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Report on the Functioning of the UK Carbon Market for 2021 and 2022

A joint report from the UK ETS Authority

July 2023



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1. Introduction

The UK Emissions Trading Scheme (UK ETS) was established on 1st January 2021 by the UK ETS Authority (UK Government, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland, (DAERA)) to incentivise cost-effective carbon emissions reduction in industry, power, and aviation as part of our plans to deliver against our net zero commitments. The UK ETS replaced the UK's participation in the EU Emissions Trading System at the end of the transition period. The EU ETS Directive applied to the UK until 31 December 2020.

The UK was instrumental in developing the EU ETS and the introduction of a UK scheme provides continuity of emissions trading for UK businesses. Some operators receive free allocation to mitigate the risk of carbon leakage. Participants can also bid for UK ETS allowances on the UK auction platform or can acquire them via the secondary market.

This report on the functioning of the UK carbon market represents a synthesis of existing publicly available material regarding the performance of the UK carbon market. It is presented in accordance with the decision of the Authority to provide transparency wherever possible in the performance of the scheme. It follows the previous UK contribution to the annual European Commission report into the functioning of the European carbon market, which was submitted in accordance with the requirements of Articles 10(5) and 21(2) of Directive 2003/87/EC (the EU ETS Directive). Similarly, the objective of this report is to provide a snapshot of developments in the UK carbon market and covers the compliance year 2021 and 2022.

2. UK ETS Infrastructure

The UK ETS is established by The Greenhouse Gas Emissions Trading Scheme Order 2020 (the Order). The Order was subsequently amended by several statutory instruments to set up the scheme. These included provisions for the free allocation of allowances and the UK ETS Registry, as well as a series of technical and operational amendments to improve the running of the scheme. Regulations under the Finance Act 2020 established rules for auctioning allowances and mechanisms to support market stability.

UK Emissions Trading Registry

The UK Emissions Trading Registry (the “Registry”) tracks the number of allowances held in accounts and the transactions between accounts. Furthermore, the system records the emissions of stationary installations and aircraft operators, and the compliance with surrender obligations stemming from these emissions. As well as containing the accounts for installation and aircraft operators, the Registry contains trading accounts which are used for the holding and trading of UK allowances, but not for compliance activities.

The Registry is provided and maintained by the Authority, with the Registry Administrator in the UK (the Environment Agency) carrying out the day-to-day operations and acting as the point of contact for the holders and authorised representatives of Registry accounts.

3. UK ETS participants

The UK ETS applies to energy intensive industries, the power generation sector and the aviation sector. Activities in scope of the UK ETS are listed in Schedule 1 (aviation) and Schedule 2 (installations) of the Greenhouse Gas Emissions Trading Scheme Order 2020.

Installations overview

The UK ETS applies to regulated activities which result in greenhouse gas emissions, including combustion of fuels on a site where combustion units with a total rated thermal input exceeding 20MW are operated (except in installations where the primary purpose is the incineration of hazardous or municipal waste).

Hospitals and small emitters (HSEs) - there are simplified provisions for hospitals and installations with emissions lower than 25,000t CO₂e per annum, and the installation carrying out the activity of combustion has rated thermal capacity below 35MW. These installations are subject to emissions targets instead of having allowance surrender obligations. There is the option for HSEs to participate in the main scheme if they so wish.

There are five power generating stations in Northern Ireland that do not currently participate in the UK ETS as they remain as participants in the EU ETS, under the terms of the Northern Ireland Protocol, to protect the operation of the Single Electricity Market on the island of Ireland.

Aviation overview

In 2021 and 2022 the routes covered by the UK ETS included UK domestic flights, flights between the UK and Gibraltar, and flights departing the UK to European Economic Area States conducted by all aircraft operators, regardless of nationality.¹ As in the EU ETS, certain types of flights are exempt from regulation, e.g., humanitarian flights.

Scheme year 2021

Installations - In 2021, there were a total of 712 installations with operator holding accounts open within the Registry. Of these, 685 installations had obligations to

¹ From 2023 the UK ETS also covers flights from Switzerland

surrender allowances equal to their reportable emissions under the UK ETS for the 2021 Scheme Year.

Aviation - In 2021, there were 412 aircraft operator holding accounts within the Registry. Of these, 321 were held by aircraft operators with obligations to surrender allowances equal to their aviation emissions under the UK ETS for the 2021 Scheme Year.

