International Carbon Action Partnership

Korea Emissions Trading Scheme

General Information

ETS Description

The Korea Emissions Trading Scheme (K-ETS) launched in 2015 as East Asia's first nationwide, mandatory ETS. It covers around 89% of South Korea's national GHG emissions and will help the country in its objective to become carbon neutral by 2050, a target embedded in the "Carbon Neutral Framework Act" of 2021.

The K-ETS covers 804 of the country's largest emitters in the power, industrial, buildings, waste, transport, domestic aviation, and domestic maritime transportation sectors. Covered entities must surrender allowances for all their covered emissions, and allocation is done via auctions or free distribution. At least 10% of allowances must be auctioned. Free allocation is provided for EITE sectors based on production cost and trade intensity benchmarks. Since 2021, domestic financial intermediaries and other third parties have been able to participate in exchange.

The K-ETS was established by the "Framework Act on Low Carbon, Green Growth" (2010). It was preceded by a mandatory Target Management System (TMS), launched in 2012, following a two-year pilot phase. The TMS facilitated the collection of verified emissions data and training in the MRV process, and still applies to smaller entities not covered by the K-ETS.

ETS Status

in force

Jurisdictions

Korea, Republic of

Year in Review

In September 2023, as part of a larger reform process, the government released new rules to increase liquidity in the K-ETS, focusing on facilitating market participation and banking. These include:

1. Increasing incentives to reduce emissions, facilitate low-carbon investment.
2. Mitigating price volatility.
3. Revising guidelines for verifying offset credits to reduce the burden on businesses and strengthen MRV.
4. Raising holding limits of Korean Allowance Units (KAUs) for third parties (three million to six million tonnes for market makers ('see Market Design' section) and 500,000 to one million tonnes for securities companies).
5. Aligning the compliance cycle so both compliance deadline and banking/borrowing applications fall in August.

From 2024:

1. Restrictions on the carryover of unused allowances will be relaxed, to three times the net sales (total allowances sold minus total allowances bought) and the conversion period of offset credits prolonged from two to five years.
2. The government will encourage the launch of carbon price-linked financial products and introduce futures markets by 2025.
3. Consignment trading will be introduced to the market. The ETS will be opened up to more financial institutions and, from 2025, to individuals.
4. Auction volume will be adjusted annually if necessary. In 2024, the monthly auctioned volume will depend on the previous month's

auction results:

a) if bid ratio is less than 100%, the next month's auction volume will be determined by the current month's winning quantity.

b) if the bid ratio is 100% or more, the next month's auction volume will be determined by the current month's auctioned volume or higher, whichever the government decides

Longer term changes will be implemented along with the next "ETS Basic Plan" –which will be finalized by December 2024, a year earlier than planned – for Phase 4, which will begin in 2026. These changes include developing a roadmap to better align the cap with the country's Carbon Neutral Framework Act and updated NDC as well as plans to increase the share of auctioning and introduce the Korean Market Stabilization Reserve.

Sectoral coverage

Maritime
Waste
Domestic Aviation
Transport
Buildings
Industry
Power

Revenue usage

Climate mitigation
Low-carbon innovation

Emissions & Targets

Overall GHG Emissions excl. LULUCF (MtCO2e)

676.6 $MtCO_2e$ (2021)

GHG reduction targets

By 2030: At least a 35% reduction below 2018 emissions (Carbon Neutral Framework Act); 40% reduction below 2018 levels (updated NDC)

By 2050: Carbon neutrality (Carbon Neutral Framework Act)

Current Allowance Price (per t/CO2e)

Updated prices available here

Size & Phases

Covered emissions (2021)

88.50%

Verified ETS Emissions

599.00$MtCO_2e$

GHGs covered

CO2, CH4, N2O, HFCs, PFCs, SF6

Phases

PHASE ONE: Three years (2015 to 2017)

PHASE TWO: Three years (2018 to 2020)

PHASE THREE: Five years (2021 to 2025)

Cap or total emissions limit

A cap limits the total emissions allowed in the system.

