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2023 Review of the UK Emissions Trading Scheme

A joint report from the UK Government, the Scottish Government, the Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland

December 2023

Any enquiries regarding this publication should be sent to us at:
emissions.trading@energysecurity.gov.uk

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1. Executive Summary

This report reviews the UK Emissions Trading Scheme (UK ETS) in its first years of operation, and fulfils the legislative requirement set out in the Greenhouse Gas Emissions Trading Scheme Order 2020 (article 17)[1].

The review takes stock following the successful launch of the UK ETS on 1 January 2021 and follows a comprehensive programme of work to develop the scheme, including the key milestone of aligning the scheme with net zero.

Based on the evidence collected so far, the UK ETS Authority (hereafter 'the Authority' made up of the UK Government, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland) concludes that the UK ETS has been achieving its purpose so far and continues to be an integral part of the transition to net zero. The Authority will be better able to assess and understand the scheme's impacts and contribution towards long-term decarbonisation after a longer period of operation, through further planned evaluation.

The review indicates that the UK ETS is mostly operating well, with stakeholder insights taken on board to implement scheme improvements. The review of the scheme's operations draws on the previously published Developing the UK Emissions Trading Scheme[2] consultation and Authority Response, Functioning of the UK carbon market[3] report, data published on Hospitals and Small Emitters (HSEs)[4] and findings from the UK ETS Evaluation Phase 1 report[5]. These provide insights into the functioning of different elements of the scheme and have informed the future programme of policy and operational improvement work that this review sets out.

Considering the scheme's good performance to date, this review recommends future work on specific areas, and highlights commitments that the Authority has made to progress with the next stage of scheme development, for example through future consultations. The Authority's recommendations for the future operation and purpose of the scheme are:

- Pursue plans for scope expansion.
- Continue policy development of the existing scheme.
- Implement further operational improvements.
- Progress with the second phase of scheme evaluation.

The Authority will continue to take a collaborative approach to decision-making and implementation, and we look forward to hearing feedback from all our stakeholders on upcoming proposals. The Authority aims to continue to be clear on the impact of changes,

[1] https://www.legislation.gov.uk/uksi/2020/1265/article/17/made
[2] https://www.gov.uk/government/consultations/developing-the-uk-emissions-trading-scheme-uk-ets (consultation published March 2022)
[3] https://www.gov.uk/government/publications/functioning-of-the-uk-carbon-market (published July 2023)
[4] https://www.gov.uk/government/publications/emissions-and-targets-for-installations-registered-as-hospitals-or-small-emitters (published November 2023)
[5] https://www.gov.uk/government/publications/evaluation-of-the-uk-emissions-trading-scheme-phase-1(published December 2023)

transparent on how decisions have been reached and committed to meeting scheme objectives and goals.

The next formal scheme review point will be before 31 December 2028.

2. Introduction

This review draws on a number of pieces of work undertaken on the UK Emissions Trading Scheme (UK ETS), which consider its operation and an assessment of the extent to which its purpose is being achieved. This review also notes future plans for the scheme as it develops beyond its first few years of operation. This report fulfils the legislative requirement set out in the Greenhouse Gas Emissions Trading Scheme Order 2020 (article 17) for a review of the operation of the UK ETS by 31 December 2023, with another review of the scheme due to be completed by 31 December 2028.

> **Article 17 of The Greenhouse Gas Emissions Trading Scheme Order 2020:**
>
> **Review of UK ETS**
>
> 17.(1) The UK ETS Authority must before each review date—
>
> (a) carry out a review of the operation of the UK ETS;
>
> (b) publish a report setting out the conclusions of the review.
>
> (2) The review dates are 31st December 2023 and 31st December 2028.
>
> (3) The report must in each case—
>
> (a) review the operation of the UK ETS (including assessing the extent to which the purpose of the UK ETS is being achieved);
>
> (b) make any recommendations that the UK ETS Authority considers appropriate as to the future operation and purpose of the UK ETS.

Since the scheme's launch, the Authority – made up of the UK Government, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland – has embarked on an ambitious programme of work to review and improve the UK ETS, including policy development, technical and operational improvements, as well as beginning monitoring and evaluation. This has taken the UK ETS from a successful launch, to effective establishment and through to the Authority's commitment to align the scheme with net zero[6]. This review point allows the Authority to take stock of the significant work already delivered and to report on our plans to continue developing the scheme in the future.

[6] See '25 July 2023 – Note on implementing legislation' for the approach taken to this for 2024 https://www.gov.uk/government/consultations/developing-the-uk-emissions-trading-scheme-uk-ets

The Authority monitors the UK ETS closely to ensure the continued effective operation of the scheme and functioning of the market. The Authority aims to provide certainty to businesses and support this market-based approach to reducing emissions and incentivising participants to find the most cost-effective solutions to decarbonise.

We are committed to continuing engagement with participants through the planned consultations on scheme development. We will work collaboratively with stakeholders to make sure that any improvements made are appropriately timed, deliver long-term clarity, maintain strength of climate ambition and, incentivise investment and targeted carbon leakage mitigation in the transition to net zero.

