National Audit Office

REPORT

UK Emissions Trading Scheme

Department for Energy Security & Net Zero

SESSION 2024-25
30 JUNE 2025
HC 950

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National Audit Office

UK Emissions Trading Scheme

Department for Energy Security & Net Zero

Report by the Comptroller and Auditor General

Ordered by the House of Commons
to be printed on 26 June 2025

This report has been prepared under Section 6 of the National Audit Act 1983 for presentation to the House of Commons in accordance with Section 9 of the Act

Gareth Davies
Comptroller and Auditor General
National Audit Office

20 June 2025

HC 950 | £10.00

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016833 06/25 NAO

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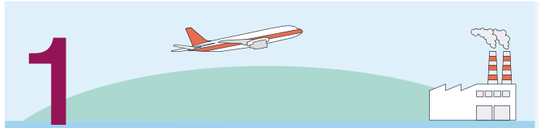
How the UK Emissions Trading Scheme works

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

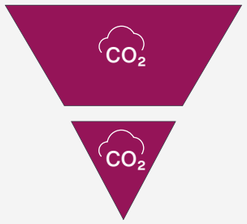
2021 — CO_2 ↓

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:

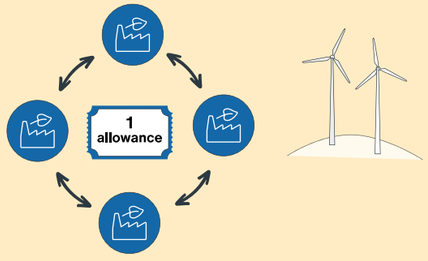
- Free allowances
- Allowances purchased at auction
- Allowances purchased from the secondary market

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.

Part One

The UK Emissions Trading Scheme

1.1 This part of the report explains:

- the role of the UK Emissions Trading Scheme (UK ETS, or the Scheme) in achieving net zero; and
- how the Scheme works.

The role of the UK ETS in achieving net zero

1.2 The UK Emissions Trading Scheme (the Scheme) is a key policy instrument for achieving net zero by 2050, introduced in 2021. The main purpose of the Scheme is to reduce greenhouse gas emissions in a cost-effective way. The Scheme places a cap on emissions, which is reduced over time. The cap is divided into allowances, each allowing a participant to emit one tonne of CO_2 equivalent. Participants must acquire enough allowances to cover their emissions each year, with this need for allowances creating a market in which allowances are bought and sold. This market sets the carbon price. Currently, the Scheme covers the power, industry and aviation sectors.

1.3 The carbon price should be high enough so that, over time, it is cheaper for Scheme participants, such as power generators and heavy industries, to introduce decarbonisation measures than to carry on emitting (**Figure 1** overleaf). Scheme participants had taken a range of steps to reduce their emissions, from power sector operators that were changing their daily or hourly operations partly in response to the Scheme, to others who, despite the Scheme, were not intending to introduce any large scale decarbonisation solutions, or had reduced their emissions by part or full closure of one of their plants.

Figure 1
Examples of decarbonisation measures

Sectors covered by the UK Emissions Trading Scheme can invest in a number of different low-carbon technologies

Sector	Previous or current technologies	Example of low-carbon technology
Power	Coal-fired power stations Gas power stations	Renewable energy, such as offshore wind Carbon capture, usage and storage Fuel switching to biofuels and hydrogen
Heavy industry: cement; chemicals; distribution of gas; iron and steel; oil and gas refining; and processing of nuclear fuel sectors	Natural gas-based fertiliser plants Gas pipeline networks	Fuel switching On-site renewables Carbon capture, usage and storage
Other industry: food and drink; non-metallic minerals; non-ferrous metals; paper and pulp; and other sectors (including combined heat and power)	Natural gas-fired ovens Gas-fired glass furnaces	Heat recovery Fuel switching
Aviation	Kerosene fuel	Sustainable aviation fuel

Source: National Audit Office

1.4 In June 2024, there were 490 participants in the industry sector, 387 in aviation and 191 in power generation, totalling 1,068 participants in the Scheme.[3] These participants are legally required to obtain a relevant emissions permit before engaging in any activity that generates greenhouse gas emissions within the scope of the UK ETS. While Scheme regulators do not identify new operators who should have permits, the Department for Energy Security & Net Zero (DESNZ) considers it likely that operators will be reported by their competitors if they were operating without a permit. There are substantial penalties for operating without a permit. Since 2021, regulators have issued one penalty for operating without a permit, totalling £1,064,889.

3 The Scheme covers activities of energy-intensive industries and the power generation sector involving combustion of fuels with a total rated thermal input exceeding 20MW (except in installations where the primary purpose is the incineration of hazardous or municipal waste). The aviation routes covered by the UK ETS include UK domestic flights, flights between the UK and Gibraltar, and flights departing the UK to European Economic Area states.

1.5 DESNZ estimates that Scheme participants generated around 25% of total UK greenhouse gas emissions as at 2023.[4] In 2022, emissions were concentrated among a few large entities, with 12 (in the power generation and heavier energy-intensive industry sectors) accounting for 50% of total emissions. The government has announced plans to expand the Scheme to the domestic maritime sector in 2026, and to energy from waste in 2028. This is with the aim of capturing more emissions under the Scheme and increasing decarbonisation across the economy.

1.6 The government has legislated for the Scheme to run from January 2021 to December 2030, known as phase one. Further legislation is needed for the Scheme to run after 2030 (phase two of the Scheme). The UK ETS Authority (the Authority) is currently consulting on the length of this second phase. Organising the operation of the Scheme into phases of a specific length is intended to give a long-term signal to the market to decarbonise.

1.7 Overall, emissions in the sectors covered by the Scheme have decreased.

- The total annual reported emissions have decreased by 11 million tonnes of carbon dioxide equivalent, from 108 million tonnes in 2021 to 97 million tonnes in 2023.
- The decrease in total reported emissions is largely due to a decrease in power sector emissions (**Figure 2** overleaf), from 48.2 million tonnes of carbon dioxide equivalent in 2022 to 37 million tonnes in 2023 (a reduction of 23% of emissions in this sector).
- The industrial sector has also seen a fall in emissions. In 2023, its emissions reduced by 3.8 million tonnes, a fall of 6.9% on the year before. Industrial stakeholders we spoke to expressed concern that these reductions may, in part, have been driven by a reduction in economic activity rather than increases in carbon efficiency.
- In contrast, reported aviation emissions increased from 7.8 million tonnes in 2022 to 8.8 million tonnes in 2023 (a 13% increase).

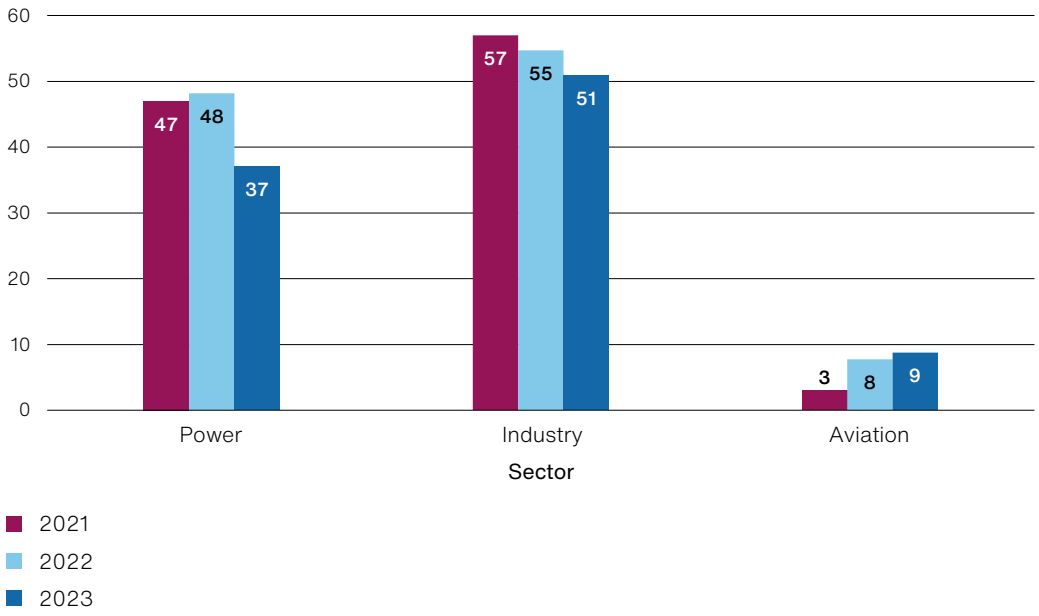
1.8 The Scheme is part of a suite of interventions which, collectively, are intended to reduce emissions.[5] For example, the Carbon Price Support is a tax that imposes extra costs on fossil fuels used to generate electricity. Analysis by Energy UK, a representative body for the energy sector, showed that as coal emits around twice as much carbon dioxide as gas, both the EU and UK ETS, alongside the Carbon Price Support, which imposed an additional £18 cost for every tonne of carbon emitted, raised the price of coal above gas.[6] By the mid-2010s, gas was a cheaper source of power than coal.

4 When the UK entered the EU ETS in the mid-2000s, the 'traded sectors' accounted for approximately half of the UK's carbon emissions. This share has reduced to around a quarter, largely because of reductions in emissions from the UK power sector in the intervening years.
5 For recent NAO reviews of a range of relevant policy interventions see: https://www.nao.org.uk/topics/climate-change-net-zero/ [accessed 8 May 2025].
6 Energy UK, *Closing the coal chapter: how the UK is leading the energy transition*, September 2024.

