

# 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. It covers around 36% of the city's emissions.

The ETS covers more than 300 entities in the industrial, buildings, and aviation sectors. In 2016, Shanghai expanded its ETS coverage by adding maritime shipping and more industrial sectors and lowering the participation threshold to 10,000 tCO<sub>2</sub> per year. 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 there have been two auctions held per 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 in terms of offset credit trading. Shanghai has been a center for carbon finance innovations in China, including repurchases, carbon funds, carbon trusts, CCER pledge loans, green bonds, and carbon margin trading. Since July 2021, the Shanghai Environmental and Energy Exchange (SEEE) has operated a trading platform for the national ETS.

The Shanghai ETS operates in parallel with the China national ETS. As the national ETS expands to new sectors, covered entities in these sectors will be integrated into the national ETS from the regional markets.

### ETS Status

in force

### Jurisdictions

Shanghai

### Year in Review

In May, the Shanghai Ecology and Environment Bureau (EEB) released the 2022 allocation plan. According to the plan, Shanghai has added data centers as a new sector with compliance obligations. In the road transport sector, 20 logistics companies have been added to the list but with only MRV obligations. Shanghai has introduced a new local crediting system, the Shanghai Carbon Emission Reductions (SHCER) aimed at incentivizing individual-low-carbon activities.

In November, the Shanghai EEB released an additional working notice on compliance for 2022, which allows covered entities with more than 500,000 tonnes shortfall to borrow allowances up to 20% of the shortfall from 2023. This is a temporary supporting policy for companies that suffered disproportionately due to the COVID-19 pandemic.

In October and November, the Shanghai EEB auctioned 2,668,835 allowances for a total of CNY 191.49 million (USD 27.03 million).

### Sectoral coverage

Maritime  
Domestic Aviation  
Transport  
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)

243.99 MtCO<sub>2</sub>e (2020)\*

\* Due to the lack of publicly available data, the data reported here is estimated by local expert based on public sources.

### GHG reduction targets

**By 2025:** Peak total and per capita CO<sub>2</sub> emissions (Shanghai Urban Master Plan 2017 to 2035 and 14<sup>th</sup> Five-Year Plan);

**By 2035:** Reduce CO<sub>2</sub> emissions by ~5% as compared to peak levels (Shanghai Urban Master Plan 2017 to 2035)

**By 2060:** Climate neutrality (Shanghai Carbon Peaking Implementation Plan)

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

Average auction price: CNY 70.90 (USD 10.00) (updated prices available [here](#))

## Size & Phases

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### Covered emissions (2020)

36.00%

### GHGs covered

CO<sub>2</sub> only

### Phases

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

**PHASE TWO:** 2016 to present

### Cap or total emissions limit

A cap limits the total emissions allowed in the system. Inclusive of reserves, the cap for past years were as follows:

### PHASE ONE (2013 to 2015):

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

### PHASE TWO (2016 to present):

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\*: 105 MtCO<sub>2</sub>

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

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

\*This drop from 2019 is primarily due to the transfer of large parts of the power sector into the China national ETS.

### **Sectors and thresholds**

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

#### **Inclusion thresholds:**

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

**PHASE TWO:** Previous sectors plus shipping, electronic materials, pharmaceuticals, automotive manufacturing, food manufacturing, and minting. Power plants were transferred to the China national ETS from 2019, but some special captive power plants and heat generation entities remain covered by the Shanghai carbon market. Data centers have been covered since 2022.

#### **Inclusion thresholds:**

- Power and industry: either 20,000 tCO<sub>2</sub> per year or 10,000 tonnes of coal equivalent (tce) per year; 10,000 tCO<sub>2</sub> per year or 5,000 tce per year for those that participated Phase 1.
- Transport: either 10,000 tCO<sub>2</sub> per year or 5,000 tce per year (aviation and ports); 100,000 tCO<sub>2</sub> per year or 50,000 tce per year (shipping).

Buildings: either 10,000t CO<sub>2</sub> per year or 5,000 tce per year.e/year.

#### **Point of regulation**

Point source (industry); downstream (indirect emissions from electricity and heat consumption).

