Korea Emissions Trading Scheme

General Information

Summary

Status: ETS in force

Jurisdictions: Republic of Korea

The Korea ETS (K-ETS) was launched on 1 January 2015, becoming East Asia’s first nationwide mandatory ETS and, at the time, the second-largest carbon market after the EU ETS. The K-ETS covers 685 of the country’s largest emitters, accounting for ~73.5% of national GHG emissions. It covers direct emissions of six GHGs, as well as indirect emissions from electricity consumption. The K-ETS is meant to play an essential role in meeting Korea’s 2030 updated NDC target of a 24.4% reduction from 2017 emissions.


The K-ETS was preceded by a mandatory GHG and Energy Target Management System (TMS) that was launched in 2012 (following a two-year pilot phase started in 2010). 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.

Year in Review

2020 was an important year for climate ambition in Korea with the government announcing a Green New Deal and a net-zero target for 2050, tied to a commitment to speed up investment in clean technologies across the economy. 2020 also saw notable developments in the K-ETS with the adoption of key regulations for the third trading phase which will commenced with the start of the new trading year in 2021. The updates include amendments to the ‘Emissions Trading Act’ and the adoption of the Phase 3 Allocation Plan in September 2020—the latter of which forms the main ETS document detailing updated design provisions ahead of the new trading phase.

Starting from Phase 3, financial intermediaries can participate in the secondary market and trade allowances as well as converted carbon offsets on the Korea Exchange (KRX)—complementing the “market maker system” that was introduced in Phase 2 to support market liquidity. Furthermore, the system’s scope has been expanded to include construction companies and (large) transport companies. This corresponds to a rise in the number of compliance entities from ~610 to 685 and a 3.2% increase in the average annual cap, amounting to 609 million tCO2e during 2021-2025. The inclusion of these sectors brings the system’s coverage to 73.5% of national emissions, an increase of more than 2 percentage points. The allocation plan also foresees the introduction of a futures market at a yet-to-be-determined date.

In line with earlier announcements about allocation provisions in Phase 3, the share of auctioning increases from 3% to 10% in 2021 for a total of 41 out of 69 industries eligible to participate in auctions. The remaining 28 subsectors receive 100% free allocation as
determined by a carbon leakage index. The share of benchmarking increases from 50% to 60% and expands to a total of 12 sectors. The share of offsets in Phase 3 is reduced from 10% to 5%.

In April 2021 in response to continuous declines in prices, the Korean Ministry of Environment introduced a temporary minimum price, which will remain in force for up to one month. Prices have declined steadily since late 2020 after beginning to recover in October 2020. The ministry’s move followed an announcement stating that Korean Allowance Units (KAUs) had traded below a rolling trigger price for market stabilization measures for more than a month, enabling the government to intervene to stabilize price levels. This marks the first time that a price floor for secondary market trading has been applied.


Overall GHG emissions by sector (in MtCO2) | Sector Name | MtCO2e
--- | --- | ---
Fuel combustion (including Transport) (632.4) | 632.4
Industrial processes (57) | 57.0
Agriculture (21.2) | 21.2
Waste (17.1) | 17.1

GHG reduction target | BY 2030: 24.4% below 2017 emissions (i.e., 536 MtCO2e in 2030) (updated NDC); 38 million international credits may be used towards achieving this goal (2030 GHG mitigation roadmap)
| BY 2050: Net-zero emissions (proposed)

Carbon Price | Current Allowance Price (per t/CO2e): KRW 32,595.83 (USD 27.62) (average secondary market price from KRX in 2020; updated prices available here)

ETS Size

Covered emissions | 0.74
GHGs covered | CO2, CH4, N2O, PFCs, HFCs, SF6
Sectors and thresholds | PHASE ONE (2015-2017): 23 subsectors from the following five sectors: power, industry (e.g., iron and steel, petrochemical, cement, oil refinery, nonferrous metals, paper, textile, machinery, mining, glass, and ceramics), buildings, waste, and transportation (domestic aviation).
| PHASE TWO (2018-2020): According to the Phase 2 Allocation Plan, the public and waste sectors are disaggregated such that the K-ETS covers the following six sectors: heat and power, industry, buildings, transportation, waste sector, and the public sector. These sectors are disaggregated into 62 subsectors.
| PHASE THREE (2021-2025): The K-ETS covers the following six sectors: heat and power, industry, buildings, transportation, waste sector, and the public sector. The transport sector (freight, rail, passenger, and shipping) and construction industries have been brought into the system’s scope, increasing the number of subsectors covered to 69.
| INCLUSION THRESHOLDS: company >125,000 tCO2/year, facility >25,000 tCO2/year

Next to direct emissions coverage, the K-ETS covers indirect emissions from electricity consumption. The same inclusion thresholds apply.

Point of regulation | Downstream
Number of entities | 685 (2021)
Cap | PHASE ONE (2015-2017): 1,686.3 MtCO2e, including a reserve of 88 MtCO2e for early action and new entrants. 84.5% of the reserve was used within the phase. 14.3 million allowances
were set side in a reserve for market stabilization, bringing the total number of allowances in Phase 1 to 1700.6 million.