Figure 2

Annual reported emissions for sectors in the UK Emissions Trading Scheme (the Scheme)

Reported emissions have decreased in two of three sectors participating in the Scheme



Notes

1 The chart shows sectors that are covered by the Scheme.

2 The reported emissions in this figure have been rounded to the nearest whole number.

Source: National Audit Office analysis of data from the UK ETS Authority

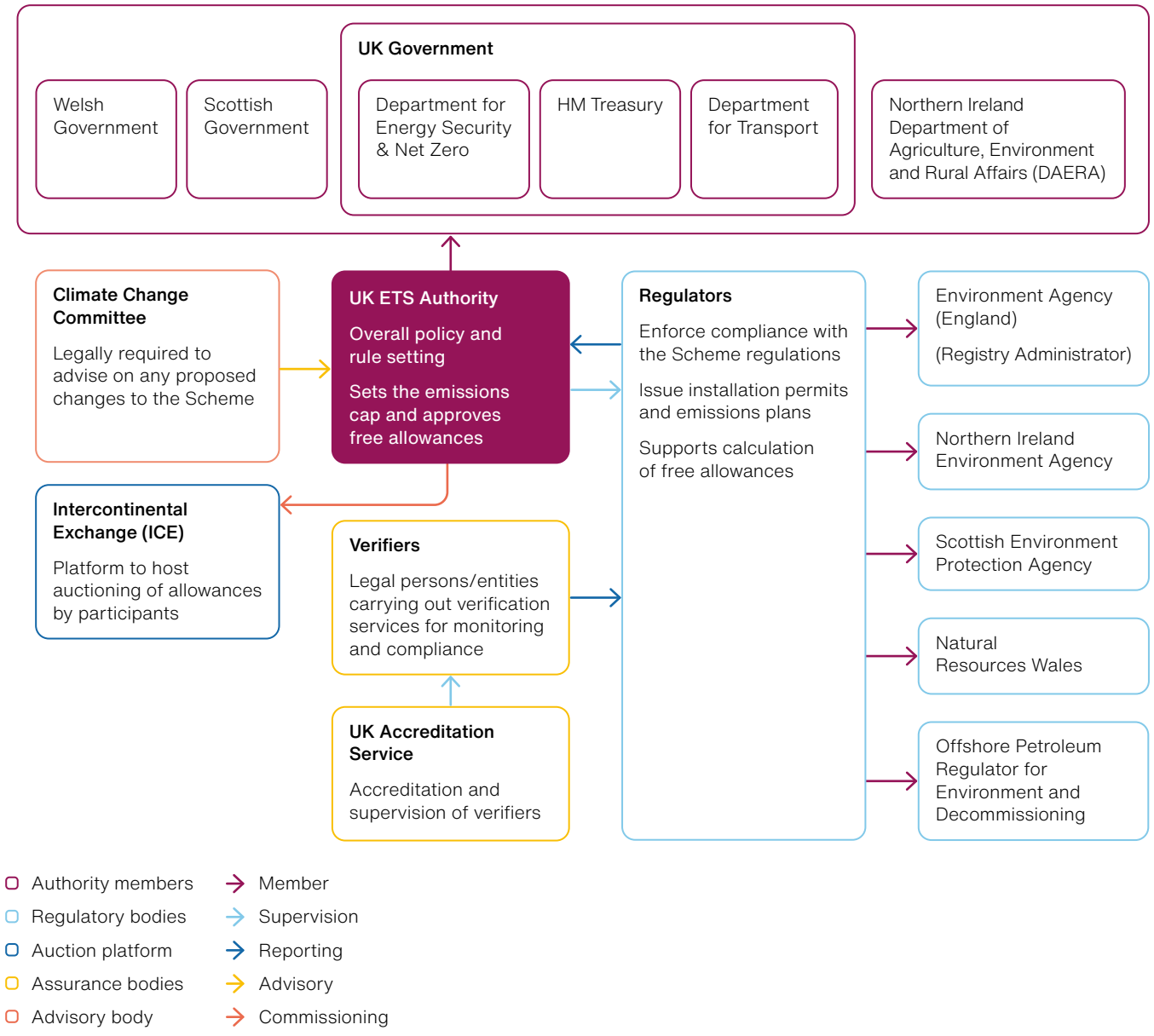
Who operates the Scheme

1.9 A number of bodies are central to the Scheme's operation (**Figure 3**). The UK Government (including DESNZ, Department for Transport and HM Treasury), the Scottish Government, the Welsh Government, and the Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland collectively make up the UK ETS Authority (the Authority). The Authority oversees the Scheme and sets its rules and regulations. DESNZ has overall responsibility within the UK government for achieving net zero. It provides the main ministerial and administrative lead on behalf of the UK Government for the Authority, as well as the overwhelming majority of its resources. The Environment Agency (England) is the Registry Administrator for the UK ETS registry – the system that tracks the allocation, ownership, and transfer of emissions allowances for regulated businesses.

Figure 3

UK Emissions Trading Scheme (the Scheme) – roles and responsibilities

A number of bodies are central to the Scheme's operation



Note

1 The Environment Agency in England is also the Registry Administrator for the UK ETS registry – the system that tracks the allocation, ownership, and transfer of emissions allowances for regulated businesses.

Source: National Audit Office summary of government documents

How the Scheme works

Capping emissions

1.10 The Authority is responsible for capping the maximum level of greenhouse gases that UK participants in the Scheme are allowed to emit over a given period. The Climate Change Committee is the government's independent climate advisor. It must, under legislation, advise the Authority on the amount of emissions that should be included in the Scheme's cap and provide advice on any change to the Scheme.

Carbon allowances

1.11 The Authority releases allowances, each equal to 1 tonne of CO_2 equivalent, either by auctioning them or allocating them for free (**Figure 4**). Auctioned allowances are the main method for distributing allowances to participants. In 2024, they represented 66% of the total number of allowances distributed. At the end of each year, each participant must submit allowances to the UK ETS registry equal to its emissions or pay a large fine.

Figure 4

Allowances released under the UK Emissions Trading Scheme (the Scheme)

The UK ETS Authority allocates both auctioned and free allowances with the aim of driving emissions reduction and protecting industries

Allowance		Description
Free allowances[1]	Industry free allocation	Given to industries at risk of carbon leakage such as steel.[1]
	Aviation free allocation	Allocated to eligible aircraft operators to cover emissions above a certain threshold from flights within the UK and specific international routes.
Auctioned allowances		Sold through the Intercontinental Exchange (ICE) at regular government auctions, typically every fortnight.[2]

Notes

1 Carbon leakage occurs where international competition from firms facing lower carbon prices results in economic activity moving abroad and continuing with unabated emissions.

2 The Department for Business, Energy & Industrial Strategy appointed ICE to host emissions auctions following the announcement by the UK Government and devolved governments in December 2020 of the planned launch of the Scheme to replace the UK's participation in the EU Emissions Trading System.

Source: National Audit Office analysis of Department for Energy Security & Net Zero documentation

1.12 The Authority calculates the free allowances for a company based on their historic levels of carbon emissions; a benchmark comparing efficiency of production in a sector (explained in the bullets below), rewarding the most carbon efficient companies; and their risk of carbon leakage (where international competition from firms facing lower carbon prices results in economic activity moving abroad and continuing with unabated emissions).

- If an operator is more efficient than the benchmark, in practice their free allocation entitlement will be more than they need to cover their emissions, and they are able to profit from selling extra allowances to other participants or use the proceeds to invest in decarbonisation.
- Operators that are not as efficient as the benchmark will not receive enough free allowances to cover their emissions, and should be incentivised to increase their efficiency.

Carbon price

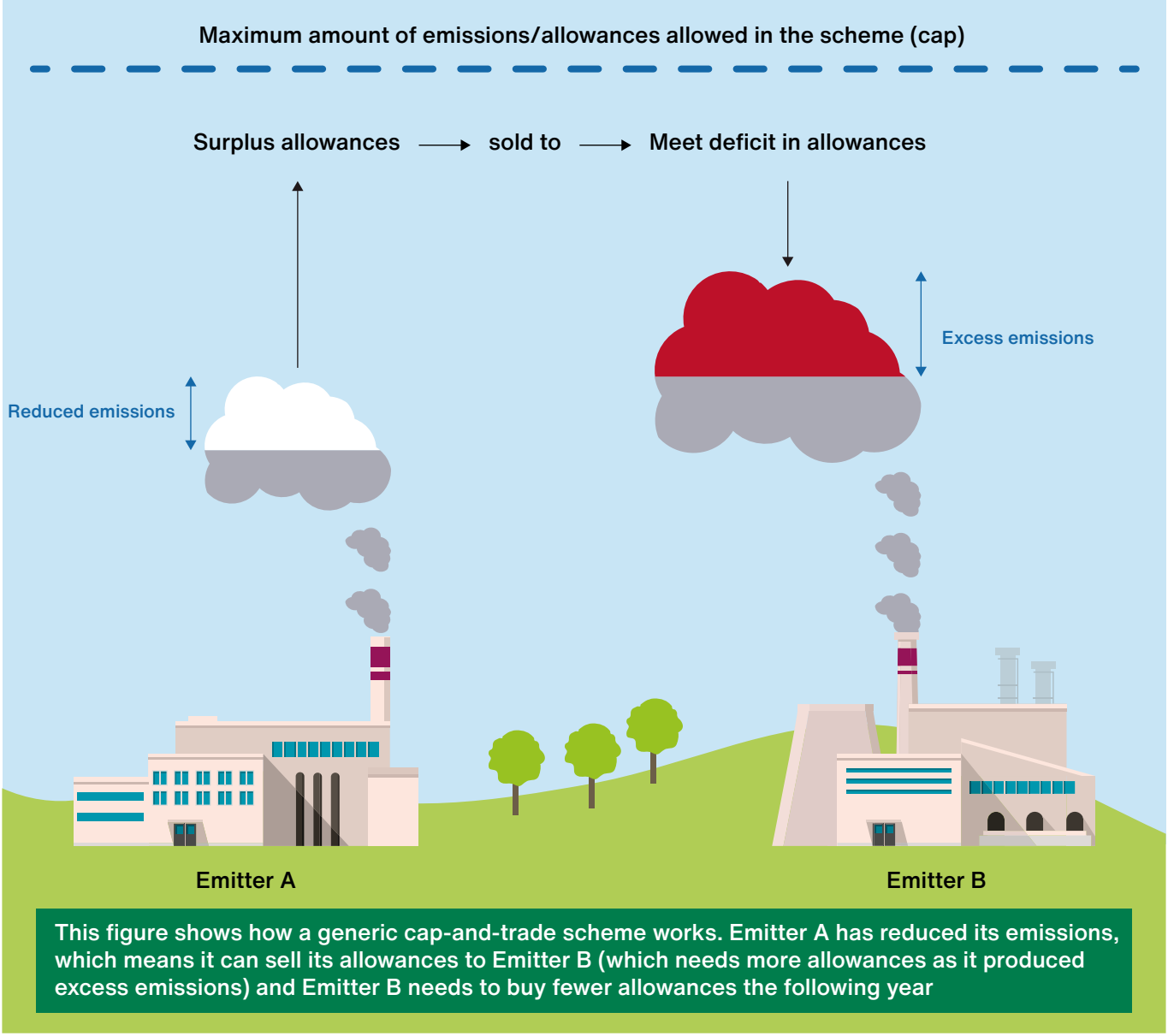
1.13 Once issued, allowances have an economic value and can be traded by companies participating in the Scheme (**Figure 5** overleaf). Scheme participants that have reduced their emissions need to purchase fewer allowances, and any surplus allowances they have can be sold via financial traders. Establishing supply and demand for emissions allowances creates a market price for greenhouse gas emissions. A tighter supply of allowances relative to demand in any year could result in high carbon prices, whereas an oversupply of allowances could result in low carbon prices and therefore reduced incentives for participants to invest in decarbonisation.