PHASE ONE: 1,689.2 $MtCO_2e$, including a reserve of 89.4 $MtCO_2e$ for early action and new entrants. 84.5% of the reserve was used within the phase. 14.3 million allowances were set aside in a reserve for market stabilization (see 'Market Stability Provisions' section), bringing the total number of allowances in Phase 1 to 1,704.2 million.

Annual Caps in Phase One:

2015: 540.1 $MtCO_2e$

2016: 560.7 $MtCO_2e$

2017: 585.5 $MtCO_2e$

PHASE TWO: 1,777 $MtCO_2e$, including 134 million for new entrants and other purposes. 14 million allowances were set aside for market stabilization and 5 million for the market makers (see 'Market Design' section) bringing the total amount of allowances to 1,796.1 million in Phase 2.

Annual Caps in Phase Two:

2018: 593.5 $MtCO_2e$

2019: 563.2 $MtCO_2e$

2020: 562.5 $MtCO_2e$

The higher caps in Phase 2 reflected the expansion of the sectoral scope of the K-ETS (see 'Sectors and Thresholds' section).

PHASE THREE: 3,048.3$MtCO_2e$. This corresponds to an average annual cap of 610 $MtCO_2e$, including reserves. Annual caps appear higher in Phase 3 due to the expansion in scope, but reflect a 4.7% decrease in emissions compared to the 2017 to 2019 baseline. In addition, 14 million allowances are set aside for market stability purposes and 20 million for market makers, bringing the total amount of allowances in Phase 3 to 3,082.3 million.

Annual Caps in Phase Three (excluding reserves):

2021: 589.3 $MtCO_2e$

2022: 589.3 $MtCO_2e$

2023: 589.3 $MtCO_2e$

2024: 567.1 $MtCO_2e$

2025: 567.1 $MtCO_2e$

Plans are currently underway to develop a roadmap to better align the cap with the Republic of Korea's updated NDC.

Sectors and thresholds

PHASE ONE: 23 sub-sectors from the following five sectors: heat and power, industry, buildings, waste, and transportation (domestic aviation).

PHASE TWO: According to the Phase 2 Allocation Plan, the public and waste sectors were disaggregated such that the K-ETS covered the following six sectors: heat and power, industry, buildings, transportation, waste, and the public sector. These were divided into 62 sub-sectors.

PHASE THREE: Coverage within the transport sector was widened to include freight, rail, passenger, and maritime shipping. Construction industries have also been brought into the system's scope. This increased the number of sub-sectors to 69.

INCLUSION THRESHOLDS: Companies emitting more than 125,000 tCO_2 per year, and facilities with emissions in excess of 25,000 tCO_2 per year.

The scheme covers both direct emissions and indirect emissions from electricity consumption. The same inclusion thresholds apply.

Point of regulation

Point source (power, industry, buildings, transport, domestic aviation, domestic maritime, waste, public/other); downstream (buildings).

Type of entities

Installations, companies, financial institutions (market makers, see 'Market Design' below), third-party institutions, e.g., financial firms and brokers.

Number of entities

804 (2023)

Allowance Allocation & Revenue

Allowance allocation

PHASE ONE:
Free Allocation: 100% of total allowance supply. Most sectors received free allowances based on the average GHG emissions of the base years (2011 to 2013). Three sub-sectors (grey clinker, oil refining, and aviation) were allocated free allowances following benchmarks based on previous activity data from the base years.

PHASE TWO:
Free Allocation: 97% of free allocation to entities in sub-sectors subject to auctioning; 100% for EITE sectors. Toward the end of Phase 2, the share of sector-specific benchmarking reached 50% of total primary allocation and was expanded to a total of seven sub-sectors: grey clinker, oil refining, domestic aviation, with the addition of waste, industrial parks, electricity generation, and district heating/cooling.

EITE sectors received 100% of their allowances for free if they met one of the following three criteria:
- Additional Production Cost of >5% and Trade Intensity of >10%; or
- Additional Production Cost of >30%; or
- Trade Intensity of >30%.

