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Korean ETS Phase I

Korea's Emissions Trading Scheme came into force on January 2015 covering 525 entities (600 entities at present) from the energy, industry, building, waste and transport sectors. The ETS will operate in three phases: Phase 1 (2015-2017), Phase 2 (2018-2020), and Phase 3 (2021-2025). Emitters are given 100% free allocation which will gradually be reduced in the coming phases. The scheme includes flexibility measures such as borrowing, banking, and offset emission credits to respond to demand increases or decreases attributable to various changes.

This report offers a short summary of the first phase's first two compliance cycles and a price forecast for 2018 provided by Ecoeye's market analysis arm, Carbon-i (www.carbon-i.com). The first compliance cycle covers the period from January 2015 – June 2016, second compliance cycle from January 2016 – June 2017, and the third compliance cycle from January 2017 – June 2018. The system currently trades on the last compliance cycle of the first phase.

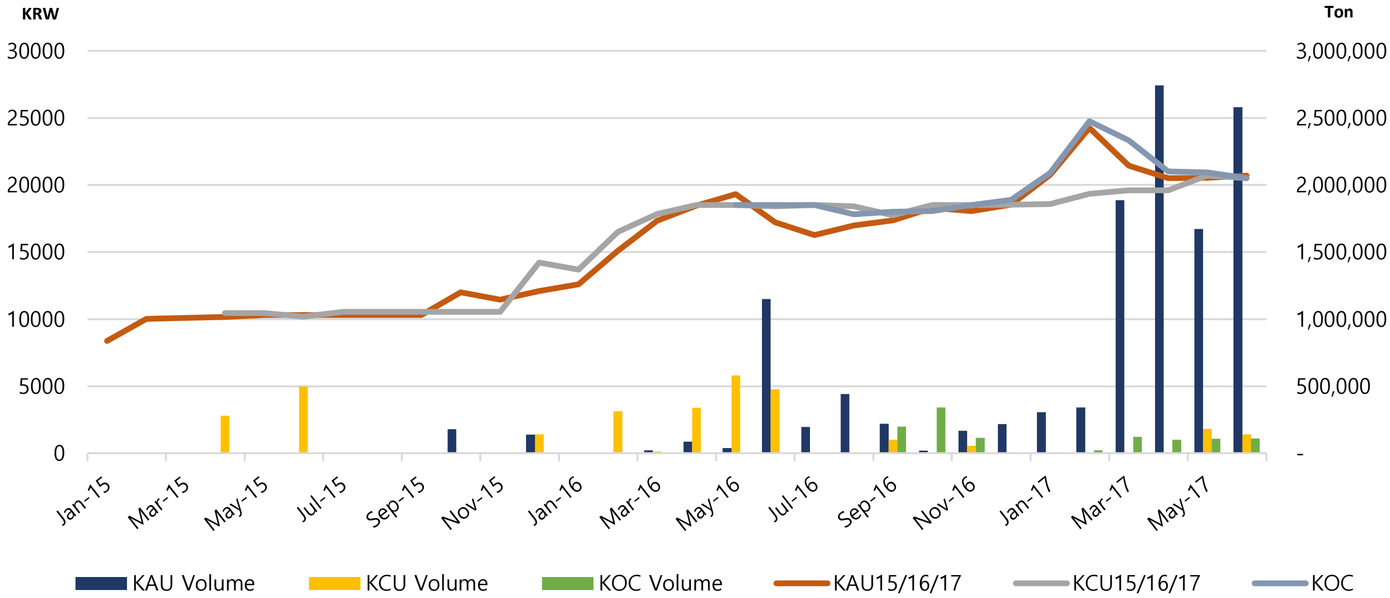
First compliance cycle – low liquidity and the MSR supply

The first trading year showed a relatively low trading volume as the market experienced a deadlock on permit supply for several months amidst allocation complaints which kept compliance entities from trading in the market.

Korean Carbon Units (KCUs), the domestic offset unit of the ETS, started trading in April 2015 when the government issued 1.91 million offsets although supply remained scarce for months as most trades happened in the OTC market. Trading of the Korea Allowance Units (KAUs) resumed in October 2015 after a nine-month paralysis with just a few volumes traded, in the value of KRW 11,300 per ton, as majority of the trade was concentrated on KCUs. Companies' anxiety on insufficient allowances continued to drive the prices reaching KRW 18,450 in March 2016 to KRW 21,000 in May 2016, an 85.8% increase compared to the October 2015 prices.

In May 2016, efforts have been made to increase the supply of allowances in the market to ease the pressure on market participants. The government implemented measures such as 1) doubling the borrowing limit from 10% to 20%, and 2) auctioning an additional 900,000 allowances from its market stability reserve at floor prices of KRW 16,200 and KRW 16,400.

