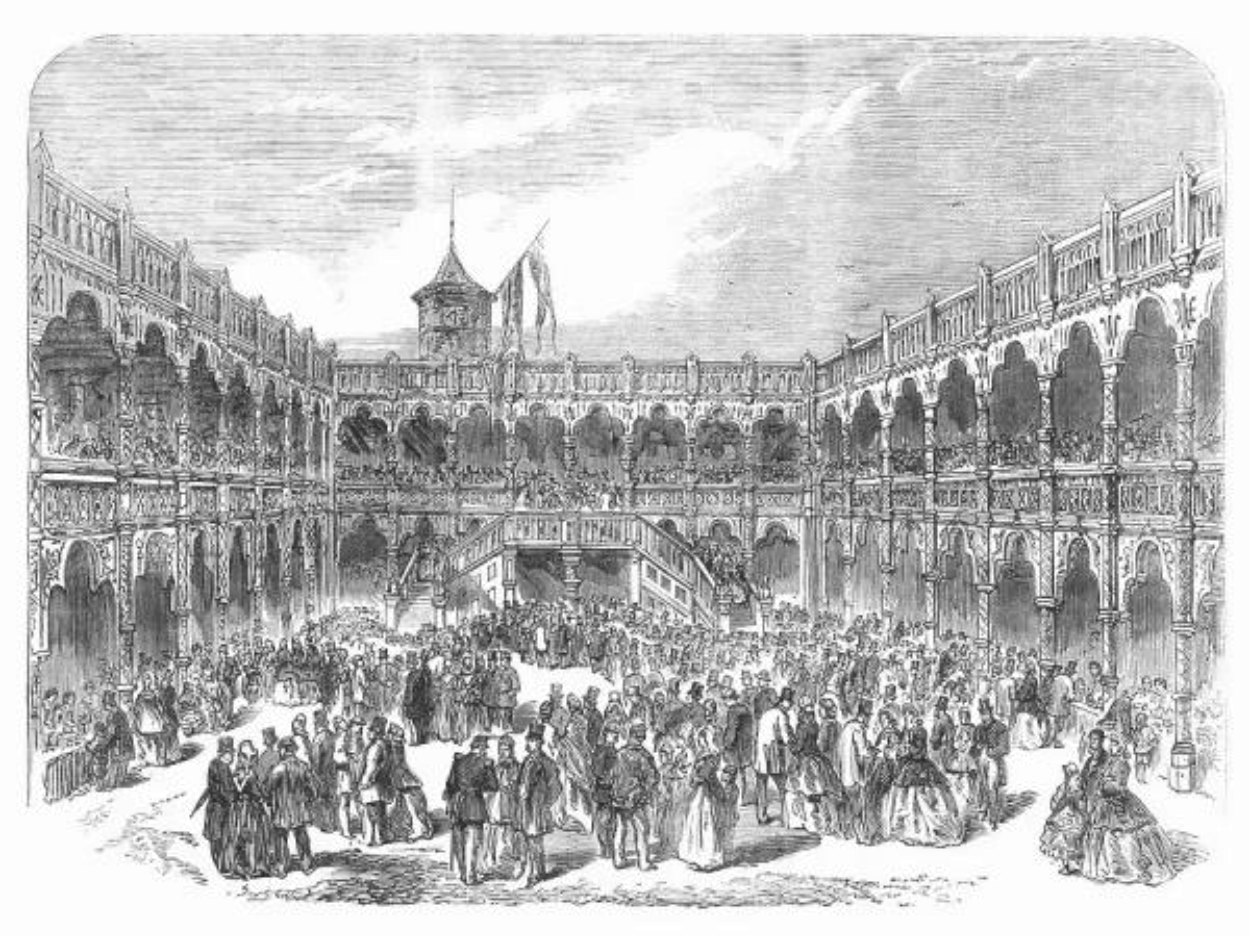
2025 State of the EU ETS Report



Grand Festival of the Municipality and Royal Academy of Antwerp: restoration of the Old Bourse, 1864

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This Report has been the subject of stakeholder consultations, including a workshop convened by the authors with stakeholders including NGOs, think tanks, academia, policymakers, market participants, and industry representatives.

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The European Roundtable on Climate Change and Sustainable Transition (ERCST) is a Brussels-based think-tank incorporated as non-profit organisation under Belgian law. ERCST provides rigorous intellectual analysis of EU and international climate change developments and policies, drawing on the experience and research of its staff as well input from stakeholders who participate in its activities. ERCST provides original ideas and research into European and international debates on climate change policy. It represents its own views and strives to strictly ensure its independence and integrity.

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The Wegener Center for Climate and Global Change is an interdisciplinary, internationally oriented institute of the University of Graz, Austria, which serves as a core research centre for pooling the University's competence in the areas of climate change and the related issues in climate physics, meteorology, and economics. An evidence-based approach to the transformation of energy systems, innovative analytical modelling concepts, and the design of energy and climate policies are focal points of current research activities.

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CBAM	Carbon Border Adjustment Mechanism
CCfDs	Carbon contracts for difference
CCU	Carbon capture and utilisation
CCS	Carbon capture and storage
Commission	European Commission
COP29	The 29th United Nations Climate Change Conference of the Parties
CRCF	Carbon Removal Certification Framework
EEA	European Economic Area
EED	Energy Efficiency Directive
ESMA	European Securities and Markets Authority
ETS	Emissions Trading System
EUA	EU emission allowances
EUTL	European Union Transaction Log
GHG	Greenhouse Gas
IMO	International Maritime Organisation
KPI	Key Performance Indicator
LRF	Linear reduction factor
MRV	Monitoring, Reporting and Verification
MSR	Market Stability Reserve
NDC	Nationally Determined Contributions
RCF	Recycled Carbon Fuels
RED	Renewable Energy Directive
RFNBO	Renewable Fuels of Non-Biological Origin
RRF	Recovery and Resilience Facility
TNAC	Total number of allowances in circulation
UKA	UK emission allowances

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Key takeaways

- The 2024 EU ETS context is shaped by a volatile economic and political landscape. 2024 saw the launch of the Draghi Report, the anniversary of the Antwerp Declaration and the Clean Industrial Deal (CID), placing carbon pricing at the heart of efforts to address competitiveness. That is a positive development, but the solution to balance prices of EUAs and cost of decarbonisation remains elusive.
- Some uneasiness resurfaced with regards to regulatory interventions, as illustrated by the announcement of the Industrial Decarbonisation Bank, as part of the CID, which is partly funded by EU ETS revenues, lacking in transparency and predictability, echoing governance concerns from to REPowerEU auctions.
- The EU ETS, like many of the EU climate change policies are facing uncertainty related to upcoming reviews as well as the impact of the 2040 target. The delay in putting forward a 2040 NDC provides the best illustration.
- The EU ETS cut emissions by 4.8% emissions reduction in 2024, recovering from the energy crisis, with over 50% of the 62% Phase 4 target (2030) already met, led mostly by the power sector and its shift towards renewable energy sources. Yet, industrial reductions partly stem from lower production output.
- The focus is clearly now on industrial decarbonisation, with sectoral emission intensity decreasing rapidly, but unevenly, as a result of investments in low-carbon projects delivering efficiency gains.
- The phasing out of free allowances is increasing EU ETS revenues. The EU ETS is now an important source of funding for the green transition and is expected to become even more important in the future. In 2024, €5.6 billion went to the Modernisation Fund, with Slovenia joining 11 MS that have made use of this fund thus far. The Innovation Fund allocated €4.9 billion, with hydrogen overtaking cement and lime as the main 2023–2024 recipient, receiving €1.2 billion, mainly through the Hydrogen Bank auctions.
- EU ETS auction revenues reached €32 billion for Member States in 2023, a 9.8% increase from 2022. MS revenues made up 76% of the total EU ETS revenue generated in 2023, followed by the MF (13%), the RRF (6%), the IF (4%) and EFTA & NI (<1%). 2023 marked the first year that MS had the obligation of a harmonised reporting of their auction revenue. This allows us to assess where the €32 billion was spent, with 43% spent on energy supply, grids and storage, followed by public transport and mobility, 21%.
- The 2025 Market Sentiment Survey confirms strong confidence (83%) in the EU ETS's decarbonisation signals to 2030, but 94% urge scrutiny of post-2030 drivers of decarbonisation in the EU ETS sectors, with the 2026 EU ETS review and 2040 target negotiations especially relevant for long-term predictability and signals.
- The stakeholder survey also reveals that despite 73% opposing the delay of introducing CBAM, 66% doubt that the CBAM can fully address carbon leakage and competitiveness, without further refinements. Support for integrating carbon removals into the EU ETS before 2030 grew to 75% in 2025. COP29's Article 6 progress spurred 61% of respondents to favour international credit linkages, signalling a shift toward broader carbon market strategies.
- From a market functioning point of view, with 9.7 billion EUAs traded and a stable auction coverage ratio of 1.73, the EU ETS market functioned effectively in 2024. Though open interest increased 3% year-on-year to its second lowest level in a decade due to weaker demand from utilities, indicating a need to monitor liquidity trends.
- This makes the question of looking to the future of the EU ETS an important one for 2025 and 2026 for policy makers and stakeholders.

1. Background

The State of the EU ETS Report is an independent initiative which is not intended to duplicate or replace mandated work undertaken by the European Commission.

This report focuses on assessing the performance of the EU ETS[1] at the time when the report is produced, it is intended as a "snapshot", providing policymakers and stakeholders with an overview of the EU ETS's state in April each year, using data from the previous year. The 2025 State of the EU ETS Report, therefore, will rely on 2024 data. Despite the limitations imposed by the availability of publicly accessible data, the report examines whether the EU ETS is "fit for purpose" by looking at whether it delivers on the environmental, competitiveness and socioeconomic, and market functioning dimensions.

Overall, the 2024 State of the EU ETS Report looks at the decarbonization mechanism that is changing focus, in a changed world. It shifted the focus from being a decarbonisation system primarily for the power sector to one focused on industry. With industrial activity accounting for more than half of the greenhouse gas (GHG) emissions covered by the EU ETS, this shift is expected to face significant challenges, given the current changing world with increased geopolitical and trade turbulence, and the increasingly clear competitive and it some cases, existential, pressures that EU industry is facing.

The 'EU Future of European Competitiveness report', known as the 'Draghi Report'[2] released last year, is a recognition that Europe is facing a world undergoing dramatic change, and that EU industry is facing challenges, many of them of its own making The Draghi Report was followed by the Clean Industrial Deal[3] (CID) which was delivered within its first 100 days in office. This CID puts carbon pricing at the heart of efforts to address competitiveness. A fit for purpose EU ETS will be necessary to achieve industrial transformation and decarbonisation of the EU economy. The EU institutions, through the legislative processes, will be responsible for sustaining the 'climate momentum' while addressing competitiveness, a balancing act. The EU ETS is a critical component, and being fit for purpose is now more necessary than ever.

The European Commission presented in 2024 a Communication recommending a GHG emission reduction target of at least 90% by 2040 compared to 1990 levels. A legal proposal is scheduled to be tabled in 2025, the legal proposal will be followed by negotiation, before then being amended into the European Climate Law. Once adopted, it may trigger a recalibration of various EU climate legislative files and will almost certainly require adjustments to the EU ETS, not only in terms of caps but also in architecture and governance. A revision of the EU ETS is currently scheduled for 2026.

Against this backdrop, the discussion surrounding the future of the EU ETS continues gaining momentum. Since its inception, the EU ETS has been regarded as the 'cornerstone' of EU climate action. However, as we near the end of the 2020s and move toward the mid-2030s, there remain several issues that need to be addressed: Will the EU ETS remain as the appropriate instrument as the number of allowances approaches zero? What should its architecture and governance look like? What role should negative emissions play[4]?

The discussion about the future of the EU ETS also unfolds at a time when the EU must reinforce its international leadership in climate policy. COP30, scheduled for November 2025 in Brazil, will offer an appropriate opportunity for the EU to reaffirm its leadership position, particularly after the new U.S government has announced its withdrawal from the Paris Agreement.

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[1] This Report will not look at the newly designed EU ETS for buildings, road transport and additional sectors (EU ETS 2), covered by Chapter IVa of the EU ETS Directive, which is still to be operational.
[2] Draghi, M. (2024): The Future of European Competitiveness Part A: A competitiveness strategy for Europe. September.
[3] COM (2025) 85 final. The Clean Industrial Deal: A joint roadmap for competitiveness and decarbonisation. February 26.
[4] The Future of the EU ETS is a process that ERCST is putting into place as an independent review. In the framework of this sub-workstream, ERCST is organising thematic events focused on key issues for the EU ETS: carbon removals, ETS extension to new sectors, governance, etc. By the time of writing this Report ERCST has published 3 reports under this workstream, focused on Coverage, Role in EU Climate Policy, and Competitiveness.

2. An EU ETS 'fit for purpose'

To assess whether the EU ETS is "fit for purpose", it is necessary to identify the parameters measuring its success. Simply put, "What do we expect the EU ETS to deliver?" and "Are these deliverables being achieved?". Identifying parameters to help us answer these questions, requires a thorough analysis of the experience gained from carbon pricing, both within and outside the EU. Additionally, insights from other markets, on-carbon ones, may serve as additional reference points.

It should be noted that official metrics may entail a degree of subjectivity and political judgment. In the analysis, we have tried to remain as objective as possible and establish KPIs that can serve as reference points. In this context, it is always important to go back to basics and recall Article 1 of the EU ETS Directive[5], outlining the EU ETS's objectives:

> *"This Directive establishes a system for greenhouse gas emission allowance trading within the Union (hereinafter referred to as the 'EU ETS') in order to promote **reductions of greenhouse gas emissions** in a **cost-effective** and **economically efficient** manner.*
>
> *This Directive also provides for the reductions of greenhouse gas emissions to be increased so as to contribute to the levels of reductions that are considered scientifically necessary to avoid dangerous climate change. It contributes to the achievement of the **Union's climate-neutrality objective** and its climate targets as laid down in Regulation (EU) 2021/1119 of the European Parliament and of the Council and thereby to the objectives of the Paris Agreement."*

Some objectives are clearly enunciated and identified, while other objectives may be regarded as more implicit. The direct deliverables assessed by this report include:

1. **Environmental delivery**. Does the EU ETS deliver against absolute environmental targets? (Chapter 4).
2. **Socio-economic delivery.** Does compliance with the EU ETS deliver macroeconomic efficiency and cost-effectiveness? Is it a driver for change without damaging EU industrial competitiveness? Does the EU ETS provide a price signal for decarbonization? (Chapter 5).
3. **Market functioning**. The EU ETS is a regulatory market, which is a complex set-up. It is worth having a market only if it functions well and leads to good price discovery (Chapter 6).

Over time, other deliverables or indicators have come to be "expected" or "understood". Some stakeholders, wrongfully in our view, equate the proper functioning of the EU ETS with the delivery of a "right price", incentivising specific technologies or approaches. However, one of the fundamental attractions of the EU ETS is that it is technologically neutral [6]. This report will not judge the success or failure of the EU ETS based on price levels: the EU ETS needs to be, by definition, technologically neutral, and should not be misused as an instrument to promote certain approaches or technologies or serve as a source of revenues (i.e. see initiatives such as REPower EU, and or the recently announced Industrial Decarbonisation Bank[7]). Some of the other deliverables that could be looked upon as KPIs are listed below.

Long-term competitiveness.

The achievement of emission reductions should be achieved in a cost-efficient and economically efficient manner. This means that when aiming for emission reductions, competitiveness should not be abandoned; rather, it should be a core consideration. The main hindrance for this is the scale and origin of upfront investments and operational expenditures (OpEx) needed to put Europe on a path of sustainable and equitable

[5] Directive (EU) 2003/87.
[6] In this line, Innovation Fund "projects shall be selected by means of a transparent selection procedure, in a technology-neutral manner". Art. 10a (8) of the EU ETS Directive.
[7] Carbon Pulse (2025) Brussels announces ETS-backed 'Industrial Decarbonisation Bank' worth EUR100 bln'. February 26.

growth. Another obstacle is how to allocate what is already scarce public resources, to maximise welfare amid a complex and transitioning energy, environmental and geopolitical framework.

The EU has placed greater emphasis on competitiveness recently and especially over the last year. Thus, it is not surprising that some stakeholders view the EU ETS not only as a key climate policy to achieve environmental delivery, but also as a tool for economic, competitiveness and social engineering to accelerate the transition to a low-carbon economy. The EU ETS can achieve its objectives by:

- Ensuring that the price of EUAs provides a signal for decarbonization, but that the cost does not lead to an uncompetitive EU industry and de-industrialization.
- Addressing the socio-economic impacts associated with the transition to a low-GHG economy, including promoting societal values, behaviour and systems.
- Driving the supply side of a market for low-carbon products.

The EU ETS Directive contributes to specific instruments to achieve long-term competitiveness. For instance, it encourages investments in low-carbon technologies through the Innovation Fund, it addresses socio-economic impacts by facilitating a "Just Transition" through the Modernisation Fund, and it allows MS to compensate sectors exposed to carbon leakage due to significant indirect costs incurred from GHG emissions passed on in electricity prices. They are all in some way funded by EU ETS revenue. While not directly explicit, we can also consider these instruments as measures to address the competitiveness of covered installations.

The progress towards these objectives needs to be quantitatively assessed by developing KPIs. Other long-term objectives lack maturity and clarity in policy discussions, making it harder to define specific KPIs for them currently.

Promote carbon pricing

The EU implemented the EU ETS in 2005. Since then, the EU has established itself as a leader in promoting carbon markets as a tool to address climate change and to push for effective climate action, with many other jurisdictions now following suit. Research, including the ICAP Status Report 2025[8] and the World Bank's State and Trends of Carbon Pricing 2024[9], show that carbon pricing is spreading across the world with 38 ETSs in operation and a further 20 under consideration. Notable examples include Turkey and Brazil announcing their own carbon pricing policies. However, whether the level of effort that they will impose on those covered, and the price of carbon that they will result in will be anywhere to what the EU ETS is, remains to be seen. No other carbon pricing system in the world has reached the levels of price and effort that the EU ETS has imposed, so far. The EU follows different strategies to promote the introduction of carbon markets worldwide:

- Firstly, by "leading by example" and persuasive climate diplomacy hinged on multiple bilateralisms, the Union incentivises other jurisdictions to take inspiration from the EU ETS. An example is the Commission task force to support the creation of carbon markets globally fostering international trade of CO_2 emissions[10], or the Council's adoption of Green Diplomacy calling for foreign countries to develop carbon pricing policies[11].
- Secondly, it leverages its market power to include climate ambition clauses in free trade agreements, thereby indirectly promoting carbon abatement abroad.

[8] ICAP (2025): "Emissions Trading Worldwide: 2025 ICAP Status Report". Available at: https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-icap-status-report-2025
[9] World Bank (2023). "State and Trends of Carbon Pricing 2023". 23rd May. Available at: https://openknowledge.worldbank.org/handle/10986/39796
[10] Abnett, K. (2024): "EU to step up efforts for more carbon markets worldwide". Reuters. February 13th.
[11] Council of the EU (2024). Council Conclusions on EU Green Diplomacy. EU diplomacy promoting the just and inclusive green transition and supporting the implementation of global commitments. 18 March.

- Lastly, the EU employs measures like the Carbon Border Adjustment Mechanism (CBAM) as a 'sticks' to ensure that the EU ETS ambition leads to worldwide decarbonisation. This is also important for the EU industry as stricter climate policies will incentivise EU companies to regions with lower climate constraints, thus not only undermining climate efforts internationally but also jeopardising the competitiveness of the EU industry. While the CBAM is perceived as a necessary instrument to avoid carbon leakage, by those covered by the EU ETS, it is also an untested instrument, and one whose alignment with the letter and spirit of the Paris Agreement is questioned by any stakeholders, especially within the G77.

Short and long-term predictability

Predictability is key to ensuring that long-term investments can take place under a credible policy signal for decarbonisation. The EU ETS Directive provides short to mid-term emissions reduction targets until 2030 (Phase IV) and also shows a clear direction of travel.

Additionally, the adoption of a carbon neutrality objective by 2050 under the European Climate Law, followed by the -55 % EU GHG emission intermediary reduction target by 2030 vs 1990, translated into a 62% EU ETS GHG emission target compared to 2005.

Following the revision of the EU ETS Directive in 2023, EU policymakers decided to widen the scope of Article 1 of the EU ETS Directive, so that the EU ETS : "contributes to the achievement of the Union's climate-neutrality objective and its climate targets as laid down in Regulation (EU) 2021/1119 of the European Parliament and of the Council and thereby to the objectives of the Paris Agreement."

The upcoming announced 2040 target of 90% net GHG emissions reduction vs. a 1990 baseline for the EU[12], should bring longer-term orientation and predictability for the EU first, as well as for the EU ETS.

3. Regulatory developments

3.1. EU ETS review

The last revision of the EU ETS Directive was completed in 2023. The substantial number of legislative changes made it necessary to update most of the secondary legislation related to EU ETS, which includes delegated and implementing acts, and ensure that the mandate of the EU ETS Directive is implemented properly.