**Annual Caps in Phase One**

2015: 540.1 MtCO2e  
2016: 560.7 MtCO2e  
2017: 585.5 MtCO2e  

(Yearly caps do not include allowances set aside for market stabilization.)

**PHASE TWO (2018-2020):** 1,777 MtCO2e, including 134 million for new entrants and other purposes. 14 million allowances were set aside for market stabilization and five million for the market makers (see “Market Stability Mechanisms” section) bringing the total amount of allowances to 1,796.1 million in Phase 2.

**Annual Caps in Phase Two**

2018: 601 MtCO2e  
2019: 587.6 MtCO2e  
2020: 545.1 MtCO2e  

Unallocated and withdrawn allowances were transferred to the reserve.

**PHASE THREE (2021-2025):** 3,048.3 MtCO2e. This corresponds to an average annual cap of 610 MtCO2e, including reserves. Annual caps are higher in Phase 3 due to the expansion in scope, but reflect a 4.7% decrease in emissions compared to the 2017-2019 baseline. In addition, 14 million allowances are set aside for market stability purposes and 20 million for the 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 MtCO2e  
2022: 589.3 MtCO2e  
2023: 589.3 MtCO2e  
2024: 567.1 MtCO2e  
2025: 567.1 MtCO2e  

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### Phases & Allocation

|-----------------|---------------------------------|---------------------------------|---------------------------------|
| **Allocation**  | PHASE ONE (2015-2017)  
Free Allocation: 100% of total allowance supply. Most sectors received free allowances based on the average GHG emissions of the base years (2011-2013). Three sectors (grey clinker, oil refinery, and aviation) were allocated free allowances following benchmarks based on previous activity data from the base years (2011-2013).  

PHASE TWO (2018-2020)  
Free Allocation: 97% of 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 sectors: grey clinker, oil refinery, 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: 3% of allocation to entities in sub-sectors subject to auctioning. 26 subsectors were eligible to participate in auctions, including entities from the electricity, domestic aviation, wooden products, and metal foundry sectors. Regular auctions began in 2019. In 2019, authorities auctioned a total of 7.95 million allowances. 9.3 million allowances were auctioned in 2020. |
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. No one bidder can purchase more than 30% of the allowances of one auction. The auctions are subject to a minimum price set by the following formula:

\[
(\text{average price over the previous three months} + \text{average price of last month} + \text{average price over the previous three days}) / 3
\]

**PHASE THREE (2021-2025)**

**Free Allocation:** Less than 90% of allocation to entities in sub-sectors 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 sectors: grey clinker, oil refinery, domestic aviation, waste, industrial parks, electricity generation, and district heating/cooling, with the addition of steel, petrochemical, buildings, paper, and wood processing.

Fuel-specific benchmarks apply to electricity generators and will be updated again by the end of 2023. Industry benchmarks are currently undergoing revisions.

EITE sectors receive 100% free allocation when meeting the following criteria:

\[
\text{Cost Incidence} \times \text{Trade Intensity} \geq 0.002
\]

**Auctioning:** At least 10% of allocation to entities in sub-sectors subject to auctioning. Entities from 41 subsectors, which excludes EITE sectors, can participate in auctions. The same auction provisions as for Phase 2 apply.

Financial intermediaries and other third parties can participate in exchange trading since 2021. A futures market will be introduced as a part of Phase 3 reforms at a yet-to-be-determined date.

* Additional Production Cost: annual average GHG emissions during base year x average market price of allowances during base year / annual average value-added production during base year

** Trade Intensity is calculated relative to the base year: (annual average exports + annual average imports) / (annual average sales + annual average imports)

### Flexibility

#### Banking and Borrowing

Banking is allowed with restrictions across and within phases.

Borrowing is allowed within a single trading phase.

**PHASE ONE (2015-2017)**

From Phase 1 to Phase 2, banking was limited for each installation to 10% of their annual average allocation at a maximum of 20,000 Korean Allowance Units (KAUs). The amount that exceeds the threshold was deducted from the Phase 2 allocation. Borrowing in 2015 was limited to 10% of an entity's obligation and was increased to 20% in 2016 and 2017.

**PHASE TWO (2018-2020)**

From Phase 2 to Phase 3, banking was initially limited to the higher of two limits: the net annual amount 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: \([\text{Borrowing limit of previous year} - (\text{"borrowing ratio" in previous year} \times 50\%)] / \text{entity's emission volume}\).

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 selling amount or 75,000 allowances for companies emitting >125k tCO2e (or 15,000 allowances for companies emitting >25,000 tCO2e) —whichever of the two 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, again whichever is higher;
• For KAU20s, the amount represents a 2/3 reduction compared to the KAU18 rule.

PHASE THREE (2021-2025)
In the first trading year, entities can 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 (2021-2023), entities can bank up to two times their net amount of allowances (KAUs) and offsets (Korean Credit Units, KCUs) sold on the secondary market.
• In the third and fourth compliance years (2023-2024), entities' banking limit is equal to their net amount of allowances and offsets sold.
• Phase 3 allowances and offsets can only be carried over to the first compliance year of Phase 4 (2026-2030). The banking limit in the fifth compliance year (2025) is set by an entity's annual average net sold units (KAU21-KAU25; KCU21-KCU25) on the secondary market during Phase 3.

