International Carbon Action Partnership

China National ETS

General Information

ETS Description

China's national ETS began operating in 2021, with the objective of contributing to the effective control and gradual reduction of CO_2 emissions. China's national ETS is the world's largest in terms of covered emissions, estimated to cover around 8 billion tCO_2 – or more than 60% of the country's CO_2 emissions.

The China national ETS regulates more than 3,500 companies from the power, steel, cement, and aluminum smelter sectors with annual emissions in excess of 26,000 tCO_2. Covered entities must surrender allowances for all their covered emissions. The allowances in the China national ETS are 100% freely allocated using an output-based approach. Compliance obligations are currently limited and vary between different types of facilities. The system's coverage will expand to other sectors over time.

In January 2024, China launched its national GHG voluntary emission reduction trading market, the Chinese Certified Emissions Reduction scheme (CCER). This came after six years of suspension, during which time it was undergoing reform. This reform could contribute to the implementation of an offsetting scheme in the domestic ETS (see 'Offset Credits' section).

The national ETS builds on the successful experience of regional carbon markets implemented in seven regions. These pilots continue to operate in parallel with the national ETS, covering sectors and entities not included in the national system.

ETS Status

in force

Jurisdictions

China

Year in Review

In January 2024, the State Council of China promulgated the "Interim Regulations for the Management of Carbon Emissions Trading" (Interim Regulations) that establishes a robust legal foundation for the national ETS, which took effect as of May 2024. It further enhances enforcement measures and non-compliance penalties for different stakeholders.

In October, the Ministry of Ecology and Environment (MEE) released the allocation plan and compliance work plan for the power sector for 2023 and 2024. The allocation plan updates benchmarks and excludes indirect emissions. It also sets a limit on banking and cancels borrowing. According to this plan, the compliance is shifting from a two-years cycle to a one-year cycle.

After the launch of the CCER program in January 2024, the Certification and Accreditation Administration (CNCA) announced the list of accredited verifiers in June 2024. In August, the MEE started accepting new project applications and verifications. As of April 2025, there are five accredited validation and verification agencies for the CCER program. More than 70 emission reduction projects have applied for CCER project status, and nine of these projects have successfully had their emission reductions issued, totaling 9.48 million tonnes CO_2e.

In March 2025, the MEE published a work plan for extending the sectoral coverage of the national ETS after a public consultation in September 2024. The plan expands the ETS to include the steel, cement, and aluminum smelter sectors, implemented over two phases. Phase 1 (2024 to 2026) aims to familiarize companies in these sectors with the national ETS and enhance emissions data quality. Phase

2 (starting in 2027) aims to decrease the emission intensity and further improve the functioning of the system. This scope expansion brings an additional 1,500 companies into the Chinese national ETS, increasing the system's emissions coverage by 3 billion tCO_2e.

Sectoral coverage

Industry
Power

Emissions & Targets

Overall GHG Emissions excl. LULUCF (MtCO2e)

14,314 $MtCO_2e$ (2021)

GHG reduction targets

By 2025: Reduction in carbon emissions per unit of GDP of 18% compared to 2020 levels (14th Five-Year Plan)

Before 2030: Peak CO_2 emissions; reduction of CO_2 emissions per unit of GDP by over 65% from 2005 levels ('1+N' policy framework; updated NDC)

Before 2060: Carbon neutrality ('1+N' policy framework; updated NDC)

Current Allowance Price (per t/CO2e)

Average secondary market price: CNY 95.96 (USD 13.33)

Size & Phases

Covered emissions (2024)

60.00%

GHGs covered

CO2, CF4 and C2F6 (only for aluminum smelter sector)

Phases

There are currently no specific phases for the Chinese national ETS.

Cap or total emissions limit

The cap is the sum of the bottom-up total allowance allocation to all individual covered entities. The cap is adjusted according to the actual production levels.

The national ETS is estimated to have had an annual cap of ~4,500 $MtCO_2$ in 2019 and 2020, ~5,100 $MtCO_2$ in 2021 and 2022, ~5,200 $MtCO_2$ in 2023 and ~8,000 $MtCO_2$ in 2024.

Sectors and thresholds

Power (including combined heat and power, as well as captive power plants of other sectors), steel, cement, and aluminum smelter.

Compliance obligations are currently limited (see 'Allocation' section).

The scope is expected to be gradually expanded to cover other sectors: petrochemicals, chemicals, flat glass, copper smelter, paper, and aviation. Entities in these sectors have MRV obligation since 2015.

INCLUSION THRESHOLDS:

For 2019 to 2020: Entities with annual emissions of 26,000 tCO_2 or greater in any year from 2013 to 2019.

For 2021 to 2022: Entities with annual emissions of 26,000 tCO_2 or more in any year from 2020 to 2021.

From 2023: Entities with annual emissions of 26,000 tCO_2 or more in the previous year.