The total traded volume in the exchange market during the first cycle was about 4.2 million tons amounting to KRW 67.7 billion (USD 63.7 million) and about 8.5 million tons in the OTC market.



*KAU15: 2015.01 ~ 2016.06, KAU16 : 2016.01~2016.12, KAU17 : 2017.01~2017.06

Figure 1. 1st and 2nd Compliance Cycles' Average Monthly Price and Volume

Second compliance cycle and ETS changes

The second compliance cycle saw the active trading of KAUs, KCUs and KOCs. In the several months following the end of the first compliance cycle, allowance prices remained firm and stable playing between KRW 16,500 – KRW 17,500.

However, the year is still plagued with poor supply as most of the volume came through KOCs and by November 2016 prices started increasing. In accordance with the revision of the national roadmap for reducing GHG emissions, the government announced an additional 17 million tons of allocation permits with the manufacturing sector getting the largest portion and the rest going to the power and waste sectors. In addition, 51 million tons of early action credits (EAC) was further allocated.

KAU prices grew despite the announcement of the 2017 re-allocation of quota and early reduction credits as higher demand for KAUs and KCUs continued. In addition, price disparity between KOCs and KCUs grew bigger by the end of 2016 as entities prefer to trade KOCs. The KAUs finally crossed the KRW 20,000 line for the first time in January 2017 settling at KRW 20,500 increasing by 29.3% in February 7th when it reached its peak of KRW 26,500, a price with only less than 30,000 tons of daily trading volume within 14 days. The prices dropped after the government mentioned its plan to implement banking restrictions.

In April 2017, the government amended and released the document containing the guidelines on banking conditions effectively implementing a restriction of 10% of the annual average allocation + 20,000 tons starting Phase 2.

The second compliance cycle ended at a closing price of KRW 21,500.

Low liquidity and Phase 2 allocation delay in the third compliance cycle

After the second cycle's compliance period ended, trading from July to September 2017 had been modest with prices just a few hundred Korean won above the support line of KRW 20,000. In August, the government announced that the release of the Phase 2 allocation plans and offset usage guidelines which was supposed to be issued by June will be pushed to the end of 2017 as changes within ministries handling the ETS are underway and the new government's energy roadmap plan is being reassessed and discussed. This triggered a spike in prices, along with low market liquidity, which saw allowance prices edging along KRW 21,000 by October and reaching KRW 28,000 by the 4th week of November. In the same month, KOC prices increased alongside KAUs moving from KRW 22,000 to KRW 28,000 in just four trading days.

By the end of November, the government distributed the draft allocation plan to compliance entities in a public hearing announcing the 2018 allocation quota as 538 million tons. The government also announced its intention to interfere in the market if a supply and demand imbalance is confirmed. The overheated market cooled down in December when the government identified that there are no supply problems in the market. However, if trade imbalance continues to persist in the 2nd half of the third compliance year (1st half of 2018), the government said it plans to supply up to 30 million tons of reserves. According to ETS regulations, the upper and lower limits to supply stabilization reserves basing on the average price of the two previous years (KRW 20,540) are KRW 41,080 and KRW 12,324 respectively.

In the last trading day of 2017 (December 28), the market closed at KRW 20,000 with 233,000 tons of KAUs traded and KRW 24,000 for KOCs.

Industry-wide, vintage 2017 allowances (KAU17) was purchased by 15 sectors with power generation (64.3%), petrochemicals (17.9%), cement (7.4%) and waste (4.5%) taking up the largest transactions amounting for 94.2% of the total trading volume. In contrast, a total of 17 sectors sold KAU17 with power generation taking the largest volume at 22.3% followed by display (17.1%), petrochemicals (16.3%) and waste (8.5%). It is worth noting that there is a relatively balanced share of buying and selling transactions in the case of the power generation and petrochemicals, the top 2 biggest GHG emitting sectors.