1.14 While the price of an allowance is set by the market, the Authority has a mechanism to mitigate against sudden, significant and sustained price decreases that could disincentivise investment in decarbonisation. The Scheme has an Auction Reserve Price (ARP) of £22 per tonne of carbon dioxide equivalent, which establishes a minimum price for which allowances can be sold at auctions. Any bids below this price are not successful at auction. The value was set in 2021 as a temporary policy intended to be phased out as the market matures; and the Authority consulted on the future of the ARP in its future markets policy consultation. The carbon price has not fallen below this value to date. The Authority wishes to explore options for altering its design to provide a specific and targeted mitigation.

1.15 The Scheme also has a Cost Containment Mechanism to mitigate sustained high prices. Currently, when the average price of an allowance is more than three times the average price in the preceding two-year period for six consecutive months, the Authority can decide to intervene. While the price met the lower price and time criteria used at launch in December 2021 and January 2022, the Authority decided against taking any action.

Figure 5
Cap-and-trade schemes explained

A cap-and-trade scheme enables companies to trade carbon allowances to meet emissions targets



Notes

1 The cap is the total level of emissions that a participant in a scheme is allowed to emit over a given period.

2 The emissions cap decreases over time.

3 This figure provides a general illustration of how cap-and-trade schemes work. The UK Emissions Trading Scheme shares this basic structure, but includes important nuances – for example, trading might involve strategic purchasing (hedging), not just surplus reallocation.

Source: National Audit Office

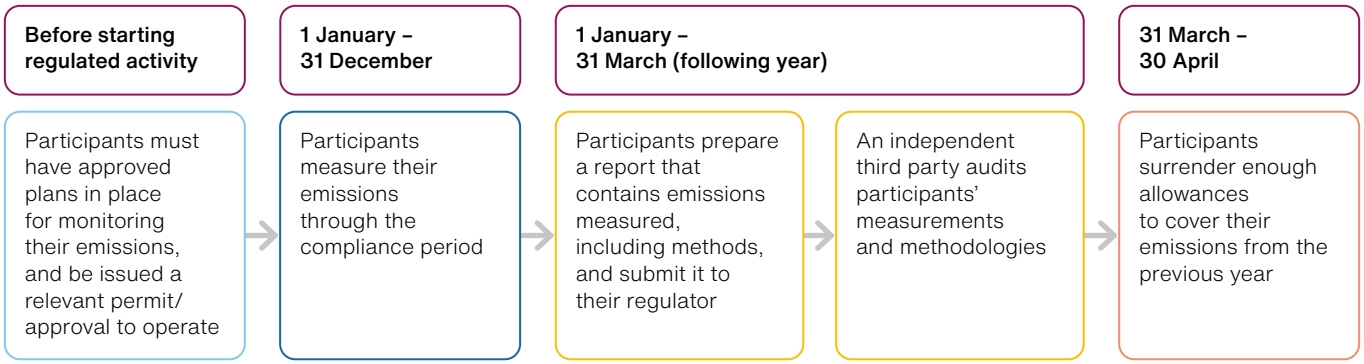
Monitoring and verification

1.16 The Authority collects information on emissions from Scheme participants through a monitoring, reporting and verification regime (**Figure 6**). This takes place over a 16-month period. Scheme participants measure their emissions over 12 months, then prepare a report detailing those emissions and submit to their relevant regulator. Emissions measurements are then audited by an independent third party (verifier), who is accredited against standards by the UK Accreditation Service (UKAS).[7] Legislation requires that these audits are conducted on a "reasonable assurance" basis (rather than "limited" or "absolute" assurance), the same arrangement as the EU Emissions Trading System (EU ETS).

Figure 6

How the UK ETS Authority (the Authority) collects emissions data for sectors in the UK Emissions Trading Scheme

The Authority has a monitoring, reporting and verification regime for collecting emissions data



Source: Department for Energy Security & Net Zero

7 Operators participating in the Hospitals and Small Emitters scheme can choose to self-verify emissions or appoint an independent accredited verifier.

1.17 The Authority has not conducted a review of the effectiveness of the monitoring and verification arrangements (paragraph 1.16), which would be helpful for informing how these arrangements work when the Authority expands the Scheme into new sectors. It told us that it has a high level of confidence in the robustness of the monitoring and verification processes, including safeguards to identify issues. The Scheme regulators (see Figure 3) audit a sample of annual emission reports each year, while UKAS uses surveillance visits to determine whether an independent third party meets the standards. Respondents in the 2023 Scheme evaluation had generally high levels of satisfaction with Scheme processes (70% or more). Demand for verification will increase when the Scheme expands to other sectors: the Environment Agency has estimated that there will be around 100 additional annual verifications for waste and 2,000 annual verifications for maritime across all four countries.[8] Verifiers are facing some challenges in recruiting new resources to meet this demand. DESNZ is working with verifiers and UKAS to address this issue.

An overview of emissions trading schemes in other countries

1.18 Many countries have an emissions trading scheme to lower carbon emissions. According to the International Monetary Fund, there are over 70 carbon pricing schemes globally, operating in 47 countries, covering 25% of global greenhouse gas emissions.[9] Schemes around the world have varying characteristics, in part due to differing organisational setups and environmental goals (**Figure 7** on pages 22 and 23). Key differences between the schemes set out in Figure 7 include the following:

- **Carbon price:** for example, the schemes listed in Figure 7 varied from an average of $8 to $70 in 2024 (UK average carbon price of $48 or £37).
- **Coverage of total emissions:** the share of emissions covered by schemes ranges widely — for example, around 25% in the UK and as high as 80% in California.
- **Sectoral coverage:** some of the earliest schemes initially focussed on sectors such as power generation and energy-intensive industries but have since expanded or are in the process of expanding to include sectors such as maritime, buildings, transport and forestry.
- **Revenue usage (hypothecation):** some schemes earmark the revenues generated for initiatives such as low-carbon innovation, emissions mitigation infrastructure and technology development.

8 The Scottish Environment Protection Agency, Northern Ireland Environment Agency, and Natural Resources Wales are responsible for regulation of these sectors in their respective countries.

9 International Monetary Fund, *Policy Options for Climate Mitigation: Emissions Trading Schemes in Asia-Pacific*, July 2024.

1.19 DESNZ has been engaging with governments internationally and completing research into the features of emissions trading schemes covering other countries or territories overseas to inform the Scheme's design. For example, in 2024, DESNZ explored how some jurisdictions included heating and road transport sectors in their emissions trading schemes. It did this to better understand policy options – their benefits and drawbacks – and consumer impact. DESNZ has not carried out an evaluation on what design features and mechanisms most effectively reduce emissions and mitigate costs across international schemes, which could provide valuable insights.

Figure 7

An international comparison of Emissions Trading Schemes (ETS)

The UK Emissions Trading Scheme (the Scheme) ranks second to last among the ETSs in this table in terms of emissions coverage and has the most ambitious decarbonisation target for its jurisdiction

Country/state/province	Sectors	2024 cap	Percentage coverage of total greenhouse gas (GHG) emissions	Linked with other ETSs?[2]	Country/state/province 2030 decarbonisation target	Use of revenue	Carbon price
			(%)				($)
UK	Domestic aviation, industry, power	92 $MtCO_2e$	Around 25%	No	At least a 68% reduction in UK net GHG emissions from 1990 levels	Revenues from the Scheme auctions are added to the general budget and are not earmarked	48
South Korea	Maritime, waste, domestic aviation, transport, buildings, industry, power	567 $MtCO_2e$	Around 89%	No	At least a 35% reduction below 2018 emissions	Revenues go into a national Climate Response Fund	8
California (USA)	Transport, buildings, industry, power	281 $MtCO_2e$	80%	Yes – Quebec	A 40% reduction from 1990 GHG emission levels	Most of California's revenue goes to the Greenhouse Gas Reduction Fund, of which at least 35% must benefit disadvantaged and low-income communities	35
Quebec (Canada)	Transport, buildings, industry, power	52 $MtCO_2e$	77%	Yes – California	38% reduction from 1990 GHG emission levels	All auction revenues go to the Electrification and Climate Change Fund	35
New Zealand	Forestry, maritime, waste, domestic aviation, transport, buildings, industry, power	28 $MtCO_2e$	Over 50%	No	50% reduction of net emissions below gross 2005 levels	Cash revenues are used to fund general tax relief, known as a 'climate dividend'	39
China National	Power	Around 5,000 $MtCO_2$	Over 40% of the country's CO_2 emissions	No	Reduction of CO_2 emissions per unit of GDP by over 65% from 2005 levels	There is currently no arrangement for the use of revenues generated by the scheme	13
EU	Maritime, domestic aviation, industry, power (Transport and buildings will also be included under the EU's separate ETS 2 scheme)	1,386 $MtCO_2e$ for maritime, industry and power 29 $MtCO_2e$ for aviation	Around 38%	Yes – Switzerland	At least a 55% net emissions reduction from 1990 levels	From mid-2023, member states are required to use all revenues generated from that point onward to support climate and energy objectives	70
Switzerland	Domestic aviation, industry, power	4.4 $MtCO_2e$ (power and industry) 1.1 $MtCO_2e$ (aviation)	12%	Yes – EU	At least 50% reduction from 1990 GHG emission levels	Revenues are added to the general budget of the federal government	65

Notes

1 This table is based on publicly available information. The table acknowledges that not all schemes are directly comparable. Data may reflect different reporting years, methodologies, and operational frameworks. The intention is to provide a broad overview to facilitate some level of comparison across international schemes, recognising that they may function on varying principles and structures.

2 Linking two schemes refers to the process of creating a common carbon market, so that allowances under one system can be used in another.

3 According to the International Carbon Action Partnership, there are 58 emissions trading schemes operating globally. We selected the schemes in this table based on various factors, including (but not limited to) their size, duration of operation, and the availability of accessible information. For example, we focussed on schemes with high and low emissions coverage, that were either linked or not linked to other schemes, and that had been established for some time.

4 Data for the EU Emissions Trading System scheme is based on the scheme as it stands and does not take into consideration the sectors that will be covered under the EU ETS 2 scheme which is under development.

5 $MtCO_2e$ stands for million tonnes of carbon dioxide equivalent, a unit used to measure the total impact of different greenhouse gases in terms of how much carbon dioxide would create the same effect on global warming.

6 The China National ETS scheme only covers carbon dioxide (CO_2), so any data linked to it, such as the percentage of emissions covered, specifically refers to CO_2 emissions rather than all greenhouse gases.

Source: National Audit Office analysis of International Carbon Action Partnership data

Part Two

Progress of the Scheme since 2021

2.1 This part of the report sets out the progress of the Scheme since 2021, including:

- how the UK Government and devolved governments established the Scheme;
- how the UK ETS Authority (the Authority) has set the cap for emissions and issued allowances through the Scheme;
- the carbon price the Scheme has generated; and
- the costs to government and participants of running the Scheme.

