



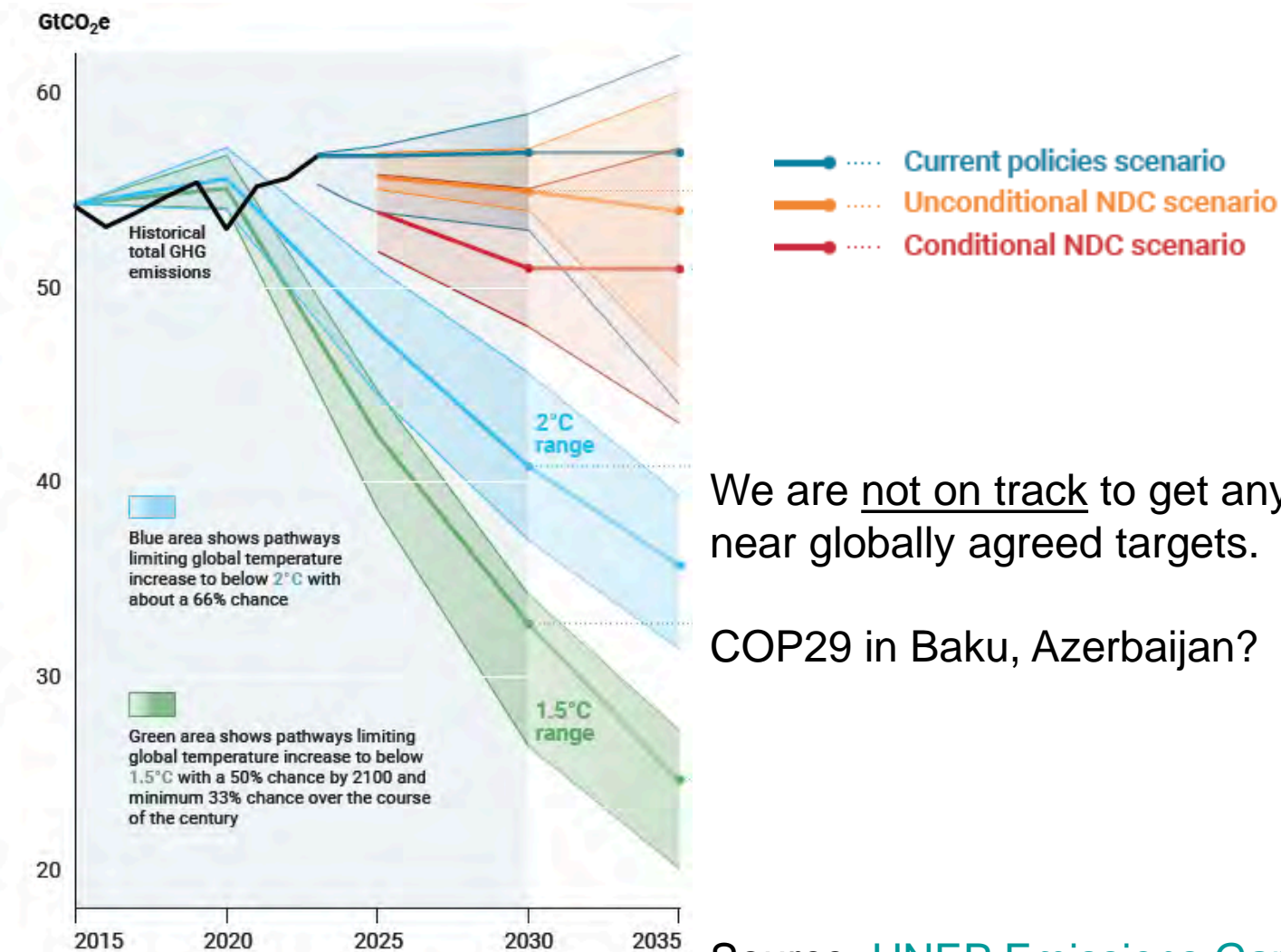
Towards a Global Carbon Market

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Progress with global decarbonisation