There were 149 trading accounts in the Registry in 2021.

Scheme year 2022

Installations - In 2022, the number of installations with operator holding accounts increased to 715. Of these, 679 installations had obligations to surrender allowances.

Aviation - There were 463 aircraft operator holding accounts within the Registry. Of these, 401 were held by aircraft operators with obligations to surrender allowances equal to their aviation emissions under the UK ETS for the 2022 Scheme Year.

There were 152 trading accounts in the Registry in 2022.

4. Functioning of the Carbon Market

Supply: allowances put in circulation

From 1 January 2021, the cap for Phase 1 of the UK ETS was initially set at 5% below the UK's expected notional share of the EU ETS cap for Phase IV of the EU ETS (2021-2030). This equated to around 156 million allowances in 2021 (covering both stationary installations and aviation) and was set to reduce annually by 4.2 million allowances. The numbers for the cap from 2021 to 2030 are set out in legislation² but the UK ETS Authority has consulted on changes to the cap to make it net zero consistent³, and has committed to implement this change from 2024.

The UK ETS Authority initially issued 125,935,515 allowances in the 2021 calendar year: 42,107,015 allowances through free allocation⁴ and 83,828,500 allowances via auction.

For the calendar year 2022, the UK ETS Authority initially issued 35,607,540 allowances through free allocation⁵ and 81,338,500 allowances via auction.

The remaining allowances are unallocated within the Registry. Options for bringing these unallocated allowances to market are being considered as part of the "Developing the UK Emissions Trading Scheme (UK ETS)" consultation.

Free allocation

To reduce the risk of carbon leakage to UK businesses, operators in vulnerable sectors covered by the UK ETS can apply to be provided with a free allocation of allowances.

The table at <https://www.gov.uk/government/publications/uk-ets-allocation-table-for-operators-of-installations> contains a list of each installation's free allocation for the 2021 to 2025 allocation period. This includes amendments to operators' allowances due to an activity level change (ALC).

An ALC will determine whether an installation is receiving too much, or too little, free allocation based on their actual emissions data for the two previous years. When the level of operation at an installation either increases or decreases by more than 15%,

² [The Greenhouse Gas Emissions Trading Scheme Order 2020 No. 1265](#)

³ [Developing the UK ETS: initial UK ETS Authority response covering proposals to be implemented by 2023](#)

⁴ The total number of allowances given annually under free allocation is subject to subsequent amendment through activity level changes.

⁵ As above

the level of free allocation is adjusted, including retrospectively for prior scheme years during the phase (i.e. 2021-2025).

The list of free allocation entitlements that will be allocated to a person in relation to a Scheme Year in which they are an aircraft operator is found at

<https://www.gov.uk/government/publications/uk-ets-aviation-allocation-table>

Auctioning of allowances

Participants (operators, aircraft operators and traders) wishing to take part in UK ETS auctions must register as bidders with ICE Futures (the contracted auction platform). Delivery of any successful bid from the primary market, and trading of allowances on the secondary market can only take place within the Registry, which functions in a similar way to an online bank account. UK ETS auctions and secondary markets launched on 19 May 2021, with auctions of UKAs hosted on the ICE Futures Europe (ICE) platform. Auctions occurred fortnightly with a dip in auction volumes throughout August 2021 to take account of the holiday season⁶. During 2022, auction volumes were broadly similar up until the end of September, when volume was marginally increased until the end of the year.

⁶ This decrease in auction volumes over the summer period was removed for 2022.

