

# China - Shanghai pilot ETS

## General Information

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### ETS Description

The Shanghai Pilot ETS was launched in November 2013 and was the second Chinese region to start its pilot system.

The system covers 403 entities. It covered power and industrial sectors at the beginning and kept expanding into new sectors such as buildings, domestic aviation, maritime, and road transport. The Shanghai government has a plan to lower the inclusion threshold and expand the ETS to cover more public buildings and GHGs in the next three years.

Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation. Ad hoc auctions were held between 2014 and 2019, after which they have been held every year.

The Shanghai ETS is the only pilot that has achieved a 100% compliance rate since its launch. It is also one of the most active pilots in terms of offset credit trading. Shanghai has been a center for carbon finance innovations in China, including repurchases, carbon funds, carbon trusts, Chinese Certified Emission Reduction (CCER) credit pledge loans, green bonds, and carbon margin trading.

The Shanghai ETS operates in parallel with China's National Carbon Market. As the National Carbon Market expands to new sectors, covered entities in these sectors are transitioning out of the Shanghai ETS.

### ETS Status

in force

### Jurisdictions

Shanghai

### Year in Review

In December 2024, the allowance allocation plan for compliance year 2024 and the ETS working plan for 2025 were released. According to the 2024 allocation plan, nine companies in the hazardous waste management sector have been added, but with MRV obligations only. All covered entities surrendered their compliance units for compliance year 2024 before June 2025.

In February 2025, the Shanghai Municipal People's Government issued the "Shanghai Carbon Emissions Management Measures". These measures took effect in April, replacing the "Interim Measures for the Administration of Carbon Emissions in Shanghai" released in 2013, and now serve as the legal basis for the Shanghai ETS. The new Measures clarify the management responsibilities and operational procedures for the Shanghai ETS, increase penalties for violations, and introduce local offset mechanisms to encourage small-scale emission reduction projects and individual emission reduction actions.

In July, the Shanghai Municipal People's Government issued the "Action Plan for Deepening Reform of the ETS from 2026 to 2030". This plan sets out the development direction for the Shanghai ETS over the next five years, with key priorities including:

1. implementing an absolute cap for sectors with stable carbon emissions;
2. lowering thresholds for certain industries in 2026 and expanding the scope of covered sectors in 2028, with potentially covering other non-CO2 GHG;
3. further refining MRV rules and incorporating accounting for green energy;

4. increasing the proportion of auctioned allowances, with the share of those up to 8% in 2027 and setting to rise in subsequent years; and
5. promoting the generation and use of local offset credits.

Over the next five years, the Shanghai Ecology and Environment Bureau (EEB) and other relevant departments will refine the design of the Shanghai ETS in accordance with this plan.

In June, the allowance allocation plan for compliance year 2025 was released. It confirmed that covered entities in the steel and cement sectors have been integrated into the National Carbon Market.

In October, the Shanghai EEB issued the “Shanghai Carbon Inclusive Management Measures”. Coming into effect in November, these new measures supersede the “Shanghai Carbon Inclusive Management Measures (Trial)” issued in 2023, and further regulate the issuance, administration, and usage of the provincial offset mechanism, which generates Shanghai Carbon Emission Reduction (SHCER) credits.

The only auction that the Shanghai EEB organized in 2025 did not clear as no market participants submitted bids.

### Sectoral coverage

Maritime  
Domestic Aviation  
Buildings  
Industry  
Power

### Revenue usage

General budget, including debt reduction

## Emissions & Targets

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### Overall GHG Emissions excl. LULUCF (MtCO<sub>2</sub>e)

178.6 MtCO<sub>2</sub>e (2022)<sup>[1]</sup>

<sup>[1]</sup> Due to the lack of publicly available data, the data reported here is estimated by local experts based on public sources.

### GHG reduction targets

**By 2030:** CO<sub>2</sub> emissions peaking before 2030 (“Shanghai Carbon Peaking Implementation Plan”<sup>☒</sup>)

**By 2060:** carbon neutrality (“Implementing Opinions of Shanghai on Peaking Carbon Dioxide and Achieving Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy”)

### Current Allowance Price (per t/CO<sub>2</sub>e)

Average secondary market price: CNY 65.89 (USD 9.16)

## Size & Phases

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### Covered emissions (2024)

56.00%

### GHGs covered

CO<sub>2</sub> only

### Phases

**PHASE 1:** 2013 to 2015, also known as the “trial phase”

**PHASE 2:** 2016 to present

## Cap or total emissions limit

A cap under Shanghai ETS changes as a function of production (output) and is the sum of the bottom-up output-based/installation-level emissions limits for all individual covered entities. The bottom-up emissions limits do not represent an absolute cap. Inclusive of reserves, the caps for past years were set as follows:

### PHASE 1:

~150 MtCO<sub>2</sub> per year

### PHASE 2:

2016: 155 MtCO<sub>2</sub>

2017: 156 MtCO<sub>2</sub>

2018: 158 MtCO<sub>2</sub>

2019: 158 MtCO<sub>2</sub>

2020<sup>[1]</sup>: 105 MtCO<sub>2</sub>

2021: 109 MtCO<sub>2</sub>

2022: 100 MtCO<sub>2</sub>

2023: 105 MtCO<sub>2</sub>

2024: 106 MtCO<sub>2</sub>

2025: 80 MtCO<sub>2</sub>

<sup>[1]</sup> This drop from 2019 is primarily due to the transfer of large parts of the power sector into China's National ETS.

## Sectors and thresholds

**PHASE 1:** Airports, domestic aviation, chemical fibers, chemicals, commercial buildings, power and heat, water suppliers, hotels, financial institutions, iron and steel, petrochemicals, ports, non-ferrous metals, building materials, paper, railways, rubber, and textiles.

### Inclusion thresholds:

- Power and industry: Emissions of at least 20,000 tCO<sub>2</sub> per year
- Other sectors: Emissions of at least 10,000 tCO<sub>2</sub> per year

**PHASE 2:** Previous sectors plus shipping, electronic materials, pharmaceuticals, automotive manufacturing, and food manufacturing. Power plants were transferred to China's National Carbon Market from 2019, but some special captive power plants and heat generation entities remain covered by the Shanghai carbon market. Data centers and road transport have been covered since 2022, with the latter only having MRV obligations. Hazardous waste management has been covered since 2024 with MRV obligations only.

The steel and cement sectors were integrated into the National Carbon Market in 2024, while the power grid is not covered as of the same year.

### Inclusion thresholds:

- Industry: either emissions of at least 20,000 tCO<sub>2</sub> per year or energy consumption of 10,000 tonnes of coal equivalent (tce) per year.
- Aviation: either emissions of at least 20,000 tCO<sub>2</sub> per year or energy consumption of 10,000 tce per year.
- Maritime: either emissions of at least 100,000 tCO<sub>2</sub> per year or energy consumption of 50,000 tce per year.
- Data centers: emissions of at least 20,000 tCO<sub>2</sub> per year.
- Buildings (including ports and airports): either emissions of at least 10,000 tCO<sub>2</sub> per year or energy consumption of 5,000 tce per year.

## Point of regulation

Point source (e.g., industry, road transport, aviation); downstream (indirect emissions from electricity and heat consumption).

## Type of entities

Companies

## Number of entities

403 entities (2025)

## Allowance Allocation & Revenue

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### Allowance allocation

Allowances are distributed for free, using benchmarking or grandparenting.

In Phase 1, covered entities received allowances for the whole period at once. In Phase 2, allowances are allocated on an annual basis. In addition, allocation methods have been progressively improved, including increased use of benchmarks.

The allocation plan is updated every year. For the compliance year 2025:

#### FREE ALLOCATION:

**Benchmarking:** Free allocation based on sector-specific benchmarks is used for electricity and heat producers, and data centers.

**Grandparenting:** Grandparenting based on historical emissions intensity is used for some industrial sectors, aviation, ports, shipping, water suppliers, and public buildings, generally based on the previous three years' data.

Grandparenting based on historical emissions is used for airports, and some industrial sectors with complex products or a considerable change in emissions boundaries, generally based on the previous three years' data.

Ex-post allocation adjustments, e.g., based on production data, are applied for those with historical intensity or benchmarking allocations. For the compliance year 2025, these covered entities will receive allowances at 80% of 2024 their verified 2024 emissions as pre-allocation. Before the compliance deadline in 2026, the competent authority will supplement or deduct the allowance based on the verified output in 2025.

In addition to the basic allocation method, the Shanghai ETS has introduced three adjustment coefficients to encourage low-carbon fuels, continuous emission reduction, and reduction of other pollutants.

The lower the proportion of carbon-containing energy, the higher the percentage of free allowances allocated based on the allocation method. This free allowance ranges from a minimum of 93% to a maximum of 99%.

In addition, if covered entities reduce emissions over three years consecutively, they can receive an extra 0.5% or 1% of free allowances.

Covered entities that demonstrate strong efforts in reducing both air pollution and carbon emissions, and are not subject to environmental penalties nor violations during 2025 and 2026, will receive an additional 0.3 to 0.5% allowances.