How is global decarbonization going? Answer: Very badly



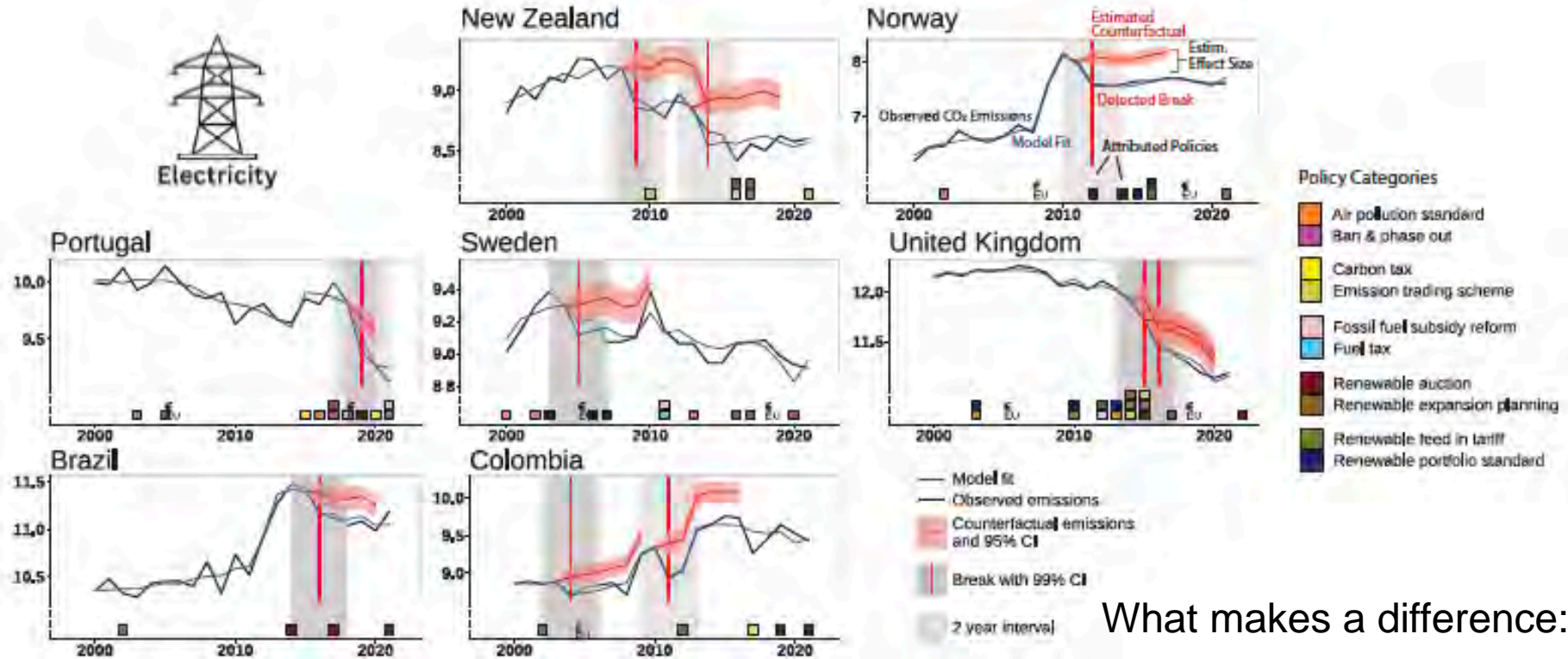
We are not on track to get anywhere near globally agreed targets.

COP29 in Baku, Azerbaijan?

Source: [UNEP Emissions Gap Report 2024](#)

The reason is: most climate policies are not about decarbonisation

1500 decarbonization policies in OECD countries: 63 polices in different sectors correlated with significant structural breaks within 2 years of policy, 1998-2022
Examples of significant breaks in log CO2 emissions in electricity sector:



What makes a difference:

Carbon prices
Renewable subsidies
Mixes of policies

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Source: Stechemesser et al., 2024, p.4, [Science](#).

