

REPUBLIC OF KOREA: AN EMISSIONS TRADING CASE STUDY



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Republic of Korea

The World's Carbon Markets: A Case Study Guide for Practitioners

Background



As part of the 2009 Copenhagen Accord, the Republic of Korea pledged to reduce GHG emissions 30% below its Business As Usual (BAU) level by 2020, a goal that equates to a 4% reduction below 2005 levels.

A major step towards this goal was realized in April 2010, when the *Framework Act on Low Carbon Green Growth* (Framework Act) and the Presidential Decree promulgated thereunder came into effect. The three most important features of the Framework Act are that it:

1. sets the national GHG emission target to reduce emissions 30% below BAU levels by 2020;
2. establishes the *Greenhouse Gas Target Management System* (TMS), which sets emissions and energy targets for business entities in the industrial, power generation, transportation, building, agriculture, food and waste sectors; and;
3. provides the legal basis for an Emissions Trading Scheme (ETS).

However, the Republic of Korea renounced the national GHG emission target described above by the June 2016 amendment to the Presidential Decree to the Framework Act. The amended Presidential Decree to the Framework Act replaced the previous target with a new target: to reduce 37% below BAU levels by 2030. Among the 37% reductions to be made, the Korean government plans to reduce 25.3% through domestic reductions, and 11.3% through the international carbon market. Details on how the Korean government will procure carbon credits or other similar reductions through international carbon market have not yet been determined. As further described below, changes to the national GHG emission target may accompany changes to the Republic of Korea's *Phase I National Allowance Allocation Plan*.

The *Act on Allocation and Trading of Greenhouse Gas Emissions Allowances* (ETS Act) and the Presidential Decree promulgated thereunder were enacted on November 15, 2012, introducing a

national emissions trading (cap-and-trade) system that began on January 1, 2015. The *Master Plan for the Emissions Trading Scheme* and the *Phase I National Allowances Allocation Plan* were announced in 2014 in order to implement the ETS Act.

With the commencement of the Korean Emissions Trading System (K-ETS) in 2015, the Republic of Korea has become the second nation in Asia to introduce a nationwide cap-and-trade system. Approximately 530 business entities are subject to caps under the K-ETS. For Phase I (2015~2017), 100% of the allowances have been allocated for free, and in Phase II (2018~2020), 97% of the allowances will be allocated for free.