#### **Type of entities**

Companies

#### **Number of entities**

357 (2022)

## **Allowance Allocation & Revenue**

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### **Allowance allocation**

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

#### **FREE ALLOCATION:**

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

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

**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. Since then, two auctions have been held each year.

In 2023, auctions were held in October and November. In the October sale, the floor price was set at the weighted average price of all

trading days between June and September of 2022, CNY 60.82 (USD 8.59). The auction offered 1,000,000 allowances, all of which were sold at CNY 67.51 (USD 9.53) apiece. In November, the floor price was set at the weighted average price of all trading days between January and October 2023. The auction offered 3,000,000 allowances, 55% of which were sold at the floor price of CNY 74.29 (USD 10.49) per tonne.

### **Total Revenue**

CNY 456.4 million (USD 64.41 million) since the beginning of the program

CNY 191.5 million (USD 27.03 million) in 2023  
2023

### **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 offset SHCERs – is allowed.

### **QUANTITATIVE LIMITS:**

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

**Phase Two:** From 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 2019, only 2% was allowed for offset credits generated outside the Yangtze River Delta region\*, and 1% must have stemmed from within the region. This limitation was raised to 5% in 2022 for both CCERs and SHCERs.

### **QUALITATIVE LIMITS:**

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

**Phase Two:** Same restriction as in Phase 1. Additionally, offset credits from hydro projects are not allowed.

\* 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 2016 and 2018. Allowances are bankable for institutional investors without such an annual maximum limit.

Borrowing is not allowed. However, in 2022, covered entities with a shortfall in excess of 500,000 tonnes were allowed to borrow allowances from their 2023 allocation to cover up to 20% of the gap. This was a temporary supporting policy for companies that suffered disproportionately due to the COVID-19 pandemic.

### **Links with other Systems**

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

## **Compliance**

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### **Compliance mechanism**

Covered entities must surrender one allowance per tCO<sub>2e</sub> 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)**

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

**REPORTING:** Annual, to the Shanghai EEB before the end of March.

**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.

**FRAMEWORK:** The Shanghai government has released general rules 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 and paper, aviation, shipping, large buildings (hotels, commercial, and financial), and transport (e.g., ports).

Third-party verification rules have been strengthened in recent years. In December 2020, the Shanghai EEB amended the interim measures for managing third-party verifiers. In October 2021, it released a new policy on the supervision and assessment of verifiers.

### **Enforcement**

**COVERED ENTITIES:** Penalties for failing to submit an emission or verification report on time or for providing fraudulent information range from CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058).

Between CNY 50,000 (USD 7,058) and CNY 100,000 (USD 14,116) can be imposed for non-compliance, in addition to the obligation to surrender the missing number of allowances. Further sanctions may also be imposed, such as entry into the credit record of the company, being added to a publicly available online list, loss of access to funds for energy conservation and emissions reduction measures.

**THIRD-PARTY VERIFIERS:** Third-party verifiers are penalized with a fine of between CNY 10,000 (USD 1,411) to CNY 50,000 (USD 7,058) for issuing false verification reports, material errors in verification reports, and for unauthorized use or publication of confidential corporate or emissions information.

## **Market Regulation**

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### **Market Stability Provisions**

**EXCHANGE:** Depending on transaction type, if prices vary by 10-30% in one day, the SSEE can institute price stabilization measures such as temporarily suspending trading or imposing holding limits.

**RESERVE:** 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).

### **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 SSEE).

### **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 auctions 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 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:** Allowances are not considered financial instruments.

## **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 Pilot ETS Implementation Plan](#)

[Measures for Management of Emissions Trading in Shanghai](#)

[Shanghai EEB- Allocation Plan for 2019 \(including list of covered entities\)](#)

[Shanghai EEB- Allocation Plan for 2020 \(including list of covered entities\)](#)

[Shanghai EEB- Allocation Plan for 2021 \(including list of covered entities\)](#)

[Shanghai EEB- Allocation Plan for 2022 \(including list of covered entities\)](#)

## **Evaluation / ETS review**

No information is publicly available about the evaluation or review system. However, the local carbon exchange has published annual reports on the Shanghai ETS with an overview of its performance from 2013 to 2020. Research on improving the ETS is undertaken every year, funded by the local government.

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