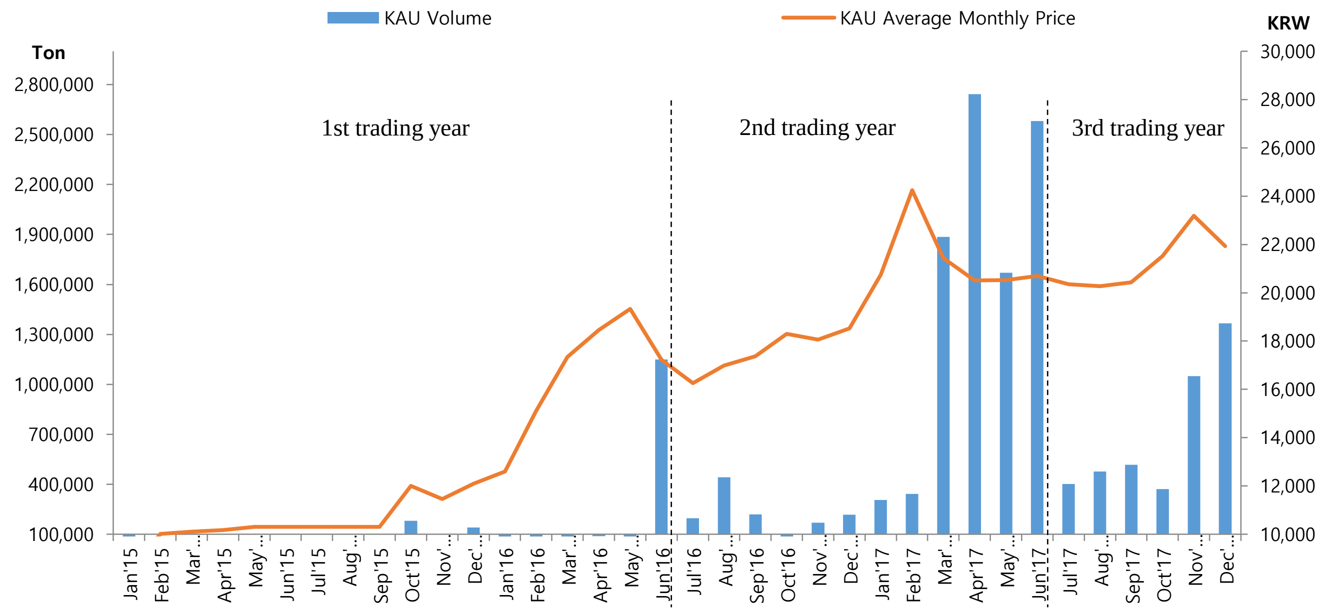


Figure 2. 2015-2017 KAU Average Monthly Price and Volume

Phase 1 (2015-2017) KAU Overall Data

As a whole, KAU prices steeply fluctuated three times; once in May 2016 and twice in February and November 2017. During these periods of fluctuation, little to low trading volume was registered and was largely due to poor market liquidity and policy issues. After reaching the peak point, prices go down after the government implemented stabilization measures.

KAU trading volume increased annually registering the highest in the months prior to the end of the compliance period (between March to June). The average prices for the vintage allowances are: KAU15/16/17 at KRW 20,374, 2017's KAU16 and KAU17 at KRW 21,131 and KAU17 at KRW 21,335.

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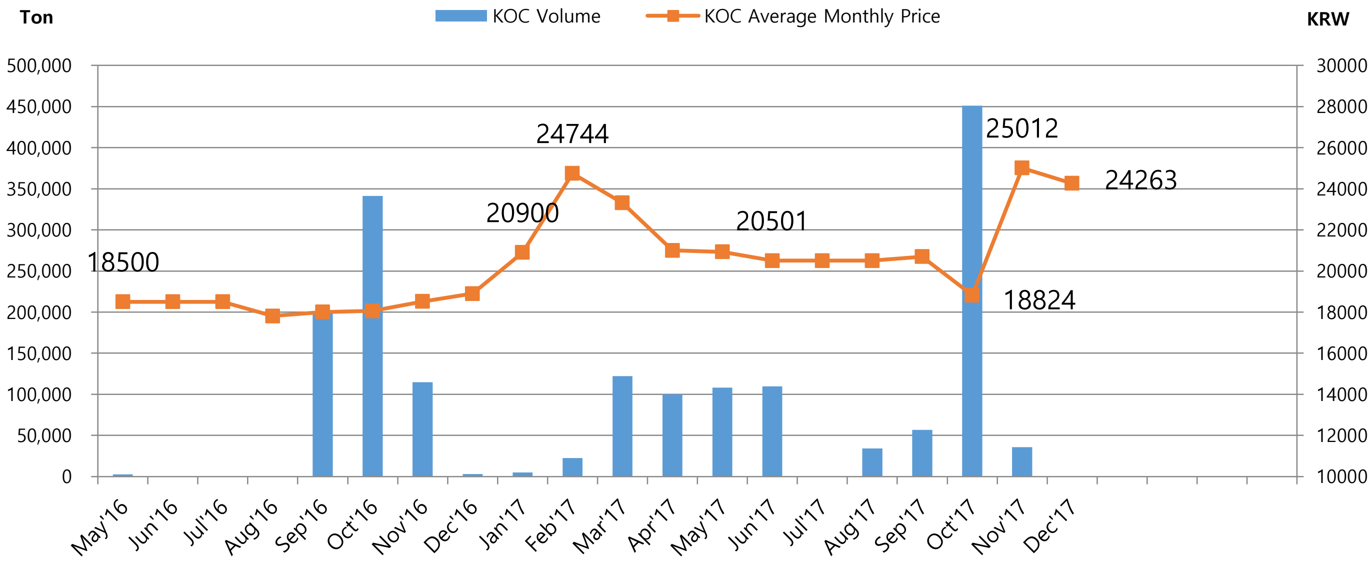

