



Department for
Business, Energy
& Industrial Strategy

Developing the UK Emissions Trading Scheme (UK ETS)

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

Closing date: 17 June 2022



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General information

Why we are consulting

The UK ETS Authority (UK Government, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland, hereinafter 'the Authority') are seeking input on a number of proposals to develop the UK Emissions Trading Scheme (UK ETS). 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. This consultation seeks views on our proposals to meet these commitments. It proposes 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. It also includes further proposals which aim to increase the ambition of the scheme and improve its operational effectiveness.

Additionally, this consultation calls 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.

Consultation details

Issued: 25 March 2022

Respond by: 17 June 2022

Enquiries to:

Emissions Trading
Department for Business, Energy and Industrial Strategy
2nd Floor, Spur 2
1 Victoria Street
London
SW1H 0ET

Email: emissions.trading@beis.gov.uk

Consultation reference: Developing the Emissions Trading Scheme

Audiences:

This consultation will be of particular interest to individual companies and representatives of industrial, power and aviation sectors with obligations under the UK ETS and environmental groups. It will also be of interest to individual companies and representatives of maritime, waste, greenhouse gas removals and agricultural sectors. This consultation is not limited to these

stakeholders; any organisation or individual is welcome to respond. (To note, this consultation does not apply to NI electricity generators who participate in the EU ETS by virtue of the Ireland / Northern Ireland Protocol.)

Territorial extent:

This consultation relates to proposals to develop the UK ETS, which operates across England, Scotland, Wales and Northern Ireland. This is a joint consultation, published by the UK Government, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland.

How to respond

Respond online at: <https://beisgovuk.citizenspace.com/energy-security/uk-ets>

or

Email to: emissions.trading@beis.gov.uk

Write to:

Emissions Trading
Department for Business, Energy and Industrial Strategy
2nd Floor, Spur 2
1 Victoria Street
London
SW1H 0ET

When responding, please state whether you are responding as an individual or representing the views of an organisation.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

Consultation responses will be shared across the UK ETS Authority.

If you want the information that you provide to be treated as confidential please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our [privacy policy](#).

We will summarise all responses and publish this summary on [GOV.UK](#). The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's [consultation principles](#).

If you have any complaints about the way this consultation has been conducted, please email: beis.bru@beis.gov.uk.

Introduction

Context – UK climate action

The UK Government, Scottish Government, Welsh Government and Northern Ireland Executive are committed to meeting our ambitious targets to reduce our greenhouse gas (GHG) emissions from across the UK economy. Since 1990, the UK has reduced GHG emissions by over 40%, while at the same time growing our economy by over 75%.

The UK is a leader in climate policy and ambition, becoming the first major economy to implement a legally binding net zero target in 2019. The net zero target requires that by 2050 any greenhouse gas emissions produced within the UK must be reduced as far as possible and any residual emissions must be counter-balanced, for example by increasing natural carbon sinks such as forests or using technology like carbon capture and storage.

The landmark Climate Change Act (CCA) 2008 lays out a sequence of carbon budgets that put legal limits on emissions that may be produced in successive five-year periods. In June 2021, the UK Government legislated for the sixth carbon budget (for the years 2033 – 2037) to reduce UK greenhouse gas emissions by approximately 77% compared to 1990 levels.¹ These targets help to ensure that both current and future generations take the action needed to tackle climate change.

Last year the UK Government published the Net Zero Strategy, which sets out policies and proposals for decarbonising all sectors of the UK economy to meet our net zero target by 2050. This strategy underpins UK climate policy, including our proposed changes to the UK Emissions Trading Scheme (UK ETS) and sets out the pace and scale of decarbonisation required to deliver on our climate targets and transition to a low-carbon economy. It sits alongside the Industrial Decarbonisation Strategy, which sets out how industry can decarbonise in line with net zero while remaining competitive and without pushing emissions abroad.