Point of regulation

Point source

Type of entities

Companies

Number of entities

~3,500 (2024)

Allowance Allocation & Revenue

Allowance allocation

Allowances are distributed for free, using benchmarking.

FREE ALLOCATION (Power sector): Output-based benchmarking is used as the main allocation method, with four distinct benchmarks: conventional coal plants below 300 MW; conventional coal plants above 300 MW; unconventional coal; and natural gas.

A pre-allocation method is adopted for the annual allowance allocation. Allocation is then adjusted ex-post to reflect the actual production in the respective compliance year.

Entities received allowances at 70% of their verified emissions in the previous year. Allocation was subsequently adjusted to reflect actual generation in 2023 and 2024. A unit load (output) adjustment factor distributed more allowances for coal-fired entities operating at load rates below 65%. This may have provided more allowances for less efficient power units.

According to the 2023 to 2024 allocation plan, compliance obligations are limited. Gas-fired plants only need to surrender allowances up to their level of free allocation as per the benchmarks. Coal-fired plants with free allowance below 80% of their verified emissions will have their allocation adjusted upwards to 80% of their verified emissions. This means that 20% remains the maximum shortfall, similar to the previous compliance periods.

FREE ALLOCATION (steel, cement, and aluminum smelter sector):

For the compliance year of 2024, covered entities will receive free allowances equal to their verified emissions.

The MEE will design and publish the annual allocation method for the compliance year 2025 and subsequent years, which will be output-based and intensity-controlled.

AUCTIONING: Allocation currently takes place through free allocation, but the Interim Regulations clarify that auctioning is to be introduced and gradually expanded. There is currently no timeline for this.

Use of Revenues

There is currently no arrangement for the use of revenues generated by the scheme.

Flexibility & Linking

Offset credits

The use of offset credits is allowed.

QUANTITATIVE LIMITS: Covered entities can use CCERs generated from projects not covered by the national ETS for up to 5% of their verified emissions.

QUALITATIVE LIMITS: There were no additional project or vintage restrictions.

In 2012, the National Development and Reform Commission (NDRC) issued the “Interim Measures for the Management of Voluntary GHG

Emissions Reduction Transactions", which provided guidelines for the issuance of CCERs. The registration of CCER projects started in 2015 but the program was suspended in 2017 while regulations were reviewed. MEE launched the CCER system in 2024 with new methodologies, registry, verifiers and exchange.

Only credits from projects registered in the new CCER program are eligible for offset use in China's national ETS after January 2025.

The National Center for Climate Change Strategy and International Cooperation (NCSC) operates the CCER registry. The Beijing Green Exchange is dedicated to CCER trading platforms.

Banking and borrowing

Borrowing was temporarily allowed in 2021 to 2022.

Banking was allowed with no limit in the first three compliance periods. In the following compliance period, covered entities are allowed to bank up to 10,000 tonnes plus 1.5 times their net sales over 2024 and 2025.

Links with other Systems

The China national ETS is not linked with any other system.

Other carbon pricing instruments in the jurisdiction

ETS: Regional ETSs in Beijing, Chongqing, Fujian, Hubei, Guangdong, Shanghai, Shenzhen and Tianjin

Domestic crediting mechanism (national): China Certified Emissions Reduction (CCER)

Domestic crediting mechanisms: Local offset crediting mechanism in Beijing, Chongqing, Fujian, Hubei, Guangdong, Shanghai, Shenzhen, Tianjin, etc.

Compliance

Compliance mechanism

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions, and allocation is based on an emissions intensity benchmark.

Compliance Period

Two calendar years from 2019 to 2022. One calendar year from 2023 onwards.

Monitoring, Reporting, Verification (MRV)

MEE publishes an ETS work plan to set the timeline for MRV work each year. MEE published the 2025 work plan in April 2025.

MONITORING: Covered entities are required to set up monitor plans and monitor their emission based on these plans.

REPORTING FREQUENCY: Covered entities must submit a monthly emission report within 40 calendar days after the end of each month, including fuel consumption, low-level calorific value, carbon content of the fuel, purchased electricity, output products, as well as other parameters. Covered entities in the power sector must submit the 2024 emissions reports by the end of March 2025. Covered entities in the steel, cement and aluminum smelter sectors must submit the 2024 emissions reports by the end of June 2025.

VERIFICATION: Provincial-level ecological and environmental authorities are responsible for organizing the verification of GHG reports. They may commission technical service agencies to provide verification services. Verification of 2024 emissions from the power sector must be completed by the end of June 2025. Verification of 2024 emissions from the cement, aluminum smelter and steel sectors should be completed before the end of August 2025. Verification of other key industries should be completed by the end of September 2025.

FRAMEWORK: MRV guidelines, supplementary data sheets, verification guidelines, and other guidance are available for the eight sectors expected to be covered by the ETS. This MRV framework has evolved continuously since 2013 (see 'Sectors and Thresholds' section).

