

China - Guangdong pilot ETS

General Information

ETS Description

The Guangdong ETS was launched in December 2013. With broad sectoral coverage, the Guangdong ETS is the largest of the Chinese ETS pilots, in terms of market size and spot trading volume. Covered entities must surrender allowances for all their covered emissions, and allocation is based on auctions or free allocation.

The Guangdong ETS covers emissions from over 258 entities in the petrochemicals, paper, domestic aviation, ceramics (building and sanitary), transportation (port) industries, and data centers. Allowances are primarily allocated for free, and allowance auctions have been conducted since the launch of the pilot in 2013. In recent years, the Guangdong ETS has introduced new measures to enhance market liquidity and is one of the regional pioneers for forward trading of emissions allowances in China.^[1]

The Guangdong ETS was the fourth largest ETS in the world before the power sector was integrated into China's National Carbon Market in 2020. In 2024, the cement and steel sectors were also integrated into the National Carbon Market.

^[1] China is still in the exploratory and research stage of carbon futures trading; according to the “Administrative Regulations on Futures Trading” document, futures can only be traded on approved professional futures exchanges. Regional ETS pilots thus cannot introduce futures trading; however, a few have developed their own unique carbon forward trading products.

ETS Status

in force

Jurisdictions

Guangdong

Year in Review

In March 2025, the Guangdong Ecology and Environment Bureau (EEB) released the 2024 allocation plan. The emissions limit dropped from nearly 300 MtCO₂ to 94 MtCO₂, reflecting the transfer of the cement and steel sectors into the National Carbon Market.

According to the allocation plan, the Guangdong ETS continues to cover the petrochemicals, paper, domestic aviation, ceramics production, ports, and data center sectors. In addition to airports and textile companies, public building above the threshold may now participate in the Guangdong ETS on a voluntary basis.

The 2024 allocation plan also clarified the accounting and management of remaining free allowances from enterprises that have been incorporated into the National Carbon Market. These remaining allowances are now frozen and designated as Special Guangdong Emission Allowance (S-GDEAs). The S-GDEAs will be unfrozen gradually over a three-year period and may be used to offset compliance obligations when used together with Carbon Inclusive Certified Emission Reductions (PHCERs).

In 2024, only one entity failed to comply and was issued a rectification order.

Sectoral coverage

Domestic Aviation

Buildings

Industry

Revenue usage

General budget, including debt reduction

Emissions & Targets

Overall GHG Emissions excl. LULUCF (MtCO₂e)

619.4 MtCO₂ (2022)^[1]

^[1] No data is publicly available for recent years. Data here is provided by local experts.

GHG reduction targets

By 2025: 20.5% reduction in CO₂ intensity compared to 2020 levels (in line with central government requirement) (“Guangdong Province 14th Five-Year-Plan for Tackling Climate Change”)

By 2030: Peak carbon emissions (“Guangdong Province Implementation Opinions on Implementing the New Development Concept and Promoting Carbon Neutrality”)

By 2060: Climate neutrality (Guangdong Province Implementation Opinions on Implementing the New Development Concept and Promoting Carbon Neutrality)

Current Allowance Price (per t/CO₂e)

- Average auction price: CNY 39.10 (USD 5.44)
- Average secondary market price: CNY 36.78 (USD 5.11)

Size & Phases

Covered emissions (2024)

15.00%

GHGs covered

CO₂

Phases

PHASE 1: Three years (2013 to 2015)

PHASE 2: Five years (2016 to 2020)

PHASE 3: Ongoing (2021 to present)

Cap or total emissions limit

The total emission limit under the Guangdong 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. Guangdong is one of few pilots in China that announces its annual emissions cap. Within the annual cap, the government also keeps a certain amount as a reserve for new entrants and market stability (see ‘Market Stability Provisions’ section).