Additional legislative frameworks and targets exist in Scotland and Wales.² In Scotland, annual and interim emissions reduction targets (including a 75% reduction by 2030, relative to the 1990 baseline) are set on a trajectory to net zero emissions by 2045. All of Scotland's targets include a fair share of emissions from international aviation and shipping activity. The Scottish Government published the Climate Change Plan Update in December 2020, which updates the 2018 Plan to set out Scotland's pathway to the revised emissions reduction targets.

In December 2020, the Climate Change Committee (CCC) published advice to Welsh Ministers on the setting of the third Welsh carbon budget (2026-30) and the path to net zero.³ The Welsh

¹ This is calculated from the levels as stated in the legislation:
<https://www.legislation.gov.uk/uksi/2021/750/introduction/made>.

² Northern Ireland contributes to UK Climate Change targets, and the NI Executive is currently considering Climate legislation

³ This can be found at: <https://www.theccc.org.uk/publication/the-path-to-net-zero-and-progress-reducing-emissions-in-wales/>

Government legislated for the net zero target for 2050 in March 2021 (Climate Change (Wales) Regulations 2021) including interim targets for 2030 (63% reduction) and 2040 (89% reduction) and a series of 5-year carbon budgets. The Welsh Government subsequently published Net Zero Wales 2021-25 – Carbon Budget 2 on 28 October 2021. Net Zero Wales focuses on Wales' second carbon budget (2021-2025), but also looks beyond to start building the foundations for Carbon Budget 3 and the Welsh Government's 2030 target, as well as net zero by 2050.

Northern Ireland currently contributes towards the UK climate change targets and carbon budgets. Climate change legislation is being considered for Northern Ireland, along with the advice from the CCC in relation to Northern Ireland's contribution to the UK's net zero by 2050 target. A new Energy Strategy for Northern Ireland was launched in December 2021, followed by the publication of an Energy Strategy Action Plan in January 2022. The Strategy's vision is to achieve zero greenhouse gas emissions and affordable energy by 2050. In addition, a multi-decade Green Growth Strategy is under development that will map out the actions that must be taken to support the growth of a resilient, green economy for Northern Ireland. The associated Climate Action Plan will set out what must be done within each sector to meet specific emissions reduction targets.

Under the 2015 Paris Agreement, in 2020 the UK announced its ambitious Nationally Determined Contribution (NDC), committing to a minimum of 68% reduction in greenhouse gas emissions by 2030 compared to 1990 levels. This is the highest reduction target set by a major economy to date and lays a clear path towards the UK's goal to end its contribution to climate change. Alongside the UK ETS, we have committed to a suite of policies which aim to support the transition to net zero and tackle wider environmental issues.

In the Spending Review and the Prime Minister's 10 Point Plan, the UK Government announced measures to support and incentivise businesses to invest in key technologies such as hydrogen and carbon capture. The UK Government has committed to supporting the development of one power Carbon Capture and Storage (CCS) plant by 2030 to reduce emissions from gas-fired power stations; £1 billion for the CCS Infrastructure Fund to help establish four CCS clusters by 2030; and the £240 million Net Zero Hydrogen Fund and a hydrogen business model to deliver the ambition for 5GW of low carbon hydrogen capacity by 2030.

The Budget 2020 also included a pledge to at least double funding for energy innovation, as well as to bring forward the phase-out date for unabated coal generation to 2025. The 2020 Energy White Paper addresses the transformation of the entire energy system in the context of net zero, looking across the power generation, networks, buildings, industry, energy markets and oil and gas sectors.

Context – Emissions trading in the UK

The UK Government, Scottish Government, Welsh Government and Northern Ireland Executive are committed to the use of carbon pricing as a key policy lever to ensure the UK reaches its ambitious climate targets, including net zero emissions by 2050, cost-effectively.

The UK has been a pioneer of emissions trading since 2002, when we established Europe's first Emissions Trading Scheme as a pilot for the European Union Emissions Trading System (EU ETS).