Scheme year 2021

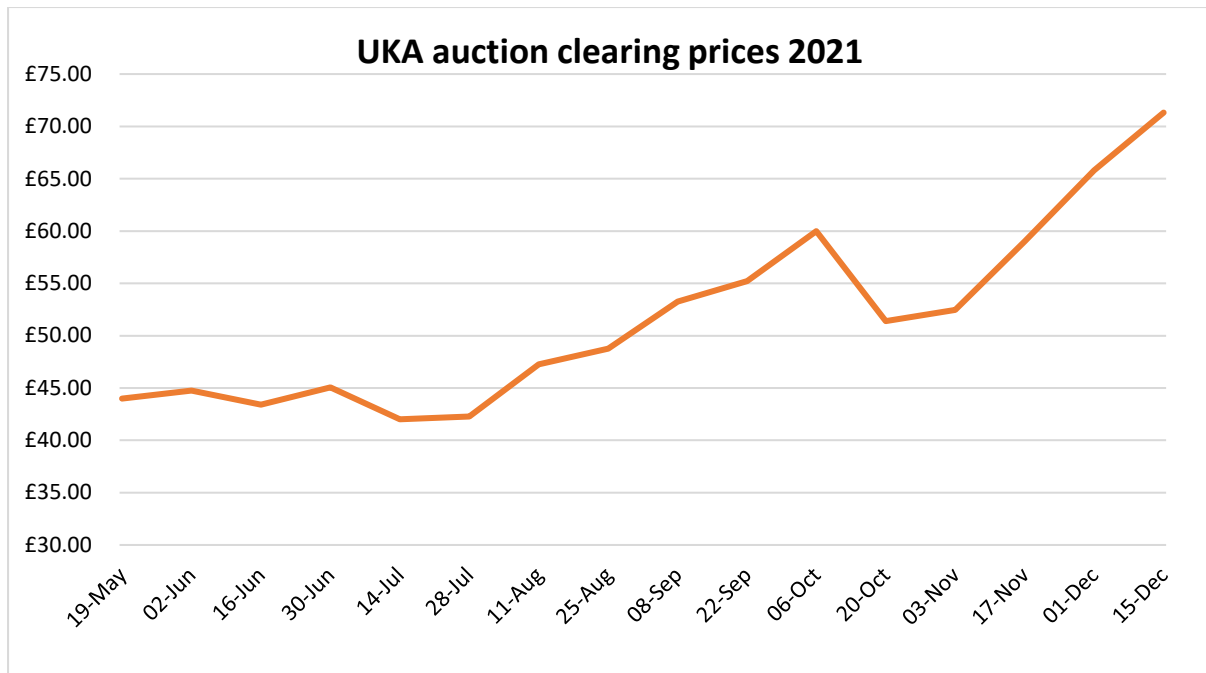
On 6 October 2021 the auction partially cleared, with 4,149,000 allowances being successfully sold at the auction clearing price of £60.00 as determined by ICE, but 1,038,500 allowances remained unsold. In line with the scheme legislation, these 1,038,500 allowances were reallocated across the following four auctions (all these auctions cleared fully).

The auction calendar was further revised following the addition of surplus aviation free allocation allowances on 19 October 2021. The revised number of allowances that were available at each auction are set out in the table below.

| Auction Date | Allowances Auctioned | Clearing Price | Total Revenue |
|---------------------|-----------------------------|-----------------------|----------------------|
| 19 May | 6,052,000 | £43.99 | £266,227,480 |
| 02 Jun | 6,052,000 | £44.75 | £270,827,000 |
| 16 Jun | 6,052,000 | £43.40 | £262,656,800 |
| 30 Jun | 6,052,000 | £45.05 | £272,642,600 |
| 14-Jul | 6,052,000 | £42.01 | £254,244,520 |
| 28-Jul | 6,052,000 | £42.29 | £255,939,080 |
| 11-Aug | 2,594,000 | £47.25 | £122,566,500 |
| 25-Aug | 2,594,000 | £48.75 | £126,457,500 |
| 08-Sep | 5,187,500 | £53.25 | £276,234,375 |
| 22-Sep | 5,187,500 | £55.21 | £286,401,875 |
| 06-Oct | 4,149,000 | £60.00 | £248,940,000 |
| 20-Oct | 5,447,500 | £51.39 | £279,947,025 |
| 03-Nov | 5,654,000 | £52.45 | £296,552,300 |
| 17-Nov | 5,654,500 | £59.00 | £333,615,500 |
| 01-Dec | 5,654,000 | £65.80 | £372,033,200 |
| 15-Dec | 5,394,500 | £71.32 | £384,735,740 |

The clearing price at auctions ranged between a low of £42.01 (14 July) and £71.32 (15 December). On the secondary market, the carbon price⁷ ranged between £42.40 (23 July) and £80.97 (16 December). The total number of bidders per auction fluctuated between 15 and 21 total bidders per auction.