PHASE 1:

2013: 388 MtCO₂ (including 38 MtCO₂ reserves)

2014: 370 MtCO₂ (including 38 MtCO₂ reserves)

2015: 408 MtCO₂ (including 38 MtCO₂ reserves)

PHASE 2:

2016: 386 MtCO₂ (including 21 MtCO₂ reserves)

2017: 422 MtCO₂ (including 23 MtCO₂ reserves)

2018: 422 MtCO₂ (including 23 MtCO₂ reserves)

2019: 465 MtCO₂ (including 27 MtCO₂ reserves)

2020: 465 MtCO₂ (including 27 MtCO₂ reserves)

PHASE 3:

2021: 265 MtCO₂ (including 13 MtCO₂ reserves)

2022: 266 MtCO₂ (including 13 MtCO₂ reserves)

2023: 297 MtCO₂ (including 14 MtCO₂ reserves)

2024: 94 MtCO₂ (including 6.5 MtCO₂ reserves)

Sectors and thresholds

PHASE 1: Power, iron and steel, cement, and petrochemicals

PHASE 2:

2016: Power, iron and steel, cement, aviation, petrochemicals, and papermaking.

Electricity production was covered until 2020, after which it was integrated into the National Carbon Market.

PHASE 3:

2021: Iron and steel, cement, papermaking, aviation, and petrochemicals

2022: As above, plus ceramics, textiles, and data centers

2023: As above, plus ceramics (building and hygiene) and transportation (ports)

2024: Steel and cement were integrated into the National Carbon Market.

INCLUSION THRESHOLDS:

2013 to 2021: Companies with emissions of at least 20,000 tCO₂ per year or energy consumption of 10,000 tce per year

2022 onwards: Companies with emissions of at least 10,000 tCO₂ per year or energy consumption of 5,000 tce per year

Point of regulation

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

Type of entities

Companies

Number of entities

258 existing entities, eight new entrants (2024)

Allowance Allocation & Revenue

Allowance allocation

Allowances are distributed largely for free, using benchmarking or grandfathering based on output data.

The allocation plan is updated every year. For the compliance year 2024:

FREE ALLOCATION: Allowances are distributed primarily via free allocation through grandfathering based on historical emissions or emissions intensity, or benchmarking.

Benchmarking: Benchmarking is applied to industrial processes in papermaking, data center and domestic aviation sectors.

Grandparenting: Grandparenting on the basis of total historical emissions is applied to some processes in the petrochemicals industry, as well as voluntary participants from textile industry and public buildings.

Grandparenting on the basis of historical emissions intensity is also applied to coal-to-hydrogen plants in the petrochemical industry, special paper and paper product manufacturers, enterprises with chemical pulp manufacturing, other aviation enterprises, ceramic (building and hygiene) and ports. Airport enterprises that participate voluntarily also use this method.

Ex-post adjustments based on real production data of the respective compliance year are applied for those sectors that use benchmarks and emissions intensity methods. For the compliance year 2024, these covered entities will receive the same volume of allowances as in compliance year 2023 as pre-allocation. New entrants will receive pre-allocated allowances based their emissions in the previous year. Before the compliance deadline in 2025, the competent authority supplemented or deducted allowances, based on the verified output in 2024.

Guangdong ETS applies different free allocation factors in different sectors. The remaining allowances will be auctioned in a sale open to all market participants.

In 2024: 95% of allowances for entities in petrochemicals, papermaking, domestic aviation, ceramics, ports, and data centers were allocated for free.

- 97% of allowances for covered entities in textiles, airports, and public buildings that voluntarily participated were allocated for free.
- 90% of allowances for covered entities as new entrants were allocated for free.

AUCTIONING: Guangdong auctions a small share of allowances.

Quarterly auctions were held until 2016; since 2017, they have been on an ad hoc basis. Auctions are also subject to a reserve price (see 'Market Stability Provisions' section).

The last auction for the compliance year 2024 took place in June 2025, with 110,000 allowances available. The floor price was CNY 39.10 (USD 5.44). Three new entrants participated in the auction, and 107,349 allowances were sold at the floor price.

Total Revenue

CNY 815.46 million (USD 113.4 million) since the beginning of the program

Use of Revenues

- General budget, including debt reduction

Revenues are attributed to the provincial treasury.