Figure 3. 2016-2017 KOC Average Monthly Price and Volume

In the period of 2015-2016, more than 12 million tons of offset permits are supplied to the entire market causing KCU and KOC trade to increase (KOCs must be converted to KCUs for an entity's compliance). However, since the KOC's listing in the Korea Exchange on May 2016, conversion to KCUs dropped and KCU trade volume became practically non-existent. KOCs continued active trading in the second and third cycle. KOC's price trend is similar with the price movements of the KAUs.

Year	Issuance Date	Issued Amount	Total
2015	April 01	1,919,000	7,102,000
	June 25	33,000	
	September 21	2,501,000	
	December 15	2,649,000	
2016	February 19	170,000	7,693,000
	March 17	3,936,000	
	May 17	1,140,000	
	May 26	988,000	
	May 31	463,000	
	October 11	996,000	
2017	January 13	799,000	4,793,000
	March 21	1,309,000	
	May 25	802,000	
	July 26	1,106,000	
	December 14	777,000	
		Grand Total	**19,588,000**

Table 1. 2015-2017 KOC Issuance

As of December 2017, the government has issued a total of 19,588,000 tons. Most of these offsets came from CERs cancelled in the UN and New Zealand registries. Out of the 19.5 million tons, 12.09 million tons were used for the 1st and 2nd compliance years.

In the first half of 2018, an additional 5,474,000 is expected to be issued as KOC where 80% will likely be traded in the OTC market. Therefore, only 1.1 million tons plus the remaining 7.5 million tons (total 8.6 million tons) is expected to be supplied to the market. A couple of CDM facilities also finished their crediting period resulting to a more limited supply of KOCs.

	2015		2016		2017 (until December 2017)	
	Total Traded Volume (ton)	Total Traded Value (billion KRW)	Total Traded Volume (ton)	Total Traded Value (billion KRW)	Total Traded Volume (ton)	Total Traded Value (billion KRW)
KAU	1,620,224	264.2	8,993,600	1839.5	5,882,952	1257.3
KCU	2,645,852	412.7	481,908	95.3	-	-
KOC	2,413	0.4	1,126,604	220.7	235,837	50.8
Grand Total	**4,268,489**	**677.3**	**10,602,112**	**2155.5**	**6,118,789**	**1308.1**

Table 2. 2015-2017 Traded Volume and Traded Value (exc. OTC market)

Trading during the first year had been modest registering 4.2 million tons at the end of the compliance year. It experienced a twofold increase by the second compliance cycle as different stability measures had been put in place in the effort to improve the market's liquidity. At the end of the second cycle, the total value increased by around 200% to KRW 2,155 billion as prices grew due to liquidity issues.

Roughly 21 million tons have exchanged hands over the period of January 2015 – December 2017 amounting to KRW 4,140 billion (approximately USD 400 million). By the end of 2017, only KAUs and KOCs traded in the market.

Trades in the OTC market flourished during the first compliance year when KOCs were mostly traded outside the official market exchange. According to Carbon-i's latest data, OTC trading volume were 8.5 million tons in the first compliance year followed by 7.3 million tons in the second year and 5.5 million tons in the first half of the third year.

Average Market Price (KAU)