In addition, the EU ETS review analysis entails examining other climate and energy files with strong interlinks and in many cases explicitly mentioned in the EU ETS Directive. Since the adoption of the European Green Deal in 2021, the interlink between carbon pricing and other climate policy files has become increasingly strong[13]. This trend is expected to remain in the future, as the EU ETS is complemented by other climate and energy instruments that could, for illustration purposes, mute the carbon price or impact the actual carbon cost.

In this context, the following section first tracks recent legislative developments of secondary legislation complementing the EU ETS Directive, followed by other policies that interact with the function of the EU ETS[14].

[12] Communication Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society. COM/2024/63 final.
[13] Marcu, A., Maratou, A., López Hernández, J. F. Nouallet, P., Caruana, N. (2025), "Future of Emissions Trading in the EU: Role in EU Climate Policy". December 12.
[14] We encourage you to read the 2024 State of the EU ETS report for a better understanding of the main modifications of the EU ETS Directive happening in 2023.

3.1.1. Secondary legislation

Following the 2023 revision of the EU ETS Directive, the adoption of secondary legislation commenced in 2023 and continued throughout 2024[15]. The list below details legislative developments adopted in 2024, with additional important documents expected to be published for consultation in 2025[16]. Each act is expected to have distinct and overlapping effects on the EU ETS.

While the precise impacts are subject to a certain degree of uncertainty and are not exhaustively detailed here, Table 3.1 below is a useful tool for mapping the many potential impacts the new secondary legislation that came in 2024 might have on the EU ETS. These effects are evaluated across environmental, competitiveness and market functioning deliveries.

The European Commission is scheduled to table a new proposal to revise the EU ETS Directive in 2026, which will likely also have similar impacts and will be discussed in Chapter 8.

Table 3.1. EU ETS Implemented and Delegated Acts Status in 2024 following the adoption of the revised Directive 2023/959/EU.

Legislation	Revised elements[17]	Adoption date
Monitoring and Reporting Regulation (MRR) - C/2024/6542 final	• Permanent chemically bound products will not be required to surrender EUA certificates (Art. 49a). • Inclusion of upstream emissions from fuels (road transport and buildings) and non-CO_2 aviation (Art. 3(69)). • Inclusion of RFNBO[18], RCF[19] and synthetic low-carbon fuels definitions and treatment from RED II.	23.9.2024
Permanently chemically bound GHGs - 2024/2620	• Captured CO_2 utilised in the manufacture of mineral carbonates and used in construction (i.e. cement, lime, hydraulic blinders, bricks) should be considered permanently chemically bound in a product (Annex I). • No obligation to surrender allowances for such GHGs (Art. 3b, EU ETS Directive)	30.07.2024
	• **Market impact**: An expansion of the list of permanently chemically bound products may lead to a decrease in demand for EUAs for these products, which will not need to surrender EUA certificates. Unlikely to significantly impact the market as long as no substantial amounts are available. If the list of permanent chemically bound products is reduced, there will be an increased demand for EUAs.	
Free Allocation Regulation (FAR) - C/2024/441 final	• Alignment of NACE, PRODCOM, and Combined Nomenclature (CN) classifications with CBAM reporting (Art. 10(2a)). • Conditionality on free allocation – link to climate plans (Art 22b), and energy efficiency measures (Art. 22a). • New reference value (from 0.97 to 0.91) for the calculation of free allocation for process emissions (Art. 16(2)). • Change in the benchmark definition of hydrogen to incentivise decarbonised process, and removal of the exchangeability fuel-electricity rules (Annex I).	30.01.2024
	• **Competitiveness impact**: Lower amount of free allocation for carbon leakage sectors due to a faster free allocation phase out, will increase the compliance cost of carbon. • **Market impact**: The less amount of free allocation available, the higher the demand of EUAs to cover carbon footprint and increased carbon price.	
Accreditation and Verification Regulation (AVR) - (EU) 2024/1321	• New verification rules for municipal waste installations above 20MW rated thermal input and ETS2 sectors. • Harmonised rules for verifiers to confirm implementation of energy efficiency measures (Art. 17a). • Rules for verifiers of sustainability and GHG saving criteria for biomass fuels (Art 17).	08.05.2024

[15] The here presented focuses on 2024 and takes stock of the list of non-legislative acts presented and already approved in the previous year, which are available in the 2023 edition of the State of the EU ETS Report.
[16] See public consultation on Activity Level Changes regulation, still to be adopted by the time of writing this Report.
[17] The revised elements we presented do not pretend to show an exhaustive analysis of all the changes but rather a non-exhaustive summary of the more relevant elements and their potential impact from our point of view.
[18] Renewable Fuels of Non-Biological Origin
[19] Recycled Carbon Fuels

Maritime	• List of administering Authorities ((EU) 2024/411), • List of derogated islands and ports – Finland ((EU) 2024/1113), • Monitoring of GHGs from offshore ships and zero-rating of sustainable fuels ((EU) 2024/3214)	30.01.2024 18.04.2024 16.10.2024
	• **Market impact**: As the maritime sector receives no free allocation, the inclusion of additional ships in EU ETS coverage should contribute to increasing the demand for EUAs from ship operators.	
Union Registry C(2025) 814 final	• New rules on the transfer of aviation allowances to EU Auction Account (Art. 40) • Clawing back EUAs that are unduly or mistakenly allocated to operators, will be now weighted by the average euro value of EUAs in the year of surrender (Art. 58a).	11.02.2025
	• **Competitiveness impact**: If carbon prices rise compared to previous year, resituated EUAs will not equal the surrendered EUAs in the relevant period.	

In addition to the aforementioned acts adopted in 2024, forthcoming regulations, complementing the provisions of the revised EU ETS Directive, include the Activity Level Change (ALC) Regulation (consultation published in January 2024), an update of benchmark values for the second subperiod of Phase IV (2026-2030) and an update of Union Registry fees[20]. For aviation, upcoming acts include an implementing regulation on the list of countries considered to be applying CORSIA[21] in 2025[22].

3.1.2. Other policies impacting carbon

The interaction between the EU ETS and other EU climate policy files is increasing. This year's iteration takes one step further and explores examples of national policies in EU MS that also have an impact on decarbonisation.

Other EU policies impacting carbon

The list of EU policies impacting carbon is extensive and growing. While all of them relate to industrial, energy and climate policies, the following division can be made according to their main policy driver[23]:

- Climate-related legislation: European Climate Law, Carbon Border Adjustment, ReFuelEU Aviation, FuelEU Maritime, Land use, land use change, and forestry (LULUCF), Effort Sharing Regulation, Carbon Removal Certification Framework.
- Energy-related legislation: Renewable Energy Directive, Energy Efficiency Directive, REPower EU, Energy Market Regulation, Energy Governance Regulation.
- Industrial-related legislation: Industrial Emission Directive, Industrial Carbon Management Strategy, Carbon Capture and Storage Directive, Net Zero Industry Act.

In 2024, the EU revised the EU Energy Governance Regulation (EU) 2018/1999[24] and adopted the Carbon Removal Certification Framework (CRCF) (EU) 2024/3012[25].

Article 19(2) of the EU Energy Governance Regulation mandates the MS to report annually by July 31, starting in 2021, on the use of EU ETS revenues from auctioned EUAs. In May 2024, the EU revised reporting templates to collect more detailed information on revenue use[26], improving tracking the use of EU ETS revenues across MS. A dedicated analysis on the use of EU ETS revenues, updated with the new reporting, is included in Chapter 5 of this Report.

[20] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14504-Union-Registry-introduction-of-fees_en
[21] Carbon Offsetting and Reduction Scheme for International Aviation
[22] Legislation is planned to be adopted for the second quarter of 2025: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14507-EU-emissions-trading-system-countries-considered-to-be-applying-CORSIA-in-2025_en.
[23] A deeper analysis of the interlink of these legislative files on carbon can be found in the 2024 State of the EU ETS Report.
[24] Regulation (EU) 2024/3012 of the European Parliament and of the Council of 27 November 2024 establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products
[25] Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (Text with EEA relevance.)
[26] DG CLIMA (2024) Adopted: New templates for Member States' climate reporting. 7 May

Adopted in November 2024, the CRCF's CDR certification appears to be a step toward including negative emissions in the EU ETS. The European Commission has scheduled a targeted revision for 2026. In addition, the CRCF will establish the rules for quantifying, monitoring, and reporting Carbon Dioxide Removals (CDR) in the EU. It is important to highlight that CRCF should consider EU ETS legislative developments (Art. 18) if revised.

The increasing complexity of the EU ETS is a symptom of the growing number of EU regulations in the climate, energy and industrial-related fields. The premise of the EU ETS as a market-driven tool is losing credibility. While it is well understood that other policies will be needed, and will be introduced, it is also becoming increasingly clear that the amount of interference with carbon pricing has reached new levels and is affecting the efficiency that markets are supposed to bring.

The following section examines examples of national policies in MS, which are relevant to better understand the impact of national instruments on carbon.

Other MS policies impacting carbon

Examining the historical evolution of the EU ETS, there is no doubt that the impact of energy subsidies and aid received by the power sector has facilitated the EU ETS's transition from a fossil fuel-based system to a low-carbon fuel based one. While the EU ETS has played a role in decarbonisation, it is important to also map national policies on climate and energy to better understand the increasing complexity of the EU ETS landscape. The following section presents examples of national policies for decarbonisation. Some of these instruments are based on the principle of technological neutrality while others are not. Some are new instruments (i.e. Spanish Capacity Remuneration Mechanism), while others have already been operating for a number of years (i.e. Dutch SDE++ Scheme).

In 2024, MS provided national state aid for the deployment of low-carbon policies. Measures initiated in 2022 such as the Temporary Crisis and Transition Framework (TCTF)[27] and the state aid for climate, environmental protection and energy[28] have provided the legal basis for these instruments and aid to be compatible with the principles of the European Single Market.

The amount of state aid allocated to energy is significant. As an example, under the TCTF scheme, in 2024 the Commission approved up to €18.862 billion of green subsidies to Germany alone[29]. Below are some examples of national instruments and schemes used by MS to support the decarbonisation of installations within their national territory:

- German "climate contracts" (2024)[30]: Subsidy scheme to transform paper, steel, chemicals and cement production by compensating the price difference compared to conventional fossil fuel-based procedures. Under this scheme, Germany provided €4 billion through the country's Climate and Transformation Fund through Carbon Contracts for Differences (CCFDs).
- Spanish Capacity Remuneration Mechanism (CRM) (2025-2026)[31]: This mechanism is currently under discussion and aims to ensure the security of electricity grid supply, generation and storage. Through CRM auctions, demand-side participants are remunerated either by injecting electricity or by reducing consumption at the request of the Spanish national power grid operator. CRMs are not

[27] European Commission (2023) State aid: Commission adopts Temporary Crisis and Transition Framework to further support the transition towards net-zero economy. Press release. March 9.
[28] Communication from the Commission – Guidelines on State aid for climate, environmental protection and energy 2022 C/2022/481
[29] This total amount can be taken from the addition of 9 different state aid-funded initiatives, including measures to support Northvolt in the construction of an electric vehicle battery production plant (900 Million EUR), Scheme to help companies, subject to the ETS, to decarbonise their industrial production processes (4 billion EUR), Measure to support ArcelorMittal decarbonise its steel production (1.3 billion EUR), Scheme to support renewable hydrogen production (350 million EUR), Scheme to support the decarbonisation of industrial processes (2.2 billion EUR), Scheme to support the construction of the Hydrogen Core Network (3 billion EUR), Scheme to support the production of renewable fuels of non-biological origin (2.7 billion EUR), State aid to support Concrete Chemicals in production of synthetic aviation fuels (350 million EUR), and Measure to support the operation of four Floating LNG Terminals (4 billion EUR). Source: ERCST based on https://ec.europa.eu/commission/presscorner
[30] BMWK (2024) First round of carbon contracts for difference launched. March 12.
[31] Miteco (2024) Propuesta de resolución de la Secretaría de Estado de Energía por la que se aprueba el procedimiento de operación de aplicación del servicio de capacidad.

novel instruments. Instead, they have been operating in the EU since 2017, with existing schemes in France, Italy, Poland, Ireland, and Belgium. Between 2017 and 2024, they amounted to €62 billion[32].

- French Annual Grants for Industrial Decarbonisation (2024)[33]: Subsidy scheme of €3 billion to support the decarbonisation of production processes of EU ETS companies. The aid covers a period of 15 years, promoting different technologies such as CCS and CCU, through electrification and measures to improve energy efficiency. For projects to be eligible, they must take place at existing industrial sites and reduce carbon footprints below ETS benchmarks[34]. Projects are selected through competitive bidding, ranked by the lowest aid per tonne of CO_2 avoided.
- Italian two-way contract for difference (CfD) (2024)[35]: Under the TCTF, €9.7 billion scheme to support electricity production from renewable energy sources and to foster the transition towards a net-zero economy. The measure will support the construction, for each kWh of electricity produced and fed into the grid, of new onshore wind, solar photovoltaic, hydropower, and sewage gases electricity production installations.
- Dutch Stimulation of Sustainable Energy Production (SDE++) Scheme (2020)[36]: €30 billion funded scheme[37] to support power generation facilities using renewable electricity, low-carbon heat, renewable gas, low-carbon production (i.e. hydrogen and CCS), and renewable heat. The SDE++ subsidises the difference between the cost price of the renewable energy during the operational period of the project and the revenue generated through the sale of CO_2 emissions allowances in the EU ETS (if any).

Weighing these examples of national instruments is relevant to better understand the role the EU ETS plays in the decarbonisation of the EU economy. In the EU, the increase in national subsidies has contributed to the increase in the share of renewable energy[38], while the change in the share of renewables has been the main driver for the variation of GHG emissions in power installations covered by the EU ETS. Chapter 4 of this report details these findings.

3.2. International carbon price developments

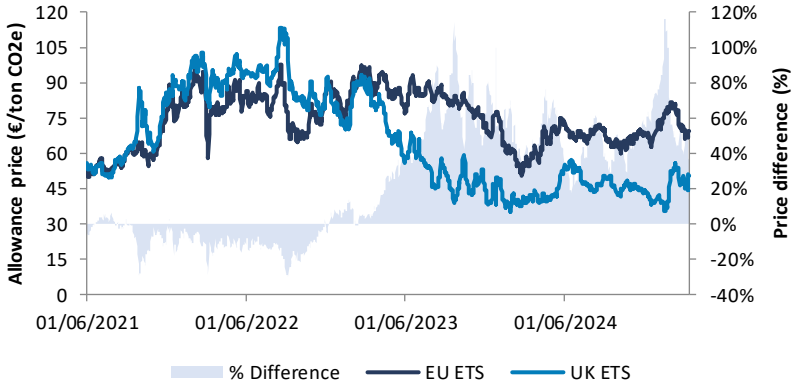
3.2.1. Impacts of Brexit and the creation of the UK ETS on the EU ETS

Due to Brexit, the emissions of UK-based installations have been regulated under the UK ETS since 2021. While liquidity in the EU ETS decreased, as UK installations were major participants in the market, there were no structural shocks as the system remained robust and maintained price momentum, due to its large size, its adjustment mechanisms and increased EU climate ambitions.

[32] Aurora (2025). Capacity remuneration mechanisms in Europe. January. Slide 10.
[33] European Commission (2024), Commission approves French State aid scheme to support decarbonisation of the industrial sector.
[34] Commission Implementing Regulation (EU) 2021/447 of 12 March 2021 determining revised benchmark values for free allocation of emission allowances for the period from 2021 to 2025 pursuant to Article 10a (2) of Directive 2003/87/EC of the European Parliament and of the Council (Text with EEA relevance) C/2021/1557
[35] Commission (2024), Commission approves an Italian State aid scheme to support renewable electricity production to foster the transition to a net-zero economy.
[36] ERCST (2022). Reflection note on Carbon Contracts for Difference (CCfD). Pp7.
[37] European Commission (2023). State aid: Commission approves modification of Dutch scheme to reduce greenhouse gas emissions. July 10.
[38] Marcu, A., Maratou, A., López Hernández, J. F. Nouallet, P., Caruana, N. (2025): "Future of Emissions Trading in the EU: Role in EU Climate Policy". (Slide 7).

Figure 3.1 shows that UK ETS allowances (UKAs) initially traded at a premium to EU ETS allowances (EUAs), at an average of around 10%, during 2021 and 2022. However, this trend reversed through the course of 2023, as UKAs traded consistently below EUAs, with UKA prices being 25-35% lower than EUA prices on average during 2023 and 2024. Despite the announcement in June 2023[39] of a range of reforms to tighten the cap and widen the scope of the UK ETS, policy uncertainty, weak power demand and reduced industrial activity contributed to UKA prices remaining lower in 2024.

Figure 3.1: EU ETS and UK ETS allowance price evolution



Source: Compass Lexecon based on EnergyMarketPrice data

Durably lower UK ETS prices could have competitive implications for sectors covered in both systems, as UK firms would be facing lower carbon costs than comparable EU firms, everything else equal. While such concerns over competition have pushed the EU to implement a CBAM, the UK has also designed a CBAM of its own, set to launch a year after the EU CBAM becomes fully operational in 2026[40].

The EU-UK Trade and Cooperation Agreement promotes cooperation on carbon pricing[41]. At the first EU-UK summit since Brexit, which was held on 19 May 2025, the EU and the UK agreed to work towards linking their respective ETSs.[42] Linking the two ETSs would create the conditions for EU and UK goods to benefit from mutual exemptions from their respective CBAMs – this helps reduce costs and bureaucracy for businesses while minimizing possible impacts on cross-border trade. Covered sectors are expected to include electricity, industrial heat, industry, maritime, and aviation. Key conditions for the linking agreement include the UK ETS' emissions cap and reduction pathway being at least as ambitious as those of the EU ETS and the agreement being subject to a joint governance mechanism.

3.2.2. Linking with other emissions trading systems

EU ETS linkage with Swiss ETS

The EU ETS and the Swiss ETS have been linked since 2020, through a linking agreement between the EU and the Swiss Confederation. This means that allowances issued in one ETS can be surrendered for emissions generated in either of the two emission trading systems. Including aviation in the linking agreement was a crucial requirement for the EU.[43]

Swiss entities are far more likely to use allowances generated in the EU ETS rather than EU entities using allowances from the Swiss ETS. This is expected, as the EU ETS is considerably larger in size than the Swiss ETS and generates far more allowances.

[39] UK Government (2023), Developing the UK Emissions Trading Scheme: Main Response, July 2023.
[40] UK Government (2024), Introduction of a UK Carbon Border Adjustment Mechanism from January 2027: Government response to the policy design consultation.
[41] European Commission (2021), The EU-UK Trade and Cooperation Agreement, April 2021.
[42] European Commission (2025), A renewed agenda for European Union – United Kingdom cooperation Common Understanding, 19 May 2025.
[43] European Commission (2023), Report from the Commission to the European Parliament and the Council on the functioning of the European carbon market in 2022, COM(2023) 654 final, October 2023.

Table 3.1 shows that aviation entities in both systems use the linkage much more than stationary installations. In 2023, as EU entities continued to almost exclusively rely on EU ETS allowances, 51.08% of allowances retired by airlines in Switzerland and 11.6% of allowances retired by Swiss stationary installations were generated in the EU ETS.

Table 3.2. Allowances used for 2023 compliance (% of total surrender units)[44]

		EU ETS allowances		Swiss ETS allowances	
		General allowances	Aviation allowances	General allowances	Aviation allowances
Units used for compliance with the EU ETS	By stationary installations	99.58%	0.37%	0.04%	0.01%
	By aviation operators	64.14%	34.72%	0.10%	1.04%
Units used for compliance with the Swiss ETS	By stationary installations	11.6%	-	87.57%	0.83%
	By aviation operators	7.26%	43.82%	1.09%	47.83%

Source: Compass Lexecon based on European Commission data

3.2.3. Article 6 of the Paris Agreement

At the 29th Conference of the Parties (COP29) in Baku in November 2024, an agreement on the rulebook of Article 6[45] of the Paris Agreement marked a significant step towards establishing an international carbon market. The accord prioritised removal credits under Article 6.4, enabling the implementation of Internationally Transferred Mitigation Outcomes (ITMOs) through agreed standards. The Supervisory Body will now have the mandate to set up the new carbon crediting mechanism, while the first credits could be expected by mid-2025.

Despite this progress on an international level, Art 6 and international removals will require a champion[46]. The EU, having secured many of its objectives in the Article 6 negotiations, may need to reassess its stance on linking the EU ETS to international credit markets. This can only be achieved under clear volumetric and predetermined price conditions, an aspect that warrants further exploration.

[44] European Commission (2024), Report from the Commission to the European Parliament and the Council on the functioning of the European carbon market in 2023, 19.11.2024.
[45] United Nations Climate Change (2024) COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods. November 24
[46] Marcu, A (2024). ERCST Reflections: COP29: good COP, bad COP? November 28th.