Establishing the scheme

2.2 In 2020, the government legislated to withdraw the UK from the EU Emissions Trading System (EU ETS) following the decision to leave the EU. The UK had been participating in the EU scheme since its introduction in 2005. Replacing UK participation in the EU ETS with a domestic scheme was complicated by the fact that, under the Climate Change Act 2008, the power to establish national emissions trading schemes in Scotland, Wales, and Northern Ireland is devolved to their respective governments. However, the UK Government and the devolved governments agreed to launch a single, UK-wide emissions trading scheme, to "create a larger carbon market, with greater liquidity, and a consistent carbon price across the UK."[10] Additionally, the four governments considered that a single national scheme would increase the cost-effectiveness of emissions trading, and avoid distorting competition between different parts of the United Kingdom, which could have the effect of impeding the UK's pathway towards net zero.

10 DESNZ, *UK Emissions Trading Scheme Provisional Common Framework*, Cp 794, February 2023, paragraph 9.

2.3 The UK and devolved governments introduced the Scheme in 2021 (**Figure 8** on pages 26 and 27). Overseeing the transition required the UK Government to develop and run the Scheme jointly with the Scottish Government, the Welsh Government, and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland. The UK Government's role in this process was led by the Department for Business, Energy & Industrial Strategy, which worked with other government departments and the devolved governments to launch the Scheme on schedule in 2021.[11] By introducing the Scheme on schedule, the UK made sure it had a functioning carbon market, and the government did not lose out on the auction revenues that the Scheme generates.

Setting the cap

2.4 In launching the Scheme in 2021, the Authority set an overall cap for phase one (2021–2030) at 1,366 million tonnes of carbon dioxide equivalent ($MtCO_2e$). This was 5% below the UK's expected notional share of the EU ETS cap for this period, had the UK remained a member of the EU scheme. Within this overall multi-year cap, the Authority set an initial annual cap equating to 156 million allowances in 2021, reducing annually by 4.2 million allowances.

2.5 The Authority set the initial cap higher than the amount of emissions it was expecting participants to actually emit. When it set the cap of 156 $MtCO_2e$ for 2021, it was forecasting emissions from sectors within the Scheme to total between 126 and 131 $MtCO_2e$. The government's view was that uncertainties connected with launching a new scheme made it appropriate to provide this headroom of allowances.

2.6 The Authority has reduced the annual cap each year, with more rapid reductions from 2024 onwards (**Figure 9** on page 28). When it launched the Scheme in January 2021, the Authority committed to revise the cap for 2021 to 2030 to align it with the government's net zero trajectory, and to implement these changes by January 2024. In July 2023, it announced that its new net zero consistent cap would be set at a total number of allowances of 936 million over the period from 2021 to 2030, with the annual cap reducing to around 50 million allowances in 2030.

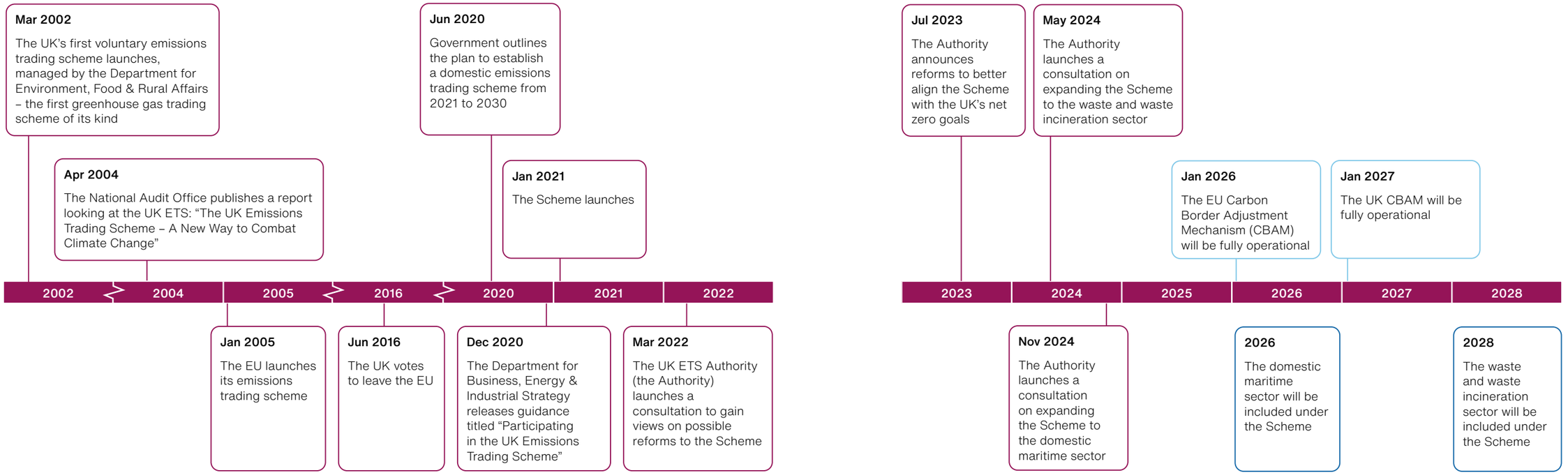
2.7 In October 2022, the Climate Change Committee (CCC) advised that the Authority's plans to reduce the cap from 2024 were appropriate, given the government's pathway towards achieving net zero set out in the Net Zero Strategy. The CCC did note, however, that the Authority's proposed cap was lower than it was recommending. This was because the government and the CCC differed over the balance of emissions reductions each expected to be delivered by those sectors covered by the Scheme and those outside it.

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

Figure 8

Key developments in the UK Emissions Trading Scheme (the Scheme), 2002 to 2028

The Scheme has developed over a number of years



- Past and present years
- Future years
- Unknown date for an event

Notes

1 The UK ETS Authority will confirm the exact timing for expanding the Scheme to the maritime and waste sectors in 2026 and 2028 in due course.

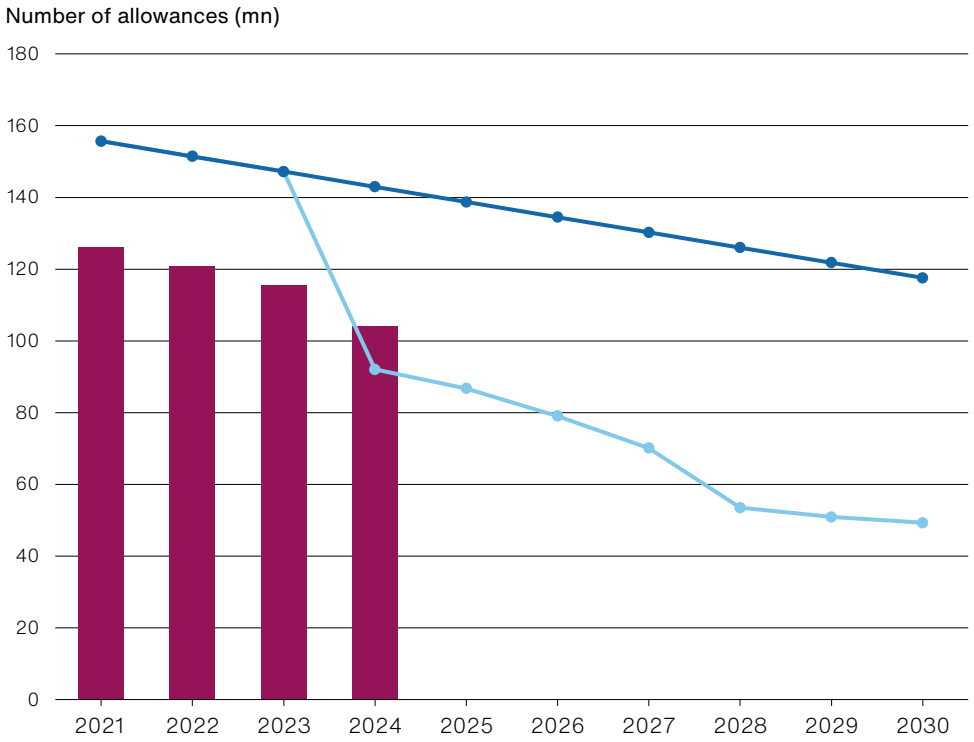
2 CBAMs apply a charge on imports from countries with lower carbon pricing to equalise their carbon costs with those paid by domestic producers (see paragraph 3.16).

Source: National Audit Office summary of UK government and European Commission documentation

Figure 9

The UK Emissions Trading Scheme (the Scheme) cap, 2021 to 2030

The cap on emissions under the Scheme is reducing over time



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Allowances distributed to date	126	121	116	104							**467**
Original cap	156	151	147	143	139	134	130	126	122	118	**1,366**
Net zero adjusted cap	156	151	147	92	87	79	70	53	51	49	**936**

Notes

1 The cap shown for each year reflects the base number of allowances set out in the legislation (Greenhouse Gas Emissions Trading Scheme Auctioning Regulations 2023).

2 An allowance permits organisations covered by the Scheme to emit 1 tonne of carbon dioxide equivalent (CO_2e).

3 The allowances distributed from 2021 to 2024 include the number of allowances auctioned and the number of free allowances, as at April and March 2025 respectively.

4 The cap sets out the maximum number of allowances that can be created. The UK ETS Authority has flexibility to decide how many allowances to release through auctions, and how many to distribute as free allowances, from 2021 to 2030.

5 In 2024, the allowances distributed to date exceed the net zero adjusted cap as some unallocated allowances from previous years were released in 2024.