Once the scheme was launched and established, the programme of work began to draft proposals for the Developing the UK Emissions Trading Scheme (ETS)[7] consultation. This consultation was published in March 2022, with the Authority's main response published in July 2023. This assessed certain aspects of the scheme and set out improvements through the Authority Response to the consultation. Some of these improvements have already been implemented, for example legislating to reduce the auction share in line with a net zero consistent cap, and for technical changes to Free Allocation such as updating the definitions of qualifying Combined Heat and Power (CHP) electricity. Other key aspects of this Authority Response included commitments for future policy development, such as the expansion of the scheme to the domestic maritime sector, which we intend to implement by 2026.

The Authority has also looked at scheme operation. This work demonstrates that the scheme is broadly working well, whilst also highlighting some specific areas for improvement. Relevant publications include the Functioning of the UK carbon market[8] report and the UK ETS Evaluation Phase 1 report[9], the findings of which are summarised in this report. Recommendations range from minor updates to individual processes to insights and feedback on the direction and purpose of the scheme.

The Authority has also looked ahead, publishing findings today in the long-term pathway for the UK ETS report[10], and the next stage of the UK ETS policy consultations to develop the scheme: the second phase of the Free Allocation Review[11] and proposals for future markets policy[12]. These proposals have considered the scheme's current operations and policy purpose to determine the best trajectory for the coming years as it continues to evolve to better meet its aims. These packages of work will continue, with future commitments to publish consultations, for example on the intention to include engineered Greenhouse Gas Removals (GGRs) in the UK ETS. There is also a plan in place to continue scheme evaluation work, with the UK ETS Evaluation Phase 2 report publication planned by the end of 2026, which will focus

[7] https://www.gov.uk/government/consultations/developing-the-uk-emissions-trading-scheme-uk-ets (consultation published March 2022)
[8] https://www.gov.uk/government/publications/functioning-of-the-uk-carbon-market (published July 2023)
[9] https://www.gov.uk/government/publications/evaluation-of-the-uk-emissions-trading-scheme-phase-1
[10] https://www.gov.uk/government/publications/uk-emissions-trading-scheme-long-term-pathway
[11] https://www.gov.uk/government/consultations/uk-emissions-trading-scheme-free-allocation-review
[12] https://www.gov.uk/government/consultations/uk-emissions-trading-scheme-future-markets-policy

further on the impact that the scheme has had on emissions reduction and carbon leakage mitigation.

This review considers a range of sources across the Authority’s programme of work which collectively demonstrate a strong, functional scheme that has established itself successfully since January 2021. The scheme is playing a key role in delivering the UK’s net zero commitments, whilst having scope for improvement in some identified areas. The breadth and scope of work, both delivered and planned, demonstrate the Authority’s commitment to scheme improvement and an investment in understanding its impacts now and into the future to ensure it delivers its primary purpose of supporting decarbonisation in a cost-effective way.

3. Developing the UK Emissions Trading Scheme (UK ETS) consultation

Once the UK ETS was established in January 2021, the Authority started work to develop the scheme. This followed commitments made ahead of the scheme's launch and led to the publication of the Developing the UK ETS consultation[13] in June 2022.

This consultation proposed options to:

- Better meet the scheme's goals (e.g. proposing to align the scheme with net zero).
- Improve on its overall ambition and scope (e.g. the expansion of the UK ETS to cover waste and maritime sectors).
- Increase its operational effectiveness (e.g. through technical changes to Free Allocation).

The significant scope and breadth of topics covered demonstrated the holistic approach to reviewing and improving the scheme shown by the Authority in the initial period after the scheme was established. External perspectives continue to play a pivotal role in how the Authority reviews the scheme. Through this consultation, the Authority spoke to and received responses from over 300 organisations, representing a wide range of industry stakeholders from the energy, industrial and aviation sectors, as well as Non-Government Organisations (NGOs), academia, advocacy groups and the Climate Change Committee (CCC). Evidence collected informed the policy decisions made in the Authority Response to this consultation, which was published in July 2023 (with an initial response published in August 2022[14]) and has continued to support future decision-making. A summary of the key proposals and responses is provided below.

Developing the structure and ambition of the current scheme to better meet its goals

Net zero sits at the heart of the scheme's goals, and as such proposals to align the UK ETS with net zero were a key part of the consultation. From 2024, the UK ETS auction share will be adjusted to align the scheme to a net zero trajectory, with an ambitious 30% reduction in the number of available allowances by 2030. The Authority will smooth this transition by redistributing allowances from existing reserve pots between 2024 and 2027. The Authority

[13] See 'Developing the UK ETS: main response' (3 July 2023) https://www.gov.uk/government/consultations/developing-the-uk-emissions-trading-scheme-uk-ets
[14] See 'Developing the UK ETS: initial UK ETS Authority response covering proposals to be implemented by 2023' (31 August 2022) https://www.gov.uk/government/consultations/developing-the-uk-emissions-trading-scheme-uk-ets

proposed a range of values for net zero alignment in the consultation and asked respondents to describe the effects of setting the cap at the bottom or top of this range. Stakeholder responses to the proposals were varied: of 114 responses, 36% agreed with the Authority's proposed range, 44% disagreed, and 20% did not answer. Responses displayed a nuanced set of concerns from diverse perspectives, which were taken on board. In response, the Authority decided to reset the number of available allowances in the UK ETS for 2021-2030 at the top of the net zero consistent range, meaning a 30% reduction in available allowances by the end of the phase.