Three policy solutions to climate change

A Technological Solution?



Source: Star Trek - The Next Generation

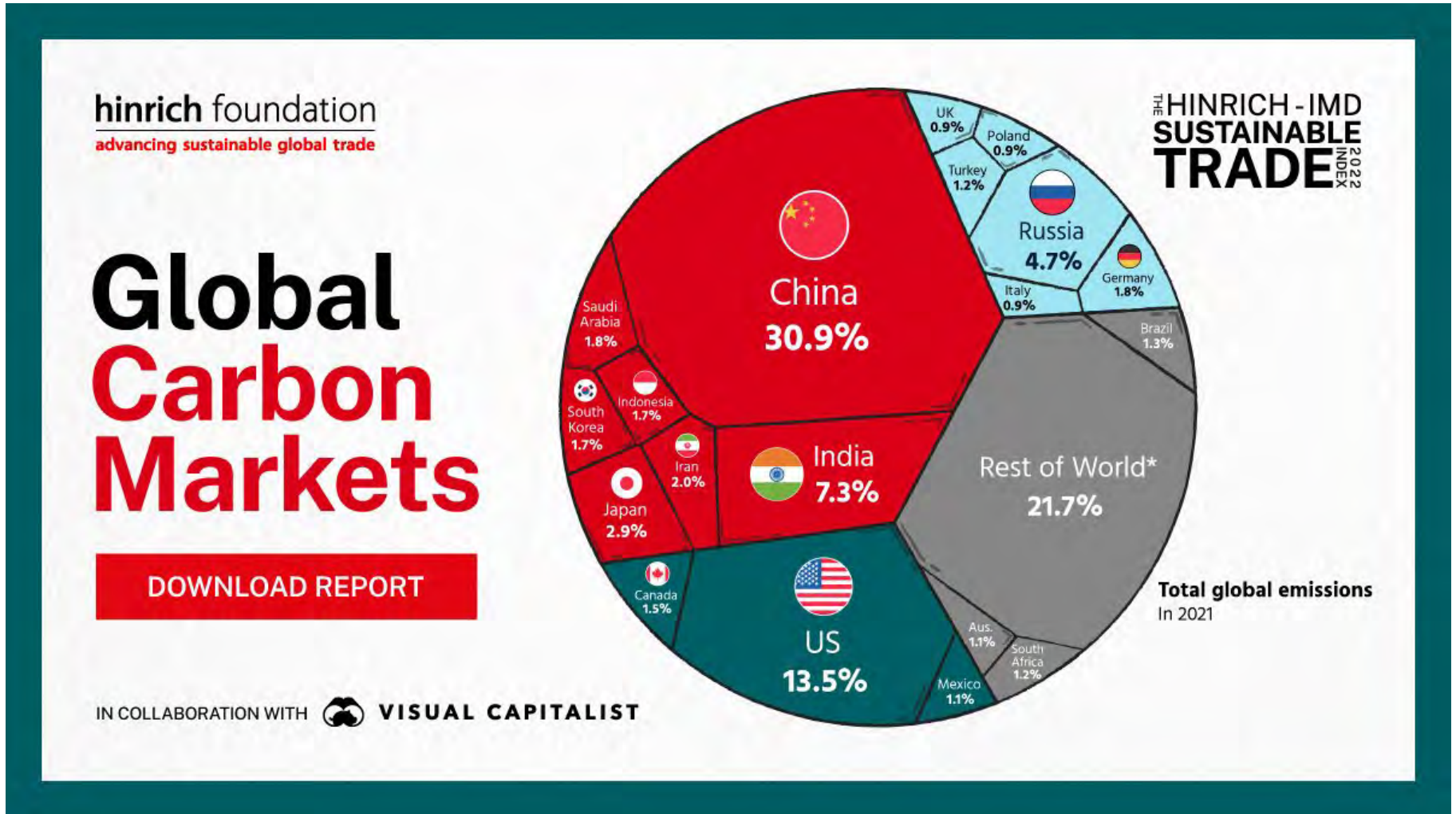
A political solution?