6 We have rounded the numbers in this figure to the nearest whole number.

Source: National Audit Office analysis of Department for Energy Security & Net Zero data

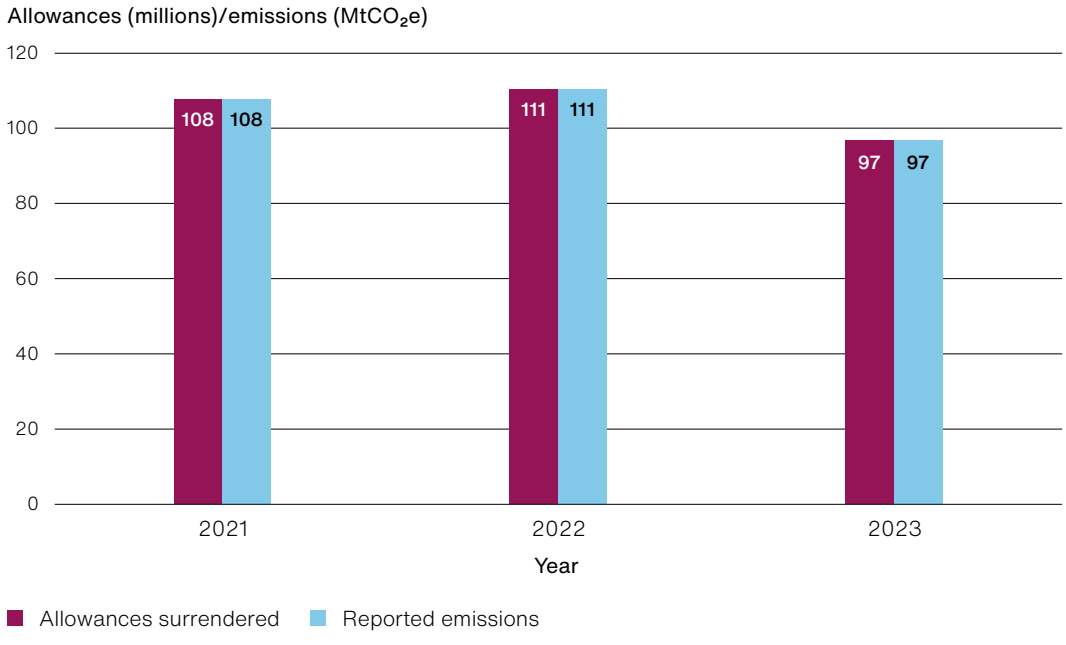
2.8 In November 2024, the CCC issued new advice on the revised cap. The CCC said that its assessments of progress since publication of the UK's Net Zero Strategy had consistently concluded that the government needed to speed up emissions reductions in both the traded sectors (those covered by the Scheme) and non-traded sectors (those outside it). It said that the Authority's revised cap of 936 million allowances for 2021 to 2030 was 49 million allowances higher than the central assumptions of the UK's Net Zero Strategy (887 million allowances). The government would therefore need to reduce the cap or identify an additional 49 $MtCO_2e$ reductions from the non-traded sectors. The Authority is considering how to respond to the CCC's advice.

Issuing allowances

2.9 Overall, in the first years of the Scheme, participants have met their obligations by surrendering allowances that cover their reported emissions (**Figure 10**).

Figure 10
Reported emissions and allowances surrendered, 2021 to 2023

Since the UK Emissions Trading Scheme (the Scheme) started, the number of allowances surrendered has equalled the reported emissions for each sector



Notes

1 An allowance permits organisations covered by the Scheme to emit 1 tonne of carbon dioxide equivalent (CO_2e).

2 'Allowances surrendered' is the total number of allowances that were returned to the UK ETS Authority in each year.

3 'Reported emissions' is the total specified emissions (in tonnes of carbon dioxide equivalent) from the regulated activities carried out by participants.

4 We calculated the number of allowances surrendered for aviation in 2023 by taking away the allowances surrendered from 2021 and 2022 from the total surrendered over 2021 to 2023.

5 Numbers have been rounded to the nearest whole number.

6 $MtCO_2e$ stands for million tonnes of carbon dioxide equivalent, a unit used to measure the total impact of different greenhouse gases in terms of how much carbon dioxide would create the same effect on global warming.

Source: National Audit Office analysis of Department for Energy Security & Net Zero data

2.10 The number of allowances issued may differ from the number set under the cap (Figure 8). The cap sets out the maximum number of allowances that can be created from 2021 to 2030. Within this, the Authority has flexibility to decide how many allowances to release through auctions and how many to calculate for free (using the approach set out in paragraphs 1.11 to 1.12).

- In 2024, the Authority limited the total number of allowances for auction to 69 million. The total number of allowances available for auction will keep reducing in the coming years, dropping to around 44 million by 2027 and around 24 million by 2030.
- The Authority has set a limit on the allowances distributed for free at 40% of the overall cap until 2030. In 2023, the Authority set a higher limit on the proportion of allowances available to be distributed for free, compared to retaining the limit set at 37% (which it had taken on from the EU ETS), stating that businesses need time and support to decarbonise. Over the four years from 2021 to mid-June 2025, of the 523 million allowances that were issued, 339 million (65%) were auctioned, while 184 million (35%) were allocated for free.

2.11 HM Treasury collects the revenue raised from auctioning allowances. Revenue raised from the Scheme over 2021 to 2025 totalled £17.8 billion.[12] HM Treasury does not regard the Scheme as a revenue-raising scheme. It expects that, over time, the Scheme should raise less revenue as participants invest in decarbonisation and then pay less into the Scheme. When announcing the creation of the Scheme in 2020, the UK Government and the devolved governments said they would examine the option of a long-term decarbonisation funding stream, funded from a share of Scheme revenues. However, they have not pursued this option. In line with its usual practice of not hypothecating revenues for particular purposes, HM Treasury does not earmark the revenues generated from auctioning allowances for particular purposes, such as investment in, or subsidies to aid, decarbonisation.

12 We calculated the total revenue raised using the 'UK ETS auction income' from the statement of revenue in the BEIS and DESNZ annual report and accounts for 2021-2024; and data from the Intercontinental Exchange for 2024-2025. Figures may not sum due to rounding.

Updating the design of free allowances

2.12 In launching the Scheme in 2021, for reasons of practicality the Authority relied extensively on transposing across the existing rules of the EU ETS. This included a weakness in the controls over the allocation of free allowances, the Authority's main way of protecting firms at risk of carbon leakage (see paragraphs 1.11 to 1.12). Under these initial rules, all of an installation's annual free allowances were distributed up front, with no mechanism to claw back surplus allowances in the event an installation ceased trading in-year. An unintended consequence of these rules was that they incentivised firms to make windfall profits by closing a plant and selling unused allowances they had received for free. In 2022, mid-year plant closures left firms with around 650,000 free allowances in excess of actual emissions, a surplus worth approximately £49 million. The Authority told us that it does not have the means to investigate whether firms had sold these allowances for a cash profit or held onto them.

2.13 In December 2023, the Authority launched a consultation on changing its approach to free allowances, leading to legislation to close this loophole in February 2025. From 2025 onwards, operators will be required to surrender unused allocations for the remainder of the year when they close an installation. The EU implemented a similar reform a year earlier.

2.14 The free allocation methodology for aviation used historic data (for some airlines) on activity dating from 2010, and did not have a process for adjusting free allocation levels following changes in activity.[13] During the COVID-19 pandemic, airline activity reduced, and some airline operators received free allowances that represented more than their total emissions. Following research published in 2022, which found minimal risk of carbon leakage to the aviation sector under the then scope of the Scheme, the Authority decided to remove free allocation for the aviation sector from 2026. In the meantime, the Authority has decided that airline operators cannot receive more free allowances than their emissions. DESNZ said that it is unaware of any evidence that any additional aviation free allowances have been sold on the secondary market.

Carbon price

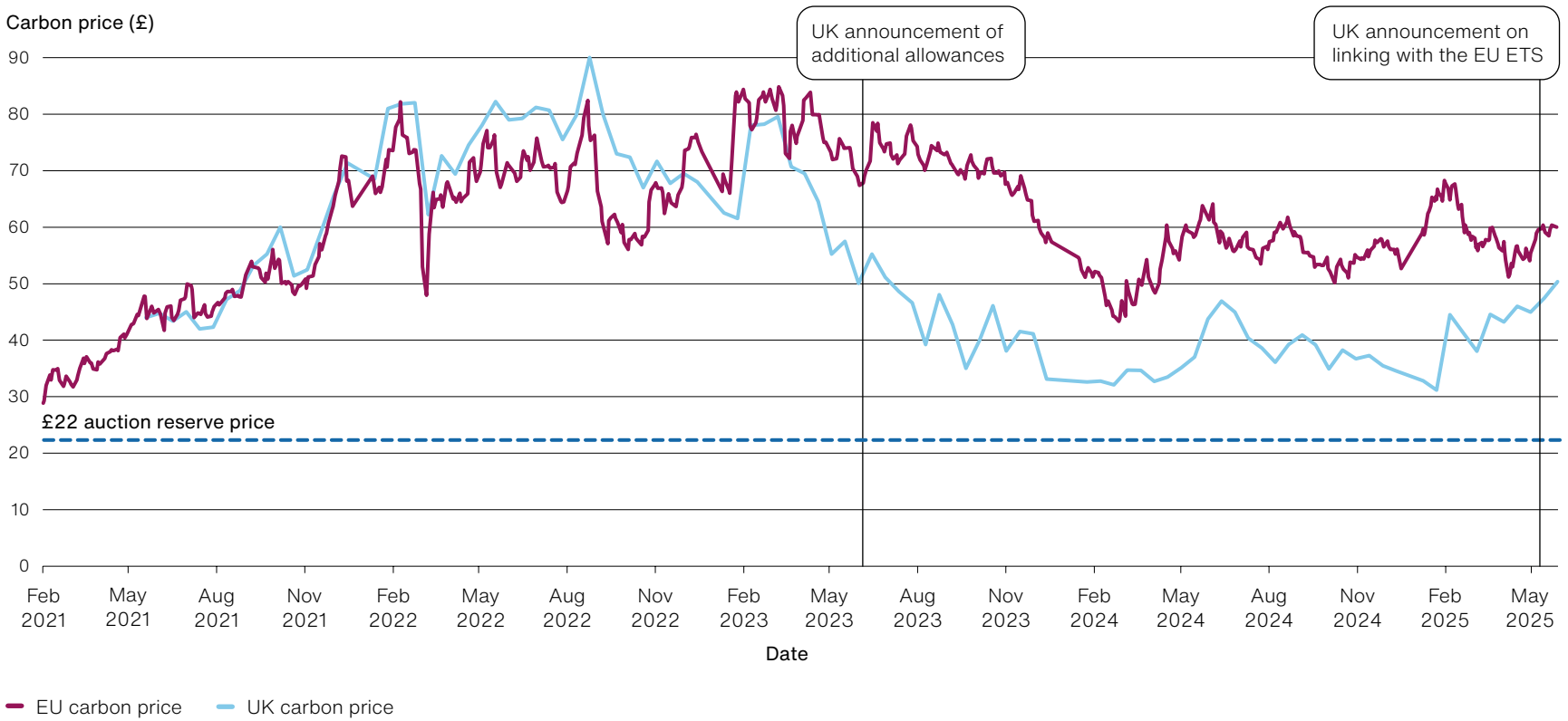
2.15 The price of a carbon allowance initially increased from 2021, before decreasing since 2023 (**Figure 11** overleaf). The price is set by the market and not the government. In 2022, the UK carbon price increased to a maximum of £90 per tonne, exceeding the maximum of £82 per tonne in the EU ETS.[14] However, in January 2023, the UK carbon price fell below the EU ETS and has remained lower since. At the end of May 2025, the UK carbon price was £50 per tonne and in the EU ETS it was £60 per tonne.

13 Aviation activity is calculated in terms of 'tonne-kilometres', where distance flown is multiplied by weight carried.
14 The carbon price cited here refers to the auction clearing price of emission allowances under the UK Emissions Trading Scheme and the EU Emissions Trading System.