On 1 January 2021 the Authority (UK Government, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs for Northern Ireland, (DAERA)) launched the UK Emissions Trading Scheme (ETS) to replace the UK's participation in the EU ETS.⁴ The Authority is committed to increasing the climate ambition of the UK ETS, while mitigating the risk of carbon leakage through issuance of free allowances. Our scheme was designed to increase ambition from the outset – from day one the cap has been reduced by 5% compared to the UK's notional share of the EU ETS Phase IV cap.

Now that the UK ETS is established, we are committed to further developing the scheme. Our goal is to make the UK ETS the world's first net zero consistent cap and trade market, and ensure it plays a crucial role towards achieving the UK's ambitious climate targets, including net zero greenhouse gas emissions by 2050.

⁴ Northern Ireland electricity generators continue to participate in the EU ETS by virtue of the Ireland / Northern Ireland Protocol

International cooperation on carbon pricing

An increasing number of carbon pricing instruments have been developed in national and sub-national jurisdictions across the globe over the past two decades, and we recognise the value that cooperation on carbon pricing can bring. Knowledge sharing, technical dialogue and exchanges of best practice are all practical means of supporting our world-leading ambitions for the UK ETS and promoting its effective operation into the future.

International cooperation on carbon pricing is particularly important to help tackle the risk of carbon leakage (where production and associated greenhouse gas emissions are offshored to jurisdictions with less rigorous carbon reduction policies). As we transition to net zero, it is important that we work across international borders to drive climate ambition, maintain competitiveness and minimise the risk of carbon leakage. In doing so, we must be alive to the range of approaches in development internationally that could potentially help to address this.

The linking of emissions trading schemes, whereby emissions allowances can be used for compliance across borders, is another form of carbon pricing cooperation which can increase cost-effective abatement opportunities and support carbon price parity across jurisdictions. COP26 saw consensus on Article 6, completing the Paris Rulebook. Among other outcomes, this provides an accounting framework for the exchange of emissions allowances internationally which could support the implementation of ETS linking. Under the terms of the Trade and Cooperation Agreement (TCA), the UK and EU agreed to consider linking our respective carbon pricing schemes and to cooperate on carbon pricing. We are open to the possibility of linking the UK ETS internationally and will continue to work collaboratively with other jurisdictions to tackle shared challenges and learn from the experience of others as we develop the UK ETS.

Carbon leakage: Definition and approach

Climate policies designed to reduce emissions in a given country can increase the costs of production for its businesses (including indirectly because of the impact on the price of inputs, such as energy) relative to international competitors if those competitors are subject to weaker climate change mitigation policies. If such policies (such as carbon pricing, or other emissions reduction policies), are not implemented in an equivalent way across jurisdictions, this can result in production in trade-exposed sectors and the associated greenhouse gas emissions being displaced, undermining the original environmental objective of climate mitigation policies. This displacement of GHG emissions is known as ‘carbon leakage’. In general, ‘carbon leakage’ can be said to occur if all of the following conditions are satisfied:

- Climate mitigation policies differ across jurisdictions;
- Emissions shift to a region with lower climate mitigation obligations as a result; and
- Shifts in production to a firm in a different jurisdiction lead to a sustained increase in emissions intensity, higher than it would have been had production not moved.

The UK Government is committed to addressing the risk of carbon leakage in UK sectors. In addition to free allocation policy, currently worth several billion pounds a year, it is already taking action internationally to tackle carbon leakage ‘at source’, for example driving progress on global decarbonisation through the G7 Climate Track and the Industrial Decarbonisation Agenda.

The free allocation review (Chapter 2) is nested within a broader strategy for carbon leakage that is considering complementary or alternative measures to address leakage, including ‘demand-side’ policies to help grow the market for low emissions industrial products, such as product standards. The UK Government recognises that multiple factors may affect different sector’s carbon leakage risk. As outlined in the UK Government’s Net Zero Review and Industrial Decarbonisation Strategy, a range of approaches could be employed to address these risks. The UK Government is actively exploring these options and will be engaging further with industry in due course. It is important to ensure that as current policy evolves to meet the UK’s emissions targets, UK businesses remain sufficiently supported in the push towards net zero.

