



Introduction to Emissions Trading Systems

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Agenda

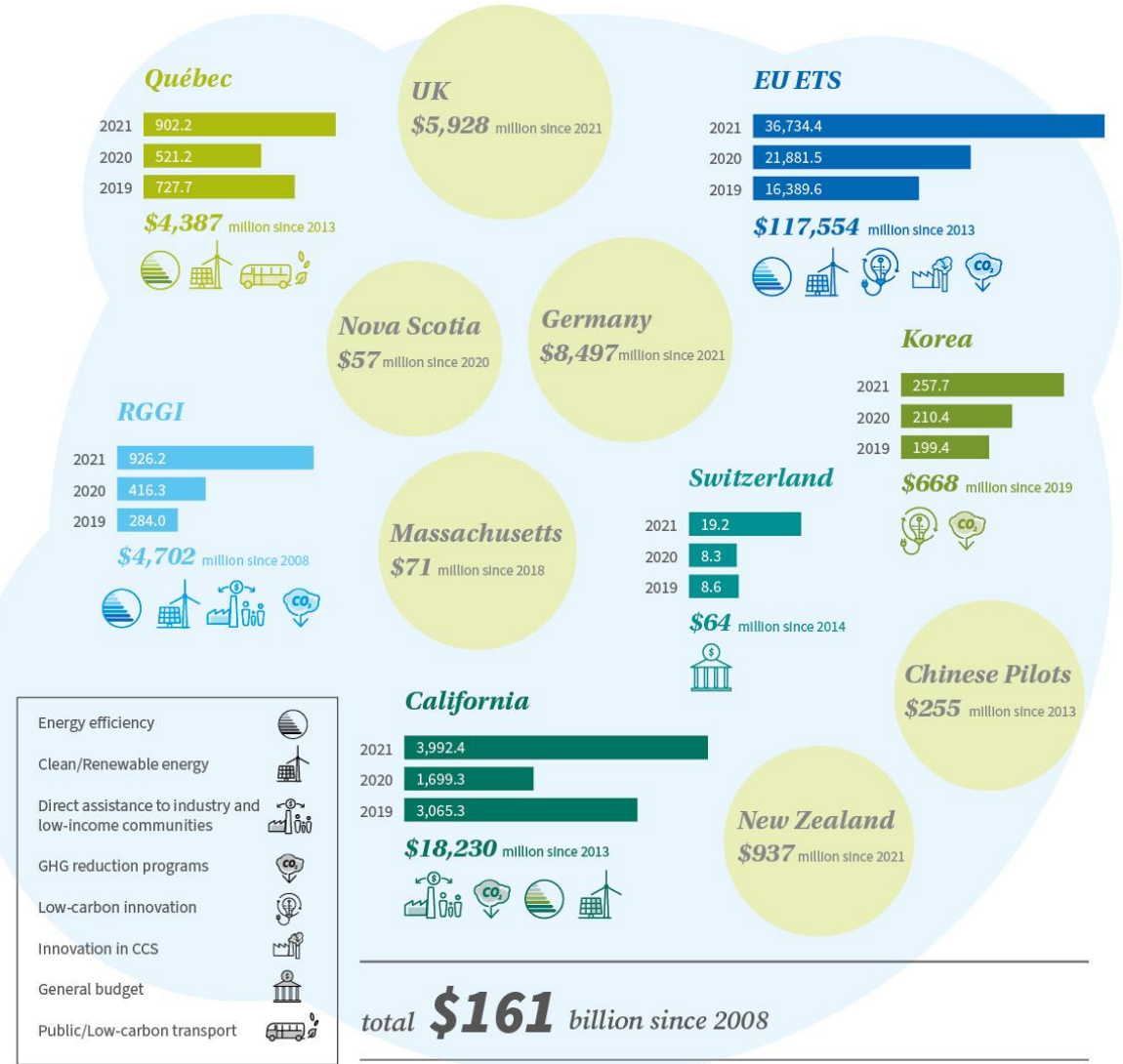
- 1. Achieving cost-effective GHG emission reductions**
- 2. Providing valuable climate finance**
- 3. Playing a central role in the climate policy mix**
- 4. Protecting industrial competitiveness**
- 5. ETS developments in Asia**
- 6. Transition from PAT Scheme to ETS**
- 7. Critical elements for success**

Achieving cost-effective GHG emission reductions

- **Emissions Trading Systems (ETS) are inherently cost-effective**
 - Emissions reduced where cheapest, surplus reductions can be sold
 - More reduction options than PAT Scheme: fuel switching and GHG abatement as well as energy efficiency
 - Flexibility mechanisms: banking and offsets
- **Carbon price signal drives reductions through investment and operating decisions**
 - Ambitious GHG emission targets (per unit production) at least in line with India's NDC
 - Introduction and scale-up of auctioning when and where feasible
- **Key prerequisites**
 - Robust, transparent, consistent and accurate MRVA system and strong enforcement
 - Efficient market for trading allowances
 - Long-term policy signal and predictability