4. Environmental delivery

4.1. Delivery against Phase 4 target

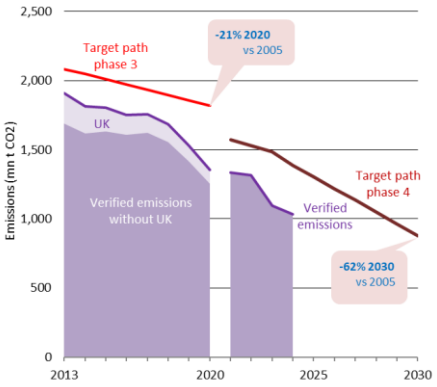
4.1.1. KPIs on data for 2024

2024 stands out as a light recovery year after the energy crisis of 2022 for the EU ETS, marking a 4,8% reduction in emissions – significantly lower than the 16% reduction of last year.

KPI 4.1, which shows verified emissions vs adopted targets, prompts several observations. First, emissions are significantly lower than the target cap. Second, there has been an accelerating decrease in overall emissions since 2019. Notably, as of 2024, more than 50% of the target of 62% reduction from 2005 by 2030 has already been achieved. KPI 4.1 also visualises the recent major developments in the EU ETS of the UK's departure in 2020 and adjustment to the target path for the fourth Phase in 2023.

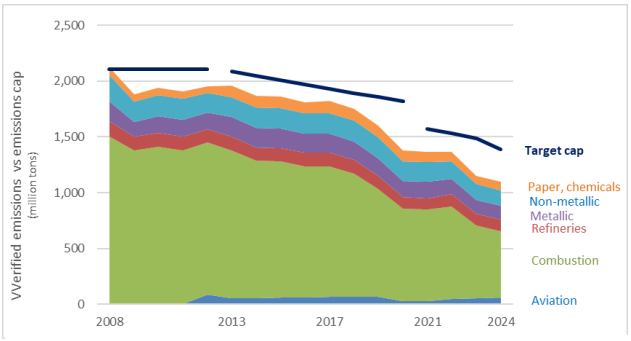
KPI 4.2 and KPI 4.3[47] show additional trends. First, verified emissions have always remained under the adopted target cap. Second, stationary installations are grouped into the combustion and industrial sectors, the latter contributing about 42% of emissions from stationary installations. Third, the trend of emissions reduction pathways differs significantly between these sectors. The 46% reduction of total emissions between 2008 and 2024 results from 24% from industry and 56% from combustion.

KPI 4.1 EU ETS verified emissions vs adopted targets

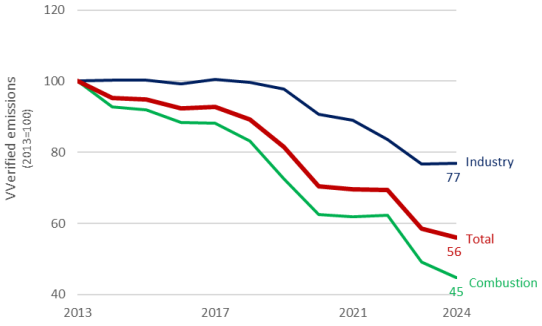


Source Wegener Center, based on EUTL (2025), EEA (2025)

KPI 4.3: Verified emissions vs target cap

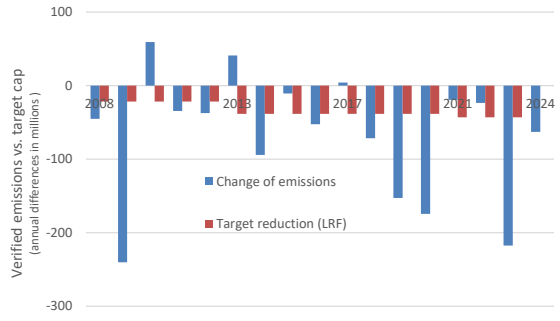


KPI 4.2: Dynamics of emissions in industry and combustion



Source: Wegener Center, based on EUTL (2025), EEA (2025)

KPI 4.4: Drivers of verified emissions vs reduction target



Source: Wegener Center, based on EUTL (2025), EEA (2025)

The combustion sector increased its reductions in the middle of phase 3, whereas the industry sector followed suit only in phase 4. KPI 4.4 compares the actual annual emissions change versus the target cap's linear reduction factor (LRF). With minor exceptions, all years since phase 3 have had actual emissions decreases larger than the LRF. This figure echoes how major crises affected the EU ETS: the financial crisis of 2009, the COVID pandemic in 2020, and the energy crisis in 2023. Notably, since Phase 3, verified

[47] Combustion of fuels (EUTL code 20) includes both power sector utilities and combined heat and power (CHP) in industry.

emissions have outperformed the LRF induced targets set into the EU ETS Directive in 2014, 2016, 2018, 2019, 2020, 2023 and 2024.

Table 4.1 analyses the drivers of the decrease in CO2 emissions from power generation in 2024 compared to 2023. There were remarkable displacements in the electricity mix, similar to what happened last year, with solar, wind, and hydro largely compensating for the decrease in use of natural gas and coal. Trends in 2023 seem to be within the range of decarbonisation scenarios published by the EU power sector, but this trend will have to be confirmed by the future evolution of power sector emissions[48].

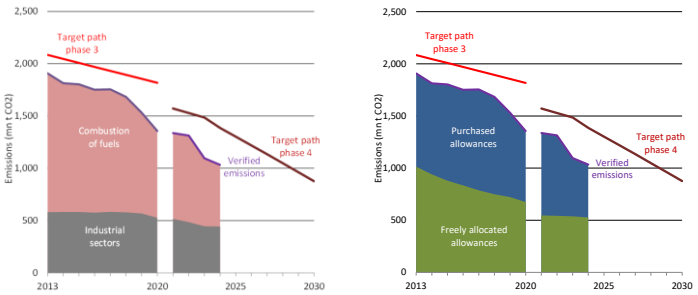
Table 4.1. Power generation data in 2023 and 2024

	Generation in 2023 (TWh)	Generation in 2024 (TWh)	Change 2023-2024 (TWh)
Solar	250	304	54
Wind	470	477	7
Coal	319	269	-50
Gas	456	430	-26
Hydro	350	362	32
Nuclear	620	649	29
Bioenergy	152	150	-2

Source: Ember (2025), Global Electricity Report

4.1.2. Impact on Phase 4

KPI 4.5: Projected emissions and target paths for Phase 4



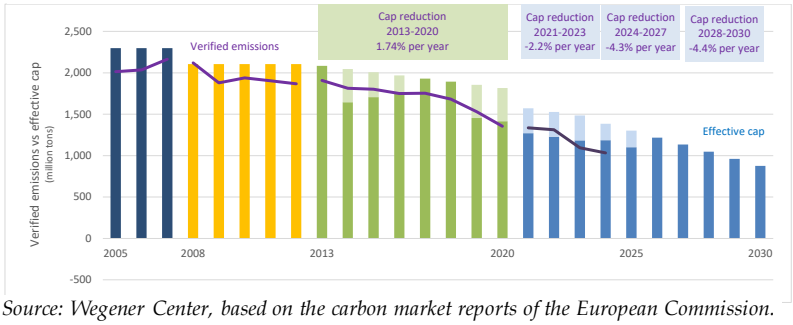
Source: Wegener Center, based on the EUTL and carbon market reports of the European Commission.

Verified emissions can be further disaggregated by macro-sector and type of allowance allocation. As shown in KPI 4.5, the combustion sector displays a declining trend in emissions that has accelerated since 2019. In contrast, the industrial sector began its decline later and exhibits a more gradual decreasing trend.

In line with the EU Climate targets for 2030, the EU ETS target path was adjusted and aims to reduce emissions by 62% by 2030 compared to 2005 levels. This revised emission target requires particular additional effort from the industry sector. Additional stringencies arise for industry because of the beginning phase out of free allowances due to CBAM.

At this stage it is interesting to picture the overall evolution of the emissions since the beginning of EU ETS operations (2005). Figure 4.1 shows the evolution of observed emission, the real cap and the effective caps[49] . On the Fig 4.1, light shaded bars indicate direct market interventions via the auction volumes, such as the backloading 2014-2016 and the feeds of allowances to the Market Stability Reserve from 2019.

Figure 4.1. Adopted vs effective emissions caps



Source: Wegener Center, based on the carbon market reports of the European Commission.

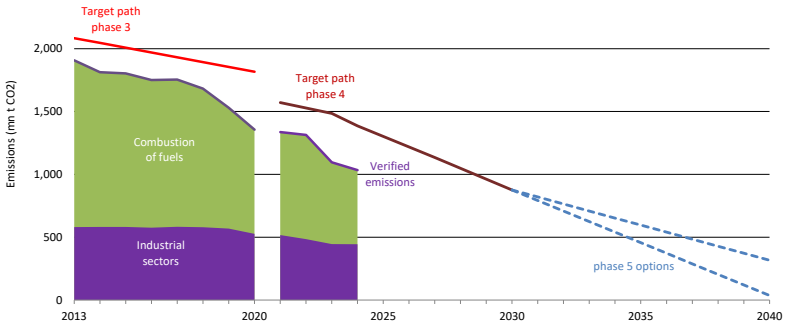
[48] Eurelectric (2018) *Decarbonisation pathways: Full study results*, EU electrification and decarbonisation scenario modelling, pp 53; Eurelectric (2008) *Power Choices Pathways to Carbon-Neutral Electricity in Europe by 2050*.

[49] The cap (or "real cap") is defined here as the cap materialized by the linear factor target path, whereas the "effective cap" is the target path as a result of the different interventions done on the allowances delivery (cancellation; MSR, etc..). The "effective cap' is not fully known in advance but has an influence on the allowances price

4.2. *Delivery against EU long-term domestic environmental commitments*

The EU ETS has successfully met its environmental objective of maintaining emissions below a specified target cap. Last year, in February 2024, the Commission published a recommendation, still to be enshrined in law, to set the EU 2040 emissions target at -90% compared to 1990. The EU ETS contribution to this target remains uncertain. What will the LRF value be after 2030?

KPI 4.6. Possible long-term target paths for EU ETS after 2030



Source: Wegener Center, based on the EUTL and carbon market reports of the European Commission.

KPI 4.6 indicates a possible corridor of paths for the EU ETS after 2030: from a zero-emission target one year before 2040 to a zero-emission target in 2050.

It will be important to discuss how to design the right transition between the present "capped EU ETS regime" with an "EU ETS net zero regime". This should include an assessment of the likelihood of technological transformation across all ETS sectors, considering the short timeframe and lack of global climate action.

4.3. *Evolution of power sector emissions*

Various factors affect the level of emissions and emission reductions in the power sector, such as energy prices, technological development, and overlapping policy initiatives. This makes it difficult to attribute specific reductions in the power sector to the EU ETS, and by extension, overall reductions in the EU to the EU ETS.

In this section, the Log Mean Divisa Index (LMDI) methodology is used to estimate the long-term contributions of a set of pre-defined factors to annual changes in EU power sector emissions.[50]

Snapshot on the Log Mean Divisa Index (LMDI) methodology

The LMDI methodology offers a systematic way to quantify the contributions of various driving factors to changes in aggregate indicators, such as changes in GHG emissions. One of its key properties is that it results in a perfect decomposition – meaning it accounts for each driving factor's contribution all else being equal and does not leave a residual term – that is consistent when aggregated. For example, when estimating the impact of the change in power demand on the GHG emissions of the sector, the base-year (2013) emission intensity of the power mix is used and only the change in power generation is considered as a variable.

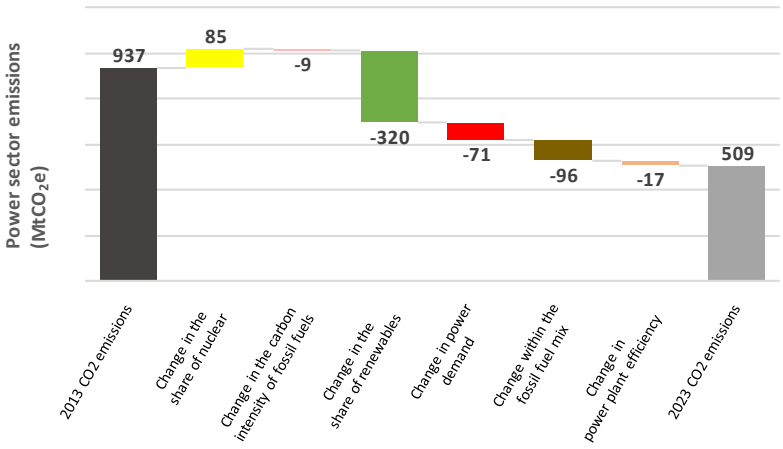
Figure 4.2 shows that annual emissions fell by around 430 $MtCO_2e$ between 2013 and 2023. The decreased share of nuclear in the EU power mix contributed to an increase in emissions. However, this increase was outweighed by other factors. The increased share of renewables in the power generation (-320 $MtCO_2e$) mix was the main factor that led to a reduction of emissions, being responsible for around 65% of this change. Reduced power demand – mainly from industry sectors – and changes in the fossil fuel mix[51] were together responsible for over 30% of emission reductions.

[50] The LMDI methodology is developed by Ang, B.W. (2005). The analysis in this report is based on the methodology applied to EU power sector emissions by I4CE (2018) and EcoAct (2023). Input data is sourced from Eurostat.

[51] "Change in the carbon intensity of fossil fuels" refers to the variation in GHG emissions released per kWh of electricity produced using fossil fuels (improved fuel quality in transformation) while "Change within the fossil fuel mix" infers mainly fuel switching from coal to gas.

Figure 4.3 zooms in on the annual contribution (2013-2023) of each factor on the power sector emissions. Notwithstanding the complexity of isolating the impact of the EU ETS in the decline in emissions, over Phase 3 and the start of Phase 4, power sector emissions fell primarily due to an increase in renewables; the switch from coal to gas and reductions in electricity demand also contributed. These dynamics may lend credibility to the EU ETS being a driver for change.

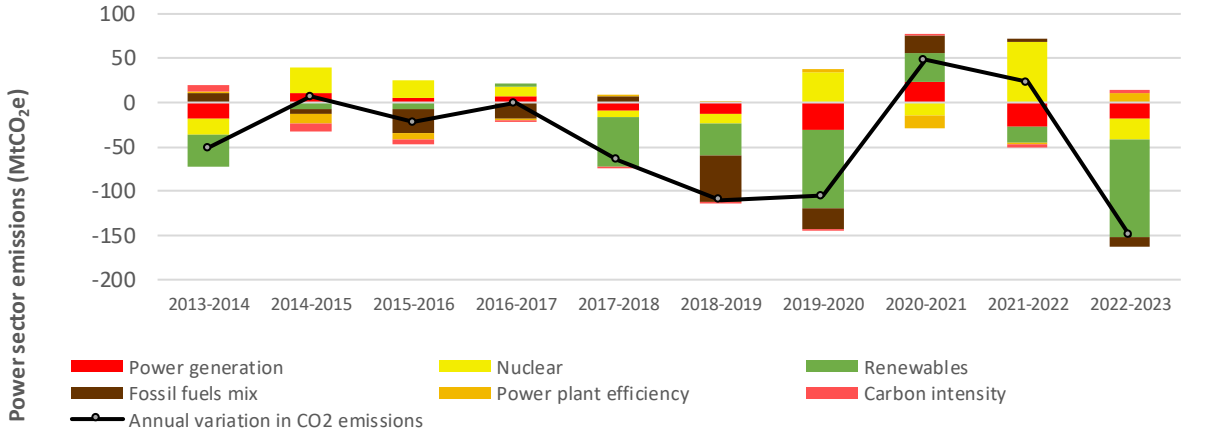
Figure 4.2. Drivers of variation in EU power sector GHG emissions (2013-2023)



Source: Compass Lexecon based on I4CE-EcoAct methodology and Eurostat data

The coal-to-gas switch in the EU power sector primarily occurred between 2015 and 2019, driven by low natural gas prices, increasing EUA prices, and national coal phase-out plans; however, the energy crisis of 2021-2022 temporarily reversed this trend as soaring gas prices made coal-fired power generation more competitive. Simultaneously, power demand declined notably in 2022-2023 due to the slowdown of industrial activity caused from the high energy prices and economic uncertainty induced by the energy crisis. The energy crisis also accelerated the shift to renewables, with record wind and solar deployment driven by energy security concerns and strengthened EU and national policies, reinforcing the long-term transition to a lower-carbon electricity mix.

Figure 4.3. Energy source vs annual drivers of variation in EU power sector GHG emissions (2013-2023)



Source: Compass Lexecon based on I4CE-EcoAct methodology and Eurostat data

5. Competitiveness and socio-economic delivery

5.1. Economic impacts

Carbon leakage and competitiveness have been issues that have preoccupied European regulators and stakeholders since the introduction of the EU ETS in 2005. Carbon leakage is the risk that EU companies relocate production or increase imports from countries with less stringent, or absent, climate policies and/or carbon pricing.[52] Sectors and sub-sectors identified at risk of carbon leakage for the 2021-2030 period add

[52]Recital (9) of Regulation (EU) 2023/956

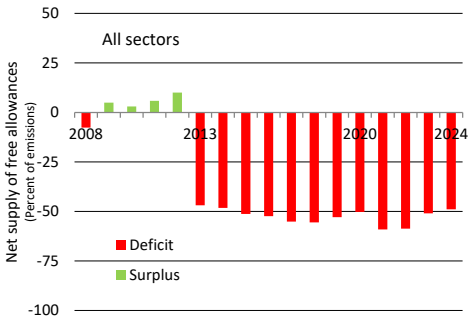
up to 63, covering approximately 94% of industrial emissions in the EU ETS.[53] They were dealt with through different approaches, with the CBAM being the latest one introduced.

With the new Commission competitiveness has been presented as a preoccupation without a clear distinction between macroeconomic factors, geopolitical trends, high energy, labour or direct and indirect carbon costs. There is thus a need to disentangle competitiveness impacts of those factors to understand the causal implications of carbon pricing, and particularly of the EU ETS.

Carbon pricing affects production costs of regulated industries which creates a risk of carbon leakage, i.e. For those sectors, the EU ETS regulation aims at both incentivising emissions reductions and levelling the playing field with non-EU production.

5.1.1. KPI Balance of allowances

Figure 5.1. Net supply volume of free allowances – all stationary installations



Source: Wegener Center (2025) based on EUTL.

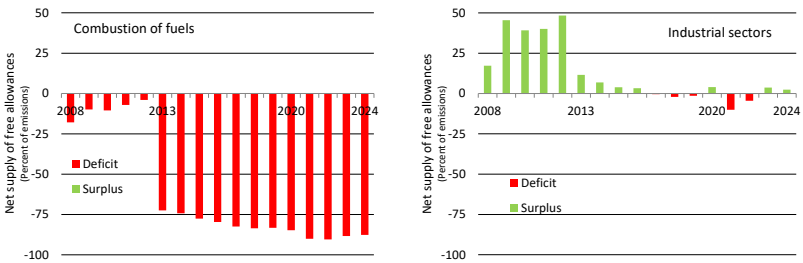
Stringencies that translate into costs

The gap between the free allocation of allowances and the actual verified emissions determines the stringency of the cap-and-trade system for each installation covered by the EU ETS. To compare individual installations, activities, and sectors, we calculate the **net supply of free allowances** by dividing this gap by the verified emissions. This indicator is presented both in terms of volume, indicating the share of allowances in a long or short position, and in terms of value, representing the monetary value of those positions by multiplying the volume by the average EU ETS carbon price. The following sections present these stringency indicators for stationary installations for overall, sectoral, and activity scopes.

Overall and Sectoral Stringencies

Figure 5.1 indicates that about half of the emissions are currently not covered by free allowances. This excess demand for allowances started in period 3 and was caused by the shift to auctioning in the supply mechanism. There is, however, a significant disparity between the sectors, as visible from Figure 5.2. This shift has become effective mainly for the combustion sector. During Period 2, industrial sectors accumulated substantial surpluses of free allowances. The situation shifted in Phase 3, but - with only a few exceptional years - industry still covered almost all of its emissions using free allowances. Phase 4 shows alternating surpluses and deficits that mirror the effects of the COVID-19 pandemic and the subsequent energy-price shocks.

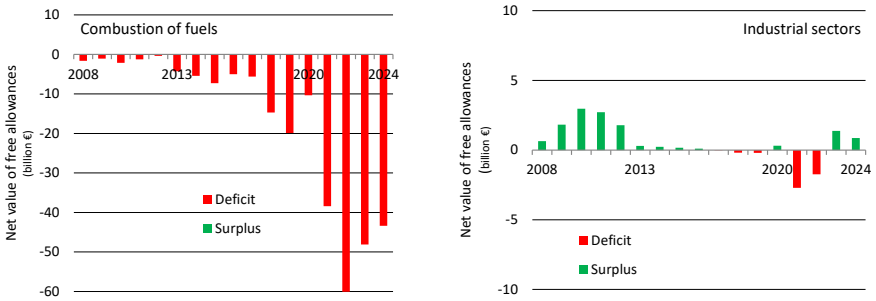
Figure 5.2. Net supply volume of free allowances – combustion and industrial sectors



Source: Wegener Center (2025) based on EUTL.