To complement the reduction and further address the concerns of respondents, the Authority Response also set out how we will smooth the transition to the net zero consistent trajectory through the release of 53.5 million additional allowances from the reserve pots to the market between 2024-2027, to ensure that whilst there will be a reduction each year, there is no sudden drop in allowance supply between 2023 and 2024 and reducing the risk of an upwards price shock. Current levels of free allocation are also guaranteed until 2026, subject to Activity Level Changes, which will support industry through the step change in the overall available number. These decisions balanced the need to meet ambitious climate targets across the UK and Devolved Governments with concerns raised by parts of the industry over, for example, the availability of technologies for industrial decarbonisation over this period.

The Authority also committed to further consultation for future changes on topics such as free allocation methodology and markets policy proposals. The future programme of work is outlined in Chapter 7 of this review.

Developing and expanding the future scope of the scheme

The consultation proposed:

- The inclusion of the domestic maritime sector (based on vessel activity) in the scope of the UK ETS, to be implemented from 2026.
- The inclusion of the waste incineration (including energy from waste) sector in the scope of the UK ETS.
- The inclusion of emissions from CO_2 venting by the upstream oil and gas sector in the scope of the UK ETS.
- The expansion the UK ETS to recognise non-pipeline transport (NPT) of CO_2 such as shipping, rail and road for Carbon Capture and Storage when CO_2 has been permanently stored in a geological storage site.

Including additional sectors in the scheme and capping a greater proportion of emissions across the UK will further contribute to delivering net zero targets at lowest cost for industry. The cap will be adjusted to take account of new sectors being added in a way that remains consistent with delivering net zero. The Authority Response recognised the complexity of the proposals, particularly on topics such as non-compliance and thresholds of inclusion, which will be the subject of future policy development proposals. Waste incineration will be included in scope in 2028 (preceded by a two-year phasing-in period from 2026-2028). This phasing-in period recognises the concerns raised by respondents regarding the proposed timelines, such as the time required for them to understand the UK ETS and install infrastructure and systems to be compliant.

After assessment of the scheme's potential, the Authority also concluded that the UK ETS is an appropriate long-term market for engineered GGRs. This will be subject to further consultation, a robust Monitoring Reporting and Verification (MRV) regime being in place and management of wider impacts. This represents a significant opportunity to promote investment in key technologies required for net zero, and a positive view that the scheme will be a good vehicle for this.

More detail on Authority commitments to further consultations on scope expansion is covered in Chapter 7 of this review.

Developing the operation of the current scheme

Responses to the consultation highlighted some areas where improvements could be made quickly and effectively without fundamental changes to the scheme. Several of these have already been implemented, whilst others are in progress. For example, the Authority sought views on technical amendments to the electricity generator definition and FA eligibility of CHP plants, after listening to concerns raised by participants, such as those in the food and drink sector. The response to the proposals was clear: in both cases over 80% of respondents were in favour of changing the existing rules, highlighting their own concerns and personal experiences. The Authority listened to these concerns, and as such has implemented new legislation to amend the electricity generator definition and to amend free allocation eligibility of high-quality CHPs, which will come into force on 1 January 2024. These will allow operators to provide evidence to their respective regulators and have their classifications updated for the second allocation period. Implementing recommendations such as these will bring significant benefit to operators, and the ability to translate feedback into action demonstrates the effective policy development and implementation processes underlying the scheme governance.

The decisions made in the Authority Response demonstrate our commitment to the goals of the scheme through recommendations to improve its operations and better achieve its aim. These provide long-term clarity, strength of climate ambition, and targeted support for businesses in the transition to net zero. The structural changes set out in this response, for example aligning the scheme with net zero, support national commitments made across the UK:

- The UK Government's legally binding Carbon Budgets and legal requirement to have reduced the UK's greenhouse gas (GHG) emissions by 100% from 1990 levels by 2050. In addition, in its Nationally Determined Contribution (NDC) the UK has committed to reducing economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels.

- Scottish Government's annual and interim emissions reduction targets (including a 75% reduction by 2030, relative to the 1990 baseline) to meet net zero emissions by 2045.
- Welsh Government's path to net zero, including interim targets for 2030 (63% reduction) and 2040 (89% reduction).
- The Northern Ireland Executive's target for at least 100% reduction in emissions from 1990 levels by 2050 and interim target for at least 48% reduction in net emissions by 2030.

The Authority's decision to align the scheme with net zero provides a clear signal to industry participants to decarbonise at the pace and scale required to keep emissions over the phase at or below the level of available allowances.

4. Summary of operational reports

a) Functioning of the UK carbon market report

To provide transparency on the running of the UK ETS and as part of its continued commitment to review and improve the scheme, the Authority published The Functioning of the UK carbon market report[15] in 2023 to synthesise the publicly available information on the performance of the UK carbon market in the years 2021 and 2022. The report outlines the successful running of the scheme in its first 2 years, pointing to the adequate supply of allowances, successful auctioning, market oversight and high-level compliance data.

The number of allowances surrendered in the years 2021 and 2022, using figures from the UK Emissions Trading Registry[17], on which operators track their allowances, is set out in Table 1, below.

Table 1: Compliance Rates Scheme years 2021 and 2022.