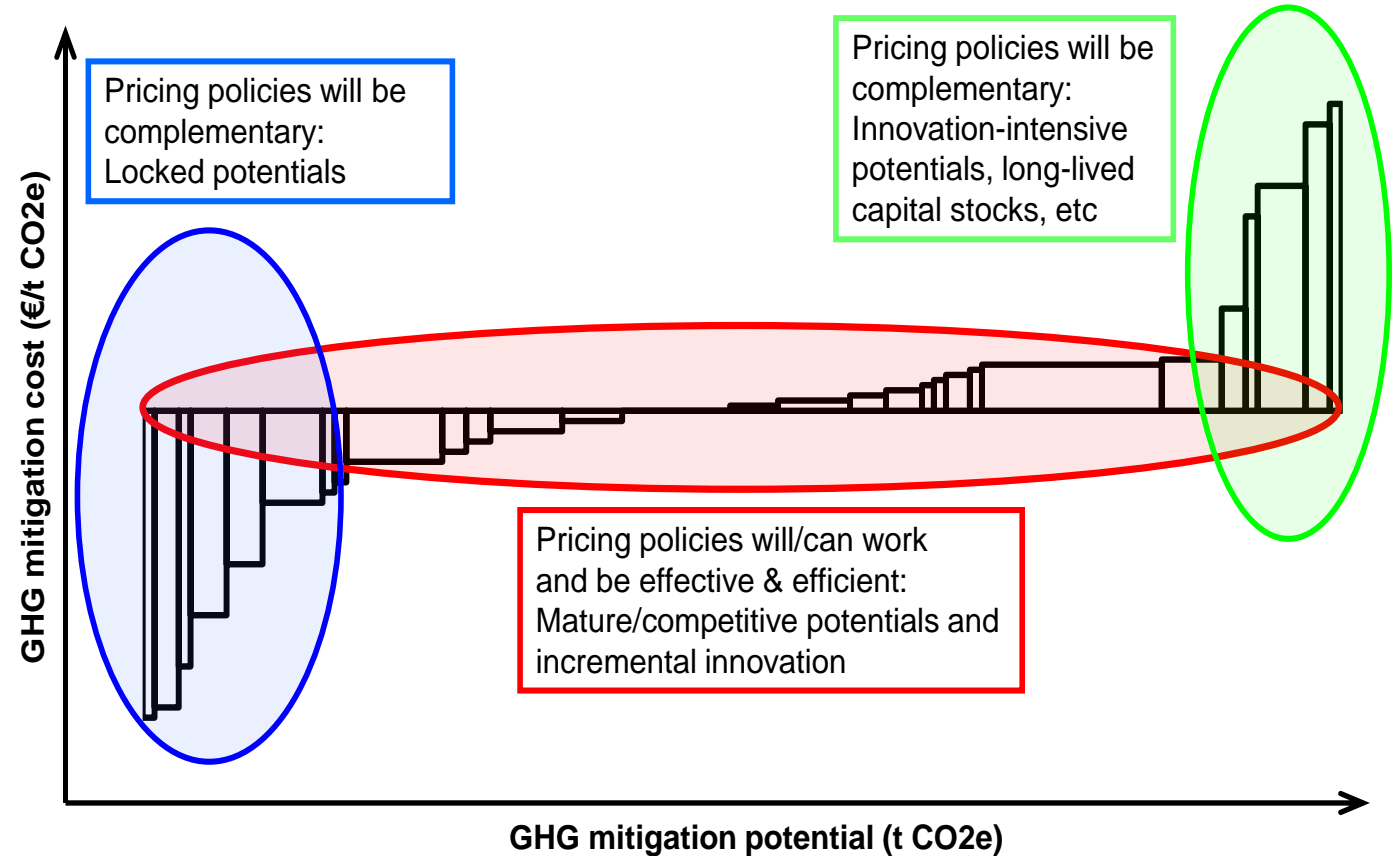
Providing valuable climate finance

- **Auctioning allowances generates revenue that can finance GHG reduction projects**
 - Valuable help for ETS entities
 - \$59 billion from EU ETS in 2019 & 2020
- **Auctioning feasible for sectors that can pass-through carbon costs to product prices**
 - Power sector is priority target – but needs effective pass-through mechanism
- **Revenue can compensate electricity price increases for vulnerable residential and industrial stakeholders**



Playing a central role in the climate policy mix

- Carbon price can drive reductions across **Marginal Abatement Cost Curve**
- Climate finance from ETS can support investment in emission reduction projects at extreme ends of MACC
- ETS provides assurance of achieving GHG emission targets through compliance cycle and sanctions