Auctioning: Regular auctions began in 2019. Participation in auctions is subject to some limitations. Only companies that do not receive all their allowances for free are eligible to bid, with a list of eligible bidders published by the Ministry of Environment. Bidders can purchase 15-30% of the allowances on offer. The auctions are subject to a minimum price.
- Auction share: 3% of allocation to entities in 26 eligible sub-sectors, including entities from the electricity, domestic aviation, wooden products, and metal foundry sectors.
- Auction volume: 7.95 million allowances (2019) and 9.3 million (2020).

PHASE THREE:
Free Allocation: Less than 90% of free allocation to entities in sub-sectors that are subject to auctioning; 100% for EITE sectors. The share of sector-specific benchmarking is to reach 60% and has been expanded to a total of 12 sub-sectors: grey clinker, oil refining, domestic aviation, waste, industrial parks, electricity generation, and district heating/cooling, with the addition of steel, petrochemicals, buildings, paper, and wood processing. EITE sectors receive 100% free allocation if they meet the following criteria:
Production cost x Trade Intensity ≥ 0.2%

Allocation is calculated using the following formulas:
- Benchmark allocation: Benchmark value (tCO_2e/t) x historical activity level (t) x correction factor x carbon leakage factor
- Grandparenting allocation: Average GHG emissions of base year x correction factor x carbon leakage factor

The carbon leakage factor is 1.0 for sectors exposed to significant risk; for non-EITE sectors, it is 0.9.

A tightening of benchmarks to align the K-ETS with long-term climate targets is under discussion.

Auctioning: Bidders can purchase a maximum of 15% of the allowances on offer. The government is expected to increase the share of auctioned allowances in the coming years.
- Auction share: At least 10% of allocation to entities in sub-sectors subject to auctioning. Entities from 41 sub-sectors, excluding EITE

sectors, can participate in auctions.

- Auction volume: 20.46 million allowances (2021), 23.24 million allowances (2022), and ~19 million allowances (2023) which represents ~3% of the 589.3 $MtCO_2e$ 2023 cap (excluding reserves).

Auctioning share

3%

Total Revenue

Since the beginning of the program: KRW 1,092.6 billion (USD 845.2 million)

In 2022: KRW 317.1 billion (USD 245.4 million)
2023

Use of Revenues

Revenues from auctioning go into the Climate Response Fund, which supports emissions mitigation infrastructure, low-carbon innovation, and technology development for small- and mid-sized companies covered by the K-ETS.

Flexibility & Linking

Offset credits

Domestic offset credits, i.e., Korean Offset Credits (KOCs) were allowed in Phase 1. KOCs and international credits (subject to qualitative criteria) have been allowed since Phase 2. Both domestic and international credits must be converted to KCUs to be used for compliance.

PHASE ONE:

Qualitative Limit: The use only of domestic offset credits from external reduction activities implemented by non-ETS entities — and that met international standards — was allowed. Domestic CDM credits (CERs) and KOCs were allowed. Eligible activities included those eligible under the CDM plus carbon capture and storage, and had to have been implemented after mid-April 2010.

Quantitative Limit: Up to 10% of each entity's compliance obligation.

PHASE TWO:

Qualitative Limit: In Phase 2, the use of CERs generated from June 2016 from international CDM projects developed by Korean companies was allowed if:

- At least 20% of the ownership rights, operating rights, or the voting stocks were owned by a Korean company; or
- A Korean company supplied the low-carbon technology worth at least 20% of the total project cost.

Quantitative Limit: Up to 10% of each entity's compliance obligation (of which up to 5% can be international offset credits).

PHASE THREE:

Qualitative limit: The use of offset credits is allowed according to the same qualitative criteria outlined for Phase 2. However, limitations apply to the issuance and conversion of credits:

- GHG reduction projects (according to reduction period coverage) to KOC conversion: 1) April 2010 to December 2020: within two years (2021 to 2022); 2) January 2021 onwards: within two years (2022 to 2023).
- KOC to KCU conversion: within five years of KOC issuance.

Quantitative limit: Up to 5% of each entity's compliance obligation, regardless of type.

As of December 2023, there were 292 registered methodologies (211 for CDM and 81 for domestic offset credits). The government aims to use 37.5 Mt of international credits to reach the 2030 NDC.

Banking and borrowing

Banking is allowed with restrictions across and within phases.