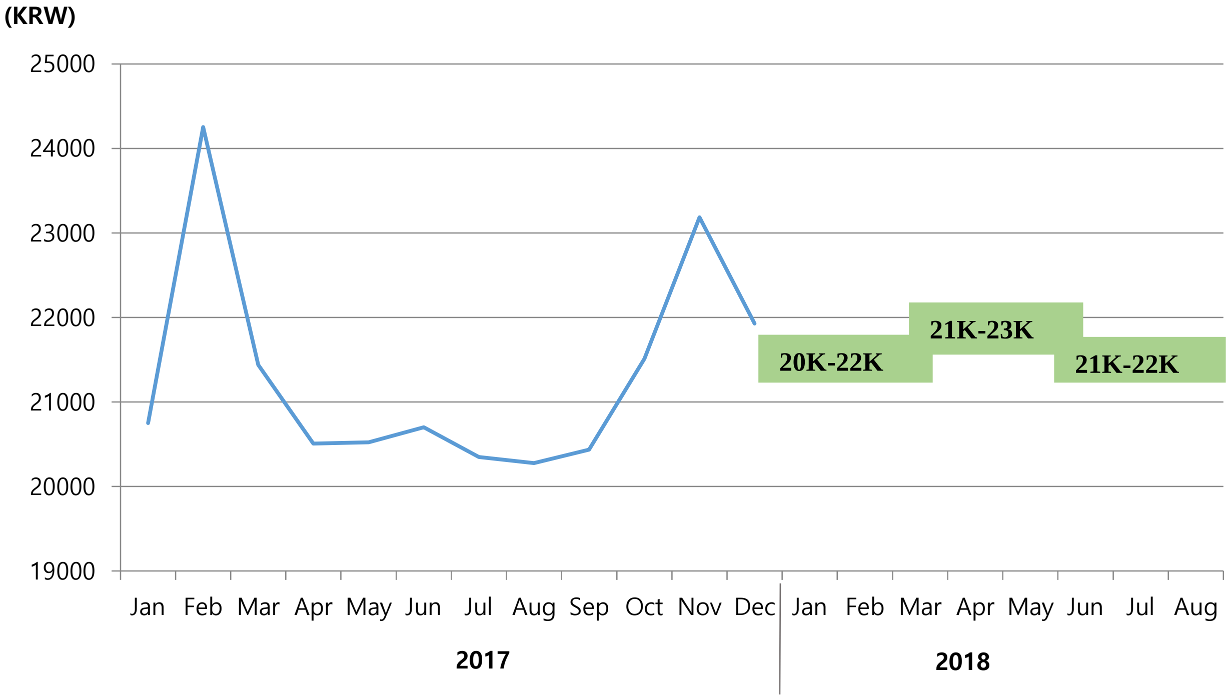

Figure 4. 2017 KAU Monthly Average Price & 2018 Estimated Average Price

2018 KAU Price Forecast (January – August 2018)

The first half of 2018 is expected to be busy as the third trading year and the ETS' first phase comes to a close in June 2018. The forecast is divided into three periods from January to March, April to May, and June to August.

March is the submission of the third year's implementation report to the government. Between January and March, the average market price is forecasted to be between KRW 20,000 – KRW 22,000 with prices not falling below the KRW 20,000 support line as companies with allowance shortage will continue purchasing KAUs. In addition, majority of large-scale companies would have resolved their shortfall by doing SWAP (KAU17 ↔ KAU18). In this period, the government would likely not supply the government reserves without the presence of a steep price increase.

After the report submission in March, it is expected that trading will soar due to the carry-over units that will be released to the market in April. Trading volume will increase as active buying and selling between entities resumes. Although big companies prefer doing SWAP transactions, buyers prefer direct deals and most of these trades will be done outside of the market or through direct negotiations. However, many small entities are expected to continue active buying in the market resulting to price volatility. It is during this period that prices may experience big fluctuations. If the prices of carbon allowances continue to rise, the government might partially supply reserves to the market. The forecasted average prices in April and May are KRW 21,000 – KRW 23,000.

The first half's last period covers the months of June, July and August when important paperwork are finalized. All compliance entities will submit reports of their banking and borrowing certifications, final total emissions certification, and additional allocation appeals. During this period the government will review, assess and finalize all the submitted documents to settle the final emission of the third trading cycle.

After the confirmation of certified emissions and additional allocation in May, the carry-over allowances will be supplied. The government will supply reserves of at least 10 million tons to companies with shortfall. The auction price will be set equal to the market price or below.

There is also a possibility that companies with excess banked permits that failed to sell at an earlier time will try to sell at a lower price and when this happens, the allowance price may fall below KRW 20,000 due to a number of small volume transactions. However, the trading volume will unlikely be significant. The government reserve supply will eliminate the shortfall of the first phase with prices trending down. The forecasted average market price is KRW 21,000 – KRW 22,000.

Foreign CDM Project Opportunities in the Second Phase

South Korea is one of the countries intending to use carbon credits from international market mechanisms to meet its Paris contributions. While the ETS was originally set to allow the use of international offsets from the start of the third phase, a major amendment was made to allow earlier use of CERs from overseas CDM projects starting 2018.

The amended directive set strict limitations on how CERs could qualify, only allowing offsets from projects directly implemented by Korean companies. The specific rule and procedure is expected to be released by the government in March 2018.

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