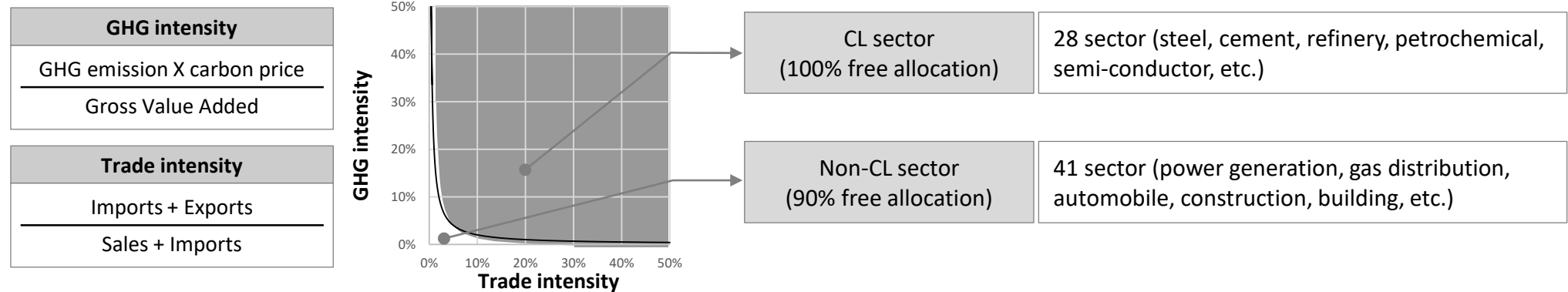


Adapted from: Matthes, F. 'Analysis of companion policies, policy interactions and optimisation', Dec 2017

Protecting industrial competitiveness

- **Free allocation**

- 100% free allocation (up to benchmark emissions intensity) for sectors at high risk of carbon leakage – best performers would get all they need
- Carbon leakage criteria determines sectors for free allocation and share of free allocation / auctioning. Example for Korea ETS (Phase 3) below:



- Windfall gains if policy is too generous

- **ETS will help India meet challenges of EU CBAM – ETS carbon costs can be deducted from CBAM costs**

Example GHG reductions - Power sector

- **EU**

- Carbon price has massively reduced carbon-intensive generation (coal and lignite) pushing it towards back of merit order and gas towards front
- Power sector CO₂ emissions decreased significantly – expected to have greatest emission reductions by 2030 of all sectors

- **Korea**

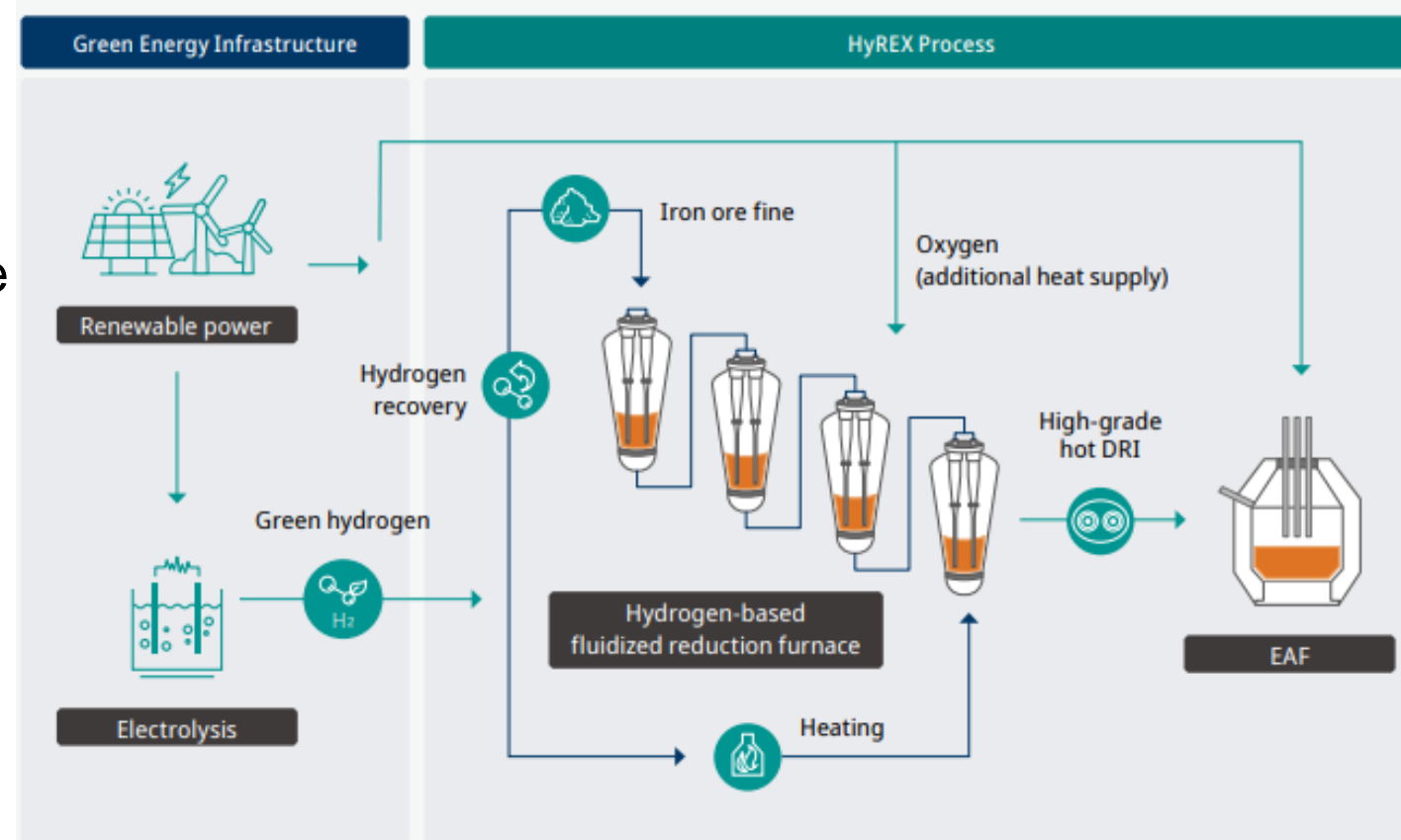
- Fuel switch (coal to LNG), expansion of renewables, co-firing hydrogen in gas turbine, CCUS (production of H₂ & CO) and green hydrogen production



