National Audit Office

REPORT

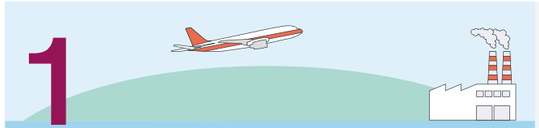
UK Emissions Trading Scheme

Department for Energy Security & Net Zero

SESSION 2024-25
30 JUNE 2025
HC 950

How the UK Emissions Trading Scheme works

The UK Emissions Trading Scheme (the Scheme) is a key policy for the government to achieve its net zero ambition. The UK ETS Authority (the Authority) is the joint body responsible for overseeing the Scheme, made up of the UK Government, the Scottish Government, the Welsh Government, and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland.



1 Setting the cap on emissions

The Authority sets the cap on the total emissions across **three** participating sectors (power, industrial, aviation), which emit an estimated **25%** of the UK's territorial emissions. There are over 1,000 participants in the Scheme

This limit is reduced over a number of years in line with the government's net zero targets

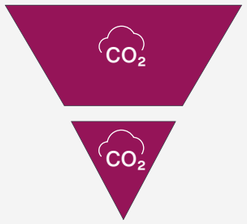
2021 — CO_2 ↓

156 million: cap in 2021
4.2 million tonnes: expected annual reduction in the cap from 2021 onwards

2030 — CO_2 ↓

50 million tonnes: cap in 2030

The first phase of the Scheme runs from 2021 to 2030



Initial cap
1,366 million tonnes: total emissions from 2021 to 2030

Revised cap
936 million tonnes: total emissions from 2021 to 2030, aligned with the government's net zero trajectory

2 1 allowance = 1 TONNE of CO_2

Issuing allowances

The cap is divided into individual allowances. Each allowance gives a participant permission to emit one tonne of carbon dioxide. The Authority issues allowances up to the overall cap from 2021 to 2030. Allowances can be auctioned or issued for free

a) Auctioned: allowances can be auctioned through the Intercontinental Exchange, usually fortnightly

2024	2030
69 million allowances auctioned	**24 million** allowances to be auctioned

£17.8 billion revenues raised for HM Treasury through auctions since the scheme began in **2021**

b) Issued for free: to mitigate the risk of carbon leakage – where competition from firms facing lower carbon prices could result in economic activity moving abroad and continuing with unabated emissions

35% 40%

40% maximum percentage of allowances that can be issued for free
35% of issued allowances that were distributed for free, 2021 to mid-June 2025

The Authority is releasing **53 million** allowances to the market, carried over from 2021 to 2023, between 2024 and 2027 to smooth the transition to the revised cap (936 million tonnes).

3

Surrendering allowances

Scheme participants must acquire sufficient allowances to cover their annual emissions

Surrendered allowances could be from:

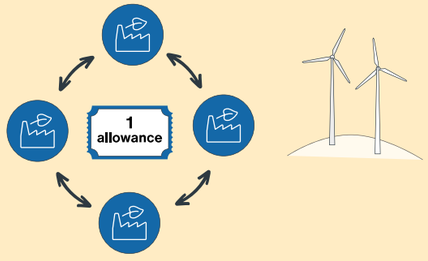
- Free allowances
- Allowances purchased at auction
- Allowances purchased from the secondary market

Regulators oversee systems of monitoring and compliance. Scheme participants must surrender sufficient allowances to cover their emissions each year to the Scheme regulators or pay a large fine

How the Scheme incentivises decarbonisation

Scheme participants and other market traders can trade allowances with each other on a secondary market. Participants that can reduce emissions can sell allowances to participants with emissions in excess of their allowances. The value of allowances on the market sets a **carbon price**

£37 the Scheme's average carbon price in 2024



Over time, participants are incentivised to reduce emissions by investing in new low-carbon technology as this becomes preferable to paying the carbon price for emitting carbon

11 million tonnes: total reduction in emissions in the three sectors covered by the Scheme, 2021 to 2023

Summary

1 The UK Emissions Trading Scheme (the Scheme) is a key policy for the government to achieve its net zero ambition. The Scheme works as follows:

- the government sets a cap, divided into individual allowances, on the level of emissions that UK participants in the Scheme, such as power stations, are allowed to emit over a given period; and
- participants in the Scheme can trade allowances in order to account for their annual emissions, which in turn sets a price on their carbon emissions.

2 The government expects that, over time, participants will invest in low-carbon technologies such as renewable energy or switch the type of fuel used, as the carbon price becomes higher than the cost of that investment. The Scheme currently covers carbon emissions in the power, industrial and aviation sectors. There are currently over 1,000 participants in the Scheme.