Flexibility & Linking

Offset credits

The use of offset credits, namely Chinese Certified Emissions Reductions (CCERs) and PHCERs, stemming from a local offset program introduced in 2017, is allowed. Since 2024, covered entities may also use S-GDEAs to offset part of their compliance obligation.

QUANTITATIVE LIMITS: The use of offset credits is limited to 10% of covered entities' annual emissions. In addition to the quantitative limit applied to individual entities, Guangdong sets an upper limit on the total volume of offset credits allowed. In 2020, entities could use up to 1.5 million offset credits towards compliance obligations, with priority given to CCERs and PHCERs from projects within Guangdong. In 2021 and 2022, entities could use up to one million offset credits for compliance. For 2023, no quantitative limit was announced. In 2024, entities generally could use up to 0.5 million offset credits for compliance.

QUALITATIVE LIMIT: At least 70% of offset credits (CCERs and/or PHCERs) used by each covered entity must come from within Guangdong province. If an entity applies to use S-GDEAs, they must be used in conjunction with PHCERs. The PHCERs must account for no less than 70% of the total combined use.

Pre-CDM credits are not eligible. Offset credits from hydropower and from most fossil fuel projects are also not eligible. Offset credits generated in other Chinese ETS pilot regions are not eligible.

OFFSET CREDIT AUCTIONS: Guangdong employs auctioning for PHCERs on an ad hoc basis since 2021, with an auction reserve price set by the local exchange and offset project developers. In 2021, six PHCER auctions were held. No auctions were held in 2022. In 2023, four PHCER auctions were held.

In compliance year 2024, 50,721 offset credits were surrendered for compliance purposes.

Banking and borrowing

Banking is allowed. These remaining allowances from cement and steel sectors are now frozen and designated as S-GDEAs. They will be unfrozen gradually over a three-year period.

Borrowing is not allowed.

Links with other Systems

Guangdong plans to explore the feasibility of the construction of a joint or linked carbon market within the Guangdong-Hong Kong-Macao Greater Bay Area. Details of such a plan are not yet available.

Guangdong and Hubei explored linking their pilot markets in 2012 and 2013, but the linking did not materialize.

Other carbon pricing instruments in the jurisdiction

ETS: China's National Carbon Market

Domestic crediting mechanisms: Carbon Inclusive Offset Mechanism in Guangdong (PHCER)

Domestic crediting mechanism (national): Chinese Certified Emissions Reductions (CCER)

Compliance

Compliance mechanism

Covered entities must surrender one compliance unit (allowance or offset credit) per tCO₂e emitted for all their covered emissions.

Compliance Period

One calendar year. Covered entities have until June or August of the following year to surrender allowances.

Monitoring, Reporting, Verification (MRV)

FRAMEWORK: The Department of Ecology and Environment of Guangdong Province (GDDEE) revised "Reporting Guidelines for Covered Entities in Guangdong ETS" and verification guidelines for third-party auditors in 2025.

MONITORING: Covered entities are required to set up and following monitoring plans.

Industrial enterprises with annual emissions of 5,000 to 10,000 tCO₂ are also required to monitor and report their emissions, albeit with no compliance obligation. Verification is not required.

REPORTING: Annual. In 2026, covered entities must have submitted the 2025 annual emission report by April 15.

VERIFICATION: Third-party verification is required. In addition, further verification was initially carried out by government-assigned expert groups in the first three compliance years. Onsite cross re-verification was conducted for entities with questionable verification reports, as well as for randomly selected entities. The verification of 2024 annual emissions reports was finalized by the end of June 2025.

A "fourth-party independent evaluation system" has been in place since the 2016 compliance period. "Technical evaluation organizations" selected by the government carry out technical review and evaluation of annual emissions and verification reports and undertake further onsite review and random inspection. These organizations do not undertake regular third-party verification tasks. The government also conducts random checks on emissions reports.