Borrowing is allowed within a single trading phase.

PHASE ONE: Borrowing was limited to 20% of an entity's obligation.

PHASE TWO: From Phase 2 to Phase 3, banking was initially limited to the higher of two limits: the net annual number of allowances sold by the entity in Phase 2; or company- and facility-specific limits of 250,000 KAUs and 5,000 KAUs, respectively. Borrowing was limited to 15% of an entity's obligation in 2018.

Rules on banking and borrowing were adjusted in 2019. The borrowing limit was set by each entity's past borrowing activity, according to the following formula: *Compliance obligation of the entity x [Borrowing limit of previous year – ("borrowing ratio" in previous year x 50%)]/entity's emission volume*.

The banking limit for the transition between Phase 2 and Phase 3 has been calculated as follows:

- For allowances from the 2018 vintage (KAU18), entities can bank either three times the net sales (total allowances sold minus total allowances bought) or 75,000 allowances for companies emitting >125,000 tCO_2e (or 15,000 allowances for companies emitting >25,000 tCO_2e) — whichever is higher;
- For KAU19s, the amounts above are reduced by 1/3, i.e., two times the net selling amount or 50,000 for large entities (10,000 for smaller entities) allowances, whichever is higher;
- For KAU20s, the amount represents a 2/3 reduction compared to the KAU18 rule.

PHASE THREE: In the first trading year, entities could borrow up to 15% of their compliance obligation. From the second to fourth trading years, the same borrowing formula as for 2019 applies.

Banking in Phase 3:

- In the first and second compliance years (2021 and 2022), entities could bank up to double their net number of KAUs and offset credits (KCUs) sold on the secondary market (excluding swaps and auctions).
- In the third and fourth compliance years (2023 and 2024), entities' banking limits are equal to their net number of allowances (total allowances sold minus total allowances bought) and offset credits sold.

Phase 3 allowances and offset credits can only be carried over to the first compliance year of Phase 4 (2026 to 2030). The banking limit in the fifth compliance year (2025) also follows the "three times of net sales" rule.

Links with other Systems

The K-ETS is not linked with any other system.

Compliance

Compliance mechanism

Covered entities must surrender one allowance per tCO_2e emitted for all their covered emissions.

Compliance Period

One year. Entities must surrender allowances for the previous emissions year by the end of August.

Monitoring, Reporting, Verification (MRV)

REPORTING: Annual reporting of emissions from the previous year must be submitted by the end of March.

VERIFICATION: Emissions must be verified by a third-party verifier.

FRAMEWORK: Emission reports are reviewed and certified by the Certification Committee of the Ministry of Environment by the end of May.

Liable entities are required to revise and resubmit emission reports which are found to be incorrect.

Enforcement

The penalty shall not exceed either three times the average market price of allowances of the given compliance year or KRW 100,000 (USD 76.58) per tonne.

Market Regulation

Market Stability Provisions

TRIGGERS: An Allocation Committee is in place to implement market stabilization measures if:

- the market allowance price of six consecutive months is at least three times higher than the average price of the two previous years;
- the market allowance price of the last month is at least double the average price of the two previous years and the average trading volume of the last month is at least twice the volume of the same month of the two previous years;
- the average market allowance price of a given month is lower than 60% of the average price of the two previous years; or
- it is difficult to trade allowances due to an imbalance of supply or demand.

INSTRUMENTS: Stabilization measures include:

- additional auctioning of up to 25% of allowances from the market stabilization reserve, which contains 14.3 million allowances;
- the establishment of a limit to the number of allowances entities can hold: minimum (70%) or maximum (150%) of the allowances of the compliance year;
- an increase or decrease of the borrowing limit;
- an increase or decrease of the offset limit; and
- temporary establishment of a price ceiling or price floor.

In 2018, the Allocation Committee put up for auction an additional 5.5 million allowances from the stability reserve to ease the market in the lead-up to the 2017 compliance deadline; 4.7 million of these were sold. No more such cases have occurred since.

In 2021, the Allocation Committee set a price floor of KRW 12,900 (USD 9.98) per tonne in April and KRW 9,450 (USD 7.31) per tonne in June.