This consultation

In this consultation document, the Authority is seeking stakeholder views on proposals to develop the UK ETS to ensure that it drives emission reductions towards our ambitious targets and continues to demonstrate the UK’s leadership on carbon pricing. We are:

- Seeking views on whether our proposals are appropriate, proportionate and workable for participants. Your feedback will enable us to develop informed policy and legislation.
- Calling for evidence on a number of areas to inform future ETS policy development.

Chapter 1 sets out proposals for changes to align the UK ETS cap and trajectory with our net zero target.

Chapter 2 considers the role of Free Allocation policy as a carbon leakage mitigation tool in the context of the net zero aligned cap. It also puts forward potential improvements to the current Free Allocation regime based on stakeholder views expressed in response to the 2019 consultation on carbon pricing and the call for evidence on free allocation in 2021.

Chapter 3 sets out proposals for bringing in unallocated allowances and/or the flexible share to the market.

Chapter 4 calls for evidence on potential drivers of evolving market conditions in the UK ETS and objectives for market stability policy as the scheme evolves.

Chapter 5 sets out the scope of the review into UK ETS aviation policy. This includes proposals on the future of aviation free allocation, considering responses to the 2019 consultation on carbon pricing, the 2021 call for evidence, and UK government commissioned economic research. It also considers how the use of Sustainable Aviation Fuels (SAF) could be incentivised under the UK ETS and options for expanding the coverage of the scheme within the aviation sector.

Chapter 6 sets out proposals and calls for evidence on possible changes to the rules for sectors currently covered by the UK ETS to ensure more greenhouse gas emissions are covered by the scheme.

Chapter 7 sets out proposals to expand the scope of the UK ETS to the maritime sector and calls for evidence on expanding the UK ETS to include waste incineration and energy from waste.

Chapter 8 calls for early views on the incorporation of greenhouse gas removal (GGR) into the UK ETS and the monitoring, reporting and verification requirements necessary to address greenhouse gas emissions in the land use and agriculture sectors.

Chapter 9 sets out proposed amendments to support effective operation of the UK ETS by addressing a number of operational issues identified during the development of policy and legislation for the scheme.

Chapter 1: Net zero consistent cap

Introduction

The UK ETS works on the ‘cap and trade’ principle, where a cap is set on the total amount of certain greenhouse gases that can be emitted by sectors covered by the scheme. This limits the total amount of carbon (or its equivalent) that can be emitted and, as the cap decreases over time, provides a signal to decarbonise at the pace and scale required to keep emissions at or below the cap. This therefore makes a significant contribution to how we meet the net zero 2050 target and other carbon reduction commitments.

Participants in the UK ETS are required to obtain allowances equivalent to their annual emissions under the scheme. These can be bought in regular auctions or by trading on the secondary market; some participants at risk of carbon leakage receive some allowances for free. The cap and therefore the number of allowances is reduced over time, so that total emissions in the sectors covered must fall.

This chapter sets out our proposals to align the UK ETS cap with the net zero commitment. For ease, the explanation below refers to sectors covered by the UK ETS as the traded sector, and sectors not covered by the UK ETS as the non-traded sector. Emissions from the traded sector and non-traded sector, in total, must be at or below our whole-economy emissions targets.

Net Zero Consistent Cap

The current UK ETS cap

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 aircraft operators) and was set to reduce annually by 4.2 million allowances.