[53] Commission Delegated Decision (EU) 2019/708 of 15 February 2019 supplementing Directive 2003/87/EC of the European Parliament and of the Council concerning the determination of sectors and subsectors deemed at risk of carbon leakage for the period 2021 to 2030 (OJ L 120 , 8.5.2019)

Figure 5.3. Net supply value of free allowances – combustion and industrial sectors



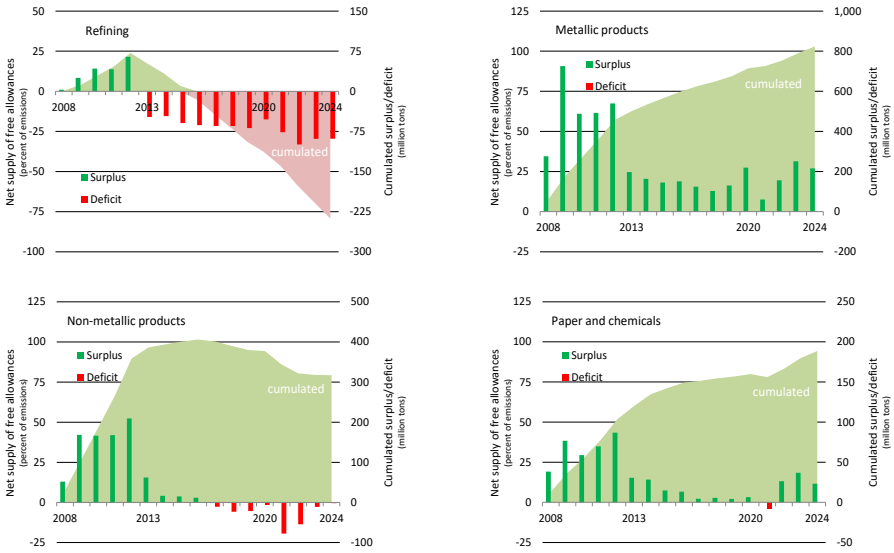
Source: Wegener Center (2025) based on EUTL.

The monetary value of deficits and surpluses of free allowances is calculated by multiplying the net supply of free allowances by the carbon price. Thus, deficits turn to costs and surpluses to gains. According to **Figure 5.3** in Phase 4, the combustion sector exhibits annual compliance costs above €40 billion. This indicator fluctuates between minus two and one billion EUR for industry.

Stringencies of Activities

Differences between activities in the stringencies of allowances become evident from **Figure 5.4** which exhibits the origin of the annual net supply of allowances and their cumulated volumes from 2008 to 2024. These graphs are shown for refineries (activity 21), metallic products (activities 22-28), non-metallic products (activities 29-34), and paper and chemicals (activities 35-99). Remarkable is the substantial cumulated surplus of allowances from free allocations in all of these aggregations of activities except for refineries.

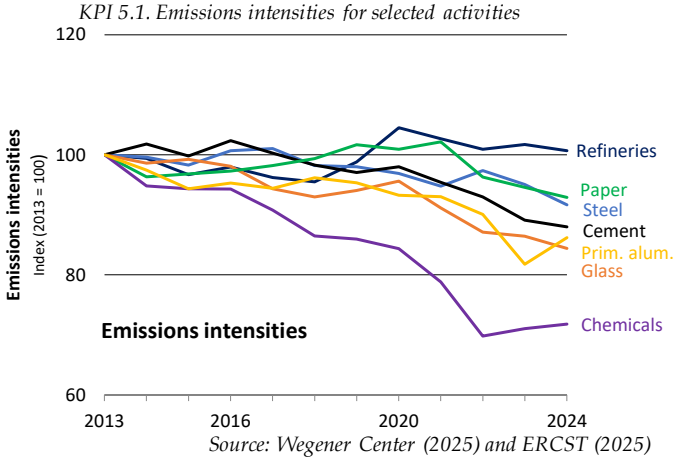
Figure 5.4. Allocated free allowances and cumulated surplus



Source: Wegener Center (2025) based on EUTL

5.1.2. KPI Emission intensities in selected industrial sectors

KPI 5.1. Emissions intensities for selected activities



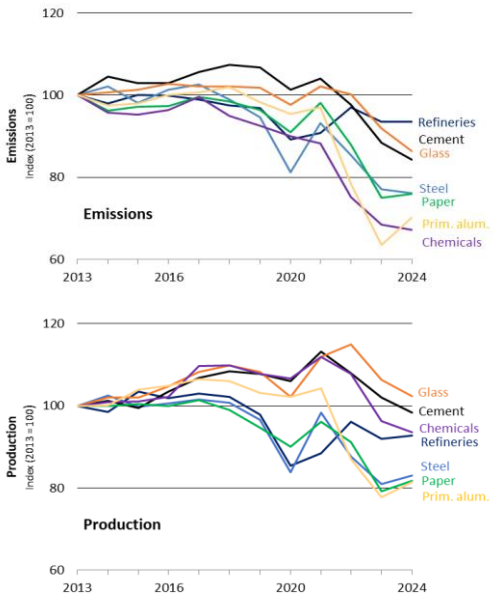
Source: Wegener Center (2025) and ERCST (2025)

A key metric for assessing the economic delivery of the EU ETS is the emission intensity of the covered industrial sectors. Emissions intensities are calculated by dividing the volume of emissions by the corresponding output of production activity. This metric allows to disaggregate emission trends due to output from those due to efficiency gains. Implementing this concept, however, is rather difficult and therefore needs caution in its interpretation[54].

[54] For our calculations, we aimed to be as transparent as possible, by using data from official sources such as the EUTL for emissions and Eurostat for activity indicators, where this was available. In our extensive research, however, we have realised the limits of relying only on publicly available data, especially because of misalignments between the sectoral scopes of emission reporting and those of production, as well as missing data.

Although it is always delicate to interpret intensities, as calculated here, the data in KPI 5.1 shows that since 2020 intensity has generally been decreasing across the covered sectors. A clear correlation exists between production and emissions, which reveals that the economic activity is significant in explaining this decreasing trend in emission intensity. Notably, in sectors such as chemicals, glass and cement, there is evidence of a decoupling between production output and emission volumes signalling the early stages of a transition towards lower-carbon production processes.

KPI 5.2. Emissions and production indicators



Source: Wegener Center (2025) and ERCST (2025)

Table 5.1. Emission Intensities – Sectoral Overview

Primary Aluminium: GHGs improvements in relation to energy efficiency of the smelting process, and to the drop in production, especially starting from 2019 (energy crisis and decreasing demand).

Cement clinker: GHGs improvements as from 2019, motivated by the introduction of dynamic allocation and increasing demand for cements with lower carbon content.

Chemicals: Current results on emissions intensity trends motivated by high gas prices, lower capacity, and restructuring in the sector after closures.

Glass: Continuous GHGs improvements across all glass sectors, driven by innovation (especially in flat glass). Increased electrification, decarbonised raw materials, switching to renewable energy and incremental improvements to processes, including energy demand.

Pulp and paper: Over time GHG improvements are due to the growing share of biomass in the energy mix and improved energy efficiency. In the 2020s, the carbon intensity starts to be driven by output destruction (caused by high energy and raw material prices).

Refineries: GHGs improvements due to investments in energy efficiency while production remained relatively stable. Less intake of natural gas due to high prices lead to more emissions by using other combustibles or feedstock. This partially off-set the gains in energy efficiency.

Steel: GHG emissions and production decreased in parallel, mainly due to dynamics in international trade and high energy costs in Europe; abatement options (electric arc furnace and direct reduced iron plants) are highly CapEx and OpEx intensive.

5.1.3. KPI Level of carbon price of EU ETS compared to other jurisdictions

International ETS Prices

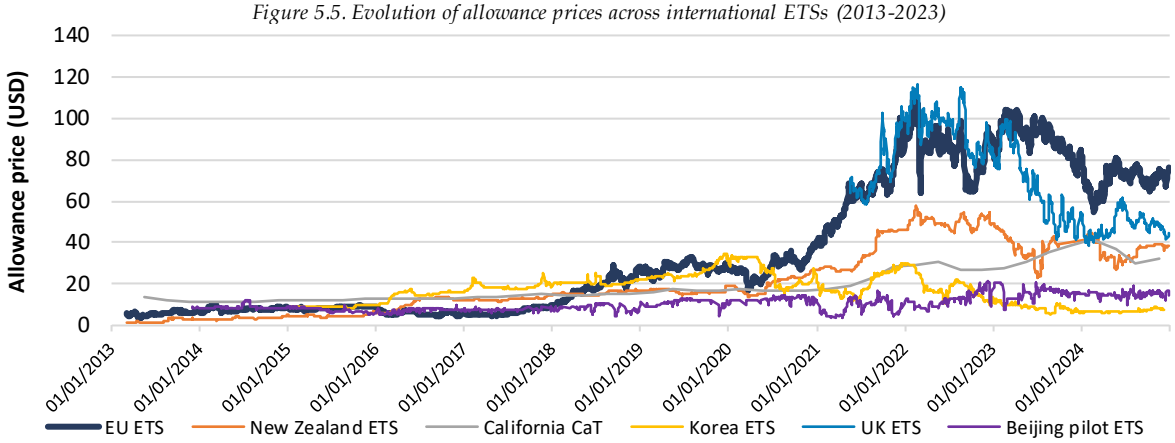
Figure 5.5 shows evolution in allowance prices across major Emission Trading Systems over 2013-2023. A key distinction among these ETSs lies in sector coverage, allowance allocation and market type. The EU ETS, UK ETS and California Cap-and-Trade (CaT) system primarily rely on a mix of auctioning and free allocation – they operate in primary (auctioning) and secondary (trading) markets. The New Zealand ETS differs significantly as it does not have a strict emissions cap, allowing entities to use forestry offsets to meet their compliance obligations. Meanwhile, the Korea ETS and Beijing Pilot ETS rely heavily on free allocation, with secondary market activity.[55]

	Start year	Sector coverage	2024 Average ETS Price *(USD/t CO2-eq)*
EU ETS	2005	Industry, Power, Aviation	70.5
New Zealand ETS	2008	Industry, Power, Waste, Transport, Buildings	36.3
California CaT	2012	Industry, Power, Transport, Buildings	35.2
Beijing pilot ETS	2013	Industry, Power, Transport, Buildings	15.1
Korea ETS	2015	Industry, Power, Waste, Transport, Buildings	6.9
UK ETS	2021	Industry, Power, Aviation	48.2

[55] The following analysis in this subsection "International ETS prices" is based on the most recent publicly available information from the International Carbon Action Partnership (ICAP)

The EU ETS exhibits the highest price volatility and price levels, especially since 2020. Prices surged in 2021-2022 due to the post-COVID economic recovery, revised EU climate ambitions associated with the

Figure 5.5. Evolution of allowance prices across international ETSs (2013-2023)



Source: Compass Lexecon analysis based on data from ICAP and Energy Market Price

publication of the Fit-for-55 Package, and the energy crisis. Prices trended down again in 2023-2024 with tension easing in the gas market, reduced industrial activity and the auction of additional allowances mandated by the RePowerEU Package. Despite this context, in 2024, the EU ETS allowance price was on average 1.5 times higher than that of the UK ETS and almost double those of the New Zealand ETS and the California CaT system.

The EU ETS's auction-based allocation, reduced reliance on free allowances, and a shrinking emissions cap have resulted in stronger price signals, while the California CaT or the New Zealand ETS impose strict price ceilings or boast extensive market-stabilizing tools and the Korea ETS and the Beijing ETS heavily rely on free allocation with limited trading activity, leading to lower and less volatile prices. The UK ETS initially followed the EU ETS trend after its launch but diverged downward as previously discussed in Section 3.2.

5.1.4. KPI: ETS compliance costs, trade & production volumes

Industrial production, trade, unitary energy and direct ETS costs 2013-2023

The following section examines the relationship between the level of production, trade balance (imports and exports) as well as average unitary energy costs and average unitary direct EU ETS costs for a range of energy-intensive sectors in the EU: aluminium, glass, iron and steel, chemicals, paper and pulp, and cement.

These sectors have a high exposure international trade and the associated competitive pressures – with a trade intensity of above 10%, except for cement – and are deemed at risk of carbon leakage – with a carbon leakage indicator exceeding 0.2 – according to the EU's carbon leakage mitigation methodology.

Based on this data it is difficult to draw a causal relationship between the direct cost of compliance with the EU ETS and production and trade volumes. An in-depth analysis of the impact of carbon pricing in the EU on production output and trade would have to be based on an ex-post assessment of carbon leakage, and thus consider other dynamics impacting output such as macroeconomic factors affecting trade, labour costs, environmental policy stringency, demand and its price elasticities, etc.

Equally, a careful assessment of EU ETS compliance costs in a given sector should rely on parameters associated with the assessment of carbon leakage risk. Typically, this combines an assessment of the carbon intensity of firms with an assessment of their trade exposure. Carbon intensity captures the impact that carbon pricing has on a particular firm or sector, this is reflected in the direct EU ETS costs below. However, the available EUA purchasing strategies most notably banking is not captured. On the other hand, trade exposure can be thought of as a proxy for the ability of a firm or sector to pass on costs without significant loss of market share and hence their exposure to carbon prices. We do not account for the ability of sectors shown below to pass-through some of the direct ETS costs to consumers.

Finally, while the EU ETS creates two main cost pressures on industries – direct costs and indirect costs (pass-through of carbon costs in electricity prices) – the analysis below considers only direct costs. For simplicity purposes, average annual production and direct EU ETS costs were considered instead of marginal costs which are typically considered by industrials to increase or reduce output or invest in efficiency and decarbonisation measures.

Future editions of this report may feature additional analysis to correct the limitations discussed above.

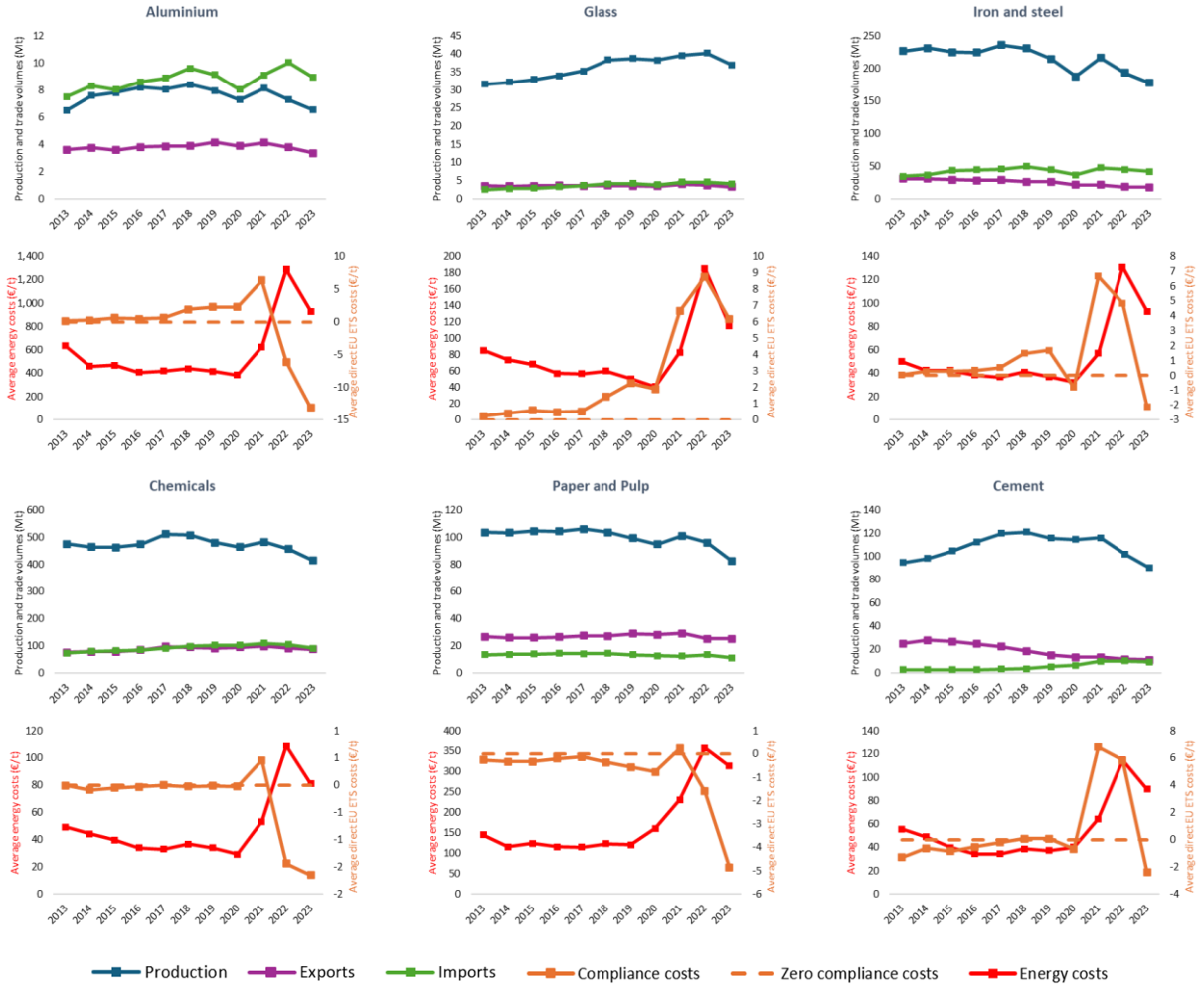
For each sector, the theoretical average direct EU ETS costs of compliance for each sector were calculated per ton of product, in €/t, using the following formula:

$$EU\ ETS\ direct\ cost_{sector,year} = (Verified\ emissions - Free\ allowances)_{sector,year} * EUA\ annual\ average\ price_{year}$$

$$Unitary\ EU\ ETS\ direct\ cost_{sector,year} = \frac{EU\ ETS\ direct\ cost_{sector,year}}{Production_{sector,year}}$$

KPI 5.3 illustrates the evolution of EU production, exports and imports as well as average energy costs and direct EU ETS costs of compliance per unit of product over the period 2013-2023 for aluminium, glass, iron and steel, chemicals, paper and pulp, and cement.

KPI 5.3. Industrial production, trade, unitary energy and direct ETS costs 2013-2023



Source: Compass Lexecon analysis based on data from Eurostat, European Environment Agency, Sendeco and industry associations

While energy and direct EU ETS costs remained relatively stable before the COVID-19 pandemic, market shocks – particularly the energy crisis – pushed energy costs to exceptionally high levels, and regulatory and market developments affected direct EU ETS costs diversely depending on sectors.

Overall, before 2018, EU industrial production grew steadily as energy costs were decreasing and average direct EU ETS costs were low and stable – but slightly on an increasing trend – and trade activity remained stable, with the reliance on domestic production to satisfy demand on a very slow decreasing trend as imports increased more rapidly than exports.

From 2018 to 2020, rising EUA prices (in light of the 2018 EU ETS reform introducing the Market Stability Reserve) pushed direct EU ETS costs upward for sectors facing net positive direct costs, i.e. sectors for which free allowances were below verified emissions.

In 2020, the COVID-19 pandemic entailed a slowdown of economic activity which affected production volumes and unitary energy costs diversely. As a result, direct EU ETS costs decreased.

In 2021, the post-pandemic recovery saw increased industrial activity as production volumes grew back up, but EUA prices surged – more than tripling by end of year – due to ambitious EU climate policies (namely the EU Green Deal and Fit-for-55 package), EU ETS reforms (MSR adjustments), increased EUA demand, and fewer free allowances under Phase 4.

In 2022, the energy crisis led to a surge in gas prices – and electricity prices – in the EU, leading to a very high increase in energy costs for industrials, impacting industrial production. The slowdown of industrial activity continued into 2023 due to persistently high energy prices. The decrease in industrial production led to lower average direct EU ETS costs as the demand for EUAs decreased.

Another impact from the market and regulatory developments between 2021 and 2023 was the slow yet steady decrease of the share of domestic production relied on to satisfy EU demand across most industrial sectors, where exports decreased more than imports.

Sector-level overview

Aluminium sector: 2018 saw a reversing trend in domestic production output which started decreasing in correlation with rising unitary EU ETS costs. Imports are covering an increasing share of demand since then.

Glass sector: EU production has steadily increased and still meets most of domestic demand. EU became net importer around 2018, suggesting that the sector has managed to stay competitive but faces increasing pressure from international competition.

Iron and Steel sector: The sector faces increasingly strong international competition, with imports rising since 2013. Further, energy costs surges over the 2020s have been correlated with decline in production output.

Chemicals sector: Production output drops significantly starting in 2019-2020, under pressure of energy costs in recent years. EU becomes net importer at sector level in 2018.

