MISTRA CARBON EXIT

The changing role of carbon pricing in EU climate policy

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Emissions trading as main pillar, cornerstone, or building block?

- Dominance of carbon pricing in early EU climate policy
- 2008-13: climate policy meets the EU *polycrisis*
- 2013-18: reform, revision, revival with an eye to 2030
- Integration of climate, energy, and industrial policies
- Long-term strategy: Energy Union & industrial strategy

EU carbon market: allowance prices

Source: EEA and EEX

In the Kyoto world, carbon pricing is everything for the EU

Top-down architecture and global governance

- EU emissions trading and Kyoto compliance linked
- AAU trading and linked carbon markets
- Decentralised EU ETS architecture

United Nations Framework Convention on Climate Change

➢ Modest short-term targets, long-term targets with significant residuals

Polycrisis: challenges to governance and to climate policy design

Financial turmoil, banking, economic, political crisis

- Top-down climate governance fails at Copenhagen
- Targets start to deepen, economic scope to widen
- EU ETS faces structural imbalances due to supply rigidity
- Carbon leakage and competitiveness dominate
- EU ETS faces credibility issue

Policy questions:

- Can the carbon market regulator, legislator, and the supply-side be the same actor?
- Are low carbon prices a problem or are they the point?
- Credible commitment: how fixed is the cap?

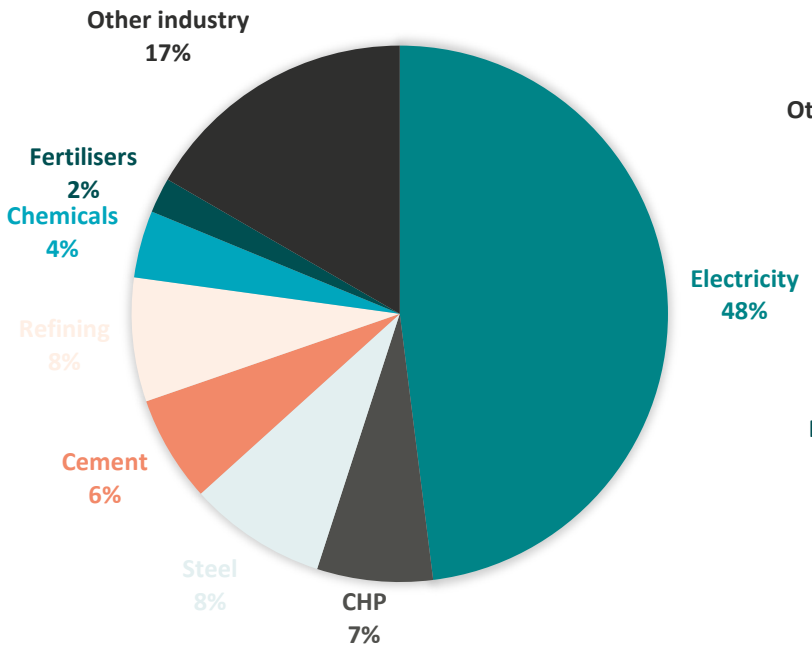
A carbon price isn’t the same to all sectors