**AUCTIONING:** A small share of the annual cap may be auctioned. The main purpose of auctions is to provide entities with additional supply to meet their compliance demand. One auction was held in each of the following years: 2014, 2016, 2018, and 2019. From 2020 to 2023, two auctions were held each year, and in 2024 three auctions were held. In 2025, only one auction was organized, in June, but no entities participated.

### Total Revenue

CNY 628.01 million (USD 87.30 million) since the beginning of the program

### Use of Revenues

Revenues are attributed to the provincial treasury.

## Flexibility & Linking

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### Offset credits

The use of offset credits – CCERs and provincial offsets SHCERs – is allowed.

In 2023, Shanghai launched the provincial offset SHCER. There are two types of approved methodologies for SHCER. Type 1 is smaller-scale reduction projects, such as distributed photovoltaic power generation and public transportation. Type 2 is aimed at individual citizens using electric vehicles. Only the offset credits from Type 1 (SHCERCIR1) are eligible for compliance purposes under Shanghai ETS.

#### **QUANTITATIVE LIMITS:**

**Phase 1:** The use of CCER credits was limited to 5% of verified emissions.

**Phase 2:** From compliance years 2016 to 2018, the use of CCERs was limited to 1% of the annual allocation. For the compliance years 2019 and 2020, the use of CCERs was limited to 3% of verified emissions. In compliance year 2019, only 2% was allowed for offset credits generated outside the Yangtze River Delta region,<sup>[1]</sup> and 1% must have stemmed from within the region.

This limitation was raised to 5% in compliance year 2022 for both CCERs and SHCERs.

#### **QUALITATIVE LIMITS:**

**Phase 1:** Offset credits for reductions before January 2013 could not be used for compliance.

**Phase 2:** Same restriction as in Phase 1. Credits from hydro projects are not allowed.

Since compliance year 2024, only CCERs issued in the relaunched CCER system are eligible for compliance purposes.

In compliance year 2024, 15,690 tCO<sub>2</sub>e of SHCERs were surrendered for compliance purposes.

<sup>[1]</sup> The region covers Shanghai, Jiangsu, Zhejiang, and Anhui.

#### **Banking and borrowing**

Banking is allowed, with some restrictions for banking across trading periods. For banked allowances from the first trading period, only one-third per year could be used by compliance entities between compliance year 2016 and 2018. Allowances are bankable for institutional investors without such an annual maximum limit.

According to the Action Plan for Deepening Reform of the ETS from 2026 to 2030, covered entities to be transferred to the National Carbon Market will have one-third of their remaining allowances in the Shanghai ETS released each year over a three-year period.

Borrowing is not allowed

#### **Links with other Systems**

Although the SEEE operates the trading systems for both the National Carbon Market and the Shanghai regional pilot, the two markets are separate. The Shanghai ETS is not linked with any other system.

#### **Other carbon pricing instruments in the jurisdiction**

**ETS:** China's National Carbon Market

**Domestic offsetting mechanisms:** Shanghai Carbon Emission Reduction (SHCER)

**Domestic crediting mechanisms (national):** China Certified Emissions Reduction (CCER)

## **Compliance**

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#### **Compliance mechanism**

Covered entities must surrender one compliance unit (Shanghai Emission Allowances (SHEA), SHCERCIR1, CCER) per tCO<sub>2</sub>e emitted for all their covered emissions

#### **Compliance Period**

One calendar year. Covered entities must surrender allowances by June of the following year.

#### **Monitoring, Reporting, Verification (MRV)**

**FRAMEWORK:** The Shanghai government released "Guidelines for Greenhouse Gas Emission Accounting and Reporting in Shanghai (Trial)" for monitoring and reporting, as well as sector-specific guidelines for the following sectors: iron and steel, power and heat,

chemicals, nonferrous metals, non-metallic mineral products, textiles, paper, aviation, shipping, large buildings (e.g., hotels, commercial and financial institutes), and transport (e.g., ports).

**MONITORING:** Covered entities are required to set up monitor plans for the next year by the end of December and follow them.

**REPORTING:** Annual. Covered entities must submit their emission reports to the Shanghai EEB before the end of March of the year following the compliance year. Road transport companies with either emissions of at least 10,000 tCO<sub>2</sub> per year or energy consumption of 5,000 tce per year, and hazardous waste management companies with either emissions of at least 20,000 tCO<sub>2</sub> per year or energy consumption of 10,000 tce per year, are also required to report their emissions with no compliance obligation.

