations, promote bilateral and multilateral cooperation based on voluntary emission reduction trading, and accelerate the building of a more effective, dynamic, and internationally influential carbon market.

Milestones

2024

On January 22, the National Voluntary Greenhouse Gas Emission Reduction Trading Market was launched.

On January 25, the Interim Regulations for the Management of Carbon Emission Trading was released.

On February 26, the State Council Information Office held a routine policy briefing on the Interim Regulations for the Management of Carbon Emission Trading.

By March 31, key emitting entities in the power generation sector submitted the greenhouse gas emissions reports of 2023.

On April 24, the composite price of trading in the National ETS exceeded 100 yuan/tonne for the first time.

On May 1, the Interim Regulations for the Management of Carbon Emission Trading came into effect.

From May 7 to May 16, the MEE conducted the third round of actions to supervise and support the quality improvement of carbon emissions reports.

On June 7, the SAMR (also known as the National Certification and Accreditation Administration) released the first batch of institutions authorized for the validation and verification of voluntary greenhouse gas emission reduction projects.

By June 30, the provincial departments of ecology and environment completed the verification tasks for 2023 greenhouse gas emissions reports from key emitting entities in the power generation sector.

On July 21, the China Carbon Market Conference 2024 in Wuhan was held; the Progress Report of China's National Carbon Market (2024) was released.

On September 13, four national carbon emission technical guidelines, including the GHG emissions accounting, reporting and verification guidelines for the cement and aluminum smelting sectors were issued.

On October 15, the Notice on Allowance Allocation and Surrender for the Power Generation Sector under the National ETS for 2023 and 2024 was issued.

On December 20, the 2022 electricity CO_2 emission factor was published.

On December 30, MEE and MOT jointly issued the CCER methodology for energy efficiency of highway tunnel lighting systems.

On December 31, The National ETS concluded the 2024 trading year successfully. MEE, National Energy Administration and the National Mine Safety Administration jointly issued the CCER methodology for utilization of low-concentration coal mine gas and ventilation air-discharged gas with methane volume concentration below 8% (VAM).

2025

On January 21, two national carbon emission technical guidelines, covering GHG emissions accounting, reporting and verification guidelines for the steel sector were issued.

On March 6, the first batch of CCERs was officially registered in the National Voluntary Market.

On March 7, The First Batch of CCERs Begins Trading in the National Voluntary Market.

On March 18, SAMR/CNCA announced the second-batch accreditation process for validation and verification bodies (VVBs) for CCER projects.

On March 20, MEE issued the Work Plan for Including the Steel, Cement, and Aluminum Smelting Sectors into the National Carbon Emission Trading System.

On March 25, the Letter on Publicly Soliciting Proposals for Methodologies for Voluntary GHG Emission Reduction Projects was issued.

On April 11, the Notice on Accomplishing the Work Related to the National ETS was issued.

On June 30, provincial departments of ecology and environment completed verification of 2024 GHG emissions reports for key emission entities in the power generation sector.

On July 16, the first batch of one-way bidding under the National ETS were successfully completed.

On August 14, MEE invited public feedback on four draft methodologies for grid-connected power generation and combined heat and power from pure agricultural and forestry biomass, recovery and utilization of associated gas from offshore oilfields, recovery and utilization of test production flaring gas from onshore gasfields, and recovery and utilization of low-volume associated gas from onshore oilfields.

On August 25, the Opinions on Advancing Green and Low-Carbon Transition and Strengthening the Construction of the National Carbon Market was publicly released.

On September 6, the 2025 National Carbon Market Construction Work Conference was held in Shenzhen.

On September 24, the 2025 China Carbon Market Conference is held in Shanghai, and the Progress Report of China's National Carbon Market (2025) is released.

Welcome to Visit the National Carbon Trading Market Information Network Website

- **Introduction:**
  The National Carbon Trading Market Information Network is the main platform for disclosing information about China's National Carbon Market, interacting with and communicating with the public. It provides society-wide access to relevant policies and regulations, news updates, educational and professional knowledge, and related research findings.

- **Website:** https://www.cets.org.cn