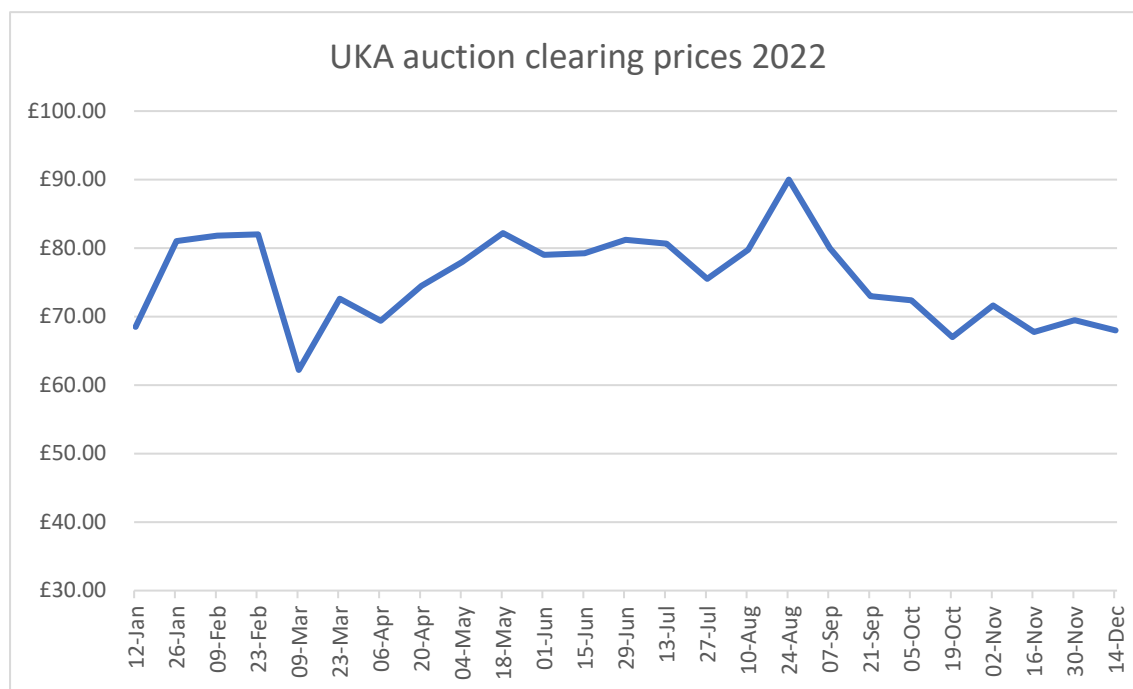
⁷ This is the end of day settlement price for the futures contract which is used in legislation for the Cost Containment Mechanism and elsewhere. It is the December 2021 futures contract from 19 May to 30 November and then the December 2022 futures contract from 1 to 31 December.



Scheme year 2022

| Auction Date | Allowances Auctioned | Clearing Price | Total Revenue |
|---------------------|-----------------------------|-----------------------|----------------------|
| 12 Jan | 3,221,500 | £68.50 | £220,672,750 |
| 26 Jan | 3,221,500 | £81.00 | £260,941,500 |
| 09 Feb | 3,221,500 | £81.81 | £263,550,915 |
| 23 Feb | 3,221,500 | £82.00 | £264,163,000 |
| 09 Mar | 3,221,500 | £62.21 | £200,409,515 |
| 23 Mar | 3,221,500 | £72.60 | £233,880,900 |
| 06 Apr | 3,221,500 | £69.37 | £223,475,455 |
| 20 Apr | 3,221,500 | £74.50 | £240,001,750 |
| 04 May | 3,221,500 | £78.00 | £251,277,000 |
| 18 May | 3,221,500 | £82.20 | £264,807,300 |
| 01 Jun | 3,221,500 | £79.00 | £254,498,500 |
| 15 Jun | 3,221,500 | £79.25 | £255,303,875 |
| 29 Jun | 3,221,500 | £81.21 | £261,618,015 |
| 13 July | 3,221,500 | £80.67 | £259,878,405 |
| 27 Jul | 3,221,500 | £75.50 | £243,223,250 |
| 10 Aug | 3,221,500 | £79.75 | £256,914,625 |
| 24 Aug | 3,221,500 | £90.00 | £289,935,000 |
| 07 Sep | 3,221,500 | £80.00 | £257,720,000 |
| 21 Sep | 3,336,500 | £73.00 | £243,564,500 |
| 05 Oct | 3,336,500 | £72.37 | £241,462,505 |
| 19 Oct | 3,336,000 | £67.00 | £223,512,000 |
| 02 Nov | 3,336,000 | £71.65 | £239,024,400 |
| 16 Nov | 3,335,500 | £67.74 | £225,946,770 |
| 30 Nov | 3,335,500 | £69.50 | £231,817,250 |
| 14 Dec | 3,335,500 | £68.00 | £226,814,000 |

All auctions in 2022 fully cleared. The clearing price at auctions ranged between a low of £62.21 (09 March) and £90.00 (24 August). On the secondary market, the carbon price ranged between £64.25 (09 March) and £92.80 (24 August). The total number of bidders per auction fluctuated between 15 and 22 total bidders per auction.