Page 4 of this report explains how the Scheme works in more detail.

3 In 2021, the single UK-wide Scheme replaced the UK's participation in the EU Emissions Trading System (EU ETS) when the UK and devolved governments launched it as part of the UK's exit from the European Union. The UK ETS Authority (the Authority) is the joint body responsible for overseeing the Scheme, made up of the UK Government, the Scottish Government, the Welsh Government, and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland. The Department for Energy Security & Net Zero (DESNZ) provides the main ministerial and administrative lead on behalf of the UK Government, as well as the overwhelming majority of resources for the Authority.[1]

1 On 7 February 2023 the government announced it had split the Department for Business, Energy & Industrial Strategy into three new departments, including the Department for Energy Security & Net Zero. Responsibility for the UK Emissions Trading Scheme now sits with the Department for Energy Security & Net Zero.

Purpose of this report

4 The Scheme is now well-established, having been operating for more than four years. DESNZ, along with other members of the Authority, is looking to develop the Scheme – not only in terms of reach (the Authority has announced plans to expand the Scheme to the domestic maritime sector from 2026, and to the energy from waste and waste incineration sectors from 2028) , but also how it functions in practice. This report aims to inform those developments by assisting Parliamentary understanding and scrutiny of the Scheme, and making recommendations based on our assessment of how the Scheme is currently working. We also consider the implications of changes to wider policies aimed at reducing carbon leakage.[2]

5 This report:

- describes the Scheme (Part One);
- sets out how the Scheme has worked in practice and performed since it was introduced in 2021 (Part Two); and
- explains the Authority's oversight of the Scheme, including plans for its future development (Part Three).

Key findings

6 The government managed a largely smooth transition from the EU ETS to the Scheme, and has subsequently taken action to close loopholes that allowed some firms to make windfall profits. Overseeing the transition required the UK Government to develop and run the Scheme jointly with the devolved governments. The government worked with the devolved governments to establish and launch the Scheme on schedule in 2021, to a tight timetable following the UK's exit from the EU. Had this not been achieved, the UK would not have had a functioning market for trading carbon allowances and would have lost the revenue the Scheme generated. The Scheme's technical components, such as the auction of allowances, have operated well, generating £17.8 billion in revenues for the government. But a loophole allowed firms participating in the Scheme to make windfall profits if they shut down an installation part-way through the year (worth up to £49 million in total in 2022). Also, in the aviation sector, some operators received more free allowances than they needed, which could have led to windfall profits for these operators. The Authority has subsequently reformed the Scheme to close both these opportunities for windfall profits (paragraphs 2.2, 2.3, 2.11 to 2.14 and Figures 4, 5 and 8).

2 Carbon leakage is where international competition from firms facing lower carbon prices could result in economic activity moving abroad and continuing with unabated emissions.

7 Overall emissions have reduced in the sectors covered by the Scheme, but it is difficult to isolate the Scheme's contribution to this performance. Across the three sectors in the Scheme, CO_2 equivalent emissions have decreased by 11 million tonnes, from 108 million tonnes in 2021 to 97 million tonnes in 2023, although the aviation sector saw an increase in emissions. This overall reduction is largely a result of the power sector moving away from carbon intensive fuels such as coal to lower carbon alternatives such as gas and biofuels and decarbonising because of other interventions, such as government subsidies for renewables. Emissions may also be reducing because of a downturn in economic activity in those sectors. The Authority expects the Scheme to work alongside other interventions (such as Carbon Price Support, which adds an extra cost to generating electricity from fossil fuels) to reduce emissions and considers the impact of those other interventions when setting the cap (paragraphs 1.7 to 1.8 and Figures 2 and 10).

8 While the Scheme price of carbon initially exceeded the price in the EU ETS, it has trended consistently below this from the start of 2023. The Scheme price initially increased between 2021 and 2023. Since then, it has decreased and has remained below the price in the EU ETS - at the end of May 2025, the UK carbon price was £50 per tonne and in the EU ETS it was £60. The fall in price is in part due to the Authority's announcement in 2023 that it would release additional allowances. Research completed by the Authority also suggests that the decline in the price was caused initially by lack of confidence among participants that the Authority would adopt a net zero consistent cap for the Scheme (paragraphs 2.15 to 2.18 and Figure 11).

9 The relatively low price may have reduced incentives for Scheme participants to invest in low-carbon technologies. The Climate Change Committee (CCC) – the government's independent advisor on achieving its climate ambitions – advised the government in November 2024 that the carbon price during the first half of 2024 was far lower than the cost of many decarbonisation measures in the sectors that the Scheme covers. As such, the CCC stated that the Scheme alone does not provide sufficient incentive for these measures to be deployed. DESNZ's position is that the carbon price is set by the market and that the lower price leads to a focus on the lowest cost interventions to decarbonise, with emissions having been below the cap (paragraph 2.16).