Paper and Pulp sector: Production started decreasing since 2017 without correlation with EU ETS costs which remained net negative. Imports and exports remained almost constant over the period suggesting that demand may have driven decrease in output.

Cement sector: EU exports have dropped to the level of increasing imports in 2023. Energy costs and EU ETS costs increases since 2020 could be correlated with the decreases in production output.

Table 5.12 below depicts key information pertaining to each sector's position in terms of the evolution of production and trade and the exposure to higher energy and carbon costs.

Table 5.2. Sectoral evolution of production, trade, energy costs & carbon costs

	Aluminium	Glass	Iron and Steel	Chemicals	Paper and Pulp	Cement
Reliance on EU production to satisfy demand	30% (average) 2013: 28% 2023: 26%	90% (average) 2013: 92% 2023: 89%	82% (average) 2013: 85% 2023: 79%	81% (average) 2013: 85% 2023: 78%	85% (average) 2013: 85% 2023: 85%	94% (average) 2013: 96% 2023: 89%
Global trade position and evolution	Imports higher than production and double of exports	Shift from net exports to net imports (but low volumes compared to production)	Increasing gap between imports and exports (double)	Recent shift to net importer (but almost similar volumes)	Net exporter (with widening gap)	Shift from next exporter with little imports to parity between exports and imports
Increase in energy costs	More than tripled	More than quadrupled	Quadrupled	Almost quadrupled	More than doubled	Almost tripled

(2020→2022)						
Average direct EU ETS costs (no market shocks)	Net positive costs (>0)	Net positive costs (>0)	Net positive costs (>0)	No net positive costs (<0)	No net positive costs (<0)	Net positive costs (>0)
Eligible: financial compensation for indirect emissions	Yes	No	Yes	Yes (but not all sub-sectors)	Yes	No

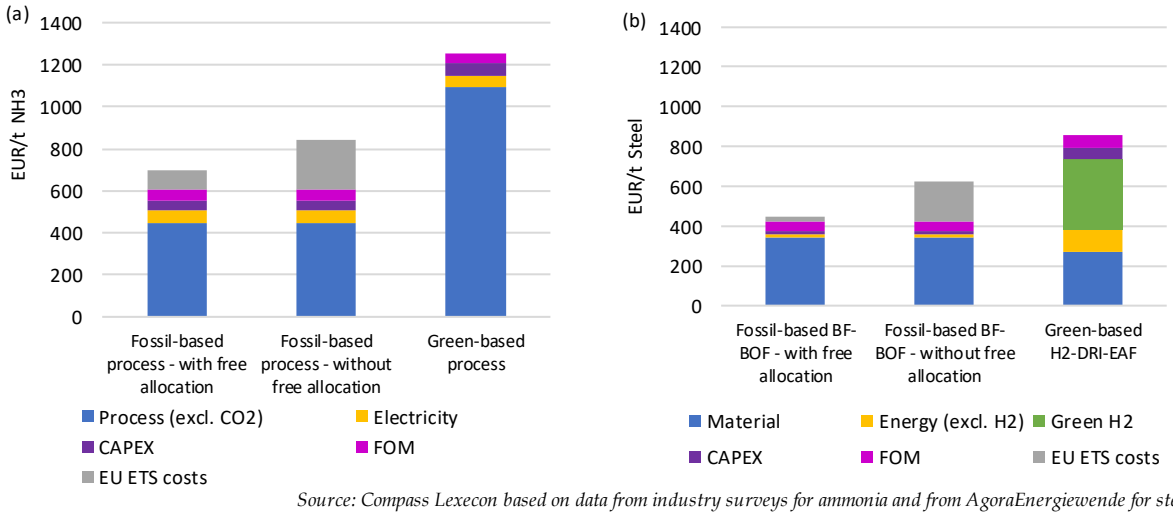
Source: Compass Lexecon (2025)

5.1.5. KPI: Carbon compliance cost in unit production costs

The phase-out of free allocation by 2034 for CBAM covered goods will have a major cost impact on the manufacturing sector. From 2026, CBAM-covered installations will start to lose their free allocation. Industrial sectors will begin to face more severe carbon price exposure from 2030. This would lead to an increase in EU ETS compliance costs. In theory, the CBAM will address competitiveness risks by reflecting similar carbon costs on imported products. How effective the CBAM will be is something that will have to be assessed thoroughly by the EC.

KPI 5.4 shows the breakdown of production costs for (a) ammonia production and (b) crude steel production in the EU in 2030 for the fossil-based process[56] and the decarbonised (green) production process.[57] The price of EUAs is assumed at 100€/tCO2eq.

KPI 5.4. Production costs for fossil-based and green (a) ammonia and (b) steel by cost component under different scenarios (2030)



Source: Compass Lexecon based on data from industry surveys for ammonia and from AgoraEnergiewende for steel.

Under the assumptions considered, KPI 5.4 suggests several points:

a. Without regulatory support, decarbonised production processes would be more expensive than carbon-intensive processes even when assuming a full free allocation phase-out: as of 2030, even when assuming green hydrogen costs in the low range of latest published 2030 hydrogen production costs, decarbonised steel would be c. 50% more expensive than fossil-based steel with no free allocations. Green hydrogen-based ammonia would be c. 40% more expensive than fossil-based ammonia with no free allocations.

b. Free allocation phase-out would increase the cost of EU produced goods to a large extent: the phase-out of free allocations combined with a rise in EUA prices would lead to EU ETS-related costs associated with the fossil-based production of ammonia almost tripling, resulting in a total cost

[56] The fossil-based ammonia production process is based on steam methane reforming (SMR) and Haber-Bosch synthesis. The fossil-based steel production process is assumed to be a retrofit BF-BOF with coking coal, while the green steel production process is based on the DRI-EAF process powered by green electricity.

[57] Energy price assumptions, as well as CapEx, quantities of input/output (iron ore, coal, hydrogen, emissions, etc) and other assumptions can be made available on request.

increase of over 20% per ton of ammonia produced compared to the case of continued free allocation in 2030. For steel production through the fossil-based BF-BOF process, EU ETS-related costs would increase by approximately a factor of 8 in the case of no free allocation, resulting in a total cost increase of almost 40% per ton of steel produced.

EU production of ammonia and steel is likely to face an increasing competitiveness gap with other jurisdictions, mainly due to carbon costs associated with the EU ETS. Without sufficient public financial support or important technological cost reductions for low-carbon processes (whether for low-carbon energy inputs or CapEx of new installations), free allocation phase-out alone does not provide a clear business case for decarbonisation.

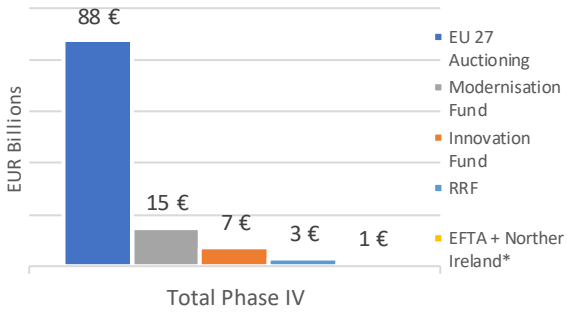
5.2. Auction revenue

Increasingly, the EU ETS has become an important source of revenue for MS (MS). MS collect revenue from the sale of carbon permits in the primary market. The primary market is operated through auctions on the European Energy Exchange (EEX), which serves as the designated common auction platform for the EU.

The allocation of auction-generated revenues from the carbon market has become increasingly complex over time. While at the beginning of the EU ETS, most revenues were directly redistributed to MS, since the adoption of the Innovation Fund in 2019[58], and of the Modernisation Fund[59] one year later, these two EU funding instruments have increasingly taken over portions of the revenue that would otherwise go to MS.

In Phase IV (2021-2023), the total EU ETS revenue income amounted to €112.8 billion. From this amount, €88 billion (78% of total EU ETS revenues) went directly to EU MS' national budgets, which must be spent on climate and energy activities at the national level. A part of these revenues is also used to finance indirect cost compensation[60]. From the other two largest allocations, €14.81 billion went to the Modernisation Fund (13.07% of the total), and €7.2 billion to the Innovation Fund (6.5% of the total). In 2023, €2.8 billion supplied the Recovery and Resilience Facility (RFF). RFF was introduced in 2022 to contribute to the €20 billion objective, following the adoption of REPower EU. Revenue to RRF is expected to continue until 2026 (see Chapter 6 on Market Functioning of this Report for more details).

Figure 5.6. Total EU ETS generated income in Phase IV and distribution between budgets (2021-2023)



Source: Own elaboration based on Commission reports on the functioning of the carbon market (2022-2024).

The remaining €0.94 billion went to Iceland, Liechtenstein, Norway and Northern Ireland. EFTA countries are not part of the EU but are covered by the EU ETS. EEX started auctioning carbon credits for Iceland, Liechtenstein and Norway in June 2019. As of 2022, EEX also auctions allowances for electricity generation plants in Northern Ireland, which have remained part of the EU ETS following the departure of UK installations from the EU ETS in 2021. The following chapter will examine how these EU ETS-generated auction revenues are being used to address competitiveness, climate, energy and carbon leakage risk.

[58] Commission Delegated Regulation (EU) 2023/2537 of 15 September 2023 amending Delegated Regulation (EU) 2019/856 supplementing Directive 2003/87/EC of the European Parliament and of the Council with regard to the operation of the Innovation Fund. C/2023/6043

[59] Commission Implementing Regulation (EU) 2020/1001 of 9 July 2020 laying down detailed rules for the application of Directive 2003/87/EC of the European Parliament and of the Council as regards the operation of the Modernisation Fund supporting investments to modernise the energy systems and to improve the energy efficiency of certain Member States C/2020/4541

[60] In 2023, € 2.1 billion of Member State revenues was reported to have financed indirect carbon costs in electro-intensive industries.

5.3. *Measures to address competitiveness*

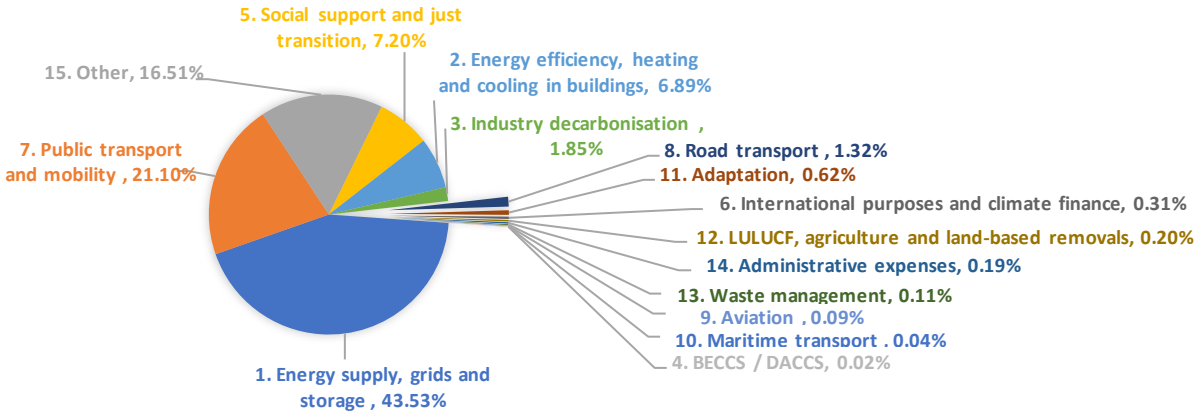
5.3.1. Member States auction revenues and use

In 2024, Member States reported the use of auction revenues generated from auctioning in 2023[61]. For all EU 27 (excluding Cyprus, where data access was restricted)[62], total auctioning revenue for MS amounted to more than €32 billion. This represents a 9.8% increase in auction revenues going to MS, compared to 2022[63]. Compared to 2017, MS auction revenues have increased fivefold in 2023.

Figure 5.7 illustrates how MS have utilised the revenues generated from the auctioning of EUAs. Following the 2023 revision of the EU ETS (Art 10 (3)), and in line with the recent updates on the Energy Governance Regulation[64] (see chapter 3), 2024 is the first year where Member States have reported the use of their auction revenues using new harmonised categories (1-15). This is a positive development as this new categorisation allows for better tracking of where EU ETS revenues have been used.

In 2023, close to half of EU ETS reported revenue (43%) was spent on 'Energy supply, grids and storage', followed by 'Public transport and mobility' (21%), 'Others' (16%), and 'Social support and just transition' (7%).

Figure 5.7. EU ETS reported MS auction revenues EU 27 per category (2024 reporting, 2023 data) (%)



Source: ERCST (2024), based on the use of EU ETS auction revenues (reporting years 2024), GovReg, EEA. Table 3.

In Figure 5.7. the 'Others' category includes a diverse range of activities such as climate leap programmes for non-EU ETS sectors in Sweden, support to local authorities in Belgium, biodiversity-related projects in Spain and Hungary, geographical and territorial information systems in Portugal, sustainable development funds in Malta, promotion of biogas projects in Lithuania, and R&D in green technologies development in Germany and Greece. 'Others' may also include aid for indirect carbon cost compensation, as reported in 2024 by Finland, Slovenia, Slovakia, Romania and Portugal[65].

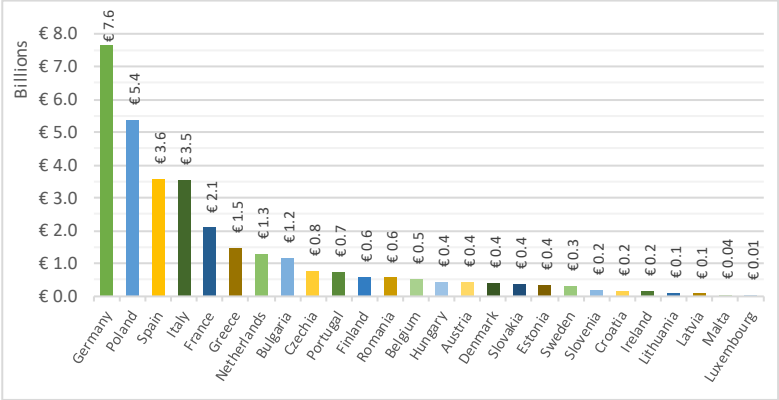
A limitation of the current reporting approach is that it impedes the ability to determine how much of Member State revenue is directly given back to covered installations. However, Figure 5.7 is still relevant if we assume that certain categories are directly related to current EU ETS sectors (stationary installations, aircraft operators, and ships).

[61] In 2024, the European Environmental Agency (EEA) published auction revenues in July-October depending on the Member State. 2025 reporting (2024 data) could be expected to be published in the same period in 2025.
[62] EEA (2024): Use of ETS auctioning revenues - Reporting year (2024) - GovReg
[63] A detailed use of EU ETS revenues in 2022 is presented in the 2024 State of the EU ETS Report
[64] (EU) 2024/1281 (Annex I)
[65] It is important to highlight that this does not include all Member State expenditures in indirect cost compensation. While some Member States have used income from auction revenues for this provision, some other Member States finance indirect compensation from national funding. In 2023, €2.1 billion of the 2023 revenue was reported to finance for electricity-intensive industries for indirect carbon costs, while total indirect cost compensation reported to have been paid by EU 27 Member States was 3.95 billion EUR. Source: Report from the Commission to the European Parliament and the Council on the functioning of the European carbon market in 2023 {SWD (2024) 264 final}

Results are illustrative and show that the categories of "Energy supply" (category number 1), "Industry decarbonisation" (3), "removals" (4), "aviation" (9), and "maritime" (10) covered 45.54% of total reported revenues. We can assume these funds are redistributed to EU ETS installations. This suggests that at least 45.54% of MS auction revenues were given back in 2024 to EU ETS-covered sectors. The Netherlands (with 49% of their EU ETS auctioned revenues), Belgium (18%) and Croatia (less than 1%) were the only MS that reported expenditures under the industrial decarbonisation category.

Figure 5.8 shows the MS that received the most auction revenues as reported in 2024. The top three recipients are Germany, followed by Poland and Spain. It is important to note that although MS are now reporting specific categories, it still does not allow us to compare category spending across MS effectively as discrepancy still remains. Some MS, such as Germany[66], overreport their revenue spending, whilst other MS under-report, as direct attribution of revenues to specific purposes is not always possible[67].

Figure 5.8. EU ETS reported MS auction revenues EU 27 (2024 reporting, 2023 data)



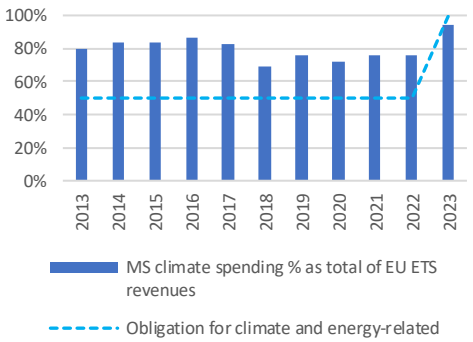
Source: ERCST (2024), based on the use of EU ETS auction revenues (reporting years 2024), GovReg, EEA. Table 3.

To evaluate the efficiency of EU ETS auction revenues it is possible to benchmark revenue use against a specific target. Until the last revision of the EU ETS Directive, Article 10 (3) stipulated that MS must allocate at least 50% of the auction revenues to climate and energy-related purposes. Since June 2023, MS have been obliged to use 100% of EU ETS revenue to support climate action and energy transformation purposes. This rule does not apply to revenue used for indirect cost compensation.

The new legislative mandate is reflected in KPI 5.7. Between 2013 and 2023, MS overperformed this target and the latter has been consistently exceeded over the entire time frame, with an average of 78.5% of total MS revenues being spent on climate and energy. In 2023, the average expenditure increased to 94% in 2023.

The above-analysed use of revenues will likely mutate to comply with a 100% use of EU ETS revenues in climate and energy-related activity during the following years. The achievement of a full MS expenditure of EU ETS revenues in climate and energy-related activities will depend on how much of this expenditure is diverted to indirect cost compensation.

KPI 5.5. % of total MS auction revenues spent on climate, renewable energy and energy efficiency (2013-2023)



Source: EEA (2024), Use of auctioning revenues generated under the EU Emissions Trading System, December.

5.3.2. Modernisation Fund

Through the Modernisation Fund[68], the EU ETS seeks to address the social impacts of modernising energy systems and improving energy efficiency. Operational since January 2021, the Modernisation Fund is designed to support decarbonisation in Central and Eastern European MS.

[66] Germany over reports with €20 billion reported as usage in climate and energy-related activities, while €7.6 billion is the accurate figure for total income generated from the auctioning of EUAs. This can be explained by the fact that in Germany, all EU ETS revenues are combined with a fund for climate and energy projects, which is additionally co-funded from the general budget Similarly

[67] Source: Use of ETS auctioning revenues - Reporting year (2024) – GovReg. Reporting data sheet for Germany. Table 1 and Table 3.

[68] Consolidated text: Commission Implementing Regulation (EU) 2020/1001 of 9 July 2020 laying down detailed rules for the application of Directive 2003/87/EC of the European Parliament and of the Council as regards the operation of the Modernisation Fund supporting investments to modernise the energy systems and to improve the energy efficiency of certain Member States. Available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02020R1001-20240101.

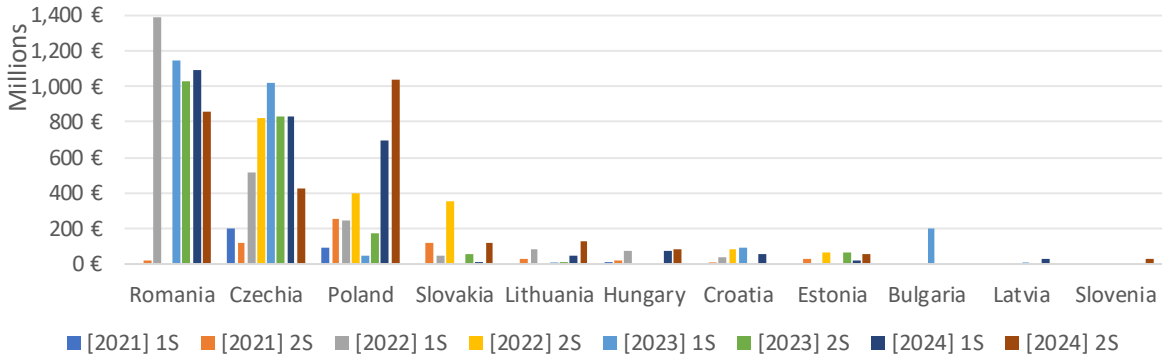
Following the latest revision of the EU ETS Directive, three additional MS (Greece, Portugal, and Slovenia) with a GDP below 75% of the EU average in 2016-2018 were added as potential beneficiaries. Slovenia made use of this opportunity in 2024, joining the list of 11 MS that have benefited from this Fund thus far.

Since its inception in 2021, there have been eight biannual calls of the Modernisation Fund[69], with a total of €15.3 billion disbursed. In 2024, two disbursement decisions were published:

- In the first biannual disbursement cycle[70] released in June, multiannual schemes were approved for a total volume of €2.87 billion.
- In the second biannual disbursement decision[71] released in December, multiannual schemes were confirmed for a total volume of €2.73 billion.