	Operators obliged to surrender allowances	Operators meeting surrendering obligations	Allowances surrendered (million)	Reportable emissions (million tonnes)	Compliance Rate
2021 Installations	685	682	104.38	104.38	Over 100%[16]
2021 Aviation	321	245	3.475	3.483	99.8%
2022 Installations	678	676	102.82	102.85	99.98%
2022 Aviation	401	338	7.71	7.77	99.3%

Whilst compliance is lower for aviation, the aircraft operators failing to surrender by the deadline represent less than 1% of the total recorded aviation emission obligations. High levels of engagement are a result of the strong relationships which have been established between the Authority, regulators and operators within the scheme. Clear guidance provided by the UK ETS Authority and regulators has enabled operators to successfully fulfil their obligations.

[15] https://www.gov.uk/government/publications/functioning-of-the-uk-carbon-market
[16] Compliance rate over 100% due to over-surrender of allowances by certain operators; this data was collected just after the surrender deadline, after which the emissions figures and over or under surrender position may have been corrected. In cases of over-surrender, this can be used against surrender obligations in the following year.
[17] https://view-emissions-trading-registry.service.gov.uk/

These levels suggest that the scheme is running broadly successfully, however, regulators will continue to work with operators with the aim of full scheme compliance.

The UK ETS fortnightly auctions and UK allowances (UKA) derivatives market allow operators, aircraft operators and traders to successfully buy allowances. This has been hosted on the Intercontinental Exchange (ICE) platform since 19 May 2021. Almost all auctions have cleared, and all allowances released for auction have been sold. When a partially cleared auction occurred in October 2021 (meaning that there remained unsold allowances), in line with the scheme legislation, the remaining 1,038,500 allowances were evenly distributed across the following four auctions. Auctioning of allowances helped to support the liquidity of the UK ETS (the ease with which allowances can be bought or sold without affecting their market price). It also enabled operators to build allowance positions ahead of the compliance deadline of 30 April 2022[18]. The sale of all allowances released for auction indicates there is sufficient demand for allowances to match the supply.

The Cost Containment Mechanism (CCM) provides a safety measure to allow the Authority to intervene if secondary market prices are significantly elevated for a sustained period.[19] The CCM was triggered in December 2021 and January 2022 but on both occasions, the Authority decided against intervention[20] and continued to monitor the market closely.

Both the CCM trigger and decision-making and the partially cleared auction demonstrate a robustness in processes underpinning the carbon market. The Authority will continue to monitor market functioning closely, as an important part of the scheme's operations.

b) Hospitals and Small Emitters (HSEs) targets and emissions data

The HSE scheme is designed to relieve some of the compliance burden of the UK ETS felt by specific installations. Under the HSE scheme, installations have annual emissions targets assigned to them by the regulator instead of having to surrender allowances.

An operator may be eligible for HSE status if the following conditions are met:

Eligibility for operators providing services to hospitals:

- At least 85% of heat produced by that installation is used by or supplied to one or more hospitals.

Eligibility for small emitters:

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[18] https://www.gov.uk/government/publications/uk-emissions-trading-scheme-markets/uk-emissions-trading-scheme-markets

[19] The CCM is triggered if the average price for one allowance on the secondary futures markets is more than an amount equal to three times the average price in the preceding two-year period for six consecutive months.

[20] 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

- An installation emits less than 25,000 tonnes of carbon dioxide equivalent (CO_2e) each year in the relevant period.
- An installation has a total rated thermal input of less than 35 megawatts (MW) in the relevant period (if applicable)[21].

Targets for HSE operators are generated by taking a baseline year and then decreasing the allowable emissions every year at the same rate as the UK ETS cap.

In accordance with the decision of the Authority to provide transparency wherever possible, the emissions and targets data of all Hospital and Small Emitters participating in the UK ETS was published[22]. This adheres to the requirements of paragraph 22A(2) of Schedule 7 to the Greenhouse Gas Emissions Trading Scheme Order 2020[23] which outlined the Authority's obligation to publish annually the emission targets and reportable emissions as soon as practically possible after receiving them.

The HSE data offers us a valuable insight into the emissions of HSEs, compared with their emissions targets. 240 HSEs had open accounts in 2022 and emissions decreased for 161 of these operators, when compared with 2021 emissions. 8 installations left the scheme between 2021 and 2022 due to ceasing operations. 55 operators emitted less than their 2021 emission targets and 67 operators emitted less than their 2022 emission targets. This increase in the number of HSEs achieving their targets is positive. However, the Authority recognises these targets are challenging, and it continues to assess how it can best support more HSEs to meet their targets and decarbonise.

This report will continue to be updated in future years as further data is collected, demonstrating the Authority's continued commitment to collecting data on the functioning of the scheme, and providing transparency to our stakeholders on the scheme's operations.

[21] https://www.gov.uk/guidance/opt-out-of-the-uk-ets-if-your-installation-is-a-hospital-or-small-emitter
[22] https://www.gov.uk/government/publications/emissions-and-targets-for-installations-registered-as-hospitals-or-small-emitters
[23] https://www.legislation.gov.uk/uksi/2020/1265/schedule/7/paragraph/22A

5. UK ETS Evaluation: Phase 1 report summary

The Authority is committed to seeking the views of stakeholders who are intrinsic to the successful running of the scheme. To support the development, implementation, and improvement of policies, UK ETS Evaluation Phase 1 report[24] has been published. In keeping with best practice, the evaluation will be a 2-phase process over the next 3 years. The Authority commissioned CAG Consultants to undertake the evaluation of the UK ETS, in partnership with Winning Moves, University College London and Cambridge Econometrics. Phase 1 work ran throughout 2023 and included a survey, in-depth interviews, an academic literature review and analysis of UK ETS market data. This report provides valuable insight for the Authority and is an important source for this review.