Figure 11

EU carbon price compared to UK carbon price, 2021 to 2025

In 2021 and 2022, the average carbon price in the UK was higher than in the EU Emissions Trading System (EU ETS), and has been lower from 2023 to May 2025



Notes

1 We converted the EU carbon price from euros to pounds using the Bank of England's spot exchange rates.

2 We did not adjust these numbers for inflation.

3 The EU carbon price shown does not reflect the price for the aviation sector.

4 The EU carbon price represents the clearing price for auctions conducted under the Common Auction Platform 3, encompassing 25 EU member states, three European Economic Area European Free Trade Association states, and various EU funds.

5 We removed cancelled auctions from the dataset underpinning this figure.

6 The EU and UK carbon prices shown in this graph are based on auction data that are sometimes collected on different dates and at varying intervals. As a result, gaps exist in the data where no auction was held for one region. For visual continuity, the graph interpolates these missing points.

7 Where exchange rates were not available for particular days on the Bank of England's website, we used the exchange rate for the closest available day.

8 The auction reserve price is the minimum price for which allowances can be sold at UK auctions.

Source: National Audit Office analysis of publicly available European Energy Exchange and Intercontinental Exchange data

2.16 In November 2024, the CCC advised the government that the carbon price during the first half of 2024 was far lower than the cost of many decarbonisation measures in the traded sectors, providing an insufficient incentive for these measures to be deployed. The Authority is currently considering its response to this advice.

Decline in the lower carbon price

2.17 The Authority reviewed the decline in the carbon price in its 2023 evaluation of the Scheme. This suggested that the decline in the carbon price was caused initially by lack of confidence among participants that the Authority would adopt a net zero consistent cap for the Scheme, due to delays in publishing a response to a related consultation. The Authority considers how policy proposals could impact on supply and demand and the likely market reaction. It told us it had taken a more formal approach to market assessments in the last year.

2.18 The Authority's announcement in July 2023 of a new cap for the Scheme that aligned with the government's net zero trajectory did not lead to a rise in the price. The Authority decided in June 2023 to smooth the transition to a net zero cap and avoid a steep reduction in available allowances by releasing 53 million unallocated additional allowances from 2021 to 2023 to the market between 2024 and 2027. This might have resulted in making more allowances available than were needed, leading to a decrease in the price of an allowance. DESNZ's analysis on moving to a net zero consistent cap recognised that not bringing unallocated allowances to the market could put an upward pressure on price, as participants were expecting these allowances to be made available; and that participants would see this as a reduction in market supply. DESNZ told us that it was expecting high price volatility in a relatively new market for the Scheme; and that cancelling the build-up of unallocated allowances from 2021 could have caused a short-term shock to the carbon price. The Authority's position is that releasing these 53 million unallocated allowances for auction was not increasing emissions under the Scheme, given they were already included within the original cap when the Scheme launched in 2021.

2.19 Other factors can have an impact on the carbon price. For example, some stakeholders told us that the relatively small size of the market covered by the Scheme (compared to schemes in other countries) affects the carbon price, as it is more easily influenced by, for example, speculation on possible changes to the Scheme. Similarly, an external review of the secondary market by University College London in December 2023 found an increase in price volatility between May 2021 and September 2023, with 80% of volatility driven by new information.[15] Stable carbon prices can encourage investment in low-carbon technologies. In the 2023 evaluation, participants tended to dislike volatility as price uncertainty made business planning more difficult.

15 Institute for Sustainable Resources - University College London, *Evaluation of the UK Emissions Trading Scheme: Phase 1 report – Annex 4, Secondary market data analysis*, UK Government and the Devolved Governments, December 2023.

Costs of running the Scheme

2.20 In 2023-24, total staff costs to DESNZ arising from the Scheme were around £6.6 million.[16] This was approximately 2% of DESNZ's total administrative spend of £309 million that year.

2.21 In 2020, the government estimated the administrative costs to participants in the Scheme at £58 million (over the six years to 2024 inclusive, at 2019 prices); this was £4 million higher than the projected administrative costs to participants of remaining within the EU ETS. The higher costs were associated with familiarisation and registration with new systems. The Authority has plans to commission research into administrative costs, with fieldwork starting in autumn 2025.

16 Because this takes into account wider policy development roles, it is higher than the £2.1 million figure for Scheme administration in 2023-24 cited in DESNZ, *Annual Report and Accounts 2023-24*, HC 235, November 2024, p. 248.

Part Three

The Authority's management and oversight

3.1 In this part of the report we examine:

- the UK Emissions Trading Scheme Authority (the Authority's) governance arrangements;
- the Authority's approach to evaluating the Scheme's effectiveness; and
- possible next steps for the Scheme that the Authority will need to manage.

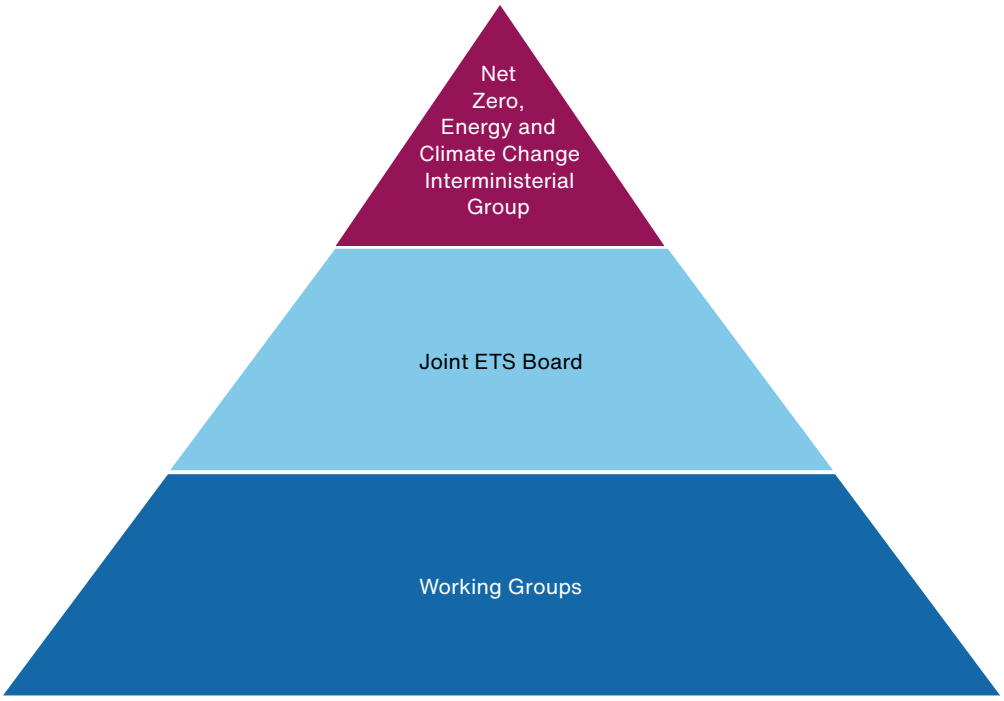
Governance arrangements

3.2 The Scheme is jointly administered by the UK Government, the Scottish Government, the Welsh Government, and the Northern Ireland Department of Agriculture, Environment and Rural Affairs (DAERA) through the UK ETS Authority. The Authority has taken on the role for the UK ETS, in setting policy design including the cap on emissions, that is fulfilled by the European Commission in respect of the EU Emissions Trading System.

3.3 The Authority's governance arrangements are not defined in legislation, but are set out in a Common Framework document published by the Department for Energy Security & Net Zero (DESNZ). It has a three-level governance structure for developing policy proposals and taking decisions on Scheme design at each stage, bringing together representatives from the four governments (**Figure 12** overleaf). This governance model is designed to ensure genuine four-way policy development: formally, all four governments are required to agree and legislate for changes to the Scheme. Officials we spoke to from the devolved governments stressed the importance of these arrangements for the development of policy that was informed by national and regional interests - for example, concerning the planned extension of the Scheme to shipping routes to Northern Ireland, and to ferries to the Highlands and Islands of Scotland.

Figure 12
The UK ETS Authority's governance structure

There are three levels of governance for the UK Emissions Trading Scheme (the Scheme)



Notes

1 The Net Zero, Energy and Climate Change Interministerial Group brings together relevant ministers from the UK Government, the Welsh Government, the Scottish Government and Northern Ireland Executive.

2 The Working Groups and Joint ETS Board are made up of officials and senior officials from the UK Government, the Welsh Government, the Scottish Government and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland.

3 There are five Working Groups, focusing on areas such as Operations and Communications, and Legal and Parliamentary Processes. In addition, the Department for Energy Security & Net Zero leads a Joint Project Group that reports on progress from the Working Groups for review and decision at the Joint ETS Board, which meets monthly.

Source: National Audit Office summary of UK ETS Authority documentation

Suspension of the Northern Ireland Assembly

3.4 The Authority responded successfully to challenges resulting from the suspension of the Northern Ireland Assembly and devolved institutions between February 2022 and February 2024, following a breakdown in power-sharing arrangements. This posed potentially serious problems for the functioning of the UK ETS Authority, as there were no ministers to provide political agreement to policy proposals on behalf of Northern Ireland.

- The Northern Ireland (Executive Formation etc) Act 2022 allowed senior officials to take decisions in the absence of ministers to exercise certain functions, provided these could be assessed to be in the public interest. DAERA therefore enabled the Authority to continue to function, with advice being prepared for senior officials supported by analysis.
- In 2023, the Authority needed to pass legislation in all four legislatures in order to meet its commitment to tighten the Scheme's cap to align it with the UK's net zero target, by January 2024. It identified some practical interim steps it could take to deliver policy outcomes during the period in which it was not possible for UK-wide affirmative legislation – which requires the active approval by legislators before being signed into law – to be laid in each national assembly or parliament.[17] The Authority subsequently took the necessary steps to pass legislation in all four legislatures in order to finalise delivery of its policy commitment.

Administrative resources and pace of policy development

3.5 Administration of the Scheme is provided by officials from the four governments who, while representing their own government, work jointly on behalf of the Authority on issues such as governance, policy development, and assurance. The overwhelming majority of these officials are provided by DESNZ, which devotes around 90 full-time equivalent posts to UK ETS administration and policy.

3.6 The volume of policy development work has presented challenges for the Authority. Alongside the Authority's resource pool, each devolved government needs its own staff to develop policy and advise ministers, whose unanimous support is required to enable the Authority to take decisions. The relative size of administrative resources can make it challenging for the Authority in terms of managing complex policy developments that can affect each nation in different ways. DESNZ has assisted the devolved governments by seconding staff to their UK ETS teams.

3.7 The Authority recognises the capacity of its administrative resources, along with the need for greater prioritisation to manage the pace of policy development, as significant issues. For example, it has identified bottlenecks in policy development, warned of the risk of optimism bias in setting deadlines, and called for greater realism in setting the timetable for decisions to be approved. Devolved governments have called for greater prioritisation within the Authority, to focus on what is most needed, and in what order to tackle it.