Figure 5.9 displays the total funding received per MS across all eight disbursement decisions. Up to 2024, Romania (€5.5 billion, representing 36% of the total funding disbursed), Czechia (€4.8 billion, 31% of the total), and Poland (€3 billion, 19% of the total) have been the main beneficiaries. Funding allocated to Slovakia, Lithuania, Hungary, Croatia, Estonia, Bulgaria, Latvia and Slovenia represents only 14% of the total funding received to date.

Figure 5.9. Total funding received from the Modernisation Fund per Member State (2021-2024)

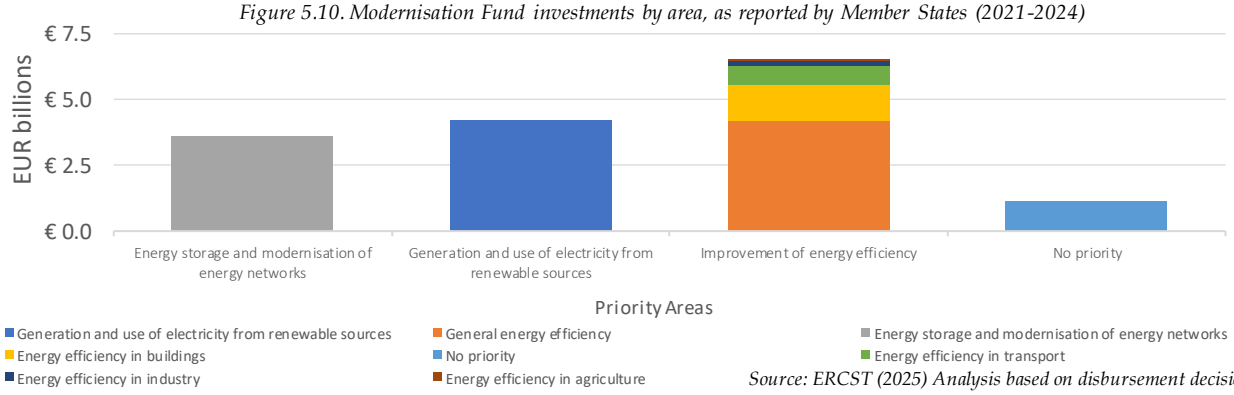


Source: ERCST (2025) based on disbursement decisions

Looking at 2024 reported data only, Romania was also the main beneficiary (with €1.9 billion) last year, but Poland surpassed Czechia as the second largest recipient, with €1.7 billion funding received, compared to €1.3 billion received by Czechia.

Figure 5.10 goes a step further and unpacks the Fund's investments per area, as reported by MS. Priority areas are those aligned with Article 10d (2) of the Directive 2003/87/EC, while non-priority areas are those not aligned but can still get access to funding under certain conditions[72].

Figure 5.10. Modernisation Fund investments by area, as reported by Member States (2021-2024)



Source: ERCST (2025) Analysis based on disbursement decisions.

[69] Modernisation Fund Disbursement Biannual Decisions available at: https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/modernisation-fund_en#:~:text=The%20Modernisation%20Fund%20is%20a%20dedicated%20funding%20programme,Estonia%2C%20Hungary%2C%20Latvia%2C%20Lithuania%2C%20Poland%2C%20Romania%20and%20Slovakia. (Accessed on March 27th, 2024)

[70] Commission Decision C(2024) 4190 final on the disbursement of revenues from the Modernisation Fund under Directive 2003/87/EC of the European Parliament and the Council - First biannual disbursement cycle of 2024 and Annexes.

[71] Commission Decision C(2024) 8977 final on disbursement of revenues of the Modernisation Fund under Directive 2003 87 EC of the European Parliament and of the Council - Second biannual disbursement cycle of 2024 and Annexes.

[72] (i.e. where fossil fuel-based projects are used). A maximum of 20% of the Modernisation Fund can be used to support non-priority investments.

Examining the 2021-2024 data, we can conclude that most funding has targeted improving energy efficiency (€6.5 billion) and generation and use of electricity from renewable sources (€4.2 billion), followed by energy storage and modernisation of energy networks (€3.6 billion)[73].

Non-priority disbursements (i.e., projects relying on natural gas) still account for a substantial portion of the total envelope (7.26%). However, it is important to note that this budget line has been reduced by almost half compared to 2023 data, where non-priority projects accounted for 11.43% of all funding disbursed by the Modernisation Fund. Since the launch of the Modernisation Fund, no priority proposals have yet been reported under "Just transition in carbon-dependent regions" (5th priority area)[74].

5.3.3. Innovation Fund

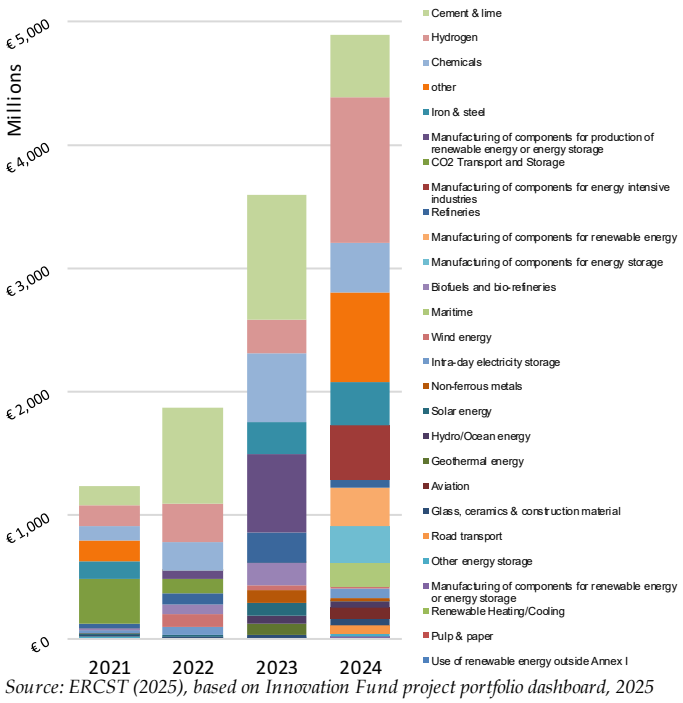
The EU ETS allocates a share of revenues from the sale of EUAs to financing projects with high decarbonisation potential through the Innovation Fund (IF). This instrument is pivotal in facilitating risk-sharing with project promoters and highlighting pioneering, highly innovative projects.

In addition to awards dispensed through calls for proposals, the IF23 pilot auction call on hydrogen[75], which included auction-as-a-service, marked the first implementation of a supplementary funding mechanism through competitive bidding.

Following the success of the pilot IF23 auction, DG CLIMA launched a €1.2 billion funded IF2024 Auction in December 2024. From this budget, € 200 million was dedicated to the maritime sector.

Figure 5.11 delineates the allocation of funding by sector across the previous three IF calls, covering a total of 207 projects and around €12 billion of funding.

Figure 5.11. Innovation Fund funding by sector and call year (2021-2024)



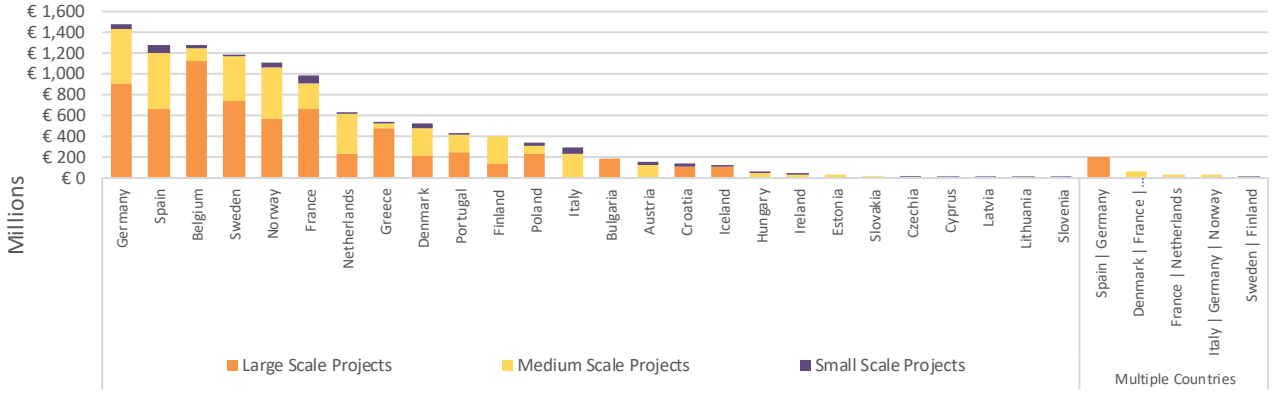
Source: ERCST (2025), based on Innovation Fund project portfolio dashboard, 2025

The overall funding provided by the IF has increased significantly over time, in line with political interest. This trend is directly linked to the rising price of carbon. The cement and lime sectors remain the leading overall beneficiaries, receiving almost €2.4 billion in funding since the inception of the IF. CCS and CCU emerge as the dominant decarbonisation technologies within these sectors. However, the 2023-2024 call marked the first time that hydrogen surpassed cement and lime as the main annual beneficiary, receiving €1.2 billion, mainly through the Hydrogen Bank auctions followed by 'other' with €0.73 billion and 'Cement & lime' with €0.5 billion. In 2024, nearly €5 billion was deployed across 82 different projects.

[73] Due to MS reporting, some projects cannot be attributed to single priority areas. In these cases, we assigned a single priority area based on the project description. 44 out of the 215 projects have +1 priority areas with a total value of €3,988,400,061.
[74] Art 10d (2) (f) of the EU ETS Directive.
[75] European Commission (2024) Innovation Fund 2024 Auction. Info day. December 10. [Slide 11].

From a country-specific perspective, Figure 5.12 illustrates the distribution of total IF funding by MS. This reveals a concentration of funding among a few MS, with the top five recipients receiving almost the same amount of funding as all other MS combined.

Figure 5.12. Innovation Fund funding by EU ETS country and project size in 2021-2024



Source: Innovation Fund Project Portfolio

For the first time in 2024, a new project category has been added, distinguishing between large, medium, and small-scale projects based on their capital expenditure (CapEx) costs. Large-scale projects are defined as those with CapEx exceeding €100 million, while medium-scale projects will have CapEx between €20 million and €100 million, and small-scale projects will fall within the range of €2.5 million to €20 million. This new categorisation was done to incentivise the participation of smaller projects, starting in 2024.

However, owing to their relatively lower size, small-scale projects constitute merely 5% of the total funding. Whilst large scale and medium-scale projects represent 59% and 37% of the total funding respectively.

2024 also marks the first year that projects spanning multiple MS have been selected ('multiple countries'), with five projects amounting to€353 million awarded to partnerships involving two or three MS.

At the project level, the leading recipient of IF funding, securing €357 million was the awarded project 'ZESTA'[76]. 'ZESTA' is set to transform steelmaking in Ghent by replacing Blast Furnaces with a new Direct Reduction Plant and two electric Arc Furnaces and onsite production of renewable hydrogen. Following closely are MP2X in Portugal and Catalina in Spain, which both focus on electrolytic renewable hydrogen production. They received allocations of €245 million and €230 million respectively.

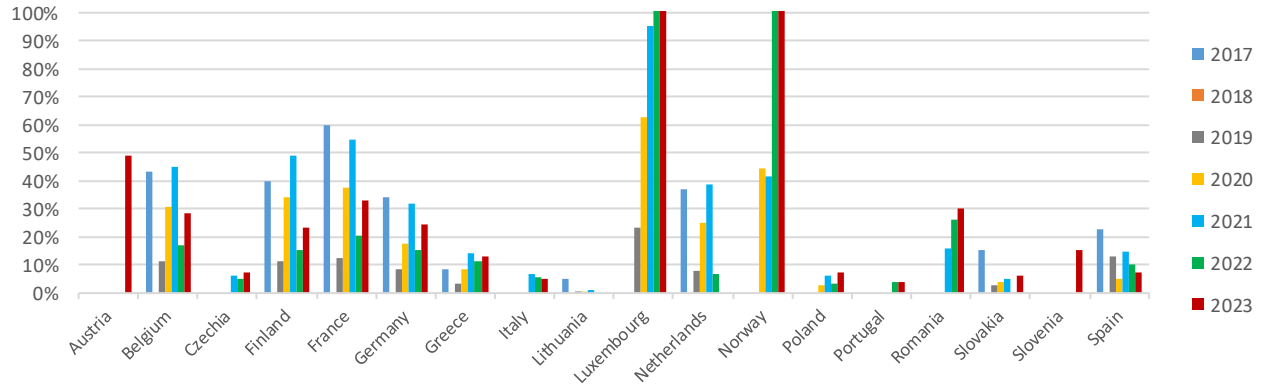
5.3.4. Indirect cost compensation

In the EU ETS the guidelines on certain State aid measures[77] allow MS to provide aid to a selected list of sectors covered by emission trading. The EU considers this aid compatible in two situations: when sectors are deemed to be exposed to a genuine risk of carbon leakage due to significant indirect costs actually incurred from GHG costs passed on in electricity prices (aid for indirect emission costs); and when aid is involved in optional transitional free allowances for the modernisation of electricity generation.

[76] Zero Emission Steelmaking at ArcelorMittal, (European Commission, 2025)
[77] Communication from the Commission Guidelines on certain State aid measures in the context of the system for greenhouse gas emission allowance trading post 2021. C (2020) 6400 final.

KPI 5.8 shows the % of EU ETS auction revenues spent on indirect costs in the EU and Norway. According to self-reported data by MS[78] and Norway[79] in 2024, the average % of auction revenues spent on indirect costs compensation to address carbon costs passed through by electricity generators in 2024 was 17.8% (16 % if excluding Norway[80]). State aid to mitigate the indirect costs of the EU ETS in energy-intensive industries was authorised by the EU Commission for 15 MS in 2023, including a new compensation scheme approved in Austria. The Netherlands discontinued its compensation programme.

KPI 5.6. % of auction revenues spent on indirect cost EU 27(2017-2023)



Source: Reports from the Commission on the functioning of the European carbon market

Total indirect cost compensation disbursed by MS from 2017-2023 amounted to €11.5 billion (€13.2 billion including Norway), of which €3.9 billion was from 2023 alone (€4.5 billion including Norway). The carbon price used to calculate the amounts paid out in 2023 for indirect costs incurred in 2022 was 54.01 €/tCO2e[81], up from 25.09 €/tCO_2e used for 2021 25.20 €/tCO_2e used for 2020.

Luxembourg has the highest share of auction revenues spent on indirect costs compensation in 2023 (517%), followed by Norway (255.8%), Austria (49.2%), France (32.9%) and Romania (30.10%).

The cases of Luxembourg and Norway are noteworthy and require explanation. Both countries expended more on indirect cost compensation than they generated in EU ETS auction revenues. For Luxembourg, this is explained by the drop in the country's auction volume, caused primarily by its use of ETS allowances to offset emissions in sectors covered by the Effort Sharing Regulation ('ESR flexibility')[82]. In Norway's case, indirect cost compensation is partly financed by the Norwegian government's revenues from EU ETS auctioning, with the remainder sourced from Norway's general budget.

6. Market functioning

6.1. Market functioning trackers

The role of a market is to provide good price discovery, making market functioning essential. Good market functioning includes active participation in auctions as the source of primary supply, liquidity in the secondary market, ease of access to the market and availability of data.

This chapter looks at eight KPIs to identify how well the market is functioning. While these indicators are useful by themselves, it is also crucial to contextualize them against historical developments and market

[78] The Commission publishes the annual Report on the Functioning of the European carbon market by the end of the year. The last report was published on November 19, 2024, and includes compensation paid out in 2023 for indirect costs incurred in 2022. COM (2024) 538 final.
[79] Indirect compensation values for Norway are taken from Veyt (2024) Norway shelves GO exit, yet fails to stimulate terawatts of demand (Updated). August 27. EU ETS auction revenues for Norway are taken from the annex of the EC Annual Carbon Market Report, which published data starting in 2019. This could be motivated by the fact that Norway did not join the European ETS auction platform until June 2019 and therefore EUAs auctioned were reported as zero. Source EEA (2019) Trends and projections in the EU ETS in 2019. Pp 49.
[80] Report from the Commission to the European Parliament and the Council on the functioning of the European carbon market in 2023. COM (2024) 538 final. Pp.27.
[81] COM (2024) 538 final. Pp.27.
[82] COM (2024) 538 final. Pp.29.

sentiment to provide a picture of how the market is operating, and whether it is improving or worsening compared to previous years. The first eight indicators have been covered previously, while liquidity has been added this year to give an overall picture of how easy it is for participants to enter and exit market positions and the effect on price.

Table 6.1. Market functioning trackers in 2024

Indicator	2021/2022	2023/2024
Volume		
Open interest		
Auction participation		
Auction coverage		
Auction vs spot spread		
Cost of carry		
Ask-bid spread		
Volatility		
Liquidity		

Source: BloombergNEF. Note: Green indicates improving, red worsening, amber stable.

Outstanding policy details – and the attendant market uncertainty – could have thrown cold water on the EU ETS in 2024, but the market appears to have been relatively unphased. Several key indicators, including market participation, volumes and liquidity, saw overall improvements.

Emissions from the bloc's power sector continued their downward trend, thanks primarily to the strong rollout of renewables. Industrials also saw a decline in emissions, but high costs, weak demand and increased competition (rather than increased electrification or efficiency) were likely the key drivers. Lower inflation and interest rates also kept price premium expectations largely unchanged.

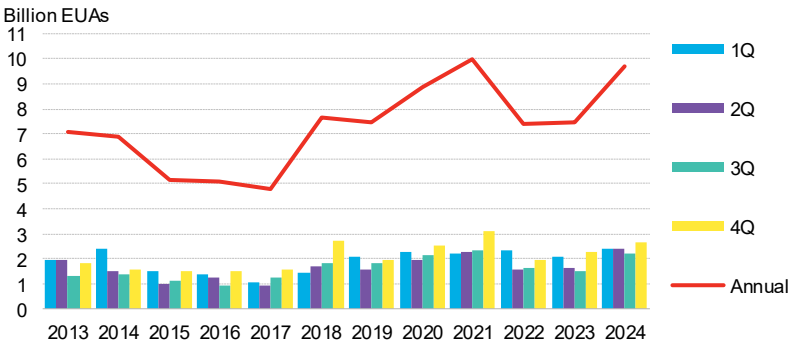
Falling demand for allowances for both compliance and hedging purposes – particularly from the power sector – freed up permits to non-compliance entities. The influence of financial players in the EU's carbon market has thus become increasingly apparent over recent years, as investors have expanded their speculative positions in both the primary and secondary markets.

6.1.1. Volume

Traded volume is crucial when assessing liquidity. A liquid market allows participants to open and close positions – in other words, enter and exit the market – whenever they want. Liquidity also enables participants to engage in activity without unduly affecting the market and allows them to be confident that the future is priced at its true value.

Traded volumes increased by around a third in 2024, to 9.7 billion EUAs. This is just shy of the record highs seen in 2021, when the post-Covid-19 rebound in economic activity led to a spike in demand. Higher levels of speculative activity last year likely contributed to this trend. Interquartile variance was at its lowest level since 2013. This may be partially due to the shift in the compliance deadline to September from April, spreading out demand. December saw the highest volumes, as is typical.

Figure 6.1. Traded Volumes



Source: ICE, BloombergNEF

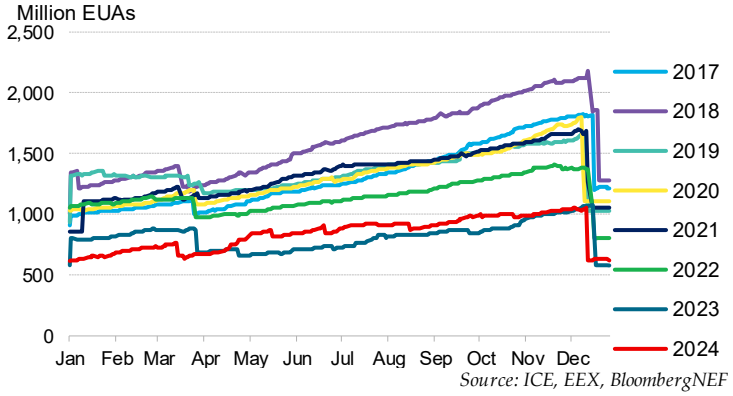
6.1.2. Open interest

Open interest denotes the total number of outstanding contracts that are held by market participants at the end of each day – in other words, it measures contracts that have been bought or sold without completion of the transaction by subsequent sale or purchase, or by making or taking actual delivery of the financial instrument or physical commodity.

Open interest measures activity levels in the futures market. Generally, the higher the open interest, the more a particular contract is traded, and hence the higher the level of liquidity.

Open interest saw a minor increase of 3% year-on-year in 2024 to its second lowest level in more than a decade. It remained relatively low as weak underlying demand and supply fundamentals kept demand muted. Utilities, the largest group that actively manages its carbon exposure, have continued to reduce their hedges, likely fuelling this trend.