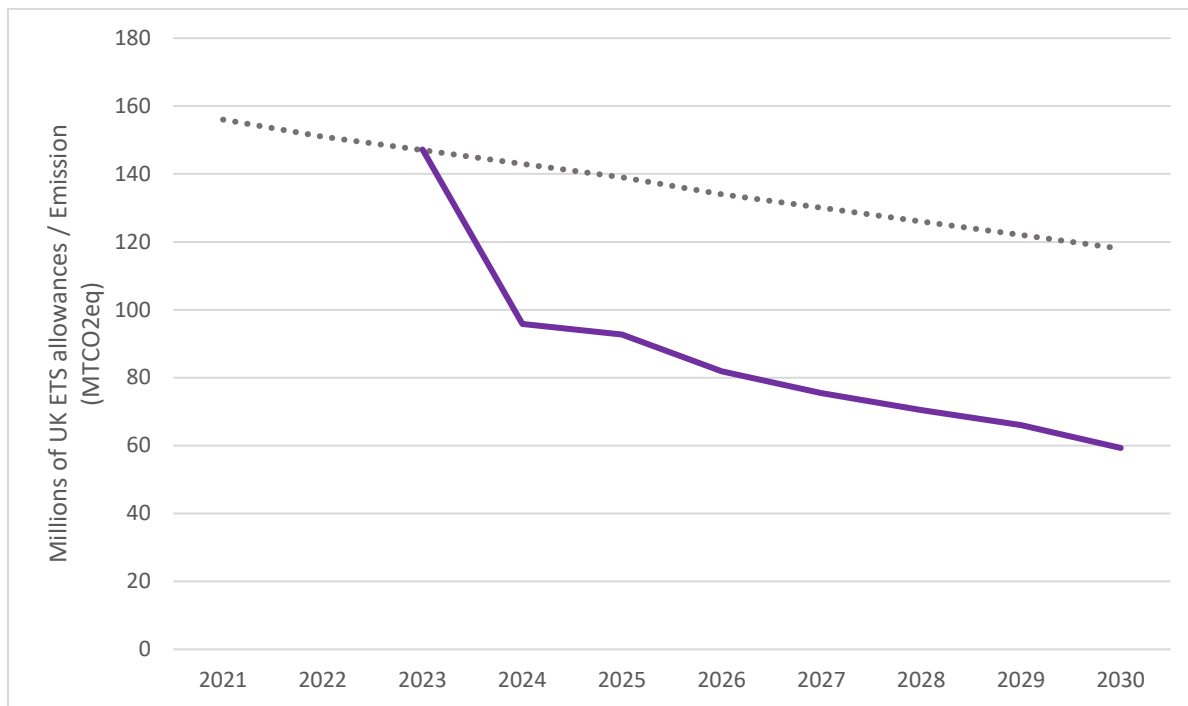
In the June 2020 Government Response to the Future of UK Carbon Pricing consultation, we noted the Climate Change Committee’s (CCC) recommendation that the UK ETS cap should be set in line with the cost-effective pathway to net zero emissions in 2050 and should be adjusted to align with this trajectory as soon as possible following receipt of the CCC’s further advice, expected as part of their advice on the Sixth Carbon Budget at the end of 2020.

We committed to consult on a net zero consistent UK ETS cap following this advice from the CCC, with the aim that any changes to the policy to appropriately align the cap with a net zero trajectory be implemented by no later than January 2024.

The CCC’s advice on the Sixth Carbon Budget and a net zero consistent cap

The CCC provided advice on the UK’s Sixth Carbon Budget in December 2020, which set out a pathway to 2030 for emissions covered by the UK ETS, consistent with their ‘Balanced Net Zero Pathway’. Their subsequent 30 June 2021 letter updated this advice, refined previous estimates, removed errors and set out a recommended UK ETS cap that reflected their recommended path for emissions for the traded sector. The CCC’s updated advice proposed emissions reductions for the traded sector of 53% against 2019 levels to 59 MtCO₂/year in 2030, or by 57% to 54 MtCO₂/year if engineered greenhouse gas removals are included. In this advice, the CCC stated that there ‘is some potential for the NDC and Sixth Carbon Budget to be met in a different way from that suggested by our analysis, with a different balance of emissions reductions in the ‘traded sector’ (i.e. within the scope of emissions covered by the ETS) as against the ‘non-traded sector’. The CCC also outlined that there “are limited ways to reduce emissions faster in one area to allow slower reductions elsewhere. It is essential that the setting of the cap does not place excessive pressure for emissions reduction on the non-traded sectors, whether by accident or design.”

Figure 1.1: The CCC’s proposed path for emissions for sectors covered by the UK ETS (purple), as per their updated June 2021 advice, compared to the currently legislated cap (dotted line).