Change of the Republic of Korea's 2016 Climate Change Response System

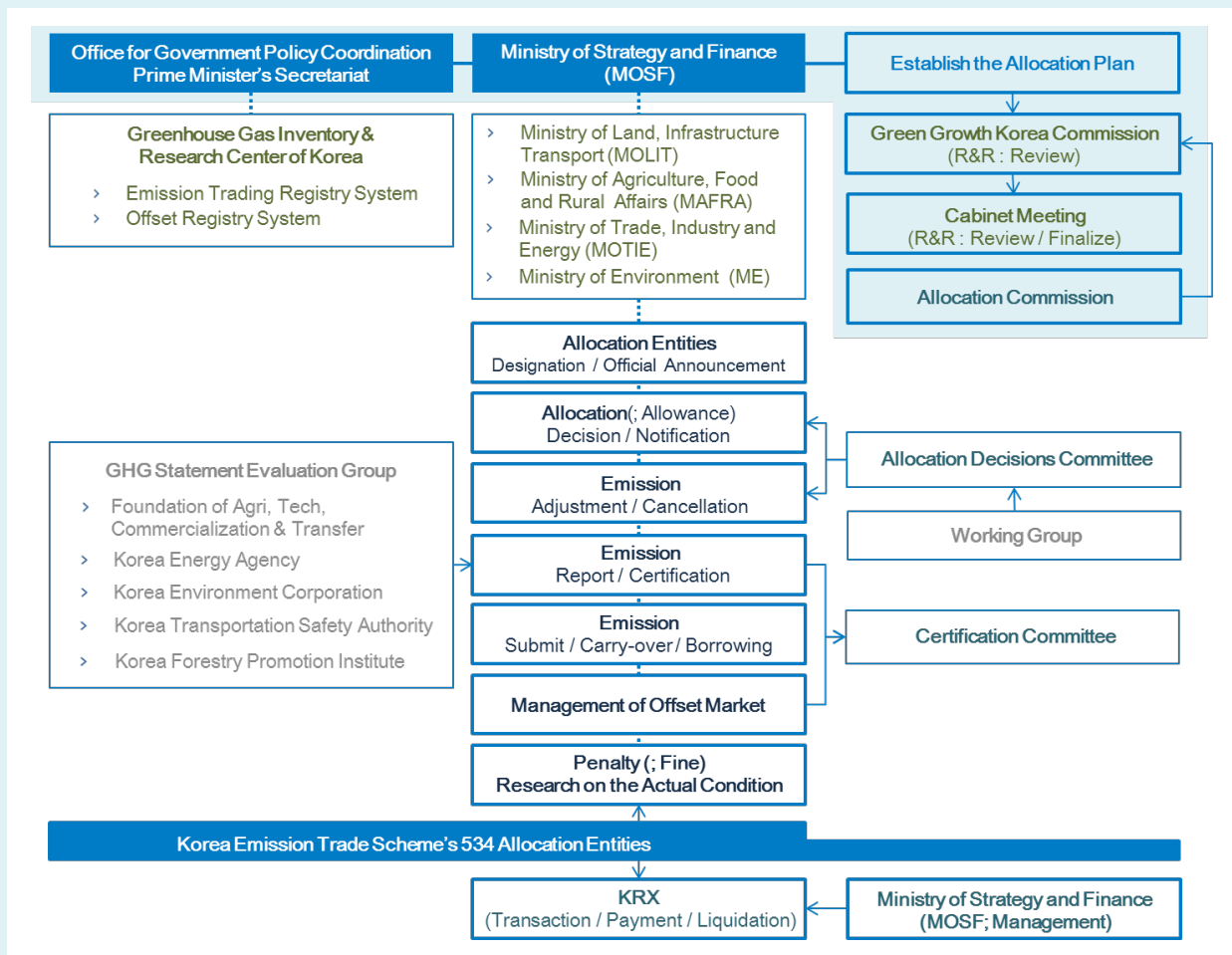


Figure 1: Korea ETS Governance

Before June 2016, the Ministry of Environment was in charge of the implementation of the K-ETS, with some supervision by the Ministry of Strategy and Finance. However, with the recent amendment to the ETS Act, the Ministry of Environment's authority in implementing the K-ETS has been

distributed to four different ministries: (i) the Ministry of Trade, Industry and Energy, which oversees industrial and power generation emissions; (ii) the Ministry of Environment, which oversees waste related emissions; (iii) the Ministry of Land and Infrastructure Transport, which oversees transportation and

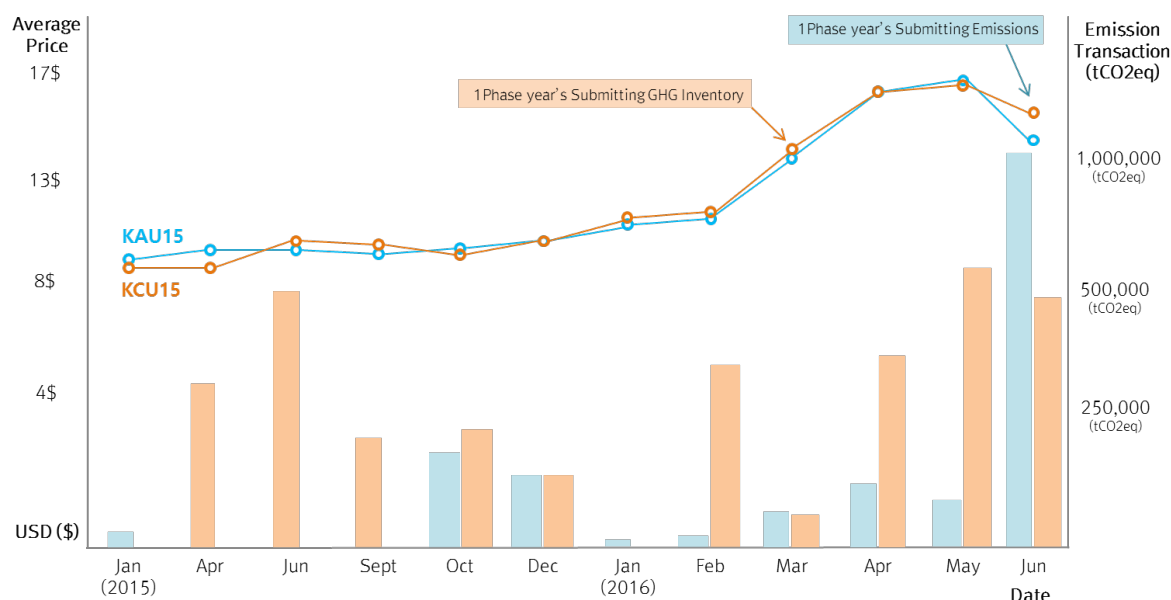
construction sector emissions; and (iv) the Ministry of Agriculture, Food and Rural Affairs, which oversees agricultural and food sector emissions.