In 2023, the government set two temporary price floors. The measure's trigger price remained at an average of KRW 12,088 (USD 9.26), calculated as 60% of the average price from the preceding two years. The first price floor of KRW 7,020 (USD 5.38) was established in July and the last price floor of KRW 7,750 (USD 5.94) was set in November and lifted in early December (when prices were maintained at KRW 8,520 (UDS 6.53) for five consecutive days).

As of the start of 2024, there are eight K-ETS market makers. These institutions can draw on a government-held reserve of 20 million allowances in a bid to increase liquidity in the market.

Market Design

MARKET PARTICIPATION: Compliance entities. Limited participation for non-compliance entities. Initially limited to compliance entities, the "market maker" system was introduced in Phase 2 to improve market liquidity. Market makers are third-party participants in the K-ETS who can draw on a separate government-held reserve of allowances (at the time five million), set aside at the time of original allocation, to increase liquidity in the market through daily allowance trade. Three new financial firms were appointed in 2021, in addition to the two market makers that had been appointed in 2019. In December 2022, the government announced a further two market makers to begin operating from 2023. Eight market makers were appointed later in 2023.

From Phase 3, as per the 2012 "Emissions Trading Act" and the Presidential Decree, non-compliance entities in the form of other non-market maker domestic financial intermediaries can participate in the secondary market and trade allowances on the Korea Exchange (KRX). In line with this, 20 financial intermediaries were approved for participation in the carbon market from 2021 (the total as of December 2023 is 21 financial intermediaries). Though, they initially could only hold up to 200,000 allowances each, to avoid excessive market share, this number was increased to 500,000 in December 2022, and again to one million in 2023.

MARKET TYPES:

Primary: Monthly auctions have been held since 2019. Sectors that receive 100% free allocation are not allowed to participate in auctions. Auctions take place via the KRX.

Secondary: The K-ETS has traditionally had a high share of over-the-counter transactions. Additionally, the KRX manages the platform where the spot secondary market transactions take place. Allowances, KCUs and KOCs are traded on the exchange for different vintage years. Consignment trading is set to be introduced in 2024.

LEGAL STATUS OF ALLOWANCES: The legal status of KAUs is not explicitly referenced in the 2012 Emissions Trading Act or the Presidential Decree. However, KAUs are not regulated under financial market law. For the purpose of preventing market price manipulation, unfair trade and to regulate exchange of information, Article 22, paragraph 3 of the Act specifies that certain provisions of "Capital Market and Financial Investment Business Act" apply.

Other Information

Institutions involved

Ministry of Environment: Holds overall responsibility for the K-ETS.

Ministry of Economy and Finance: Chairs the Allocation Committee; briefly held overall responsibility for the K-ETS between June 2016 and January 2018.

Korea Exchange (KRX): Trading and auctioning platform.

Greenhouse Gas Inventory and Research Center (GIR): Responsible for the registry and technical implementation.

International Carbon Reduction Council: Ministry-level body that promotes GHG reduction projects.

Regulatory Framework

Carbon Neutral Framework Act

Enforcement Decree of the Act on the Allocation and Trading of Greenhouse Gas Emissions Allowances

Act on the Allocation and Trading of Greenhouse Gas Emissions Allowances

First Basic Plan for 2015-2024

Second Basic Plan for 2017-2026

Third Basic Plan of the ETS

First Allocation Plan

Second Allocation Plan

Greenhouse Gas Emissions Allocation and Trade Act (amended in June 2020)

Third Allocation Plan

Evaluation / ETS review

The GIR regularly releases summary (evaluation) reports that include key emissions statistics, market performance indicators, and survey results from covered entities.

Disclaimer

In line with ICAP's mandate, the ICAP ETS map exclusively covers cap-and-trade systems for greenhouse gas emissions. Information displayed on the map is regularly updated by ICAP Secretariat staff based on official and public information as far as possible and subject to annual peer review by government representatives from the covered systems. Although the information contained in the map is assembled with utmost care, ICAP cannot be held liable for the timeliness, correctness and completeness of the information provided. Please refer to the imprint on the website of the International Carbon Action Partnership regarding links to external websites, liability and privacy policy.