How to allocate: theoretically easy, practically difficult

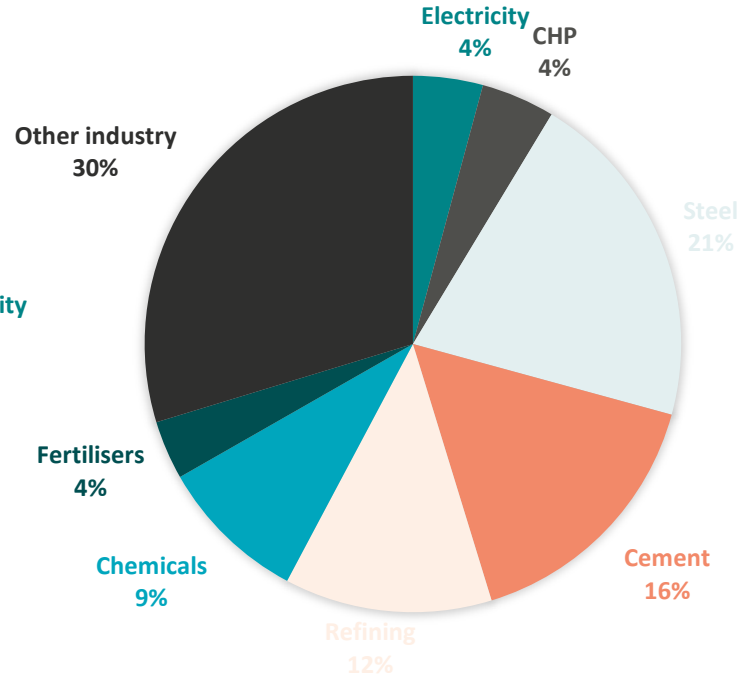
- Auctioning better?
- Polluter pays?
- Static & dynamic efficiency
- Power: auctioning (windfall profits)
- Industry: free allocation (carbon leakage risk)
- Which mitigation options?