Summary of Key Policy Features

| | |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long-Term Reduction Goal | To reduce 37% below the Republic of Korea's BAU emission levels by 2030. |
| Cap | 539 million tCO ₂ e in 2015 |
| Compliance Periods | The K-ETS has three phases: Phase I (2015-17), Phase II (2018-20), and Phase III (2021-25). |
| Greenhouse Gases Covered | Carbon Dioxide (CO ₂), Methane (CH ₄), Nitrous Oxide (N ₂ O), Hydrofluorocarbons (HFC), Perfluorocarbons (PFC), and Sulfur hexafluoride (SF ₆) |
| Sectors Covered | The industry, power generation & energy, building, transportation and waste sectors are covered, which are further divided into 23 sub-sectors |
| Number of Obligated Entities | Approximately 530 companies |
| Threshold | Companies whose total annual emissions are 125,000 tCO ₂ e or more or companies with places of business whose annual emissions are 25,000 tCO ₂ e or more are subject to caps under the K-ETS. Companies whose emissions are below the threshold described above may voluntarily participate in the K-ETS. |
| Types of Credits Available | <p>Korea Allowance Unit (KAU): KAUs are allowances allocated to companies subject to targets under the K-ETS</p> <p>Korea Offset Credit (KOC): KOCs are credits converted from CERs or other offsets approved by the Korean government. KOCs can be traded between both ETS and non-ETS entities, but cannot be traded in the KRX. KOCs cannot be submitted to the government for compliance with K-ETS targets.</p> <p>Korea Credit Unit (KCU): KCUs are credits converted from KOCs. KOCs can be submitted to the Korean government for compliance with K-ETS targets. KOCs can be claimed and traded between ETS entities only, and are allowed to be traded in the KRX. KCUs cannot be converted back to KOCs.</p> |
| Average Carbon Price | <p>According to monthly price updates provided by the Climate Change Research Institution of Korea, the average closing price of KAU15s traded in the Korea Exchange (KRX) during the period between January, 2015 and June 2016, was KRW 16,520/tCO₂e. KAU15 prices were at its highest on May 19, 2016, reaching KRW 21,000/tCO₂e.</p> <p>According to monthly price updates provided by the Climate Change Research Institution of Korea, the average closing price of KCU15s traded in the KRX during the period between January, 2015 and June 2016, was KRW 18,500/tCO₂e. KCU15 prices were at its highest on June 7, 2016, reaching KRW 18,500/tCO₂e.</p> |
| Allowances Allocation | <p>For Phase I, 100% of allowances have been freely allocated. In Phase II, 97% of allowances will be freely allocated; and in Phase III 90% or less allowances will be freely allocated.</p> <p>Allowances are grandfathered, except for three sectors (aviation, cement and oil-refinery) which receive allowances based on benchmarks.</p> <p>Companies are subject to different reduction factors depending on the sector it is in (i.e., sectoral targeting). The government sets sector-wide caps, and the reduction factor applicable to companies within such sector is the ratio of the sector-wide cap and the number of allowances companies within such sector has applied for.</p> |
| Carbon Leakage Provisions | <p>Sectors that meet one of the following conditions may receive 100% of their allowances for free in a certain phase.</p> <ol style="list-style-type: none"> 1. sectors whose production cost rate (ratio of total allowance cost among total value added production, specifically defined in the Presidential Decree to ETS Act) is 30% or more; |