Penalties and enforcement

The Interim Regulations enhanced enforcement measures and penalties for different parties. Covered entities face a fine for not reporting or cheating in reporting, ranging from CNY 500,000 (USD 69,469) to ten times the illegal gains. Failures in compliance obligations result in fines ranging from five to ten times the market value of the gap, a significant increase from the previous maximum fine of CNY 30,000 (USD 4,416). For those who refuse to surrender allowances after receiving a warning, deductions from the following year's allocation and potential production suspension are now in force.

Consultancy firms, third-party verifiers and testing organizations involved in MRV data fraud may face penalties up to ten times of their illegal gains, as well as disqualification. Similar punishments also apply for market manipulation. The regulation rectifies the previous absence of penalties for misconduct by technical service providers and market participants.

Market participants involved in market manipulation behaviors may face penalties up to ten times their illegal gains, starting from CNY 500,000 (USD 69,469).

Market Regulation

Market Stability Provisions

In May 2021, the MEE announced the option of establishing a market-regulating and protection mechanism. This would enable the MEE to respond to abnormal fluctuations in trading prices, for instance through buy-back, auctioning, or adjusting the rules related to CCER use. The necessary triggers and specifics of this mechanism are yet to be defined.

EXCHANGE

Instrument type: Price-based instrument

Functioning: The Shanghai Environment and Energy Exchange implements a system of limits on price increases and decreases for trading over the exchange. For listed trading (the maximum volume for a single transaction does not exceed 100,000 tCO_2e), this is 10% above or below the reference price (the closing price of the previous trading day). For block trading (with minimum transaction volume of 100,000 tCO_2e), this is 30% above or below the reference price. Only transactions within this price range can be successfully completed on the exchange. It also sets the maximum position limit for the different market participants: the sum of their annual allocated allowances plus 1 $MtCO_2$ for compliance entities, 1 $MtCO_2$ for institutional investors, and 50,000 tCO_2 for natural persons.

Market Design

MARKET PARTICIPATION: Compliance entities. The Interim Regulations indicate that other types of institutions or individuals may in the future also be allowed to participate in the market; however, there is no specific timeline for this.

MARKET TYPES:

Primary: Allowances are currently only distributed by free allocation. The Interim Regulations state the intention to introduce auctioning, though without a specific timeline.

Secondary: China Emission Allowances (CEA) can be traded on a dedicated trading platform managed by the Shanghai Environment and Energy Exchange. CEAs for the 2019 to 2020 period, CEAs for 2021, CEAs for 2022, and CEAs for 2023 are categorized as four different products on the exchange, and have similar prices.

Due to financial market regulations, other products (i.e., derivatives) are currently not allowed.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments. For financial accounting purposes, the Ministry of Finance published an interim policy that categorizes only purchased allowances, and not those received for free, as assets in financial statements.

Other Information

Institutions involved

The China national ETS has a multi-level governance structure involving three levels of government:

Ministry of Ecology and Environment (MEE):
Acts as the national competent authority setting the rules and overseeing the system, jointly with other national regulators.
Provincial-level MEE subsidiaries: Oversee the implementation of the ETS, including identifying covered entities, organizing MRV, hiring verifiers, calculating allowance, managing provincial registry account, oversee compliance.

Municipal-level authorities: Responsible for managing covered entities directly.

China Carbon Emissions Registration and Clearing Co., Ltd.: Responsible fo.lr operating the CEA registry and clearing platform.

Shanghai Environment and Energy Exchange: Operates the CEA trading platform.

National Center for Climate Change Strategy and International Cooperation (NCSC): Operates the CCER registry.

The Beijing Green Exchange: Responsible for operating the CCER trading and clearing platform.

Regulatory Framework

The National Measures for the Administration of Carbon Emission Trading (trial) (2021)

Allocation Plan for the Power Sector (2019-2020) and list of covered entities (2021) (English translation)

Guidelines for Enterprise Greenhouse Gas Verification (trial) (2021)

Notice on Strengthening the Management of Enterprise Greenhouse Gas Emissions Reporting (2021)

Allocation Plan for the Power Sector (2023-2024)

Management Measures for voluntary Greenhouse Gas Emission Reduction Trading (Trial) (2023)

Guidelines for GHG Monitoring and Reporting for various sectors (2013, 2014, and 2015)

Updated Guidelines for GHG Monitoring and Reporting for the power sector (2023)

Updated Guidelines for GHG Monitoring and Reporting for industrial sectors (2023)

Interim Regulations on the Administration of Carbon Emission Trading (2024)

Guidelines for GHG Monitoring and Reporting for Cement, aluminum smelter and steel industries (2024 and 2025)

Work Plan for National ETS covering steel, cement and aluminum smelter sectors (2025)

Evaluation / ETS review

An evaluation framework is currently under development.

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