Cost Containment Mechanism

The UK ETS has a Cost Containment Mechanism (CCM) that is triggered if current prices are elevated for a sustained period relative to a historic average. The Authority must then assess the nature of the price movements in question and decide whether and to what extent to intervene by bringing increased supply to future auctions. This is a similar mechanism to the EU ETS' Article 29a, but the UK ETS CCM was more sensitive in the early years of the scheme.

Following a period of rising UKA prices in 2021, the CCM was triggered in December 2021. The Authority subsequently decided against intervening to increase allowance supply⁸.

The CCM then triggered again a month later in January 2022. The Authority again, decided against intervening to increase supply.⁹

<https://www.gov.uk/government/publications/taking-part-in-the-uk-emissions-trading-scheme-markets/taking-part-in-the-uk-emissions-trading-scheme-markets>

⁸ <https://www.gov.uk/government/publications/uk-emissions-trading-scheme-ets-authority-cost-containment-mechanism-decisions/uk-ets-authority-statement-cost-containment-mechanism-decision-december-2021>

⁹ <https://www.gov.uk/government/publications/uk-emissions-trading-scheme-ets-authority-cost-containment-mechanism-decisions/uk-ets-authority-statement-cost-containment-mechanism-decision-january-2022>

5. Market Oversight

The Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 sets out that both the carbon allowances of both the EU ETS and UK ETS (i.e. EUAs and UKAs) are “financial instruments”.¹⁰ This means that rules applicable to traditional financial markets, including carbon derivatives traded on leading platforms or over-the-counter (OTC), also apply to the spot segment of the secondary carbon market (transactions in emission allowances for immediate delivery in the secondary market). This segment is thus put on equal footing with the derivatives market in terms of transparency, investor protection and integrity. Oversight in the primary market for UK ETS allowances is covered by the Greenhouse Gas Emissions Trading Scheme Auctioning Regulations 2021 (SI 2021/484), other than issues related to market abuse.

Other pieces of financial markets legislation apply. For example, the UK Market Abuse Regulation (UK MAR)¹¹, which covers transactions and conduct involving emission allowances, on both primary and secondary markets. The Money Laundering, Terrorist Financing and Transfer of Funds (Information on the Payer) Regulations 2017 (SI 2017/692) also applies.

The FCA is responsible for monitoring the market under the existing market abuse rules, both with respect to the auctions and the secondary market. The FCA has the power to impose remedial action or sanctions when they decide that certain behaviours give rise to market abuse. To allow the FCA to carry out their market monitoring task, the financial markets legislation establishes several reporting and transparency requirements applicable to trading venues. This includes the requirement for trading venues and investment firms to communicate to the FCA detailed data on transactions in emission allowances or their derivatives, carried out on the trading venues and OTC. The reporting requirements also include an obligation for trading venues and investment firms to provide the FCA with position data as regards emission allowances as part of the transparency requirements, trade data and weekly aggregated position data are made public by trading venues and investment firms.

¹⁰ See para 11 of Schedule 2 to the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 (SI 2001/544), as amended by the Recognised Auction Platforms (Amendments and Miscellaneous Provisions) Regulations 2021 (S.I. 2021/494).

¹¹ [Regulation \(EU\) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse \(market abuse regulation\) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC as amended by the Market Abuse \(Amendment\) \(EU Exit\) Regulations 2019](#)

6. Surrender Compliance

The UK ETS regulators are responsible for monitoring compliance with the UK ETS Regulations and taking any necessary enforcement action. This includes conducting operational functions such as issuing and ensuring compliance with permits (for installations) and emissions monitoring plans (for aviation).