| | |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <ol style="list-style-type: none"> 2. sectors whose trade intensity level (specifically defined in the Presidential Decree to ETS Act) is 5% or more; or 3. sectors whose production cost rate is 5% or more and at the same time has a trade intensity level of 10% or more. |
| Third Party Trading | During Phase I and Phase II, companies other than those subject to caps under the K-ETS (except for Korea Development Bank, Korea Exim Bank and the Industrial Bank of Korea) are not allowed to open allowance trading accounts on the K-ETS. |
| Price/Market Control Measures | <p>According to the Phase I National Allowances Allocation Plan, an allowance reserve of approximately 88 million tCO₂e of allowances, has been created for market stabilization measures and distribution to new entrants.</p> <p>In case:</p> <ol style="list-style-type: none"> i. for six months, allowance prices climb threefold or more compared to the average price of the two most recent years; ii. during the recent one month, average allowance prices increase two-fold or more and trade volume increases two-fold or more compared to the averages of the two most recent years; or iii. during the recent one month, allowance prices decrease 60% or more than the averages of the two most recent years, <p>the government will be allowed to pursue any of the following market stabilization measures, subject to review of the Allowance Committee under the Ministry of Strategy and Finance:</p> <ol style="list-style-type: none"> i. hold an early allocation(s) for up to 25% of the allowance reserve; ii. set minimum or maximum allowance possession limits; iii. limit or increase the allowed ratio of borrowing; iv. limit or increase the ratio of offsets allowed to be submitted; and / or v. temporarily set price ceilings and floors. |
| Offset | Covered entities can use offsets to meet up to 10% of their allowance submission obligations. In Phase I & II, only domestic offsets are accepted. In Phase III, the use of international offset credits will be allowed, but only up to half of the offsets submitted may be international offset credits. |
| Linkages | The ETS Act provides that the government should try to link the K-ETS with the international carbon market pursuant to (i) the United Nations Framework Convention on Climate Change or (ii) agreements with countries that are recognized to credibly measure, report and verify its GHG emissions. |
| Market Regulation and Oversight | According to the ETS Act, the government may designate or establish an allowance exchange for the formation of fair allowance prices and the security and efficiency of transactions. On January 15, 2014 the government designated the KRX as an allowance exchange. |
| Enforcement/Penalties | The penalty for non-compliance with the K-ETS is an administrative fine not exceeding three times the average market price per unit of tCO ₂ e for that year. The maximum penalty is KRW 100,000 per tCO ₂ e, or approximately US \$91 per tCO ₂ e. |
| Banking | Both inter-phase and intra-phase banking are allowed. Inter-phase borrowing is not allowed, whereas intra-phase borrowing is allowed, up to 10% of allowances required to be submitted (however, for Phase I, borrowing is allowed up to 20%). |
| Motoring and Reporting | Covered facilities are required to develop an annual emission inventory , which must be verified by a third party before being reported to the government. Once reports are certified, facilities are listed in the Emission Trading Registry System (ETRS) , established by the government. Facilities are required to submit the allowances which account for emissions from the previous year. |

Carbon Price Evolution



KOREA CARBON MARKET (2015~)

Figure 2: Korea Carbon Market Price

Source: KRX, 2015-2016 Available at: ets.krs.co.kr

The state of transactions during the first year of the K-ETS can be summarized as the following table.

| | Transaction Volume (ktCO ₂ e) | | | Prices (KRW) | | Total Traded Value (KRW million) | | |
|------------|------------------------------------------|--------------|---------------|--------------|---------|----------------------------------|----------------|----------------|
| | KRX | OTD | Sum | Minimum | Maximum | KRX | OTD | Sum |
| KAU | 1,760 | 282 | 2,040 | 7,860 | 21,000 | 28,510 | 4,570 | 33,080 |
| KCU | 2,640 | 286 | 2,930 | 7,860 | 20,600 | 42,770 | 4,630 | 46,400 |
| KOC | Negligible | 7,931 | 7,930 | 9,000 | 20,000 | | 128,190 | 128,190 |
| Sum | 4,410 | 8,500 | 12,900 | | | 71,280 | 136,390 | 207,670 |

Source: Industrial Bank of Korea, 2016, Korea ETS Market Analysis Report

As seen in the table above, the volume of credits traded was only 12,900ktCO₂e, while the total cap was 539 million tCO₂e (only 2.3% of the cap was traded). Inter-phase banking allowed under the K-ETS, frequent government intervention in the market, and restrictions on third party market makers appear to be the

main reason of such lack of liquidity in the K-ETS.

According to data provide by the KTX, trading was most active in June (1,625,912 tCO₂e traded in the KRX), May (619,838 tCO₂e traded in the KRX) and April (427,800 tCO₂e traded in the KRX), 2016, which was immediately

after the GHG statement verification of the companies subject to caps. Between February and May, 2016, allowance prices increased most rapidly, rising from KRW 12,000 to KRW 21,000. However, after the government's June 1, 2016 announcement to implement market stability measure of releasing

900,000 tCO₂e between June 1, 2016 and June 3, 2016, prices have dropped down to KRW 16,600/tCO₂e (drop of approximately 25%) and have been trading at similar prices (KRW 16,500/tCO₂e) since then.