A carbon price isn't the same to all sectors

EU ETS: 2017 GHG EMISSIONS

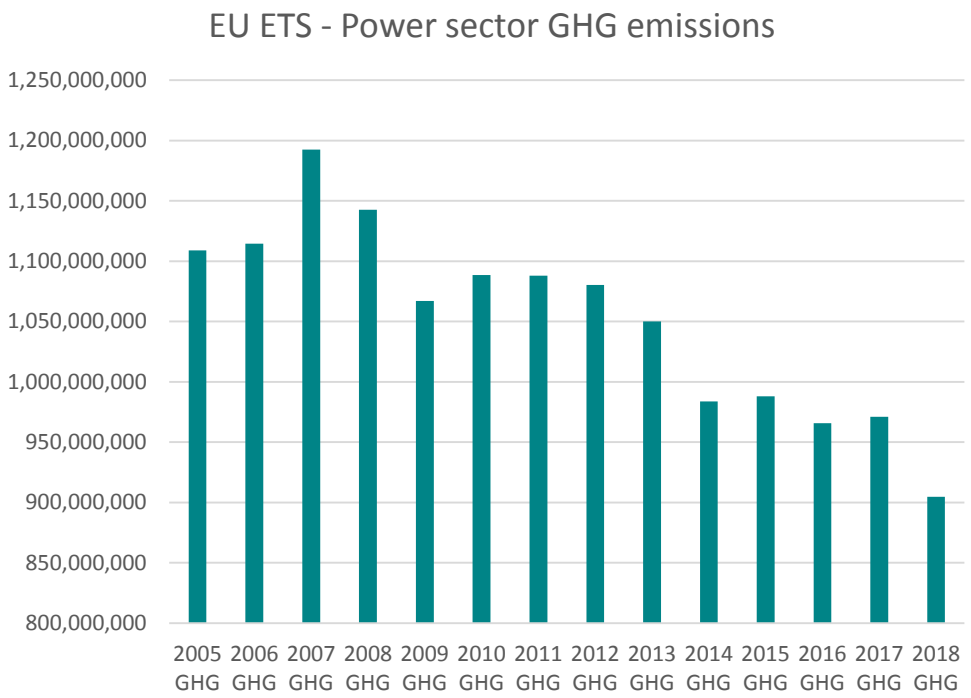


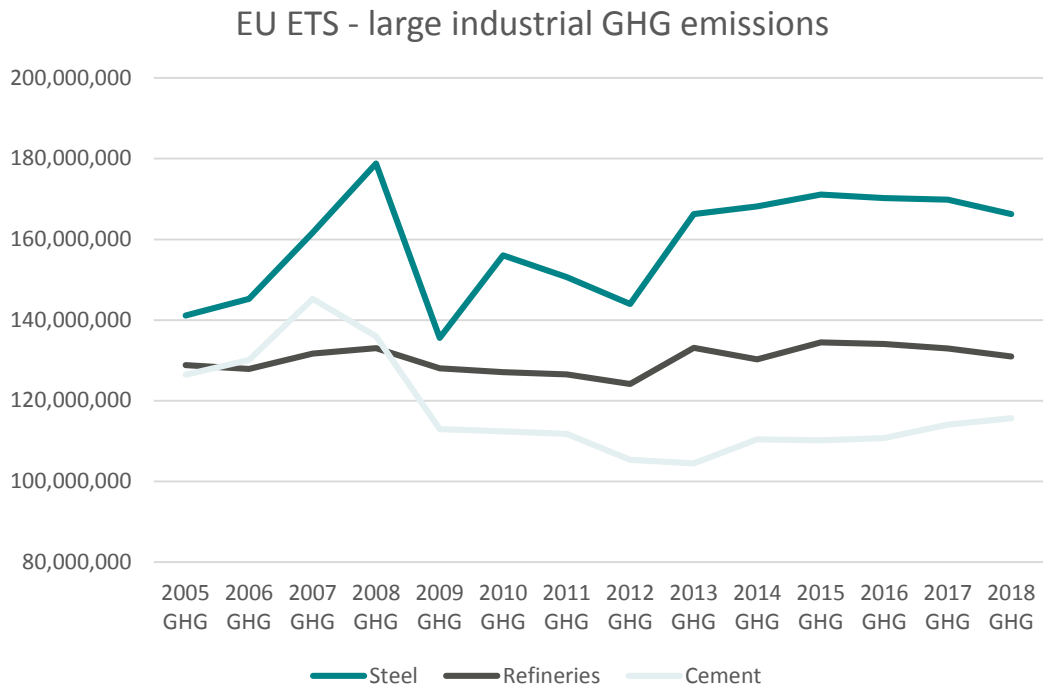
EU ETS: 2017 FREE ALLOCATION



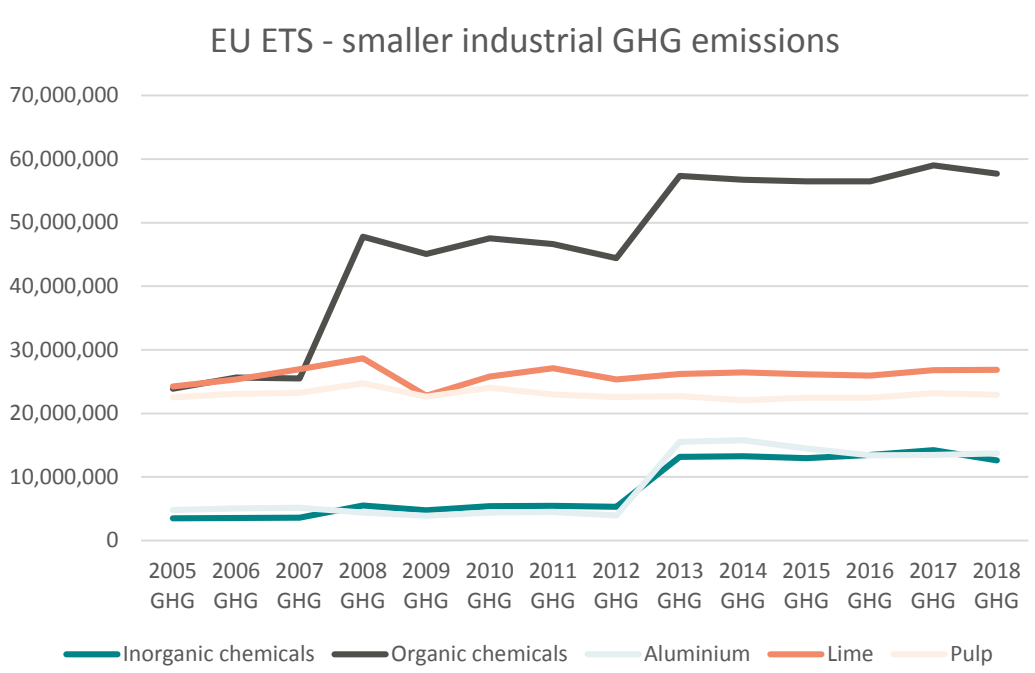
Sector	Emissions	2016 Net FA	2017 Net FA
Electricity	0,49%	7,8%	3,4%
CHP	-3,64%	27,5%	25,0%
Steel	-0,20%	99,3%	97,4%
Cement	3,24%	104,0%	98,3%
Refining	-1,55%	65,8%	65,9%
Chemicals	4,83%	93,8%	87,1%
Fertilisers	1,32%	68,0%	65,5%
Other industry	3,38%	74,4%	70,1%