10 Reductions in emissions so far may not necessarily be an indicator of future success, due to uncertainties in the availability and take-up of new low-carbon technologies. Future emissions reductions will increasingly need to come from the industrial and aviation sectors, requiring increased investment in decarbonisation and the development of new technologies at scale and pace. Some technologies – for example, carbon capture and sustainable aviation fuel – are in their infancy and may take many years before they start making a significant difference to emissions. The Authority has collected some evidence on the extent to which the Scheme has incentivised investment in low-carbon technologies. But it does not collect evidence on activity in this area on a regular basis (paragraphs 1.6, 3.12 to 3.15 and Figure 1).

11 While the Authority has confidence in its arrangements for monitoring and verifying emissions, it has yet to complete a review of their effectiveness. The Authority is expanding the Scheme into new sectors. Demand for verification will therefore increase, and a different approach may be needed to accommodate the characteristics of these new sectors. A review could help it refine its approach to monitoring and verifying emissions from the sectors currently covered by the Scheme, as well as helping inform the development of a regime to monitor and verify emissions from participants in new sectors (paragraphs 1.4, 1.5, 1.16 and 1.17 and Figure 6).

12 The Authority is an innovative example of genuinely joined-up policymaking, although it has been prone to administrative bottlenecks that have frustrated stakeholders. The Authority is, overall, working well in terms of its members working collaboratively, though this can require time to reach agreement. While the UK and devolved governments pool resources, there remains a potential mismatch between the resources devolved governments can deploy - meaning they can sometimes struggle to work at the pace set by DESNZ. Externally, participants have commented on the volume of consultations alongside the length of time it takes the Authority to make decisions. The Authority is looking to improve the timeliness and clarity of its communication (paragraphs 1.9, 3.2 to 3.9 and Figures 3, 12 and 13).

13 Stakeholders have raised concerns about how effectively the government is managing the potential impacts on UK industry of a proposed new approach to carbon leakage. Carbon leakage is where international competition from firms facing lower carbon prices could result in economic activity moving abroad and continuing with unabated emissions. The government is introducing a Carbon Border Adjustment Mechanism (CBAM), which is a tax and therefore its development sits with HM Treasury rather than the Authority. In addition, the UK is planning to introduce its CBAM one year later than the EU plans to introduce its CBAM. HM Treasury told us that due to the complexities of this intervention, it was not possible to introduce the UK CBAM sooner. Stakeholders are concerned this could result in goods with a lower carbon cost being diverted to the UK, impacting on competitiveness. In May 2025, the government announced a commitment to link the UK ETS with the EU ETS, with the suggestion this would improve conditions for low-carbon investment. It stated that agreement to link the respective schemes should create the conditions for mutual exemptions from the UK and EU CBAMs (paragraphs 1.11 to 1.12 and 3.16 to 3.25).

Conclusion

14 The Scheme is one of the government's key policies for achieving net zero. The UK government did well to introduce the Scheme that made sure there was a functioning market in the UK following EU Exit and the Scheme arrangements have continued to work well. There have been reductions in carbon emissions in the sectors that the Scheme covers, although it is challenging to assess how much of this can be attributed to the Scheme, as opposed to other interventions and wider economic factors. Looking to the future, the Scheme's effectiveness will, in part, depend on the development of low-carbon technologies. A greater understanding of the Scheme's impact on investment in those technologies would help DESNZ to be more transparent about its effectiveness, as well as make better plans for how the Scheme will work alongside other policies in achieving future emissions reductions.

Recommendations

15 The Authority should:

a consider its approach to prioritising the development and introduction of new policies to take account of its own capacity and that of the Scheme participants. It should also consider its approach to working with the other parts of government with responsibilities for the UK's industrial and energy sector;

b collect evidence on the type and value of investment in low-carbon technologies made by the Scheme's participants, including the extent to which this has been driven by the carbon price. It should use this to help inform its understanding of the future path of emissions reductions under the Scheme and consequently how the Scheme will support emissions reductions in each of the sectors to which it applies;

c enhance its existing annual reports on the functioning of the UK ETS carbon market, by including a broader commentary on the Scheme's performance;

d improve its communications with the Climate Change Committee to help it anticipate the Committee's advice, and to support the Committee's understanding of its modelling; and

e **(i)** make sure, as it expands the Scheme into new sectors, the monitoring and verification arrangements it is developing reflects those sectors' specific characteristics; and

(ii) review the effectiveness of these arrangements as part of its approach to monitoring and evaluation, and take action in response to any limitations identified.