20th Annual IEA-IETA-EPRI Workshop 2020/10/22

Carbon Pricing Issues in Korean Power Sector

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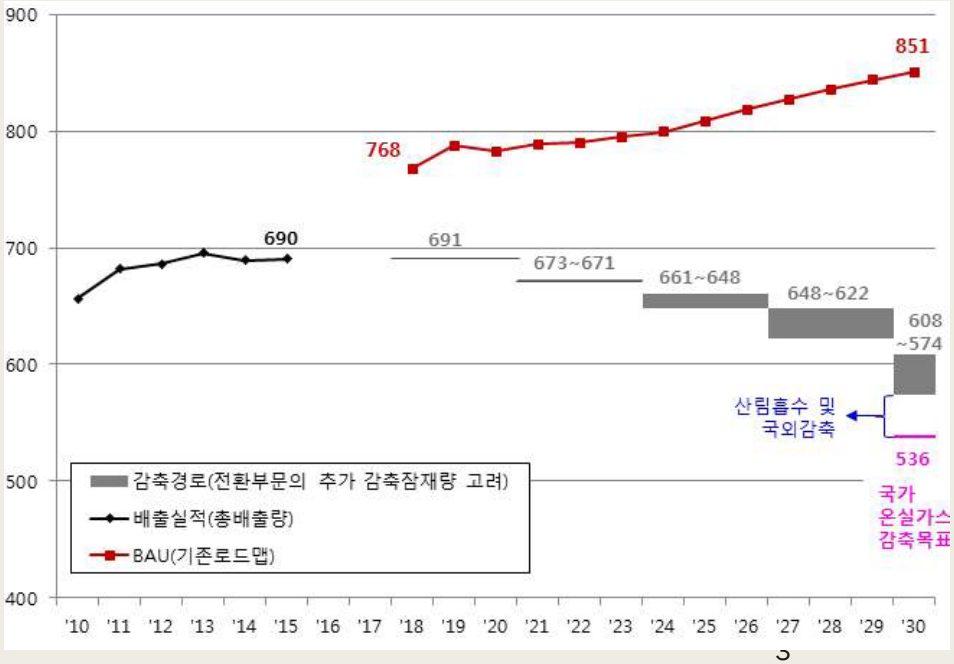
Korea Environment Institute

Korean ETS at a glance

Compliance period	Phase I (2015~2017); II (18~20); III(21~25); IV(26~30)
Cap	Phase I: 1,685.6 MtCO2e ; Phase II: 1,777.1 MtCO2e; Phase III: 3,048 MtCO2e
GHG covered	CO2, CH4, N2O, HFC, PFC, SF6 **Indirect emission from power and heat purchases** ❖ To overcome incomplete pass-through of carbon price in the short and medium term and to widen coverage of carbon pricing
Sectors covered	Industry, Power, Transportation, Building, Waste
Threshold	Companies of more than 125,000 tCO2e per year Installations of more than 25,000 tCO2e per year
Types of trading units	Korea Allowance Unit (KAU), Korea Offset Credit (KOC), Korea Credit Unit (KCU)
Allowance Allocation	Grandfathering based on recent 3 year historical emission Benchmarking based on average emission intensity Auction: 3% (Phase II); 10% (Phase III)
Banking & Borrowing	Strict limits to (inter- & intra-phase) banking; Limited borrowing within phases
Leakage prevention	Free allocation for EITE sectors: Cost increase over 5% and trade dependency over 10% or either of them over 30% (Phase I~II), The product of cost share and trade depencency over 2% (Phase III)
Offsets	< 10% with <5% for foreign credits (Phase I~II), <5% (Phase III)
Penalty	Lesser of KRW 100,000Won/tCO2e or 3 times market price

3rd Allocation Plan

- **Emission Cap = 3,048 million KAU**
  - ✓ derived from GHG roadmap for 2030 national emission target
- **Total allowances = 3,082 million KAU**
  - ✓ Initial allowance allocation 2,902 m
    - ➢ 1,041 for energy transformation; 1,636 industry sector…
  - ✓ New entrant reserve 146 m
  - ✓ Market stability reserve 34 m
    - ➢ Allowances outside Cap
    - ➢ 14 m for market stabilization
    - ➢ 20 for market facilitation



3rd Allocation Plan

- **Allocation method**
  - ✓ Benchmarking for 12 sectors
    - ➢ Steel, chemical, building, pulp and paper are added to the list of power, refinery, cement, aviation, waste, CHP, etc.
    - ➢ Fuel specific benchmarks for power plants based on average emission rates adjusted by cross-fuel sector-specific correction factor
      - Cross-fuel single benchmark from 2024, conditional on coal-cap instrument
  - ✓ Grandfathering for all the others (base years: 2017~19)
  - ✓ Auction share increase to 10% from 3% in Phase 2
- **EITE threshold criteria**
  - ✓ Product of Carbon cost ratio and Trade intensity over 0.2%
    - ➢ Modified from EU rule (30/30/10/5)
    - ➢ Less than half of the sectors, including refinery and steel, are allowed full free allocation (power sector subject to 10% auction)

3rd Allocation Plan

- **Banking limits**
  - ✓ Intra and inter planning period banking limits for KAU and KCU: 1~2 times of net sales of KAU and KCU
    - ➢ The 3rd parties, except designated market facilitators, are also subject to banking limits
  - ✓ Aims to induce the supply of allowances under extremely thin markets with little allowances in surplus
- **Borrowing only intra planning period up to 15% max per year**
- **Offset limit: Maximum 5% of allowances surrendered**
  - ✓ Foreign offsets – only CDM invested by Korean legal entities
  - ✓ Tightened from 10% in Phase I~II

Carbon pricing in power sector

- **Currently, lack of carbon pricing in power dispatch decision by KPX**
  - ✓ Economic dispatch with no reflection of the carbon price
  - ✓ System Marginal Price (SMP) compensation for variable cost evaluated by an independent committee (Cost-Based Pool (CBP) Market)
    - ➢ Transition to Price Bidding Pool (PBP) is planned for 2024 or later
  - ✓ High carbon price from unfettered coal power generation, until the plummet due to the Corona pandemic
- **Net trading cost approaches for the reflection of GHG allowance cost ('environmental dispatch') to be applied from Phase III**
  - ✓ Intense debate between Ministries (Environment vs. Industry)
  - ✓ Reflect the 'realized' expenditure for net purchase of allowances (purchase – sales – free distribution) per unit production of electricity as a part of variable cost for merit order
    - ➢ Possibility of variability of the net trading cost over time, stemming from mismatch between emissions and allowance purchases
  - ✓ Separate cap on coal power generation as a complementary measure