United Earth Government
(Circa 2154)

Source: Kris Trigwell

An economic solution?



Source: Hinrich Foundation

Comparing theoretical properties of ETS (cap and trade) with carbon tax

Which is better for?	ETS (cap & trade)	Carbon tax
Consistency with climate science	X	
Emissions certainty	X	
Lowering price risk		X
Lowering price uncertainty	X	
Likelihood that real prices will rise over time	X	
Policy complementarity		
<i>Avoiding waterbed effect (complexity)</i>		X
<i>Crowds in other policies</i>	X	
<i>Credible long-term commitment</i>	X	
Managing internal political economy	X	
Facilitating cross border co-ordination	X	

Most economists have been wrong theoretically about carbon taxes and carbon markets are theoretically superior...

Testable Empirical Properties of 73 Carbon pricing mechanisms (CPMs)

Testable Property T=Theoretical D=Desirable Q=Quantity P=Price	Description	Strongly Observed	Partially Observed	Not Observed
TQ1	National emissions decrease more in countries with CPMs.	X		
TQ2	<i>ETSs should have lower emissions quantity risk and volatility.</i>	X		
TQ3	Covered emissions should reduce relative to their previous trend.		X	
TQ4	<i>ETSs should have greater scheme longevity than CTs.</i>			X
TQ5	ETSs should better facilitate cross border coordination than CTs.	X		
DQ1	<i>CPMs should expand to cover a higher share of national emissions.</i>		X	
DQ2	Countries that have Net Zero Targets are more likely to have CPMs.		X	
TP1	<i>ETS real-local prices should increase over time.</i>	X		
TP2	ETS nom-local (and real-local) prices are pro-cyclical.		X	
TP3	<i>CTs should have lower nominal-local price risk and volatility.</i>	X		
DP1	CT nominal-local prices should not decrease.		X	
DP2	<i>EWCP nominal-real prices increase towards the SCC.</i>		X	

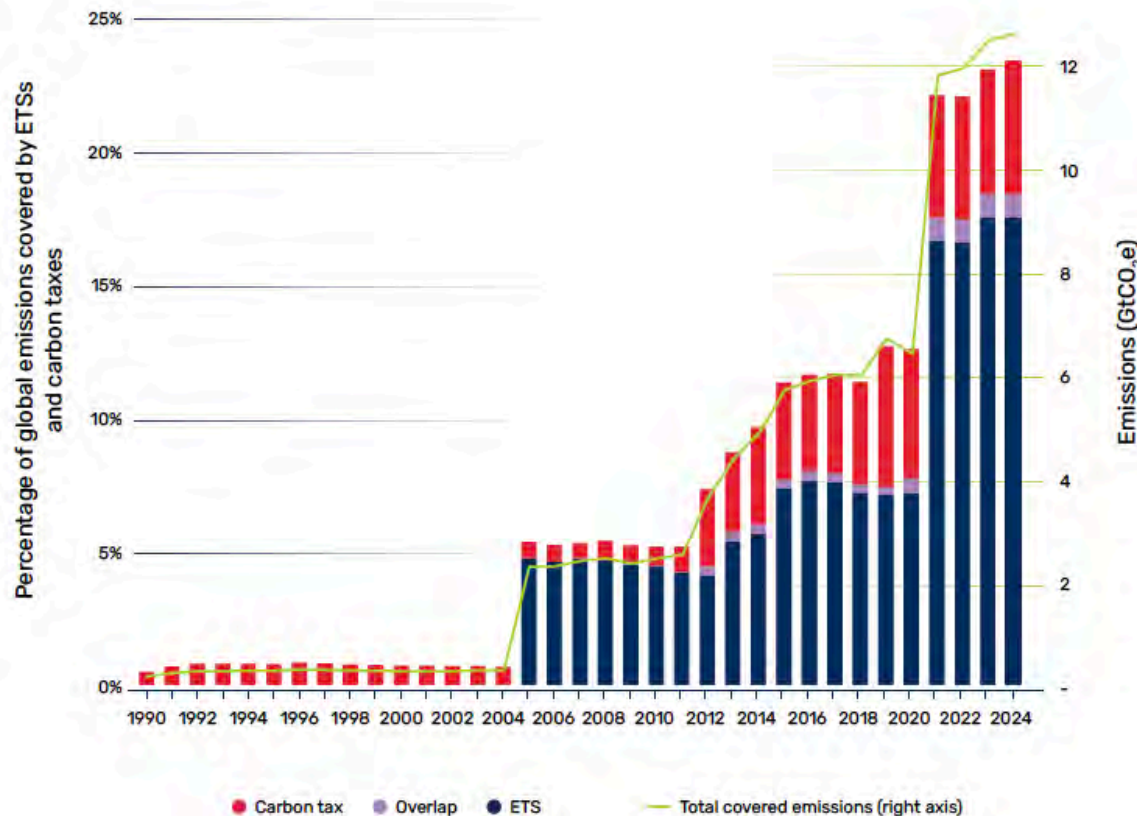
EWCP = Emissions Weighted Carbon Price
Source: Slinger and Pollitt, 2024.