A summary of some key findings is below, divided into four key areas of focus analysed within the report: the transition from the EU ETS, processes, markets, and early decarbonisation outcomes.

Transition from EU ETS to UK ETS

The report offers a useful insight into how a variety of stakeholders view the establishment of the UK ETS. Overall, the quantitative analysis highlights that the transition from the EU ETS was viewed as successful by 60% of operator respondents who appreciated the continuity from the EU ETS scheme and the smooth transition for businesses. The transition was consistently reported as fairly seamless. The analysis also reveals some concerns affecting scheme participants. For example, the December 2020 timing of the decision to implement the UK ETS created challenges for some high-emitter operators who wish to buy allowances up to 2 years in advance and were therefore subject to business uncertainty. Qualitative feedback will continue to be assessed to inform future operational and policy decisions.

Processes

The process section of the report gathered views on compliance processes, based on thematic analysis of qualitative research with operators, regulators, verifiers and other stakeholders as well as analysis of responses to the operator survey. The evidence indicates that whilst some areas are working well, there are some suggested improvements which could be made without fundamentally changing the running of the scheme.

a) Allocation of Free Allowances (FA) and Activity Level Changes (ALCs)

[24] https://www.gov.uk/government/publications/evaluation-of-the-uk-emissions-trading-scheme-phase-1

The allocation of FA is clearly valued by operators with 88% of operators who are in receipt of FA reporting using this FA for compliance in the year received. However, only 44% of operators in receipt of FA expressed satisfaction with the approach to FA in the UK ETS and only 48% expressed satisfaction with the activity level reporting (ALR) process. There were several comments on the uncertainties around ALR and the finalising of FA allocation. Initial FA is made available in the year in which emissions are reported and over a year before that year's compliance deadline. However, some installation operators expressed concern that final allocation could take several months to be finalised in cases where an ALC was required. Interview responses suggested that, as a result, some found it difficult to plan financially for compliance and would like clearer guidelines. Feedback collected on the process is useful for the Authority to understand how operators are being impacted.

Results from the operator survey reveal that whilst there are strengths to the current ALC process, it also has scope to improve. Most stakeholders expressed satisfaction with regulator communications, but issues were raised with the process's complexity. Smaller regulators expressed that they commit large amounts of time to this process. Some explained that this resulted in having less capacity for other priorities such as the conduction of site inspections. One regulator raised concerns that in these early years of the UK ETS they are still using tools and templates for ALC reporting which were developed by the EU for the EU ETS. A majority of operators suggesting improvements asked for streamlined reporting and tools (54%) whilst others asked for the process to be more transparent (40%) and quicker (15%). The approach to the ALC process is currently being considered by the Authority as part of the second phase of the Free Allocation Review.

b) PMRV (permitting, monitoring, reporting and verification) processes

The permitting (installation operators only), monitoring and reporting processes drew varying responses from a range of stakeholders; 64% of participants said they were satisfied; however, aviation responses were significantly more positive; 81% of aircraft operators were satisfied with the process compared to 51% of installation operators in the main scheme. Qualitative interviewees explained that the use of central flight data from EUROCONTROL enabled simplified reporting for aviation operators, who are also not obliged to obtain a GHG permit but instead apply for an Emissions Monitoring Plan.

The research found that applying for GHG permits, required by installation operators, was straight-forward and operators noted the quick responses from regulators. However, some stakeholders encountered some inconsistencies in the interpretation of permitting requirements across the regulators which caused them delays. It was also noted that permit changes can be quite cumbersome for some operators and create workload for regulators. Suggested improvements include simplification of administrative processes, and better guidance. Improved compatibility between the EU and UK ETS administrative systems was also suggested by 35% of operators with less than 1,000 tCO_2e p.a. in the UK ETS. These were primarily aircraft operators who hold accounts in both the UK ETS and EU ETS schemes.

The participants view the verification process as fit for purpose with 74% of respondents satisfied with their experience of finding an accredited verifier.

The enforcement process is still becoming embedded within the scheme, but interviews revealed that there are issues surrounding smaller aircraft operators who remain unregistered, despite being covered by the scheme.

c) Registry

Regulators consistently identified that some features of the UK ETS registry portal are easier to use than the EU ETS registry, for example exporting statements from the UK ETS registry was easier, as well as the transferral and surrendering of allowances. However, many noted that approving or changing authorised users was slow. The qualitative research found varying views on registry guidance. Some have found the process of finding helpful support on the registry smooth, and others have found it difficult to identify the right guidance online. Recommendations included further simplification of registry processes to be more time-efficient and UK specific guidance, as several operators expressed difficulty locating guidance and having to rely on email correspondence.

d) Service provided by regulators and Authority (including on communications & guidance)

Overall, respondents were satisfied with the levels of service provided throughout the above processes. 72% were happy with the service of the regulators, and 63% were satisfied with service from the Authority. Suggested improvements include having a nominated contactable person from the regulator, more staff hired, streamlining processes and clearer communications.