One of the most important features of the first year of the K-ETS was that all three types of credits recognized in the K-ETS (i.e., KAUs, KCUs and KOCs) were traded at almost the same price, despite the different features of the credits. As described above, offsets, represented by KCUs can be used

for achievement of up to 10% of a company's target. Similarly, KOCs can be sold only to companies subject to K-ETS targets. Nevertheless, KOCs and KCUs were valued at almost the same price as KAUs. The fact that companies can bank their KAUs for as long as they want seems to have deterred companies from releasing surplus KAUs, and led to the lack of supply of KAUs, which has resulted in similar price trends between KAUs and offset credits (KCUs or KOCs). For similar reasons, KCU and KOC trade volume was approximately

five times larger than that of the KAU trade volume during the first year of the K-ETS.

As a measure subsequent to the Republic of Korea's renouncement of its previous 2020 climate target (30% reduction from BAU levels by 2020), the Korean government is considering adjusting its national allocation plan, which may include additional allocations to certain sectors.

Commentary on Market Functioning

1. The first year of the K-ETS was long by 7 million tCO₂e (certified emissions were 100.82% of allocations), but nevertheless, there was a lack of supply of credits. In order to address such shortage, the government implemented market stability measures in early June 2016, which dropped credit prices as high as 21,000 per tCO₂e down to approximately KRW 16,500 per tCO₂e.
2. The following three factors seem to have most significantly affected credit prices and liquidity in the K-ETS: (i) government intervention (e.g., market stabilization measures); (ii) restrictions on third party market participation; and (iii) unlimited inter-phase banking of credits.
3. During the first year of the K-ETS, approximately 12.9 million tCO₂e of credits were traded (representing 2.3% of the 2015 cap) and the sum of the value traded in the KRX and OTC was approximately KRW 200 billion.
4. None of the companies subject to K-ETS caps failed to meet their allowance submission requirements.
5. The government is considering expanding the application of benchmarking to sectors other than the cement, oil-refinery and aviation sectors.
6. The government may adjust the Phase I national allocation plan pursuant to changes made to the Republic of Korea's national GHG reduction target.
7. Approximately 40 companies have filed lawsuits against the government challenging allocations. Most of these lawsuits come from a limited number of sectors (e.g., the petrochemical sector, non-ferrous metal sector). Discontent of sector-wide emission reduction factors (sectoral targeting) appears to have been the main cause of these litigations.

What Distinguishes this Policy?

UNIQUE ASPECTS

1. The Republic of Korea established and implemented its nationwide ETS beginning in 2015. The K-ETS is the second nation-wide ETS in Asia, following Kazakhstan.
2. Approximately 530 companies are subject to the K-ETS. The K-ETS covers the industrial, power generation, transportation, building and waste sectors.
3. Different emission reduction factors apply depending on the sector a certain company is in (i.e., sectoral targeting).
4. The Korean government has implemented market stability measures, despite the market being long.
5. Companies are allowed to bank allowances for an unlimited period of time, and companies or individuals not subject to caps under the K-ETS, except for a couple of Korean government owned banks, are restricted from trading allowances in the K-ETS.
6. Until Phase II, only CERs from CDM projects located in Korea are allowed to be converted to KOCs, and thus traded in the K-ETS.

CURRENT CHALLENGES AND OPPORTUNITIES:

1. The Republic of Korea is currently deliberating on how it will meet the national target to reduce 11.3% of its GHG emissions through international carbon markets.
2. Limits on third party market participation are likely contributing to low liquidity in the market.
3. Korean government intervention may have undermined market credibility of K-ETS credit prices.
4. Due to changes in the Republic of Korea's nation-wide climate target, some changes to the Phase I National Allocation Plan and additional allocations to certain sectors may take place.
5. The government may expand its application of benchmarking to sectors other than those already subject to benchmarking.
6. The National Development and Reform Commission of the People's Republic of China (NRDC) has proposed to the Korean government to create "Northeast Asia Emission Trading Cooperation Business" in order to seek opportunities of an Asian carbon market.

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Disclaimer: The authors encourage readers to please contact the CRIK and IETA Contacts with any corrections, additions, revisions, or any other comments, including any relevant citations. This will be invaluable in strengthening and updating the case studies and ensuring they are as correct and informative as possible.