Offsets and credits
Domestic offsets, 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 need to be converted to KCUs in order to be used for compliance.

PHASE ONE (2015-2017)
Qualitative Limit: Only domestic credits from external reduction activities implemented by non-ETS entities—and that meet international standards—could be used for compliance in this phase. Domestic CDM credits (CERs), and credits from domestically certified projects (Korean Offset Credits) were allowed. Eligible activities included those eligible under the CDM and Carbon Capture and Storage. However, only activities implemented after 14 April 2010 were eligible.

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

PHASE TWO (2018-2020)
Qualitative Limit: In Phase 2, CERs generated after 1 June 2016 from international CDM projects developed by domestic companies are allowed. CDM projects operated by Korean companies were allowed when:
• at least 20% of the ownership rights, operating rights, or the voting stocks are owned by a Korean company;
• a Korean company supplies the low-carbon technology worth at least 20% of the total project cost; or
• the projects are funded by a Korean company with a national or regional government operating in a UN-designated Least Developed Country or a low-income economy as classified by the World Bank.

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

PHASE THREE (2021-2025): Offsets will continue to be allowed according to the qualitative criteria outlined for Phase 2.

Quantitative Limit: In Phase 3, the share of offsets has decreased to 5% of an entity’s compliance obligation. No separate limit for international credits applies.

Market Stability Provisions
AUCTION RESERVE PRICE: Regular auctions as well as auctions for market stability are subject to a reserve price determined by a formula (see “Allocation” section).

ALLOCATION COMMITTEE: An Allocation Committee is in place to implement market stabilization measures in particular cases:
• 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 twice 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 40% of the average price of the two previous years; or
• it is difficult to trade allowances due to an imbalance of supply or demand.

The stabilization measures may include:
• additional auctioning of allowances from the reserve (up to 25%);
• establishment of a limit to the number of allowances in an entity’s account: minimum (70%) or maximum (150%) of the allowance of the compliance year;
• an increase or decrease of the borrowing limit;
• an increase or decrease of the offsets limit; and
• temporary setup of a price ceiling or price floor.

In 2016, the Allocation Committee doubled the borrowing limit to 20%; as well, an additional 0.9 million allowances were auctioned at a reserve price of KRW 16,200 (USD 13.73) of which almost one-third were sold. In 2018, the Allocation Committee auctioned 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 allowances were sold.

In June 2019, the Korea Development Bank and the Industrial Bank of Korea were officially designated as “market makers.” These institutions can draw on a government-held reserve of five million allowances in a bid to increase liquidity in the market. Both banks, along with the Korean Export-Import Bank, engaged in market transactions on a daily basis. This has improved market liquidity and reduced bid-ask spreads.

The reserve for market liquidity increased to 20 million allowances for the third trading phase.

### Compliance

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<tr>
<th>Compliance Period</th>
<th>One year. Entities need to surrender allowances for the previous emissions year by end of June.</th>
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| Monitoring, Reporting, Verification (MRV) | **REPORTING FREQUENCY:** Annual reporting of emissions must be submitted within three months from the end of a given year (by the end of March).  
**VERIFICATION:** Emissions must be verified by a third-party verifier.  
**OTHER:** Emissions reports are reviewed and certified by the Certification Committee of the Ministry of Environment within five months from the end of a given compliance year (by the end of May).  
If the liable entity fails to report emissions correctly, the report will be disqualified. |
| Enforcement | The penalty shall not exceed three times the average market price of allowances of the given compliance year or KRW 100,000 (USD 84.73)/tonne. |

### Linking

**Links with other systems**  
No linkage is currently considered.

### Other Information

**Institutions involved**  
In 2016, overall responsibility for the K-ETS moved from the Ministry of Environment to the Ministry of Economy and Finance (MOEF). In January 2018, responsibility was transferred back to the MOE, although the MOEF still chairs the Allocation Committee Korea Exchange (Trading Platform) Greenhouse Gas Inventory and Research Center (GIR; Registry and technical implementation).
### Evaluation / ETS review

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

### Revenue

**Since beginning of program:** KRW 480.7 billion (USD 407.3 million)*

**Collected in 2020:** KRW 248.3 billion (USD 210.4 million)

* The regular auction schedule began in 2019. Allowances were also auctioned in 2016 and 2018 by the Allocation Committee from the reserve for market stability measures. Revenues from these auctions totalled USD 99.6 million and are not included in the total auction revenue figure above.

The government has put forward possible options for the use of the revenues. These options include support for mitigation equipment, low-carbon innovation, and technology development of ETS-covered entities. Specific rules on the use of revenues are yet to be decided.

### Implementing Legislation

- Framework Act on Low Carbon, Green Growth
- 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 Master Plan for 2015-2024
- Second Master Plan for 2017-2026
- First Allocation Plan
- Second Allocation Plan
- Greenhouse Gas Emissions Allocation and Trade Act (amended as of June 2020)
- Third Allocation Plan
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