Figure 6.2. Aggregate open interest seasonality



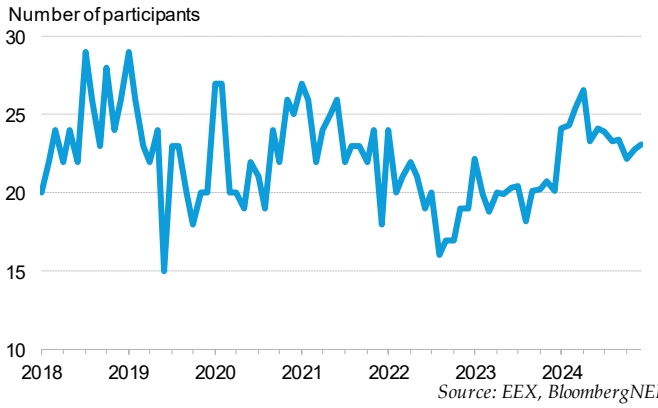
Source: ICE, EEX, BloombergNEF

6.1.3. Auction participation

Auction participation counts the number of participants in daily auctions on the European Energy Exchange (EEX). By measuring how many participants are bidding into auction, this KPI reflects interest in primary supply.

Participation rose in 2024, with an average of 23.6 participants per auction, up from 20.1 in 2023. There were fewer auction participants in the second half of the year, however, when participants per auction averaged 23.1, compared with 24.6 in the first half. This may have been due to fading sentiment throughout the year.

Figure 6.3. Monthly average auction participation



Source: EEX, BloombergNEF

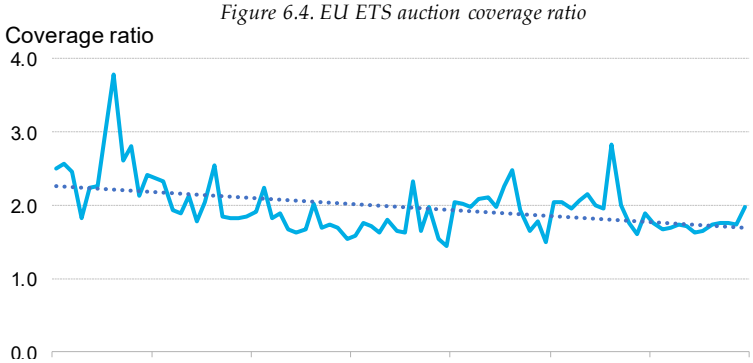
The overall year-on-year increase in participation likely reflects a higher number of financials taking part, rather than a jump in the number of compliance entities. This continues a trend observed in 2023, when the majority of buyers in the primary market were not subject to compliance obligations – meaning they were not required to surrender allowances to cover their emissions for the year – according to the ESMA EU carbon market 2024 report.

6.1.4. Auction coverage

The auction coverage ratio reflects the total number of bids in an auction divided by the number of available EUAs. This indicator reveals what actual auction demand is relative to supply on the primary market.

The coverage ratio was largely stable in 2024, averaging 1.73 across the year. A coverage ratio below 2, which also occurred in 2020 and 2021, can allow some market participants to

Figure 6.4. EU ETS auction coverage ratio



Source: BloombergNEF. Note: Coverage ratio is the total number of bids in an auction divided by the number of available EUAs.

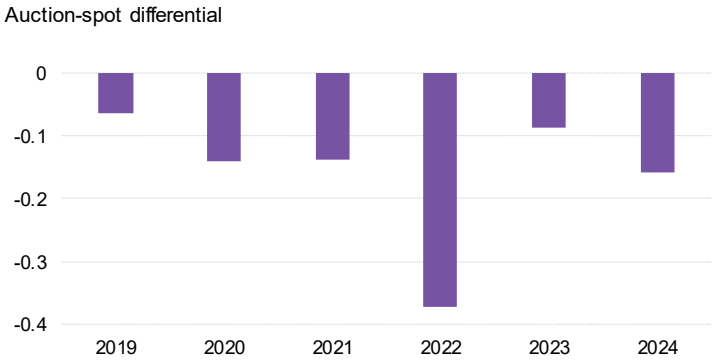
exercise market power or potentially game auctions in the future.

6.1.5. Auction-spot differential

The auction-spot differential KPI measures the difference in the EUA price between auctions and the secondary market. A low absolute difference is preferable, as a high difference could indicate an ability of market participants, particularly speculators, to exercise market power.

The auction-spot differential saw a small decline to -0.16 in 2024 from -0.09 in 2023, but this an insignificant change compared with the differential in 2022 of -0.37. A larger differential could express higher risk, as it indicates a larger difference between the price the bidder is willing to pay and the price sellers expect to receive. The narrow auction-spot differential in 2024 suggests that the market remains relatively stable, with the expectations between bidders and sellers closely aligned.

Figure 6.5. Monthly average difference between auction and spot price

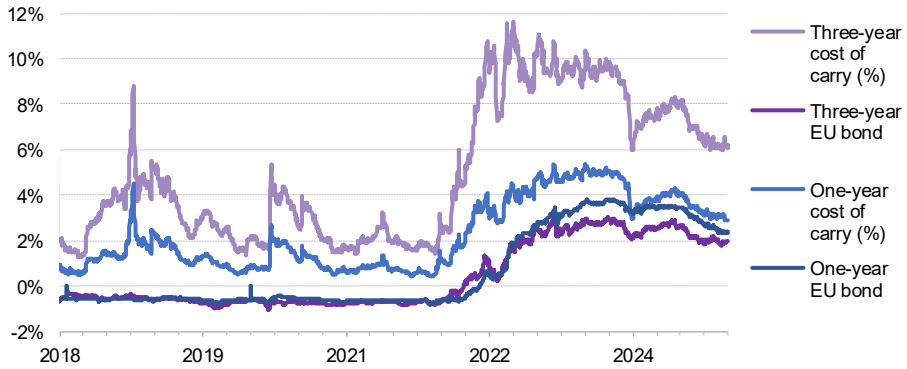


Source: EEX, BloombergNEF.

6.1.6. Cost of carry

Cost of carry can be used as an indicator of how market players expect the price to move in the future. It shows the difference between the price of an allowance on the spot market and a futures contract with delivery in the future, and therefore tells us the premium the market places on futures contracts.

Figure 6.6. Cost of carry of EUAs versus AAA EU three-year bond yields



Source: ICE, BloombergNEF. Note: Cost of carry here shows the difference between the one- and three-years-ahead December futures contracts and the front-year December futures contract.

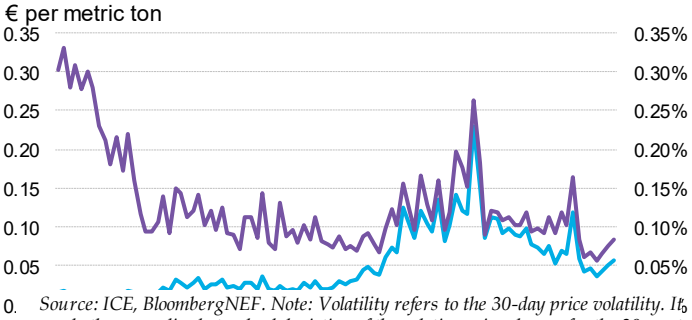
The cost of carry fell by close to 20% year-on-year in 2024. Easing inflation and interest rates over the course of the year could have helped bring down the figure, as these are expected to reduce the cost of capital, thereby making contracts dated further into the future relatively less expensive. However, the cost of carry remains elevated in comparison to the years before 2022, indicating that market participants continued to place a relatively high premium on future price developments.

6.1.7. Ask-bid spread

This KPI shows the difference between the lowest ask price and the highest bid price in the market at market close. The average ask-bid saw a marginal decline to €0.06 per ton in 2024, compared to €0.10 per ton in 2023.

A reduced ask-bid spread can signal greater certainty in the market and can be an expression of lower risk. It indicates a shrinking difference between the price the bidder is willing to pay and the price sellers expect to receive. The difference

Figure 6.7. Ask-bid spread on ICE



Source: ICE, BloombergNEF. Note: Volatility refers to the 30-day price volatility. It equals the annualized standard deviation of the relative price change for the 30 most recent trading days' closing price, expressed as a percentage.

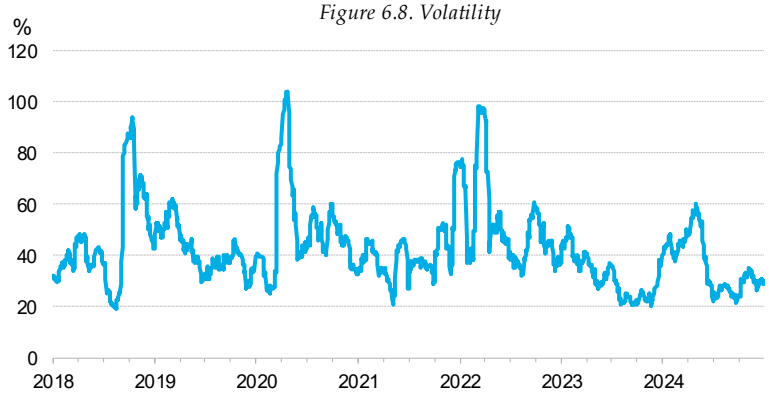
in 2024 is narrow, and largely in line with the past few years.

6.1.8. Volatility

In addition to the ask-bid spread, volatility is another measure of risk in the market. This metric represents how much prices move around the mean price. High volatility is undesirable for compliance entities, as utilities and industrials need a reliable price signal on which to base long-term investment decisions. On the other hand, high volatility may be positive for traders and other financial participants seeking to profit from price movements.

Averaging 36% across the course of 2024, volatility saw a slight, four-percentage-point increase from 2023 figures, yet remained well below the record high of 53% in 2022. Elections in the region and neighbouring countries as well as the relationship of carbon allowance prices with gas are the main reasons for the minor uptick.

Figure 6.8. Volatility

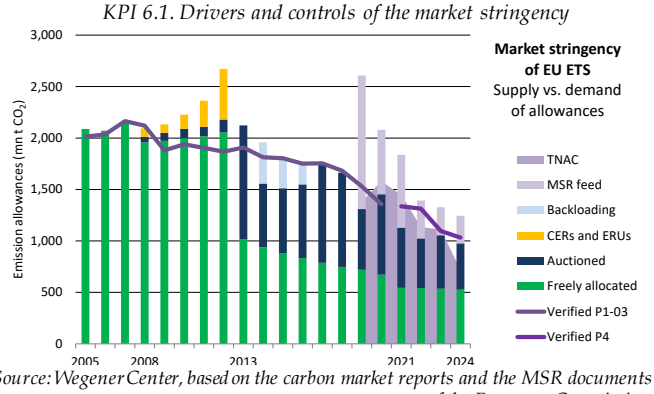


Source: ICE, BloombergNEF. Note: Ask-bid spread shows the difference between the lowest ask price and the highest bid price in the market at market close, in euros per metric ton and as a percentage of the closing price.

6.2. Supply-demand balance and evolution of TNAC

The interaction between allowance supply and demand is essential for functioning a cap-and-trade system like the EU ETS. The related price formation of emission allowances reflects the market stringency, which is determined by past realizations and future allowance supply and demand expectations.

KPI 6.1. Drivers and controls of the market stringency



Source: Wegener Center, based on the carbon market reports and the MSR documents of the European Commission.

KPI 6.1 depicts how the balancing of the market has operated so far, including the main supply sources: free allocations and auctions. Essential is splitting the supply of allowances into freely distributed and auctioned volumes. The free allocations, which are distributed in advance over a trading period, are motivated as a shield against carbon leakage, the relocation of activities outside of the EU ETS geography. Thus, as a quick response to adjusting market stringencies, only the auctioning volume is left.

The first instrument for intervention in the EU ETS mechanisms was the shift in the intended auction volume. This instrument was used in the so-called backloading, which removed 900 million allowances from the auction volume from 2014 to 2016 as a response to the massive inflow of international allowances (CERs and ERUs) into the system up to 2012. The second instrument was the establishment of the Market Stability Reserve, which provides a rule-based mechanism for controlling the supply of allowances. The so-called Total Number of Allowances (TNAC)[83] triggers this mechanism and is annually published by the European Commission. This mechanism also allows for the cancellation of allowances, which has become a powerful tool for reducing the vast surplus in the EU ETS.

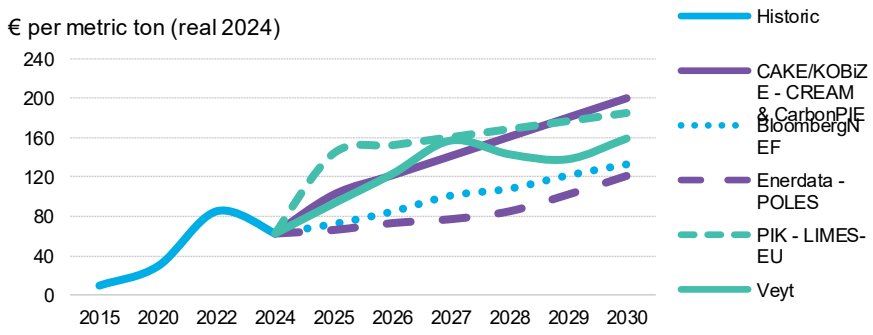
[83] TNAC = supply - (demand + allowances in the MSR)

The most recent TNAC value, published in May 2024, amounted to 1.11 $GtCO_2$. This TNAC value is expected to trigger a total auction volumes reduction of 266 816 768 allowances which will be placed in the market.

6.3. Price forecasts

If the aim of this report is to keep track of changes that have an impact on the EU ETS, it is interesting to follow how the perception of the market changes over time. To do that, we can evaluate price forecasts from different analysts.

Figure 6.9. EUA price forecasts

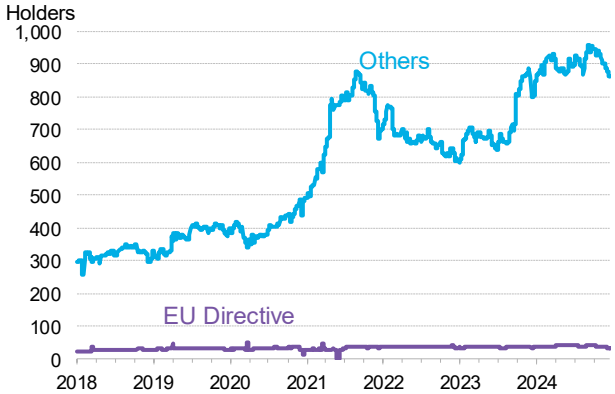


Source: BloombergNEF, Energy Aspects, Refinitiv.

Figure 10 shows 2024 EUA price forecasts collected from various analysts. There is a strong consensus that the carbon price will rebound in 2025 as the market heads towards several reforms that would raise the ambition of emission reductions in the EU ETS. Although there is variation between forecasts, all of them reach at least €120 per ton before 2030 and show a general upward trend.

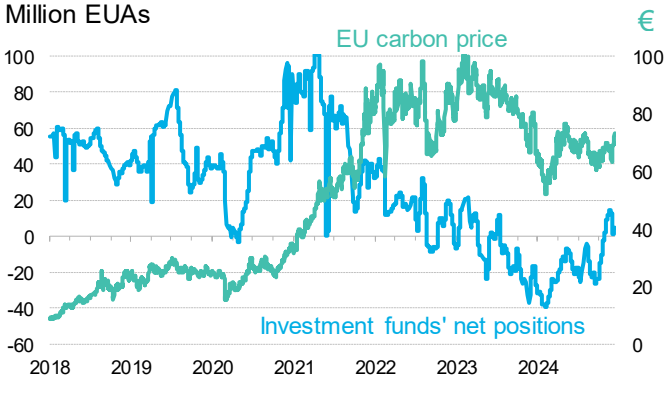
While the forecasts may vary from year to year and methodologies may change, they give an overall impression of market sentiment. All projections expect the carbon price to rise, illustrating the anticipation of future scarcity in Phase 4, which runs from 2021 to 2030.

Figure 6.11. Net position holders



Source: ICE, EEX, BloombergNEF. Note: Data is from Commitment of Traders (CoT) database.

Figure 6.10. Investment funds' net positions



Source: ICE, EEX, BloombergNEF. Note: Data is from Commitment of Traders (CoT) database.

6.4. Market participation

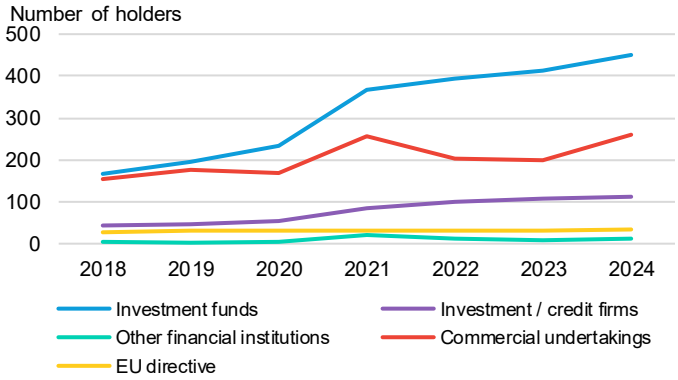
The average number of entities invested in EUA futures and not regulated under the EU ETS Directive has been rising. In 2024, the figure increased to around 900 on average, a jump of about 15% year-on-year. Speculators can increase volatility and create price spikes if they trade opportunistically. They can also bring market liquidity and stability to prices if they have a longer investment horizon (beyond one year) and invest from a fundamentals perspective.

Fluctuation in prices in 2024 partly aligned with news focused on the market or adjacent sectors (such as gas), as well as political decisions, suggesting that speculators can move the market, especially when the market trades on thin volumes.

The carbon price finished 2024 more or less where it began, despite reaching a five-year low of €52 per metric ton in February. A slow upward trend in prices plus a rally at the very end of the year led to an average price of €67 per ton for the year as a whole.

The number of investment funds that held allowances increased 10% year-on-year, to more than 450 in 2024. This is typically the largest group of holders, and its number has more than doubled in the last five years.

Figure 6.12. Number of EU emission allowance future holders, by type of



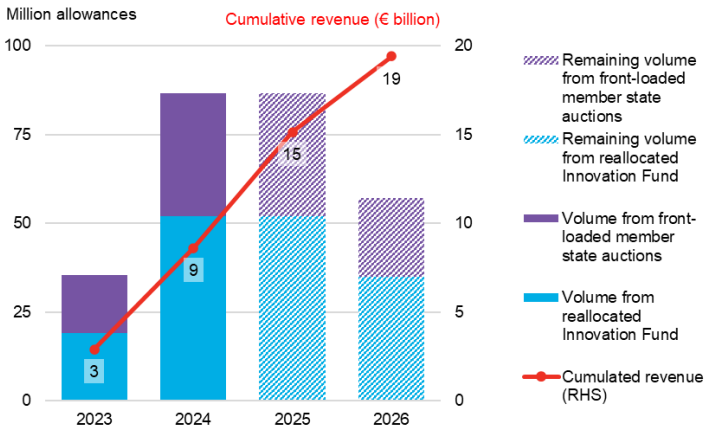
Source: BloombergNEF, Commitment of Traders Data (CoT).

6.5. REPower EU

The European Commission estimates that some 267 million allowances will be auctioned for REPowerEU – the bloc's strategy to reduce reliance on Russian energy – by the end of 2026. Assuming an average price of €75 per ton between 2023 and 2026, that will reach the target of €20 billion in sales.

A total of 87 million allowances were auctioned for this purpose in 2024, raising around €9 billion. The exact phasing of auction volumes for REPowerEU for the remainder of 2025 and in 2026 is yet to be determined, and it will partly depend on the price of carbon allowances. If carbon prices fall below €75 per ton, more permits may be required.

Figure 6.13. Other EU policies impacting carbon: REPowerEU volumes and revenue status



Source: European Commission. BloombergNEF. Note: European Commission carbon price forecast underpins calculations.

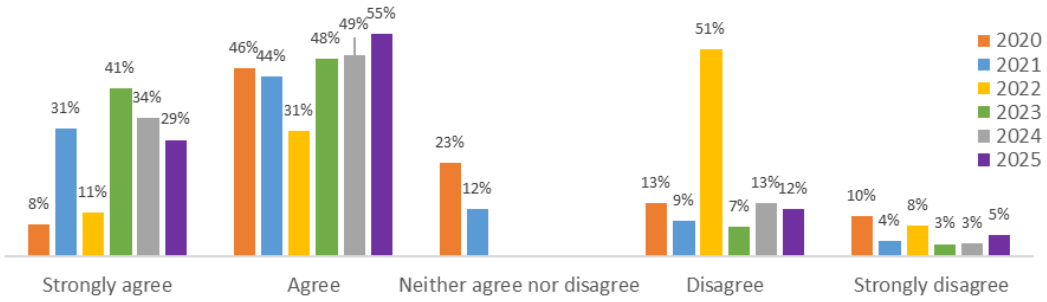
7. Market Sentiment Survey

Market sentiment towards the EU ETS has historically been pivotal, often regarded as equally if not more influential than market fundamentals in determining the system's behaviour. Even as the importance of fundamentals in price determination has grown, the sway of sentiment, particularly when spurred by regulatory developments, continues to hold significant weight. This influence is further underscored by the prevailing view that the regulatory framework is vulnerable to fluctuations in political sentiment.