17 In Northern Ireland, agreement to the policy positions was secured having had consideration to the provisions of the Northern Ireland (Executive Formation etc) Act 2022 and a sitting Assembly.

3.8 The UK Government has noted the importance of its constructive relationships with the devolved governments, but is clear that current arrangements limit the efficiency of policy development, with the Scheme developing at the pace of the members with the smallest administrative resources. Devolved governments, meanwhile, have noted that DESNZ has sometimes experienced difficulties in aligning UK Government departments around a coherent position: combined with the interruption caused by the 2024 general election, for example, this led to a delay of several months in development of policy on extension of the Scheme to the maritime sector.

3.9 Stakeholders highlighted to us the theme of 'consultation fatigue' – too many consultations in too short a period. Specifically, stakeholders said the Authority took too long to make a decision on policies it was consulting on, and that it was opening fresh consultations on an area of policy before revealing its decision on a previous consultation on the same area. Cabinet Office guidance is that departments should aim to publish a response within 12 weeks of the end of a consultation period.[18] As of 1 May 2025, of the 12 consultations launched by the Authority and three launched by the UK Government since 2022, none had been responded to within this period. Of those where a response had been published, response times ranged from 15 to 54 weeks, while some were still awaiting a response, despite having closed in spring or summer 2024 (**Figure 13** on pages 40 and 41). The Authority acknowledges that a failure to meet set deadlines and public commitments risks damaging its reputation and confidence in the UK carbon market. It is looking to improve the timeliness and clarity of its communications, for instance by developing more regular, consolidated updates on progress across its range of policy developments.

Reviewing the Scheme's effectiveness

3.10 The Authority has been required by statute to carry out two reviews into the Scheme's performance (**Figure 14** on page 42). Under the legislation that established the Scheme, the Authority had to complete the first review by December 2023, with another review of the Scheme due for completion by December 2028. The Authority is carrying out the second phase of its evaluation programme when several years of energy and carbon data are available to assess the impact of the Scheme on carbon emissions over a longer time period; this will inform the 2028 review. The first phase of its evaluation provided an early indication of impacts and reviewed the operational processes; this informed the 2023 review. Both evaluation phases use a counterfactual to compare performance in the absence of an emissions trading scheme, or to firms that are not covered by the Scheme. The evaluations test the Scheme's contribution to outcomes against possible alternative explanations for impacts.

18 Cabinet Office, *Consultation principles: guidance,* 18 March 2018.

Understanding impact on investment in low-carbon technology

3.11 A key objective of the Scheme is to incentivise emission reductions through investment in low-carbon technologies. A higher carbon price can promote investment in such technologies, by making it cheaper to decarbonise than to pay the carbon price.

3.12 The Authority's completed and planned evaluations of the Scheme are collecting some evidence on the extent to which it incentivised investment in low-carbon technologies. Its 2023 evaluation identified some positive evidence on this:

- A total of 90% of survey respondents had a carbon reduction plan in place, which included a range of decarbonisation options, although almost a third of respondents reported uncertainties associated with carbon technologies.
- A total of 62% of installation operators reported that the cost of allowances influenced investment in decarbonisation, although only 20% of aviation operators said this.

3.13 The planned phase 2 evaluation (running from summer 2024 to early 2026) will examine data on private sector investment in low-carbon technologies. The Authority does not collect evidence on investment as routinely as it collects emissions data, but it does seek to use its policy consultations as an opportunity to understand how likely participants are to invest in decarbonisation technologies. Its 2023 consultation on free allocations, for example, explored an option not to allocate, or to reduce, free allowances to participants that are not actively engaging with decarbonisation efforts.

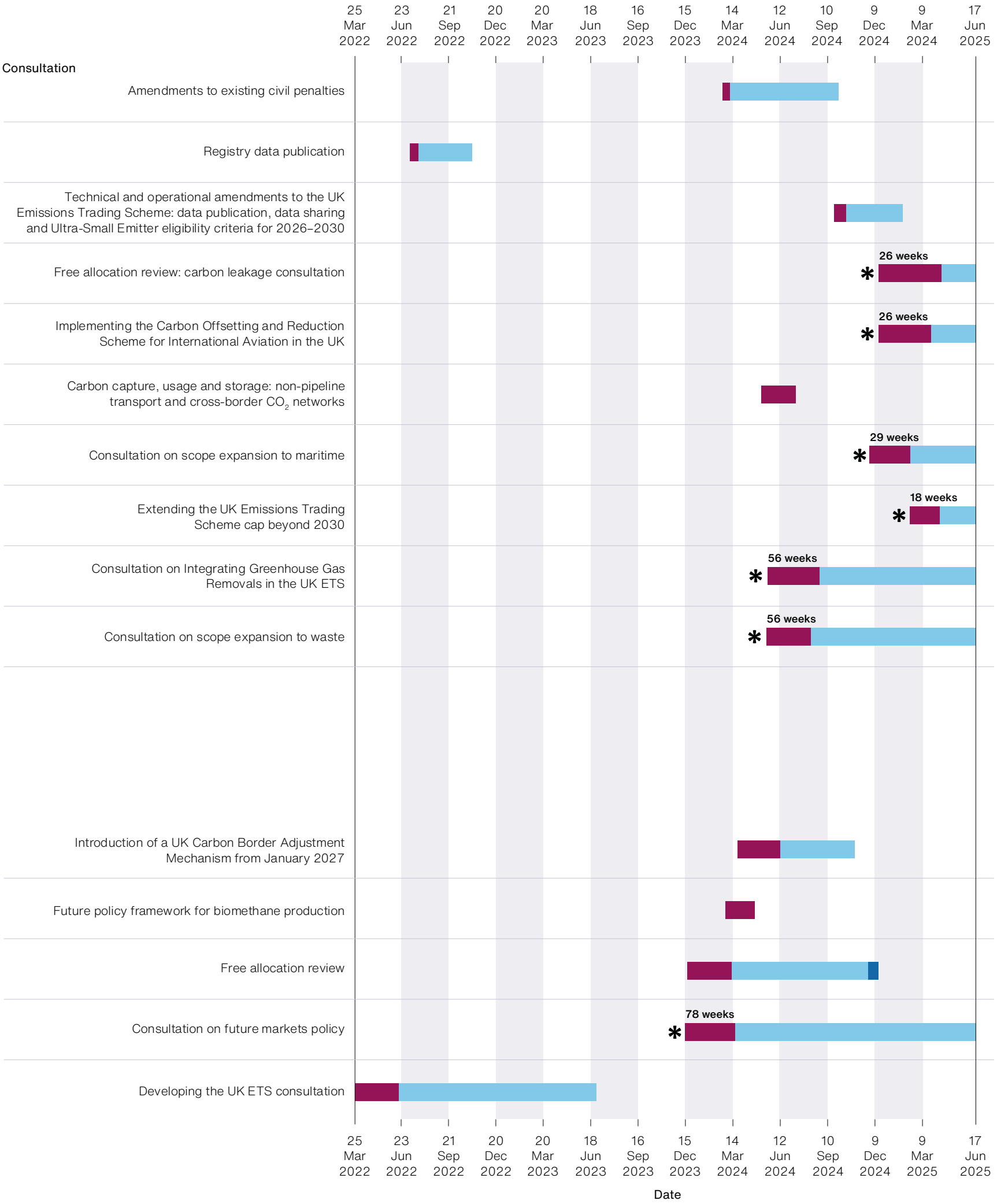
3.14 Uncertainty about future carbon reduction technologies was the most commonly-cited barrier to reducing emissions in the 2023 evaluation of the Scheme, with respondents highlighting that the necessary technical solutions for large-scale emissions reductions were at an early stage of development. Some industrial stakeholders we spoke to were concerned that, in the absence of available technologies and wider government-led infrastructure provision (for example, on hydrogen and carbon capture networks), they would have few options in the future to decarbonise. Energy UK suggested to us that driving future emissions reductions through carbon pricing is a complex interaction with a suite of other government policies. It called for a joined-up approach for how different policies interact with each other; and more certainty about how new technologies like battery storage, carbon capture or hydrogen power will work together. On a related theme, DESNZ told us that it had received feedback from stakeholders in the maritime sector, calling for a coherent decarbonisation strategy for the sector. Later in March 2025 the Department for Transport published a maritime decarbonisation strategy, setting out the role of the Scheme.[19]

19 Department for Transport, *Maritime decarbonisation strategy*, 25 March 2025.

Figure 13

UK Emissions Trading Scheme (the Scheme) consultations since 2022

The UK ETS Authority and UK Government have launched a number of lengthy and overlapping consultations



✱ Consultations that remain open, as at 17 June 2025

The length of time from the consultation opening to receiving responses

The length of time between the closing date of the consultation and the first response

The length of time between the first response and the second response

Notes

1 The number of weeks for open consultations show the total number of weeks the consultation was open for response and the total number of weeks that has passed without a response, as at 17 June 2025.

2 A 'consultation' in this figure could also refer to a call for evidence for a policy that may have implications for the Scheme.

Source: National Audit Office analysis of Department for Energy Security & Net Zero data

Figure 14
Evaluations of the UK Emissions Trading Scheme (the Scheme)

The UK ETS Authority is completing a two-phase evaluation to inform its reviews of the Scheme's performance

Evaluation phase	Time frame	Focus areas
2023 Scheme Review	Published in December 2023	• Overall performance of the Scheme in its initial years. • Stakeholder feedback and operational assessments.
Phase 1 Evaluation	Published in December 2023	• Transition from EU Emissions Trading System to the Scheme. • Effectiveness of the Scheme's delivery. • Operation of the Scheme's market. • Early findings on emissions reduction and carbon leakage.

Phase 2 Evaluation	Summer 2024 to early 2026	• Comprehensive assessment of long-term impacts, including:
		  ◦ analysis of emissions reductions; and
		  ◦ evaluation of economic impacts on industries.

2028 Scheme Review	Must be completed by 31 December 2028	• The operation of the Scheme (including assessing the extent to which the purpose of the Scheme is being achieved). • Make any recommendations that the UK ETS Authority considers appropriate as to the Scheme's future operation and purpose.

Source: National Audit Office analysis of UK ETS Authority documentation

3.15 In setting the revised net zero aligned cap in 2023, the Authority considered the impacts on emissions of other policies and economic factors across a number of scenarios. For example, it considered the impact of existing climate policies, plus those set out in the 2021 Spending Review, on emissions in the sectors covered by the Scheme. It also considered the impact of additional policies outlined in the 2021 Net Zero Strategy. While the Scheme does not specify the technologies that participants can use to decarbonise, the Authority works with industrial decarbonisation teams in government, such as for carbon capture, hydrogen, and sustainable aviation fuels, to understand relevant emerging decarbonisation policies.