Whilst almost two thirds of respondents were happy with the Authority's service, 10% were dissatisfied. 64% of respondents would like more prompt notification of scheme changes. Other suggested improvements include explanations provided in layman’s terms, more targeted emails, and workshops organised to explain changes.

Markets

The report synthesises evidence on the UK ETS market using secondary market analysis, analysis of UK ETS registry transaction data, operator survey response and in-depth interviews with operators and traders. The report concludes that UKA markets are generally functioning well and fit for purpose.

From the qualitative research, some interviewees reported that early in the establishment of the UK ETS, the lack of liquidity in the market led to unanticipated costs due to initially higher UKA prices. It was noted by many however, that liquidity has since improved, and the initial situation was an expected consequence of setting up a new scheme. Thorough preliminary analysis of secondary market data indeed supports this view that the market quality is relatively good for a market of the UK ETS’ size, demonstrated by its liquidity improving over time. Some stakeholder and participant suggestions to further improve liquidity included increasing auction frequency and attracting more market makers. Market makers are firms which provide a range of risk, financial and management services to the existing client base, usually larger traders and operators.

Detailed comparisons of data captured by ICE, which provides exchange and clearing house services for UKA and EUA derivative markets, reveal that the EUA and UKA futures markets perform similarly; both exhibit similar average price volatility and similar efficiency of the price discovery process during typical trading days. However, whilst demonstrating a similar liquidity level to the EU ETS over the period analysed, the UK ETS exhibits less stability when analysing the period covered in the report.

Interviews conducted with traders reveal varying behaviour within the market and the differing goals of market participants. Most operators outsource trading to brokers, who operate a fee-based system, or market makers, who trade to meet the client's needs whilst profiting from the bid-ask spread. The report found that smaller operators are more likely to buy annually before the surrender deadline, whilst larger operators buy more frequently. The commonality was that most operators use the UK ETS market solely to ensure compliance with UK ETS regulations, rather than to profit financially. Therefore, the scheme has evolved to encompass varying needs within the market under the 'cap and trade' principle. Numerical analysis on the auctioning process is outlined in The Functioning of the UK carbon market summary [Chapter 4a] of this report.

Evidence suggests that speculative activity (firms registered on the ICE taking potentially risky positions in the UK ETS market) is not currently a risk to the UK ETS market. Discussions with traders and analysis of transactions suggest that speculative activity is low in the UK ETS and that the market at the time was considered unattractive for speculators. There are also indications that speculator activity in the UK ETS has positive impacts on price discovery.

Early findings on UK ETS Decarbonisation Outcomes

Overall, the extensive interviews and survey data demonstrate that the UK ETS is influencing operator decarbonisation behaviour. 44% of main scheme operators reported that the UK ETS influenced their awareness of carbon reduction opportunities to a 'great' or 'large' extent. 62% of stationary participants said that the cost of UKAs had influenced their organisations to increase decarbonisation investment in plant, equipment or machinery. However, this was significantly lower for aircraft operators, only 20% of which said that the cost of UKAs had influenced an increase in decarbonisation investment in new aircraft or aircraft upgrades. Qualitative research found that aviation operators mainly focused on operational efficiencies and increased use of Sustainable Aviation Fuel, with the latter being influenced more by EU ETS incentives than by the UK ETS.

There is also a widespread view amongst operators that the UK ETS can only be effective when combined with a broader decarbonisation strategy and the availability of decarbonisation options for firms, such as hydrogen and CCUS. When asked about the difficulties surrounding decarbonisation, 31% of respondents identified uncertainties around carbon reduction technologies whilst a quarter reported a lack of capacity or capability within their organisation. There is also concern from some operators over costs involved in driving decarbonisation combined with the reduction of future FAs.

Next Steps for the UK ETS Evaluation work

The Authority is taking on board the feedback and recommendations raised within the Evaluation Phase 1 report and is continuing to consult with stakeholders to ensure that the UK ETS is a stable and effective carbon market, with efficient processes for its participants.

The UK ETS Evaluation work will continue, with a second phase of research and recommendations due in 2025-2026, building on Evaluation Phase 1 which ran in 2023. This will provide evidence on the UK ETS decarbonisation impacts as well as carbon leakage impacts if any are detected. Future publications are detailed in Chapter 7 of this review.

6. Long-term pathway for the UK ETS: report summary

Work to develop a longer-term vision for the UK ETS has been initiated in response to the *Independent Review of Net Zero*[25] recommendation that the UK ETS Authority develop a long-term pathway for the scheme. The UK ETS Authority accepted this recommendation and is publishing its response alongside this report.[26]

The response sets out that:

- Carbon pricing via the UK ETS continues to be an effective, market-based way of allowing businesses to make economically rational decarbonisation investment decisions. The scheme provides a long-term price signal that, when supported by complementary mechanisms and policies, can deliver a stable investment case for decarbonisation. It will continue to be an important lever for delivering an economically efficient transition to net zero; doing so at least cost across the sectors covered by the scheme whilst providing revenue to help fund public services, including to support the net zero transition. The Authority therefore intends to legislate to continue the UK ETS beyond 2030 until at least 2050.
- The Authority will continue to explore expansion of carbon pricing to more sectors of the economy, including high emitting sectors. The Authority will take account of the decarbonisation pathway set out in the UK Government's Net Zero Strategy[27] and of the anticipated decarbonisation pathways of each of the Devolved Governments[28, 29, 30] as it explores expansion of the scheme. It will consider five factors when considering expanding the UK ETS to new sectors: practicality; decarbonisation suitability; business impact; distributional impact on households; and timing.