Most economists are being proved wrong about assumed empirical properties of carbon markets.

Some important history: the spread of carbon pricing

FIGURE 5

Global GHG emissions covered by ETSs and carbon taxes



‘Historians...often do a better job than economists of identifying important mechanisms that are plausible, interesting, and worth thinking about, even if they do not meet the inferential standards of contemporary applied economics.’

Angus Deaton,
2015 Nobel Laureate in
Economics

[Rethinking My
Economics, April 2024](#)

Source: World Bank (2024), *State and Trends in Carbon Pricing*, p.22.

Some important history: the spread of carbon pricing

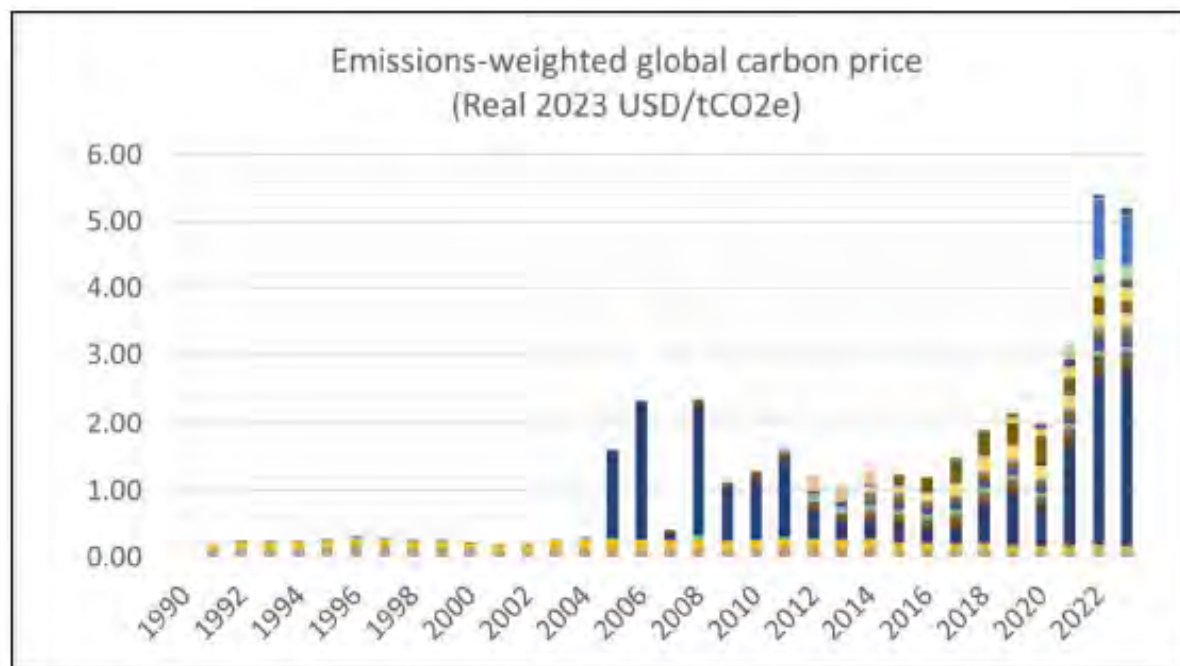


Figure 8 - Combined EWCP of all ETS and Carbon Taxes

Source: Slinger and Pollitt, 2024.

Source of today's carbon prices:

<https://carboncredits.com/carbon-prices-today/>

China carbon price:

<https://www.cets.org.cn>

High carbon prices matter. ESG effect on cost of capital:

= - 0.3% vs

\$43 / tonne carbon price:

= + 4%

i.e. order of magnitude difference from carbon price vs green premium.

Source: In Search of the True Greenium [Eskildsen et al. 2024](#)

EU Emissions Trading Scheme

Price of Carbon Permits in EU ETS

EU Carbon Permits



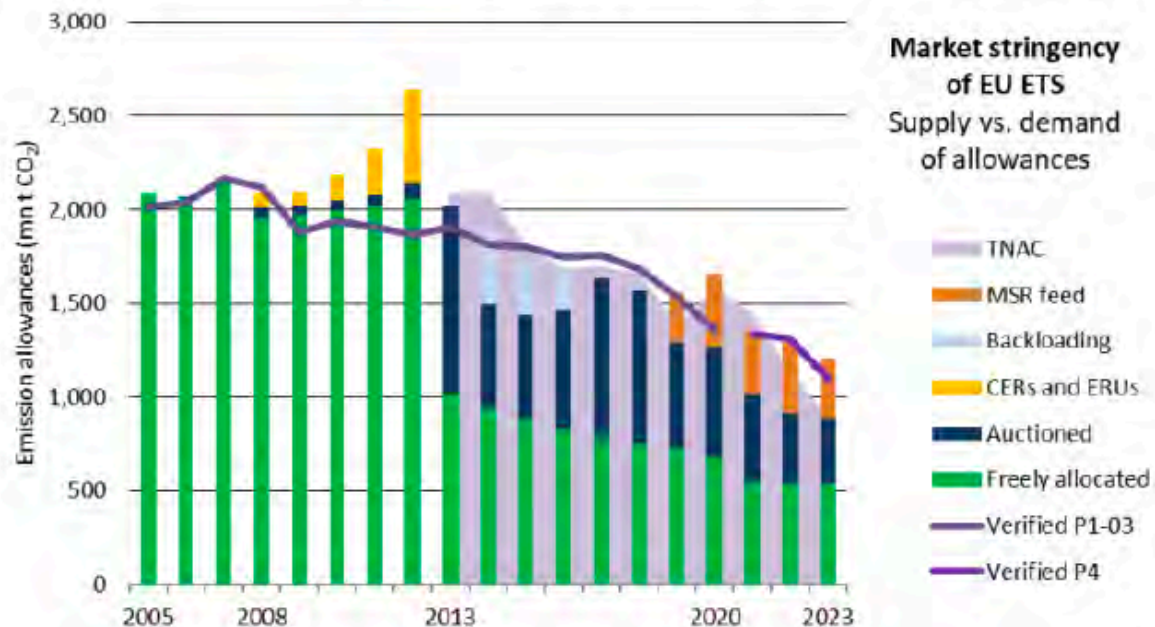
Price per tonne
CO2

Market value of
Roughly 130 bn
Euro in 2023

source: tradingeconomics.com

Quantity of Permits in EU ETS

KPI 6.10: Supply and demand of EUAs and TNAC



Source: Wegener Center, based on EUTL (2024), EEA (2024), European Commission (2023)

*CERs 'Certified Emission Reduction', ERUs 'Emission Reduction Units'

Phase 1: 2005-07

Phase 2: 2008-12

Phase 3: 2013-20

Phase 4: 2021-30

1486m permits issued in 2023

TNAC = Total Number of Allowances in Circulation

1. Role of CERs (no longer allowed from 2013)
2. Free allocation share still high to industry.

Source: State of the EU ETS Report 2024, p.29, ERCST (2024).