**VERIFICATION:** Third-party verification is required. The Shanghai EEB commissions an independent third party to carry out verification. In addition, “fourth-party verification” is carried out by government-assigned experts. The government also assesses verifiers’ performance through a performance evaluation mechanism

#### **Penalties and enforcement**

**COVERED ENTITIES:** Penalties for failing to prepare an emissions data quality control plan as required, or failure to submit the annual emissions report in accordance with the requirements, or failure to properly retain the original records and management ledgers of the annual emissions report, shall be between CNY 50,000 (USD 6,954) and CNY 300,000 (USD 41,726).

Where an entity prepares an annual GHG emissions report with major defects or omissions, or engages in intentional concealment, falsification of data or information, use of false data or information, or other fraudulent acts, it shall be fined between

CNY 100,000 (USD 13,909) and CNY 300,000 (USD 41,726). Those persons directly responsible shall be fined between CNY 50,000 (USD 6,954) and CNY 100,000 (USD 13,909).

Where an entity fails to fulfill its obligation to surrender carbon emission allowances as required, in addition to being ordered to make up the shortfall in allowances, it shall be fined between CNY 200,000 (USD 27,817) and CNY 300,000 (USD 41,726).

**VERIFIERS AND CONSULTANTS:** Where a technical service institution issues a technical report with major defects or omissions, or engages in intentional concealment, falsification of data, or other fraudulent acts during the preparation or technical review process, the institution shall be fined between CNY 200,000 (USD 27,817) and CNY 300,000 (USD 41,726). The persons directly responsible shall be fined between CNY 20,000 (USD 2,782) and CNY 200,000 (USD 27,817).

## **Market Regulation**

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### **Market Stability Provisions**

#### **RESERVE**

**Instrument type:** N/A

**Functioning:** A small share of the annual cap can be kept in a reserve for auctioning before the end of the annual compliance cycle as a market stability measure (see ‘Allowance Allocation’ section). The Shanghai EEB can organize irregular auctions according to market demand, no fixed triggers are envisaged.

#### **EXCHANGE**

**Instrument type:** Price-based instrument

**Functioning:** The SEEE implements a system of limits on price increases and decreases for trading over the exchange. For listed trading (trading volume less than 100,000 tCO<sub>2</sub>), this is 10% above or below the reference price (the weighted average price of all transactions on the previous trading day). For block trading (with a minimum trading volume of 100,000 tCO<sub>2</sub>), this is 30% above or below the reference price. Only transactions within this price range can be successfully completed on the exchange.

For block trading of allowances with a single buy or sell order of 500,000 tCO<sub>2</sub> or more, the transaction price may be determined through negotiation between the trading parties.

### **Market Design**

**MARKET PARTICIPATION:** Compliance entities; non-compliance entities (domestic institutional investors that meet the requirement of the carbon emission trading rules set up by the SEEE).

## MARKET TYPES:

**Primary:** No set percentage of allowances are allocated via auctioning, though the Shanghai ETS regulations state that auctioning is to be introduced gradually. Ad hoc sales have been held since 2014 to provide compliance entities with additional supply. In addition, further auctions have also been held since 2020 where institutional investors have also been allowed to participate.

**Secondary:** Products include Shanghai Emission Allowances (SHEA), Shanghai Certified Emission Reduction (SHCERCIR1 & SHCERCIR2), Shanghai Emission Allowance Forwards, and CCERs. SHEAs and CCERs are spot products. Shanghai Emission Allowance Forward (SHEAF) is the standardized spot forward product.

**LEGAL STATUS OF ALLOWANCES:** The status of allowances as financial instruments is under consideration.

## Other Information

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### Institutions involved

**Shanghai Ecology and Environment Bureau (EEB):** Acts as the competent authority setting the rules and overseeing the system.

**Shanghai Environment and Energy Exchange:** Responsible for operating the trading platform.

**Shanghai Information Center:** Responsible for overseeing and operating the registry.

### Regulatory Framework

[Shanghai Carbon Emissions Management Measures \(2025\)](#)

[Action Plan for Deepening Reform of the ETS from 2026 to 2030 \(2025\)](#)

[Shanghai Carbon Inclusive Management Measures \(2025\)](#)

[Shanghai EEB - Allocation Plan for Compliance Year 2024 \(including list of covered entities\)](#)

[Shanghai EEB - Allocation Plan for Compliance Year 2025 \(including list of covered entities\)](#)

[Shanghai ETS summary report 2025](#)

### Evaluation / ETS review

Shanghai EEB has published annual ETS summary reports since 2024. According to the 2024 summary report, the absolute CO<sub>2</sub> emissions from covered entities in industrial sectors dropped by 14.7% compared to 2016 levels. The absolute CO<sub>2</sub> emissions from covered entities in the public building sector dropped by 12.8% compared to 2016 level. This same trend was also noted in the 2025 summary report.

Research on ETS improvements, funded by the local government, is undertaken every year.

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