The response concludes by stating that stakeholders will continue to be consulted as the Authority sets out further details of the long-term pathway for the UK ETS. This will ensure that the scheme remains fit for purpose as a future-focused, key lever in the UK's pathway to net zero. The response to the *Independent Review of Net Zero* also demonstrates the scheme's ability to evolve based on external expert feedback and advice.

[25] https://www.gov.uk/government/publications/review-of-net-zero
[26] https://www.gov.uk/government/publications/independent-review-of-net-zero-government-response
[27] UK's Net Zero Strategy: https://www.gov.uk/government/publications/net-zero-strategy
[28] Update to Scotland's 2018-2032 Climate Change Plan: https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/
[29] Wales's Net Zero Strategy: https://www.gov.wales/net-zero-wales
[30] Northern Ireland's Net Zero Strategy: https://www.daera-ni.gov.uk/articles/climate-change-act-northern-ireland-2022-key-elements

7. Future work and recommendations: Further policy development and evaluation

Reviewing the scheme has highlighted certain areas which may benefit from further review, recommendations, and improvements. The Authority has already recommended and committed to several packages of work to provide clarity and transparency to our stakeholders on potential changes to the scheme. The findings of this review support continuing to pursue these scheme developments. Future work includes detailed proposals focused on approaches to specific policy areas, wider suitability reviews on future scope expansion and the next phase of the UK ETS Evaluation. To take stock of this next phase of work, as detailed in the Greenhouse Gas Emissions Trading Scheme Order 2020 (article 17(2)), the Authority will publish another review by 31 December 2028.

The Authority closely monitors the UK ETS primary and secondary markets and has an ongoing programme of work to support an efficient and stable market. To continue this focus and building on the proposals made in Developing the UK ETS[31], a consultation has been published[32] today on UK ETS markets policy. This consultation explores options that could mitigate the key risks posed to the market and ensure it remains fit for purpose as it matures from the nascent market of the first few years of the scheme. This will help to maintain stable and effective market conditions that will continue to incentivise decarbonisation in covered sectors. The consultation examines the merits of mechanisms that are in the scheme already, such as the CCM and the auction reserve price, or those that could be implemented, such as a supply adjustment mechanism. Market participant feedback will be important to thoroughly reviewing policy options, and the Authority Response to this consultation will set out policy decisions.

Free Allocation of UK ETS allowances is the main policy instrument through which carbon leakage risk is currently addressed in the UK ETS, and as such, the Authority has committed to review FA policy to ensure it is achieving the best possible outcomes for the UK ETS. The second phase of an ongoing review has been published[33] in the form of a consultation. This consultation outlines proposals focused on changes to the methodology for distributing FAs, ensuring that support is better targeted for sectors most at risk of carbon leakage, in the context of UK industry and within the bounds of the new net zero aligned scheme. The proposals will aim to work alongside other UK Government policies[34] to create a holistic framework for mitigating carbon leakage risk. The Authority Response to this consultation will confirm any changes that will be implemented ahead of the second allocation period, from 2026-2030. Ahead of any future phases of the UK ETS from 2031 onwards, further details on

[31] https://www.gov.uk/government/consultations/developing-the-uk-emissions-trading-scheme-uk-ets
[32] https://www.gov.uk/government/consultations/uk-emissions-trading-scheme-future-markets-policy
[33] https://www.gov.uk/government/consultations/uk-emissions-trading-scheme-free-allocation-review
[34] Further policy proposals for addressing carbon leakage risk were consulted on jointly by HM Treasury and the Department for Energy Security and Net Zero. Details can be found here: https://www.gov.uk/government/consultations/addressing-carbon-leakage-risk-to-support-decarbonisation

how free allocation policy will work will be consulted upon, and this will remain an important pillar of UK ETS policy.

Given the good functioning of the current scheme, and some early evaluation findings on UK ETS impacts, the Authority recommends continuing to assess appropriate expansion of the scheme's emissions coverage both within sectors already in the scheme and to new sectors. This will support the scheme to better achieve its purpose and support decarbonisation efforts. Within sectors already in the scheme, planned work will focus on refining proposals to make integration as seamless as possible. This includes:

- The inclusion of CO2 venting by the upstream oil and gas sector from 2025, which has already been consulted on as part of Developing the UK ETS consultation[35];
- Consulting on the detail of the regulatory framework for integrating non-pipeline transport (NPT) for Carbon Capture and Storage from the mid-2020s, to enable UK ETS participants who use NPT for CO_2 storage purposes to make carbon subtractions.

Future work will also be completed which will review the expansion of the scheme to new sectors, for example:

- We will look to set out further detail on the expansion of the UK ETS to domestic maritime from 2026 based on vessel activity. This consultation will include implementation, decarbonisation and distributional impacts, and MRV requirements and processes.
- We will consult on the implications of the inclusion of waste incineration in the scheme from 2028. This will contain more detailed proposals for MRV associated with the sector from 2026 onwards.
- We intend to include engineered GGRs in the UK ETS, subject to further consultation, a robust MRV regime being in place and the management of wider impacts.