Penalties and enforcement

ENTITIES: Penalties for failing to submit emissions or verification reports on time range from CNY 10,000 (USD 1,391) to CNY 50,000 (USD 6,954). Companies failing to surrender sufficient allowances are deducted twice the number of allowances from the following year's allocation and fined CNY 50,000 (USD 6,954). Other non-financial penalties include negative impacts on access to bank loans and subsidy

programs.

TRADING INSTITUTIONS: Penalties for failing to publish transaction information or failing to establish and implement a risk management system range from CNY 10,000 (USD 1,391) to CNY 50,000 (USD 6,954).

THIRD-PARTY VERIFIERS: Third-party agencies are fined between CNY 30,000 (USD 4,173) and CNY 50,000 (USD 6,954) for issuing false verification reports, material errors in verification reports, or for unauthorized use or publication of confidential corporate and emissions information.

Market Regulation

Market Stability Provisions

AUCTION RESERVE PRICE

Instrument type: Price-based instrument

Functioning: In 2015, a “policy reserve price” was set as an effective reserve price, which links the auction reserve price with the secondary market price. Each year, 5% of allowances are set aside as government reserves for new entrants and market stability. The specific rules for market stability are provided by the “Trial Measures for ETS”.

In 2016, the policy reserve price was set at 100% of the weighted average price for allowances over the previous three months. When auctions resumed in April 2020 for the compliance year 2019, the policy reserve price was set at 90% of the weighted average price for allowances over the previous three months, considering the impact of the COVID-19 pandemic. In the latest auction in June 2025, the reserve price was based on the

weighted average price for allowances over the preceding three months.

EXCHANGE

Instrument type: Price-based instrument

Functioning: The CEEX Guangzhou implements a system of limits on price increases and decreases for trading over the exchange. This is 10% above or below the reference price (the weighted average price of all transactions on the previous trading day) for listed trading, as well as 30% for block trading. Only transactions within this price range can be successfully completed within the Exchange.

Market Design

MARKET PARTICIPATION: Compliance entities; domestic and international institutional investors that meet the requirement of the carbon emission trading rules set by China Emissions Exchange (CEEX).

MARKET TYPES:

Primary: As the first Chinese region to introduce auctioning as a method for allowance allocation, Guangdong held quarterly auctions until 2016. Since 2017, auctions have been held on an ad hoc basis. The CEEX organizes auctions for the primary market.

Secondary: The Guangdong Emissions Allowance is the main spot trading product in the secondary market. Bidding transfer was introduced in 2020 to organize auctions for covered entities to enhance market efficiency. CCERs and PHCERs are also traded in the secondary market. All products are traded on the CEEX.

Due to the financial market regulations in China, no standardized forward markets or derivatives are allowed. However, with the April 2021 establishment of the Guangzhou Futures Exchange, Guangdong is seeing new momentum to study and explore the launch of carbon futures and other innovative financial products.

LEGAL STATUS OF ALLOWANCES: Allowances are not considered financial instruments.

Other Information

Institutions involved

Department of Ecology and Environment of Guangdong Province (GDEE): Responsible for ETS affairs, including MRV and administrating the registry.

China Emissions Exchange Guangzhou (CEEX): Responsible for operating the trading platform.

Regulatory Framework

[Implementation Plan of Guangdong Emissions Trading to Support Peaking Carbon Emissions and Achieving Carbon Neutrality \(2023-2030\)](#)

[Trial Measures for Carbon Emissions Trading in Guangdong \(2014\)](#)

[GDEE – Regulations of PHCER trading management](#)

[GDEE - Allocation Plan for 2024](#)

Evaluation / ETS review

No public information about the evaluation or review system is available. However, the Guangdong Research Center for Climate Change has published a biannual/annual report on the Guangdong ETS with an overview of its performance from 2013 to 2021.^[1] In addition, research on improving MRV and allowance allocation has been undertaken, funded by the local government

[1] The latest iteration of this report is available at <https://heep.hks.harvard.edu/sites/g/files/omnuum8116/files/heep/files/...>

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