Future developments

Carbon border adjustment mechanisms

3.16 In December 2023, the government announced the UK would introduce a carbon border adjustment mechanism (CBAM) from 2027 to address the issue of carbon leakage.[20] Currently, the Authority uses free allowances to protect industries at risk of carbon leakage. Through the CBAM, the government would aim to ensure equal treatment of domestic and imported carbon-intensive goods: where imported goods come from countries with lower carbon costs, a charge would be applied to equalise their carbon costs with those of domestic producers.[21] In July 2021, the European Commission announced its proposal to establish an EU CBAM.[22] This is coming into full effect on 1 January 2026, a year earlier than the UK's version.

3.17 Prior to the announcement in May 2025 on linking with the EU ETS (paragraph 3.25), a range of concerns had been raised by stakeholders, including the following:

- **Paying the difference in carbon costs to the EU:** If the fall in the UK carbon price relative to that in the EU (paragraph 2.15) were sustained after the EU CBAM comes into effect, concerns were raised this could result in carbon-intensive goods exported from the UK into the EU facing additional charges, designed to bring them into line with the EU carbon price. In 2024, analysis produced for a group of UK power companies suggested that this could result, between 2026 and 2030, in UK firms paying between £200 million and £800 million in carbon charges to the EU.[23]
- **Timing of the UK CBAM:** UK Steel expressed concern that during the one-year gap between the EU CBAM (coming into effect in 2026) and the UK CBAM (starting in 2027), steel from producers with lower carbon costs could be diverted to the UK market to avoid attracting EU carbon charges, with risks to the competitiveness of UK production.[24] Stakeholders we spoke to did not understand why the UK was introducing its CBAM a year later than the EU, when the EU had announced an intention to develop a CBAM in 2019.

20 HM Treasury and DESNZ, Factsheet: UK Carbon Border Adjustment Mechanism, 18 December 2023.
21 This charge will be levied either on the person responsible for the goods when they are released into free circulation if there are customs controls, or the person on whose behalf the goods are moved into the UK if there are no customs controls.
22 European Commission, Commission proposes new Carbon Border Adjustment Mechanism and revision of the Energy Taxation Directive, as part of the EU Green Deal, 14 July 2021 [accessed 3 June 2025].
23 Frontier Economics, *Linking UK and EU carbon markets*, 6 August 2024.
24 UK Steel, *UK CBAM: Creating a Level Playing Field With Robust Carbon Leakage Protection*, April 2024.

3.18 Within the UK government, responsibility for developing the CBAM is separate to responsibility for running the UK ETS. The Authority is clear that CBAM policy is separate to the Scheme and does not fall under its remit. HM Treasury is responsible for the development of the UK's CBAM, as CBAMs are treated as a tax. DESNZ leads on the interaction of the CBAM with the Scheme, while the Department for Business and Trade leads on the implications for different economic sectors. HM Treasury told us this was a highly complex new intervention and that it considered it was not possible to develop and implement it in time to match the timetable of the EU's CBAM. DESNZ told us that the impacts of the EU CBAM would be limited in its first year as the EU is planning for a gradual phase-in of its effects. It also considered that impacts would be limited following the EU's announcement (in February 2025) that it will restrict the application of its CBAM so that only the largest emitters will be affected.[25]

3.19 The Authority is considering adjusting free UK ETS allowances for sectors that will be included in the CBAM after 2027, such as cement and steel. A rationale for this is that it would reflect the reduced risk of carbon leakage in these sectors thanks to their inclusion in the CBAM. Some stakeholders we met expressed the concern that, as CBAMs were a novel development, their effectiveness in protecting against carbon leakage was untested. Respondents to the UK government's consultation on CBAMs urged the government to adopt a cautious approach to revising the allocation of free allowances after the UK CBAM is in operation.

3.20 CBAMs are not intended to address all carbon leakage risks. They are aimed at addressing 'import leakage', where domestic producers may face competition from imported goods whose producers face lower carbon costs. They are not aimed at addressing 'export leakage', where UK firms may be disadvantaged in competing in international markets with firms not subject to the same carbon costs. The Authority acknowledges that this is an issue and is considering what action it might need to take in response.

Linking with the EU ETS

3.21 In 2019, the UK Government and the devolved governments jointly stated that, following withdrawal from the EU ETS, their preferred option was to first establish a UK ETS and then link it back up with the EU System. Linking is the process of establishing equivalence across two markets, such that allowances under one system can be traded and used for compliance in another. In the UK's Trade and Cooperation Agreement with the EU, both parties committed to "cooperate on carbon pricing" and "give serious consideration to linking their respective carbon pricing systems".[26]

25 European Commission, C*ommission simplifies rules on sustainability and EU investments, delivering over €6 billion in administrative relief*, 26 February 2025.

26 Foreign, Commonwealth & Development Office, UK/EU and EAEC: Trade and Cooperation Agreement [TS No.8/2021], 30 April 2021.

3.22 Linking the Scheme with the EU ETS could bring several challenges. For example, shocks or developments in one system could be felt in the other partner's jurisdiction. However, if managed properly, linking could provide more – and potentially cheaper - reduction options for one system, by providing access to cheaper allowances from the other. This would create a common carbon price and level the playing field for companies across the linked markets. From the outset, the Authority designed the UK ETS to be compatible with a potential future link with the EU ETS.

3.23 While the average UK carbon price was higher than the EU price in 2021 and 2022, it was lower in 2023 and 2024 (Figure 11). DESNZ told us that some stakeholders were concerned that a link with the EU ETS would raise carbon prices. However, research to support the statutory review of the UK ETS in 2023 found that many participants were in favour of closer alignment with the EU ETS. Stakeholders we spoke to referred to advantages of linking, including increasing the size of the UK ETS market, mitigating any impacts and administrative burden introduced by the EU CBAM, and strengthening market stability overall.

3.24 In its Seventh Carbon Budget report, the Climate Change Committee suggested linking as a potential means of strengthening the Scheme. It stated that the UK Government needed to ensure that the carbon price was sufficient to incentivise decarbonisation, and that linking with the EU ETS could be one way of achieving that. In spring 2025 the government stated its position as being to explore all options to improve trade and investment as part of the UK's reset with the EU.

3.25 Following the UK-EU Summit on 19 May 2025, the government announced that it would work towards linking the Scheme with the EU ETS. The government stated that the UK's standalone carbon market was "smaller and less liquid" than the EU ETS, from which it withdrew following EU Exit, potentially resulting in less stable prices and reduced levels of investment in low-carbon technology.[27] It considered that linking could lead to a cheaper path to net zero, as more stable prices could support industry confidence to invest in new technologies, leading to faster decarbonisation. The government noted that not linking would mean that trade worth £7 billion in 2024 would be at risk from paying the EU CBAM. The government also set out its expectation that agreement with the EU to link emissions trading systems should create the conditions for mutual exemptions from their respective CBAMs. The UK Government is working with the European Union to establish a timeline for the next stage of negotiations with the European Commission.

27 Cabinet Office, *UK–EU Summit – Explainer*, 19 May 2025.

Appendix One

Our audit approach

Our scope

1 This report is intended to assist Parliamentary understanding and scrutiny of the UK Emissions Trading Scheme (the Scheme) and inform its development going forward. This report sets out:

- how the Scheme is designed;
- how the Scheme has worked in practice and performed since it was introduced in 2021; and
- the Department for Energy Security & Net Zero's (DESNZ) governance arrangements for the Scheme, including how it works with the other government departments and the devolved governments of Scotland, Wales, and Northern Ireland that together make up the UK ETS Authority; and next steps for the Scheme that it will need to manage.

Our evidence base

2 In examining these issues, we drew on a range of evidence that we analysed between March and May 2025.

Document review

3 We reviewed DESNZ documents on the Scheme. These included:

- governance documents such as papers of relevant boards, meeting minutes and related terms of reference;
- documents on Scheme performance such as emissions by sector in the Scheme, and on risk management such as a risk register for the Scheme;
- any papers that set out learnings from emissions trading schemes in other countries; and
- modelling and research documents such as modelling carried out for free allowance allocations.

4 In addition, we reviewed documents and reports from stakeholders to understand views on the design and impact of the Scheme. We also sought views on challenges with the Scheme and different approaches for the Scheme in the future.

Interviews

5 We conducted a series of 11 semi-structured interviews with officials at DESNZ. The interviews were structured by the key themes of our report: transitioning from the EU Emissions Trading System (EU ETS); carbon pricing; free allowances; governance arrangements; linking; monitoring, reporting and verification; and plans for the carbon border adjustment mechanism. We also spoke to HM Treasury about the role of the carbon border adjustment mechanism.

6 We spoke to officials in the Scottish Government, the Welsh Government and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland; and officials in the Environment Agency responsible for administering the Scheme. We also spoke to the Climate Change Committee – the government's independent advisor on achieving its climate ambitions.

7 We also undertook 13 semi-structured interviews with wider stakeholders. The purpose of these interviews was to seek views on the design and impact of the Scheme; their roles and responsibilities; Scheme management including challenges; and future approaches for the Scheme. The stakeholders we spoke to were:

- Frontier Economics;
- London School of Economics and Political Science;
- the International Emissions Trading Association;
- the UK Emissions Trading Group;
- UK Steel;
- Innovate UK;
- RWE Supply and Trading;
- energy and climate specialists at the House of Commons Library;
- Energy UK;
- the Green Alliance;
- Energy Systems Catapult;
- Cambridge Judge Business School; and
- University of Cambridge.

8 We also attended a UK Emissions Trading Group meeting on 13 May 2025 to gather wider stakeholder views on subject areas such as the transitioning from the EU ETS; carbon pricing; free allowances; governance arrangements; linking; monitoring, reporting and verification; and plans for the carbon border adjustment mechanism.

9 We conducted interviews virtually using Microsoft Teams. We took notes during each interview, but we did not record the interviews.

International comparisons

10 We used readily available, public data from the International Carbon Action Partnership (ICAP) to analyse emissions trading schemes in different countries. This resulted in a comparison of key characteristics across different schemes, including carbon price, percentage of emissions coverage and 2030 targets. ICAP presented the carbon price in US dollars for international comparability purposes.

Quantitative analysis

11 We analysed a range of publicly available data, as well as data provided by DESNZ, including:

- data on emissions and allowances to understand changes over time and levels of compliance with the Scheme;
- data on revenue collected from allowances sold in the Scheme;
- data on the carbon price to understand the movement over time and compared to the EU ETS carbon price; and
- data on other emissions trading schemes to compare against the ambition and size of the UK ETS.

12 We used the UK ETS registry to calculate the number of Scheme participants.

13 The carbon price can refer to either the auction price or the secondary market price. In this report, we focus on the auction price as it serves as the main mechanism for introducing allowances into the market. It does not differ significantly from the secondary market price.

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National Audit Office

Design and Production by NAO Communications Team
DP Ref: 016833-001

£10.00
ISBN: 978-1-78604-624-6