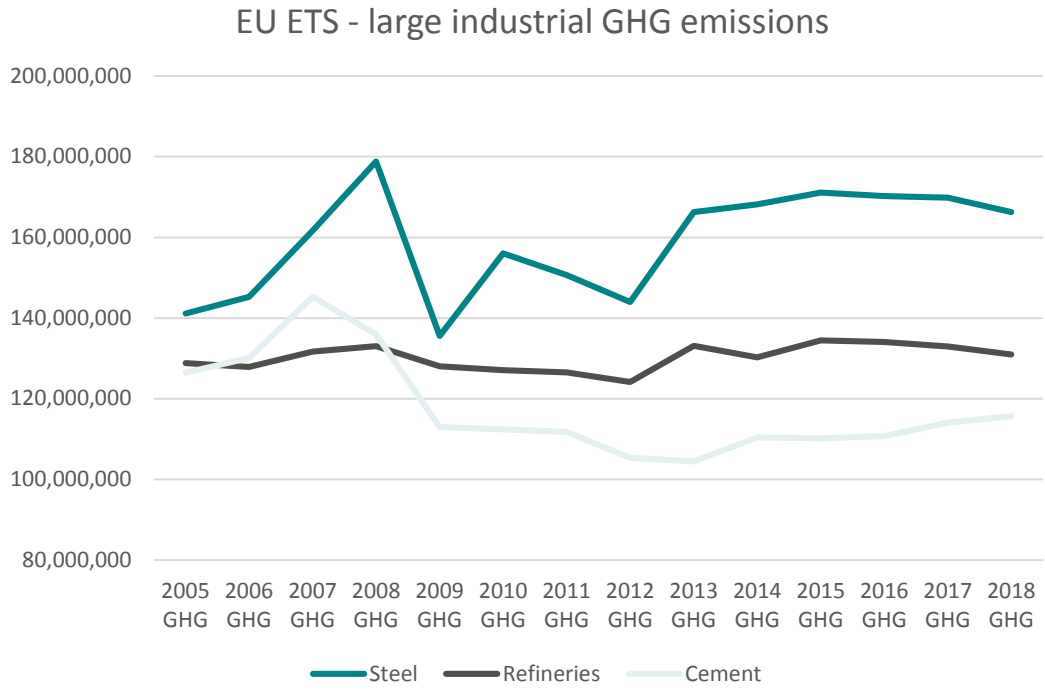
EU ETS emissions & prices





EU ETS emissions & prices





Mid-term efficiency vs long-term radical transformation: the last 10-15% makes all the difference

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Paris Agreement: everything changes, more urgency, 80-95% GHG emissions reduction range: more people starting to look at the higher number

What does this new reality mean for carbon pricing?

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The future role for carbon pricing: supporting and managing interactions between numerous climate policies?

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- What does a carbon price signal do? Disincentives vs incentives
- Long-term industrial decarbonisation requires breakthrough technology
- Abatement costs & carbon prices are always set to change (depend on time horizon, changes in capital stock)
- Technology needed at scale to bring down costs through learning, also requires a market for low-carbon products – otherwise no investment case
- Does the ETS price help you get H2-based steel-making or cement production with carbon capture and storage?