The regulators for each of the UK nations, controlled waters, territorial sea, and the UK sector of the continental shelf are listed in article 10 of The Greenhouse Gas Emissions Trading Scheme Order 2020.

| Jurisdiction | Regulator |
|--|--|
| England (and aircraft operators registered or resident outside the UK) | Environment Agency (EA) |
| Scotland | Scottish Environment Protection Agency (SEPA) |
| Wales | Natural Resources Wales (NRW) |
| Northern Ireland | Northern Ireland Environment Agency (NIEA) |
| Offshore oil and gas | Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) |

The Order provides for an excess emissions penalty of £100 (indexed to inflation) for each tonne of CO₂ emitted in a year for which no allowance has been surrendered by 30th April in the following year. We published a report based on the UK ETS Registry compliance status as of 1 May 2022¹² and 1 May 2023.

2021 scheme year

Installations –104.38 million allowances surrendered against reportable emissions of 104.38 million, representing an overall compliance rate of over 100% based on

¹² https://reports.view-emissions-trading-registry.service.gov.uk/ets-reports/section5/uk_ets_Standard_Report_Compliance_Surrenders_20220518095140130.xlsx

emissions recorded in the Registry, meaning some operators had over-surrendered¹³

- There were 685 installations within the scheme with a surrender obligation. Of these, 682 successfully met their obligations.
- 3 installations failed to surrender any allowances by the deadline.

Aviation – 3.475 million allowances surrendered against aviation emissions recorded in the Registry of 3.483 million, representing an overall compliance rate of 99.8%.

- There were 321 aircraft operators obligated to surrender by the 30 April deadline. Of these, 245 surrendered allowances equal to the aviation emissions recorded in the Registry.
- The 76 aircraft operators that failed to surrender represent less than 1% of the total recorded emission obligations for aviation.

2022 scheme year

Installations –102.82 million allowances surrendered against reportable emissions of 102.85 million, representing an overall compliance rate of 99.98%.

- There were 678 installations within the scheme with a surrender obligation. Of these, 676 successfully met their obligations.
- 2 installations failed to surrender any allowances by the deadline.

Aviation – 7.71 million allowances surrendered against aviation emissions of 7.77 million¹⁴, representing an overall compliance rate of 99.3%.

- There were 401 aircraft operators obligated to surrender by the 30 April deadline. Of these, 338 surrendered allowances equal to the aviation emissions recorded in the Registry.

¹³ The figures were a snap shot of what was in the registry just after the surrender deadline. Since that date the emissions figures may have been revised and the over or under surrender position corrected.

¹⁴ This figure includes 33 Operators who did not engage with the scheme at all and whose emissions were determined through Eurocontrol data.

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- The 63 aircraft operators that failed to surrender by the deadline, represent less than 1% of the total recorded emission obligations for aviation.

95% of Registry operator accounts were fully up to date with their UK ETS surrender obligations as of 1 May 2023 – this equates to over 99% of stationary installations and 89% of aircraft operators surrendering allowances at least equal to their cumulative recorded emissions. This was assisted by the targeted messaging of the regulators to help participants prepare for this deadline.

In 2022, emissions recorded in the second compliance year of the UK Emissions Trading Scheme (UK ETS) were 110,614,015 tonnes of carbon dioxide equivalent greenhouse gas (tCO₂e). This compares to 107,880,367 tCO₂e in 2021, a year-on-year increase of 2,733,648 tCO₂e. This change was largely driven by a substantial increase in UK ETS aviation emissions, consistent with a rebound in aviation activity following the COVID-19 pandemic.

Regulators have begun the process of enforcement. Regulators will publish the list of operators and aircraft operators who have been given a penalty as required by legislation.

Conclusions and Outlook

Looking towards the next decade, in 2022 the [Authority consulted on developing the UK ETS](#), so the UK can become the world's first net zero carbon cap and trade market. We have committed to implementing a net zero consistent cap for the scheme, reviewing Free Allocation policy, and expanding the use of emissions trading across the economy. The consultation sought views on our proposals to meet these commitments. It proposed options for a net zero consistent cap, changes to Free Allocation policy in the context of a net zero consistent cap and options for the expansion of the UK ETS to cover waste and maritime sectors.

The consultation also included further proposals which aim to increase the ambition of the scheme and improve its operational effectiveness. The consultation called for evidence on a number of potential future opportunities for scheme development, including the incorporation of greenhouse gas removal into the UK ETS, and on the monitoring, reporting and verification requirements necessary to address greenhouse gas emissions in the land use and agriculture sectors. We published the [government response](#) to the consultation on 3 July 2023.

This publication is available from: www.gov.uk/government/publications/functioning-of-the-uk-carbon-market

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