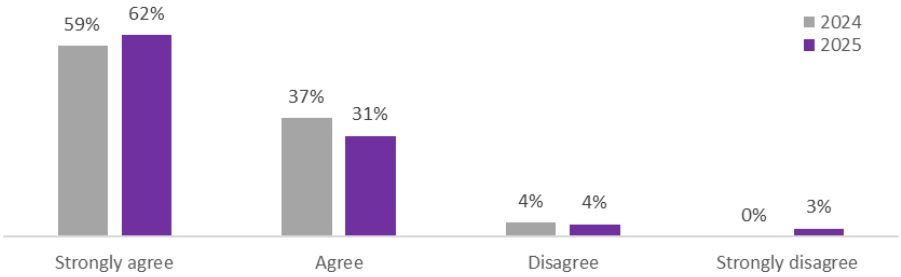
Since the 2018 edition of the State of the EU ETS Report, the ERCST has carried out a Market Sentiment Survey among stakeholders identified as 'market players and opinion makers'. This group includes stakeholders with knowledge of carbon pricing, policymakers, industrial and utility operators, traders, and civil society representatives. It is important to underscore that respondents are anonymous.

Figure 7.1. Market Sentiment Survey Results

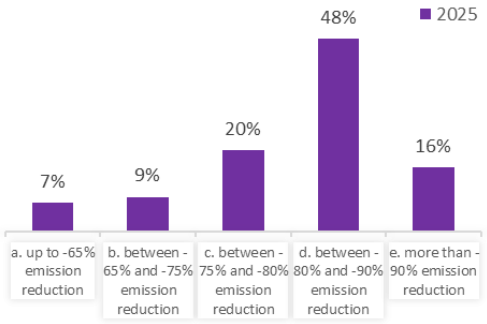
7.1 The EU ETS in its current form is providing signals for decarbonisation to 2030.



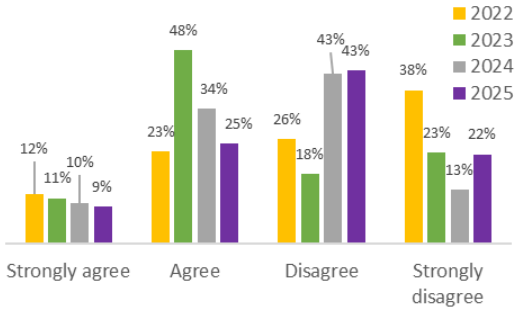
7.2 There is a need to examine what will drive the decarbonisation of EU ETS sectors post-2030.



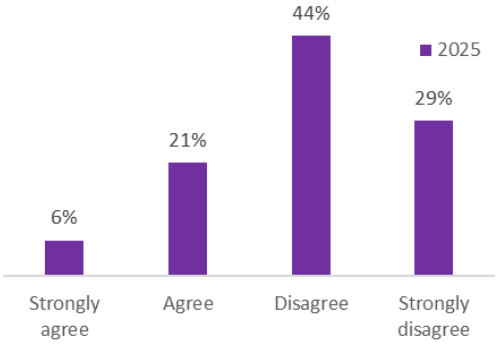
7.3 At what level of decarbonisation should the EU set its 2040 target?



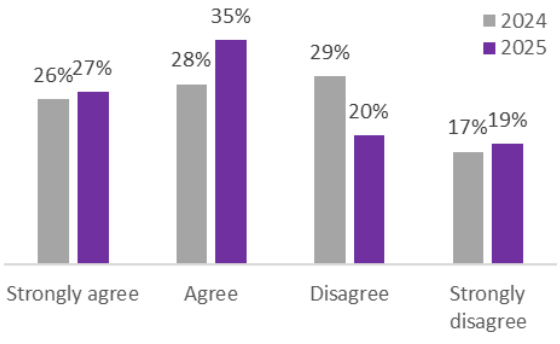
7.4 The combination of EU ETS and current CBAM for the EU will adequately address competitiveness and carbon leakage concerns for the EU industry.



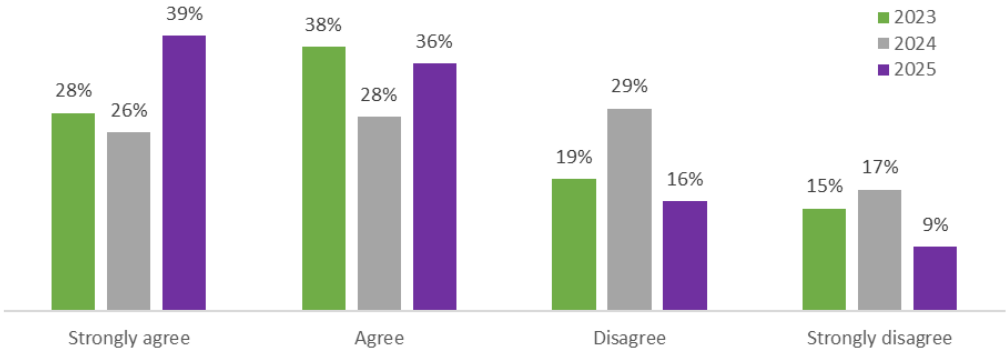
7.5. The CBAM should be delayed until significant issues are addressed.



7.6. To reach the goals of the Climate Law, an international link through international credits is important.



7.7 Early integration of removals in EU regulation, including in the EU ETS Phase IV, is critical to reach EU Climate objectives.



The results from 2025 present a diverse range of perspectives, with certain measures and outcomes being viewed positively, whilst others are met with more scepticism. In a nutshell, respondents appear to show optimism about the current shape of the EU ETS, while acknowledging that there are still improvements to be made, especially after 2030, for which uncertainty remains.

In line with last year's results, most of the sample (Question 7.1) agrees that the EU ETS in its current form is providing signals for decarbonisation (83% agree or strongly agree). While predictability exists until 2030, there is increasing majority (94% of respondents agree or strongly agree) that sees the need to examine the EU ETS post-2030 (Question 7.2). This urgency increases closer to 2030, which is logical given that currently, the EU ETS does not provide legal predictability beyond its Phase IV.

Two new questions have been added this year. Neither of the questions focuses on the EU ETS directly, but they are important as they relate to policies that could have an impact on the future architecture of the EU ETS. During the last few years, the EU ETS has become part of a broader policy climate framework, no longer working in isolation, and there is a need to examine it in a wider context.

Question 7.3 gauges at what level of decarbonisation the EU should set the 2040 GHG emission reduction target compared to 1990. 48% of respondents see the need for an 80% - 90% target, which does not represent a majority. This underscores the importance of setting realistic targets that can allow the EU to implement during a transitional phase, without adversely affecting EU industry. 36% are in favour of a reduction target that is less than 80%, compared to 1990, while 16% support a target that exceeds 90%.

Question 7.5 relates to CBAM. As the consequences of this new instrument are still uncertain and issues remain to be addressed, some MS have called for a simplification and strengthening of the instrument[84]. In our survey, almost three-quarters (73%) of the respondents disagreed or strongly disagreed that CBAM should be delayed.

However, following question on CBAM, 7.4 asked if the EU ETS and CBAM adequately address competitiveness and carbon leakage concerns[85] for the EU industry. 66% of the respondents disagreed or strongly disagreed with this statement. When compared to the results for 2023, 2025 data shows a less optimistic sentiment. 2023 is the year when the final CBAM legislative text was adopted, following the negotiation process that took place in 2022, when pessimism was also high (64% of respondents disagreeing or strongly disagreeing).

Questions 7.6 and 7.7 reflect respectively on the international aspects of the EU ETS, and the early integration of carbon removals before 2030. In 2024, 61% of stakeholders agree or strongly agree that to reach the goals of the European Climate Law, an international link through international credits is important.

[84] Carbon Pulse (2025). France calls for simplifying and strengthening the EU's CBAM. February 13.
[85] The concerns raised by stakeholders during the EU ETS revision included impact on low-income households, distributional concerns between Member States, carbon leakage risk, industrial competitiveness, use of revenues, energy efficiency, delayed decarbonisation of the industrial sector, deployment of innovative climate-neutral technologies, coverage, emission reduction, regulatory uncertainty, transparency, price volatility, etc.

The results express a 6% positive swing in comparison with the previous year, where 54% of respondents agreed or strongly agreed that international credits are important.

The inclusion of carbon removals into EU regulation, including in the EU ETS, even before 2030, is gaining momentum, and support is increasing when compared to previous years. In 2023, only 28% of respondents strongly supported the inclusion of removals, while in 2025, 40% of stakeholders strongly agreed with their inclusion into EU regulation, including EU ETS.

Results in Question 7.7 indicate a persistent enthusiasm for the possibility of integrating carbon removals at the domestic level, jumping from 53% in 2024 to 75% in 2025, while this support is stronger also compared to setting an international link through international credits (75% vs 25% of respondents strongly agree or agree compared to disagree or strongly disagree).

Overall, stakeholders agree that the EU ETS is providing signals for decarbonisation to 2030, without losing sight of what will drive the decarbonisation of EU ETS sectors beyond this timeframe and that examination beyond 2030 is needed. Opinions on the present form of the CBAM are divided, particularly concerning its ability to mitigate competitiveness and carbon leakage issues. The survey results suggest that CBAM does not fully address these issues, yet there is strong opposition to delaying its implementation, likely reflecting a desire for legislative stability.

On the positive side, there is substantial support for the integration of carbon removals in the EU ETS before 2030. The same positive outcomes apply for the need to set an international link through international credits, albeit to a lesser extent than the support to integrate carbon removals at a domestic level. Interestingly, this survey was published prior to the announcement from the German coalition government in support of the inclusion of international credits. The results presented here reveal the strong interest of the EU community in discussing today the potential framework of the EU ETS post-2030, as a way to bring certainty and predictability to the EU ETS.

8. Looking forward

In June 2024, the European Commission opened a call for tenders to *Support the evaluation of the EU emissions trading system (EU ETS) and the Market Stability Reserve (MSR) and for the 2026 review of the EU ETS and MSR*[86]. The European Commission has planned a public consultation in 2025, and a proposal should be published by the third quarter of 2026[87].

This revision brings potential challenges but also opportunities for discussion about the future of the EU ETS. While the European Commission has its role to play in providing an official review, it is also important that an independent review and assessment of the functioning and delivery of the future of the Emissions Trading System in the EU takes place. 'Looking forward' is a new chapter in the State of the EU ETS Report, following the recent EU ETS announcements[88].

This chapter includes forthcoming legislative developments and aims to serve as a methodical record rather than providing a long or detailed analysis. It takes a more qualitative approach, highlighting upcoming developments. It is a factual chapter, taking stock of the steps concerning the future of the EU ETS towards 2040, the potential impact on the current system with the available information, and expectations for the future.

[86] European Commission (2024): Support for the evaluation of the EU emissions trading system (EU ETS) and the Market Stability Reserve (MSR) and for the 2026 review of the EU ETS and MSR. Call for tenders. EC-CLIMA/2024/OP/0003.
[87] European Commission (2024): EU emissions trading system for maritime, aviation and stationary installations, and market stability reserve – review. Law. Have your say.
[88] The information here provided is based on the parallel ERCST work on the project 'Future of Emission Trading System in the EU', and the most recent legislative announcements on EU ETS, by the time of writing this chapter. The project started in kicked off in June 2024 and will address different issues impacting the future of the EU ETS, including coverage, role in EU climate policy, price signal and competitiveness, carbon removals, agriculture, market functioning, and governance.

Policy	Market Stability Reserve (MSR)
Details	**Q1 2025: The** Commission is expected to review Article 3 of the MSR[89] Decision, including: • The intake rate % for the number of EUAs to be placed in the reserve (Art. 1(5) of the MSR). • The value of the threshold. • The number of EUAs to be released from the reserve (Art 1(6) or (7) of the MSR). • The impact on growth, jobs, and the EU's industrial competitiveness and on the risk of carbon leakage.
Impact?	The precise impact remains uncertain and will depend on specific modifications to the MSR. A more stringent intake rate % could increase the speed of reduction of the TNAC supply. A shorter TNAC could have a bullish impact on carbon prices. The impact would be more stringent if the invalidation rule remains.
Policy	Carbon Border Adjustment Mechanism (CBAM)
Details	• Q1 2025: Commission to simplify the CBAM. • Q3 2025: Commission to review the CBAM, assessing the feasibility of extending to downstream sectors and indirect emissions, how to support exporters of CBAM products, and how to tackle circumvention risks. • Q4 2025: Commission to review CBAM's impact on least-developed countries. • Q1 2026: Commission submitting a legislative proposal on an extension of CBAM. • Q4 2027: Commission to review and evaluate progress in international climate negotiations. • Q1 2028: Commission must report on CBAM's impact on carbon leakage, including exports, every 2 years.
Impact?	CBAM simplification could reduce disproportionate administrative costs for compliance installations, especially smaller importers benefiting from the new exemption threshold and reduced compliance obligations. A more detailed review is expected by the end of 2025, which may propose expanding CBAM coverage to downstream goods, subject to further parliamentary approval. CBAM's scope expansion to new sectors and downstream products could have different implications. For the initial CBAM sectors, free allocation decreases gradually from 2026 to 2034, replaced by the requirement to purchase EUAs as CBAM is phased in. When additional sectors are incorporated into CBAM, potentially as late as 2030, their free allocation will also be phased out but over a shorter timeframe to align with the 2034 deadline for full CBAM implementation. This accelerated phase-out for newly added sectors, compared to the eight-year transition for initial sectors, will increase their demand for EUAs more rapidly. Combined with the ongoing phase-out for current sectors, this shift means more industries will compete for a shrinking pool of EUAs, as the EU ETS cap decreases annually under its reduction factor. This heightened demand could tighten the carbon market, driving up EUA prices for all EU ETS participants.
Policy	Permanent, and non-permanent removals (CCU)
Details	By July 31, 2026: • Commission to publish a report on integrating negative emissions (including but not limited to BECCS and DACCS), into the EU ETS. • Commission to review also whether double counting is avoided, and to assess ways to account for emissions that have been captured and utilised in a product but risk entering the atmosphere during or after normal use.
Impact?	With current information available and pending substantial legislative developments, assessing the impact of including CCU in EU ETS is challenging. Impact will depend on final decisions, accounting methodology, and EU ETS expansion to new sectors (i.e. municipal waste incinerators). At present, there may be an increase in EUA demand for products that were previously exempt from surrendering allowances, such as Precipitated Calcium Carbonate (PCC). Under the current revisions, part of PCC will have to bear the cost of CO_2 usage when its end application is not considered permanently chemically bound. Moreover, the decision regarding the inclusion of CCU has not yet been finalised, making it impossible to accurately assess the potential impact on EUA demand. An expansion of the list of permanently chemically bound products may lead to a decrease in demand for EUAs for these products (no need to ask for EUAs to cover their carbon footprint, same as CCS). This is unlikely to significantly impact the market as long as no substantial amounts are available. Conversely, if the list of products is reduced, these products will need to pay for the CO_2 they emit, resulting in increased demand for EUAs. From an environmental point of view, the wider the list of CCU products recognised as not emitting or partially emitting CO_2, the greater the incentive to reduce GHGs. This approach makes sense if permanently chemically bound products, which do not emit CO_2 *under regular use*, are exempt from surrendering certificates. The recognition of CCU (both permanent and non-permanent) in EU ETS could be a first step for the accounting of negative emissions as we approach net zero. If negative emissions are included in the EU ETS, in the long term, the increased supply of EUAs/CDRs could counterbalance the expected price increase of EUAs from a stricter cap and facilitate EU decarbonisation. Stricter environmental provisions should be in place to avoid mitigation deterrence.
Policy	Municipal Waste Installations (MWI)
Details	By July 31, 2026: Commission to release a report and if positive, legislation for the inclusion of MWI into the ETS by 2028. • Q1 2028: Emissions from MWI installations would be included in ETS1. • Q1 2030: Until 2030, MS will have the possibility to opt out of MWI from the ETS1 (Art 30 (7)).
Impact?	The inclusion of new sectors in EU ETS should not damage the functioning of the carbon market but instead increase the cap and bring additional supply of EUAs. The inclusion of municipal waste incinerators could have implications for the accounting of CCU, as the EU ETS value chain expands. An important question is who will benefit from claiming utilised CO_2, to avoid paying for carbon which is not emitted but utilised.

[89] Consolidated text: Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC (Text with EEA relevance) Text with EEA relevance.

Policy	Aviation
Details	• 2025 - 2026: Flights within the EEA area will lose 50% of free allowances, with a phased out by 2026. • By July 31, 2026: The Commission reviews CORSIA. • Q1 2027: Possible inclusion of flights between the EEA and non-EEA airports into ETS1 in case CORSIA does not deliver.
Impact?	The inclusion of international aviation in EU ETS could have implications for the relationship between CORSIA and EU ETS. From an environmental perspective, it is reasonable to consider that the higher the number of trips covered by EU ETS, the better the carbon footprint, as currently EU ETS is more ambitious than CORSIA. From a market perspective, it should enhance liquidity and demand for EUAs, as free allocation for aviation will end by 2026.
Policy	Maritime transport
Details	2027 - 2028: To include offshore ships exceeding 5,000 gross tonnage and potentially incorporate smaller offshore ships. Q1 2028: Shipping 100% emissions on journeys between EU and non-EU ports if the IMO mechanisms are not ambitious.
Impact?	The extension of ships covered by EU ETS should increase the demand for EUAs and bring market pressures. If additional trips are covered by EU ETS, this trend could be accentuated. Similar to aviation, the inclusion of international maritime voyages should improve their carbon footprint. It will be important to observe how IMO articulates with EU ETS in the future.
Policy	International Linking
Details	Q2 2026: Commission to review the possibility of linkages between the EU ETS and other carbon markets.
Impact?	Following the Swiss example, international linking should be a priori, a positive development for the EU ETS. From a theoretical point of view, it will increase the number of participants in EU ETS, increasing market size, trading and liquidity. If it is the same level of ambition, it should also reduce the risk of carbon leakage vis-à-vis linked jurisdictions. Impact will depend on linking conditions, sector coverage, and exchangeability of credits.
Policy	ETS for Road transport, buildings and other sectors not covered by ETS1 (ETS2)
Details	By July 15, 2026: • Commission to decide whether to include installations below 20MW total rated thermal input (Annex I) in ETS1. If not, they will join ETS2. • Commission to decide if ETS2 will kick off in 2028 or 2027 (based on energy prices). • Q1 2027: ETS2 to commence. • Q2 2027: Commission to review the ETS2, evaluating its effectiveness, administration, and practical application. • Q1 2028: ETS2 commences if the decision in 2026 is to postpone one year later. • Before 2031: Commission to decide if EU ETS1 and ETS2 should be merged.
Impact?	The inclusion of ETS2 in ETS1 in the future could increase market size, reduce transaction costs and increase market supply. This development could be especially relevant to bringing market liquidity in EU ETS into a shorter market. Current ETS1 covered sectors are expected to decarbonise in the 40s and the availability of EUAs will be limited.
Policy	Benchmark update
Details	Before 2026: Implementing Act updating, for the period 2026-2030, the benchmark values on the basis of 2021 and 2022 data, applying the annual reduction rate between 2008 and 2028 [Article 10a (2) (c) of the EU ETS Directive].
Impact?	More stringent benchmarks will reduce the amount of free allocation available to compliant entities. If CBAM is on top, the speed of free allocation phase-out will increase. By extension, it will increase the demand for EUAs to cover emissions, thus increasing carbon prices. From an environmental impact, the faster the phase-out of free allocation the higher the risk of carbon leakage, as long as no other effective instruments in place. In the end, this could impact not only the climate but also competitiveness of EU industries.
Policy	Industrial Decarbonisation Bank
Details	June 2026: EC legislative proposal aiming at €100 billion funding to support industrial decarbonisation[90]. • Existing Innovation Fund: 20 billion (starting from 2025) • 10% of MS EUAs Auctioned in 2028-2037: € 33 billion. • InvestEU: 2.5 billion (leverage factor of 10 to make total leveraged amount €33 billion).
Impact?	On the Innovation Fund share, there is no indication that additional EUAs will be sold in the market thus no expected impact. The impact on the market related to auctioning shares will depend on the distribution of EUAs across periods (i.e. frontloading in REPower EU), otherwise, there will be no direct impact on EUA supply. An indirect impact could still happen on the EU ETS. If successful, the Bank could accelerate emission reduction in EU industry, leading to a lesser demand for EUAs. Still, many uncertainties remain until the legislative proposal in 2026.

[90] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. The Clean Industrial Deal: A joint roadmap for competitiveness and decarbonisation. COM (2025) 85 final. Pp 13.