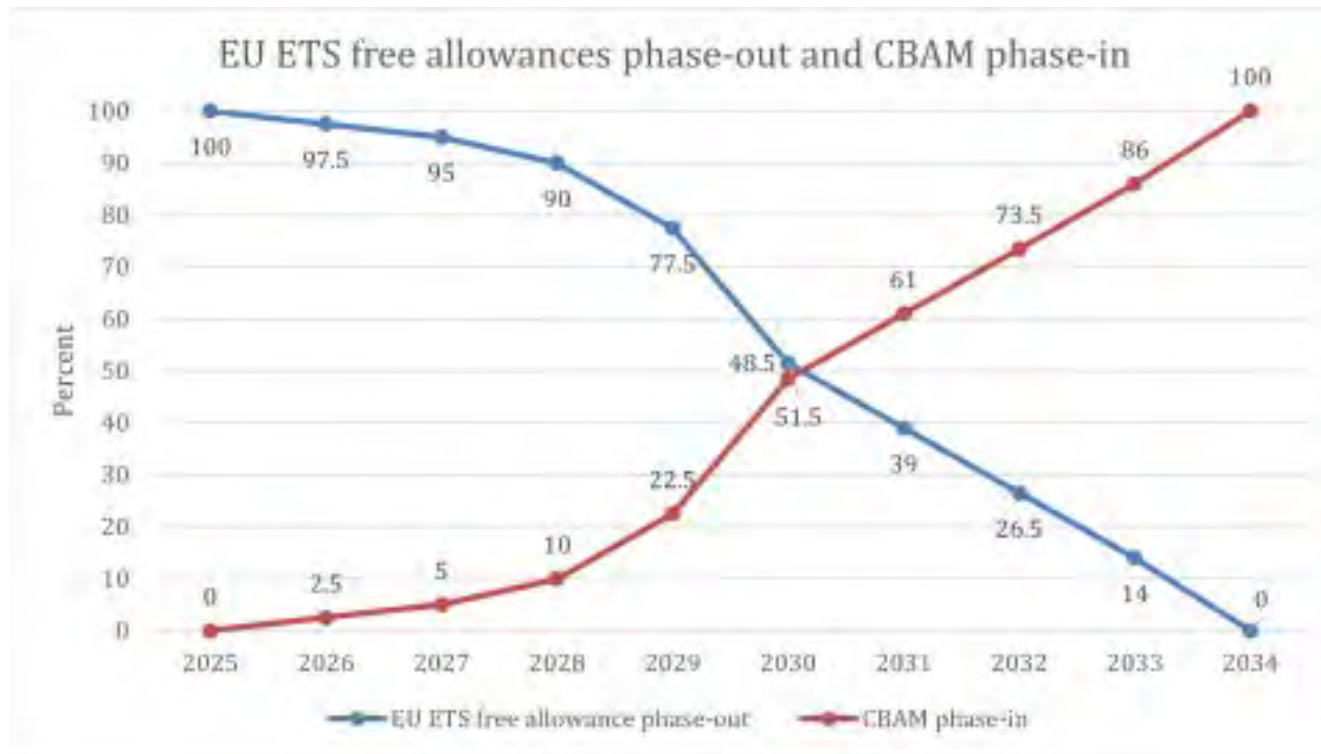
The successful evolution of EU ETS

- The world's largest and longest running carbon pricing experiment.
- Currently around 36% of EU emissions.
- 30 countries, coupled to Switzerland and hopefully the UK.
- Extended by country, by sector (aviation 2013 and maritime 2025), in time.
- Innovated by setting up market stability reserve (MSR).
- Carbon Border Adjustment Mechanism (CBAM) agreed (Regulation 2023/956).
- Extension to heating and transport (EU ETS2) agreed (Directive 2023/959).
Around 31% of EU emissions.