Source: Korea Western Power Co., Ltd
'KOWEPO's Sketch for Carbon Net Zero'

Example GHG reductions - Steel sector

- **Optimise steelmaking process**
 - Smartization, energy efficiency and facility rationalisation
- **Bridge technology**
 - Lower hot metal ratios / maximize scrap, hydrogen as reducing agent and facilitate CCUS
- **Hydrogen based steelmaking**
 - Salzgitter (Germany): 1st H₂ based DRI using EAF by 2025, 2nd by 2030 & rest by 2035 (95% CO₂ reduction)
 - Korean steel consortium: pilot plant by 2028, scale up in 2030s, full transition by 2040s



Source: POSCO's Dialogue for Climate Action

Example GHG reductions - Other sectors

- **Chemicals sector**

- Cracker furnace redesign, electrification of crackers using renewables, hydrogen furnaces, biomass, CCS & alternative routes to make chemicals (waste material, CO₂ and H₂ chemistry)
- BASF: electrically heated steam cracker by 2023 in Germany, net-zero petrochemical plant in Belgium by 2030

- **Cement sector**

- Alternative fuels, reduction of clinker share in cement and CCUS

ETS development in East & Southeast Asia

Country	Start year	Sectors	Emissions (MtCO ₂ e/y)	Cap type	% Auction
Korea	2015	All	~600	Absolute	10% (Phase 3) ↑↑ (Phase 4)
China	2021	Power, then industry	~4,500 initially, then ↑↑	Intensity	To introduce & expand
Indonesia	2023	Coal power, then industry	~360 initially, then ↑↑	Intensity	TBC
Vietnam	2026	All	TBC	TBC	TBC
Japan	2026	All	TBC	TBC	TBC
Others	Malaysia, Thailand, Philippines and Taiwan are also considering developing ETS				

Transition from PAT Scheme to ETS

- **PAT Scheme provides strong platform to establish very substantial ETS due to similar building blocks, relevant institutions, energy savings / MRV capability and large coverage**
- **Some policy development (regulations, guidance and plans), ETS building block development and ETS capacity building for relevant stakeholders will be needed**
- **Companies should accelerate development and implementation of effective GHG emission reduction and net zero strategies considering future carbon prices – early action rewarded!**
- **Key areas to consider to ensure ETS effectiveness include target setting methods, carbon leakage mitigation, power market interaction, auctioning and revenue recycling, and market liquidity and price control**

Critical elements for success

- 1. Strong legal framework establishing critical elements**
- 2. Robust, transparent, consistent and accurate MRVA system and strong enforcement**
- 3. Efficient data flow and management eg electronic reporting and registry**
- 4. Long-term policy certainty**
- 5. Ambitious cap eg in line with Paris Agreement goals and with transparent method**
- 6. Efficient market for trading allowances**
- 7. Carbon leakage mitigation measures and safeguarding industrial competitiveness**
- 8. Carbon cost to influence power sector fuel switch and be passed to electricity prices**
- 9. Auctioning for power sector, revenue to finance ETS entities' GHG reduction projects**



Thank you!

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