The second phase of the UK ETS Evaluation will also continue, which will cover the evaluation of UK ETS impacts in more detail over its first five years of operation, focussing on the key metrics of emissions reduction and carbon leakage mitigation. Whilst the first phase of the report offered some early findings on UK ETS impacts, it will only be possible to understand the scheme's impacts towards long-term decarbonisation after a longer period. This second phase is due to be published in 2025-26.

[35] https://www.gov.uk/government/consultations/developing-the-uk-emissions-trading-scheme-uk-ets

8. Conclusions

The UK ETS has been established well through its first years of operation and continues to develop and improve. Several important pieces of work have taken place already, each assessing different elements of the scheme's policy or operations. These combine to show a functional scheme that looks to be well placed to achieve its purpose, with some early indications that it has prompted stakeholder action towards decarbonisation. This supports the Authority's proposals to pursue further scheme development.

From its review of the UK ETS over its initial years of operation, the Authority has drawn the conclusions set out below.

Operation of the UK ETS

- The scheme is broadly functioning well across its operational areas. Examples include:
    - The successful establishment of the scheme and supporting systems in January 2021, as shown through stakeholder feedback in the UK ETS Evaluation Phase 1 report.
    - The high levels of compliance by scheme participants published in the Functioning of the UK carbon market report.
    - The high stakeholder satisfaction results from the UK ETS Evaluation Phase 1 report across scheme processes.
    - Quantitative and qualitative data showing strong market functioning in the UK ETS Evaluation Phase 1 report and the Functioning of the UK carbon market report.
- Strong governance structures and processes are in place to translate external input into scheme improvements in the short and long-term, as evidenced by the Authority Response to the Developing the UK ETS consultation and the Authority's response to the Independent Review of Net Zero in the form of the Long-term pathway for the UK ETS report. These demonstrate a strong collaborative approach to continuing to develop the scheme.
- The scheme has operated in a transparent manner, as evidenced by the publication of operational reports on scheme participants, such as the Functioning of the UK carbon market report and the HSEs targets and emissions data.
- The Authority continues to take an ambitious approach to the future of the scheme and provide clarity to its stakeholders. This has been evidenced by the milestone commitment to align the scheme with net zero, and the proposals for scope expansion in multiple areas.

- There are areas that could be improved, and stakeholder feedback continues to be important to highlight these. For example, improvements could be made to the delivery of Free Allocation, which will be explored in the Free Allocation Review consultation. The UK ETS Evaluation Phase 1 report has also provided significant and nuanced insights, which the Authority should use to develop proposals and implement scheme improvements as appropriate.

Achievement of the scheme's purpose

- Early findings, particularly from the UK ETS Evaluation Phase 1 report, indicate that the scheme is likely to be supporting participants to limit or reduce their emissions of greenhouse gases. Therefore, there are initial signs that the UK ETS is achieving its purpose in terms of limiting or encouraging the limitation of the emissions of scheme participants. It is the Authority's view that, based on the current evidence, the scheme is performing in line with expectations and is more likely than not achieving its statutory purpose.
- The UK ETS has only been in place for three years. This short timeframe is insufficient to be able to attribute any observations of reduced emissions by individual or groups of participants directly to the UK ETS. Evaluation methods capable of establishing a causal link between the UK ETS and emissions reductions require a longer time-series of data than is currently available.
- The UK ETS is designed to provide long-term clarity to participants and as such evidence will continue to be collected and assessed over a longer time period, including to inform the assessment that will be made in the next statutory review, by the end of 2028.

Recommendations for the future operation and purpose of the scheme

- **Scope expansion**. Given the broadly positive assessment of the scheme's operations, the Authority recommends continuing to pursue its plans for scope expansion as set out in this report. This will support the UK ETS to better achieve its purpose in sectors already covered by the scheme and across other sectors of the economy. This is echoed by commitments made in the Long-term pathway for the UK ETS report, which also sets out the factors that the Authority will consider when expanding to new sectors.
- **Development of the existing scheme.** There are opportunities to improve UK ETS rules for the UK context now that the scheme is established. The Authority recommends that the programme of work including the second phase of the Free Allocation Review and the review of markets policy are taken forward to build on the strong first years of the scheme, to better target carbon leakage mitigation and support a well-functioning market.

- **Operational improvements.** The UK ETS Evaluation Phase 1 report also indicates there are areas for operational improvement. The Authority recommends that it continue to engage regulators and operators to improve the way the scheme runs, for example seeking to minimise administrative burdens and make the scheme run as efficiently as possible.
- **Further evaluation.** Whilst the UK ETS Evaluation Phase 1 study shows some signs of positive scheme impacts, it is too soon to draw firm conclusions. The Authority therefore recommends that the evaluation programme continues into its planned Phase 2. This will allow a more detailed look at impacts and whether the scheme is achieving its purpose ahead of the next statutory review by the end of 2028.

The Authority aims to run the scheme in the best way to efficiently deliver on our previous commitments. We aim to be clear, transparent and predictable in our delivery and policy work, for example through completing and publishing this review, alongside the consultations on Free Allocation and markets policy, as planned in December 2023.

The recommendations made in this review and the commitments made for future work will support our stakeholders to continue with their long-term planning and decarbonisation efforts.

This publication is available from: www.gov.uk/government/publications/uk-emissions-trading-scheme-review-2023

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