CBAM – Carbon Border Adjustment Mechanism

- This will apply to importers of cement, iron and steel, aluminium, fertilisers, electricity and hydrogen. First proposed in EPRG Working Paper (Ismer and Neuhoff, 2004).
- Will enter into force from 1 October 2026, with initial free allocation.
- Will have to present evidence of CBAM certificates of payment at average carbon price for the compliance year. Evidence of pre- payment for carbon can be offset against payment for CBAM certificates. Actual carbon intensity or Default country intensity or Worst in EU class intensity will be used to calculate CO2 content.
- CBAM should therefore encourage coupling of ETSs (by some).
- Phase out out of free allocation to 2034.

Free allowances phased out, CBAM phased in



Source: ICAP.

Liability for CBAM will increase from 2.5% to 100% from 2026 to 2034. 543m allowances given out free in 2022. Halving the value of free allowances by 2030 would raise c.16 bn Euros p.a. ($543 \times 0.67 \times 87 \times 0.5$)

What next for carbon markets globally?

Not just about EU CBAM: other CBAMs coming



Source: [Carbon Link](#)

CBAM responses

- China is responding to CBAM, with 9 September 2024 Ministry of Ecology and Environment (MEE) announcement, expanding its carbon market by around 3000mt p.a. to cover iron, steel, cement and aluminium. This expansion is bigger than the existing EU ETS.
- This will be the biggest expansion of an existing market in history (5% of global GHG emissions). It will make China's carbon market around half of global carbon pricing (c.14% out of 27%). China will then have covered 60% of its emissions. Alignment period 2025 and 2026. 1500 firms covered (with 26,000 tonnes or more). CF_4 and C_2F_6 emissions covered for aluminium.
- UK has announced its own CBAM from 1 January 2027 on 30 October 2024. Applies to similar sectors as EU CBAM (not electricity), but no phase in of liability and no announcement on phase out of free allowances. There are details on which sectors it will be applied to.
- So far, exporting countries are adjusting and initial hostility diminishing...

Difficulties for carbon markets

- The ultimate problem for carbon markets is not their effectiveness but the distribution of the real costs of a deep decarbonization policy.
- Carbon markets suffer from the same suspicion as financial markets have generally. Even the Pope does not like carbon markets (Laudato si, 2015).
- Carbon markets can be subject to price spikes, like other commodity markets, though this volatility has been and can be managed or hedged.
- Extension of carbon markets in scope is a work in progress. EU failed to take the opportunity to extend existing market to heating and transport.
- The world is fragile geopolitically. CBAMs may be a tool for arbitrary trade taxes and/or seen as aggressive trade policy.
- Carbon markets are only as good as their Monitoring, Reporting and Verification (MRV) processes. There has to be international monitoring of emissions (or MRV processes) in a more integrated global carbon market²²

Reasons to be hopeful about carbon markets

- COP29 in Baku reaffirmed the key role for carbon markets. Article 6.2 on allowing trading of Nationally Determined Contributions (NDCs) and Article 6.4 on UN backed standard for voluntary carbon credits were agreed.
- Theory says that carbon prices can vary by level of development in different jurisdictions, but over time prices should converge to a single global price.
- Carbon markets are winning the argument about their role in providing a central mechanism that can guarantee overall decarbonization.
- Carbon markets do allow multi-year, multi-jurisdictional policy frameworks to be established with potential for effort related international transfers. No other single mechanism for this exists.
- Carbon markets do induce other decarbonization policies in order to manage carbon prices and the waterbed effect is a good thing distributionally.
- Scope and price are rising globally and the prospects for linking clearly exist.

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