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Challenges of deep decarbonisation

- Could high prices at first, lower prices later be realistic or desirable?
- Everyone needs abundant, cheap low-carbon electricity, but electricity generators need to make money (wholesale?)
- Low-carbon basic materials may be a lot more expensive, but the share of final product prices can be tiny
- Circular economy and demand reduction can help if carbon prices push up costs, but do shrinking markets help with investment? (specialisation)
- Interactions and integration between sectors facing different (carbon) policy regimes continue to grow

Market failure & political economy

ETS based on classical economic efficiency & a Coasean framework that underestimates transaction costs

Market failures/imperfections:

- Principal agent problems
- Economies of scale
- Incomplete markets
- Network externalities
- Innovation externalities
- Information asymmetry

Political economy:

- Pigouvian outcome through Coasean tools?
- Collective action problems
- Credible commitment
- Distribution: concentrating costs while diffusing benefits

Thank you

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Backup: EU Long-term Strategy

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Long Term Strategy Options

	Electrification (ELEC)	Hydrogen (H2)	Power-to-X (P2X)	Energy Efficiency (EE)	Circular Economy (CIRC)	Combination (COMBO)	1.5°C Technical (1.5TECH)	1.5°C Sustainable Lifestyles (1.5LIFE)
Main Drivers	Electrification in all sectors	Hydrogen in industry, transport and buildings	E-fuels in industry, transport and buildings	Pursuing deep energy efficiency in all sectors	Increased resource and material efficiency	Cost-efficient combination of options from 2°C scenarios	Based on COMBO with more BECCS, CCS	Based on COMBO and CIRC with lifestyle changes
GHG target in 2050	-80% GHG (excluding sinks) ["well below 2°C" ambition]					-90% GHG (incl. sinks)	-100% GHG (incl. sinks) ["1.5°C" ambition]	
Major Common Assumptions	• Higher energy efficiency post 2030 • Deployment of sustainable, advanced biofuels • Moderate circular economy measures • Digitilisation					• Market coordination for infrastructure deployment • BECCS present only post-2050 in 2°C scenarios • Significant learning by doing for low carbon technologies • Significant improvements in the efficiency of the transport system.		
Power sector	Power is nearly decarbonised by 2050. Strong penetration of RES facilitated by system optimization (demand-side response, storage, interconnections, role of prosumers). Nuclear still plays a role in the power sector and CCS deployment faces limitations.							
Industry	Electrification of processes	Use of H2 in targeted applications	Use of e-gas in targeted applications	Reducing energy demand via Energy Efficiency	Higher recycling rates, material substitution, circular measures	Combination of most Cost-efficient options from "well below 2°C" scenarios with targeted application (excluding CIRC)	COMBO but stronger	CIRC+COMBO but stronger
Buildings	Increased deployment of heat pumps	Deployment of H2 for heating	Deployment of e-gas for heating	Increased renovation rates and depth	Sustainable buildings			CIRC+COMBO but stronger
Transport sector	Faster electrification for all transport modes	H2 deployment for HDVs and some for LDVs	E-fuels deployment for all modes	Increased modal shift	Mobility as a service			• CIRC+COMBO but stronger • Alternatives to air travel
Other Drivers		H2 in gas distribution grid	E-gas in gas distribution grid				Limited enhancement natural sink	• Dietary changes • Enhancement natural sink

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Backup: ETS Reform, revision, revival?

- 2012: backloading – ad-hoc supply management
- 2015: Market Stability Reserve – structural supply management
- 2015: start of Phase IV rulebook discussion – competitiveness!
- 2017: Phase 4 revision: some tighter free allocation
  - But also: MSR made stronger, dynamic cap adjustments
- 2018-19: long-term strategy update: net-zero?