The UK Government’s Net Zero Strategy

Since the CCC provided this advice, the UK Government has published its Net Zero Strategy. This is the UK Government’s long-term plan to end the UK’s domestic contribution to man-made climate change by 2050. It sets out clear policies and proposals keeping us on track for our upcoming carbon budgets and our ambitious Nationally Determined Contribution (NDC). The strategy sets out our vision for a decarbonised economy in 2050.

While there are a range of ways in which net zero could be achieved in the UK, the Net Zero Strategy sets out a delivery pathway showing indicative emissions reductions across sectors to meet UK Government targets up to the Sixth Carbon Budget (2033-2037). This is based on the UK Government's current understanding of each sector's potential, and a whole system view of where abatement is most effective. These indicative sector pathways are presented as ranges to reflect inherent uncertainty. Given the interdependencies and interactions within and between sectors, the exact areas for emissions savings may shift as UK Government understanding increases.

The Net Zero Strategy pathway requires greater emissions reductions in the traded sector compared to the CCC's advised path for emissions covered by the UK ETS. This difference reflects that while we need ambitious emissions reductions across all sectors to meet our targets, there are options for our exact approach to decarbonisation such as the balance of technology deployment and behavioural change, which affect the decarbonisation pathway of each sector.

The Authority have considered the CCC's advice carefully. However, given that the subsequent Net Zero Strategy provides the UK Government's internally consistent assessment of the pace of emissions reductions needed across different parts of the economy to deliver UK economy-wide climate targets, it is appropriate that the cap trajectory is based on the Net Zero Strategy. Setting a cap at the CCC's original pre-Net Zero Strategy path for emissions for the traded sector would permit more emissions in the traded sector compared to the Net Zero Strategy pathway. This could place additional pressure for emissions reduction on the non-traded sector.

The Net Zero Strategy therefore provides the foundation for the net zero consistent cap trajectory from 2024. The Devolved Governments have made different choices regarding the balance of effort required in the traded and non-traded sectors in their national carbon reduction strategies and plans. However, given the impact UK Government fiscal and policy levers will have on emissions in devolved countries, the Devolved Governments have concluded that the proposal for the cap outlined below is consistent with meeting carbon reductions targets in the traded sector.

The Authority's approach is consistent with the CCC's advice that the NDC, Sixth Carbon Budget and Devolved Government Carbon Budgets can be met in a different way from that suggested by their analysis, with a different balance of emissions reductions in the traded sector as against the non-traded sector. We welcome further views from the CCC as part of this consultation.

We plan to implement the net zero consistent cap to take effect in 2024 rather than 2023 to maximise the period of notice to the market from the date of this consultation and enable the ETS Authority to consider responses in full. This means the current cap will remain in place until the end of 2023. The proposed approach to the cap takes into account the change to the current cap from 2024 and ensures the cap over Phase 1 of the UK ETS is, overall, consistent with delivering net zero.

A net zero consistent cap

The Authority has identified a range of values which could, under certain conditions, provide a net zero consistent cap for the scheme. In setting this range, we have considered the primary objective of aligning the cap with the UK's ambitious climate targets and ensuring an effective long-term signal for decarbonisation. We have also considered the additional objectives of providing a smooth transition for participants and mitigating any unintended effects that the resulting trajectory may have on carbon leakage risk, competitiveness and affordability.

It would allow a total cap for the entire first Phase (2021-2030) of between 887 million allowances and 936 million allowances. Compared to the current legislated cap for the whole phase, 1365 million allowances, this would equate to a reduction of between around 30-35% over the course of the phase. This would require a step change in the level of the cap in 2024, with the cap becoming tighter over the phase and an annual cap of around 50 million allowances in 2030.

The range reflects the fact that there is some degree of uncertainty in expected sectoral emissions reductions and in other key assumptions (e.g. changes in scientific evidence which affects the scale of emissions). All cap options falling within this range would be consistent with the Net Zero Strategy.

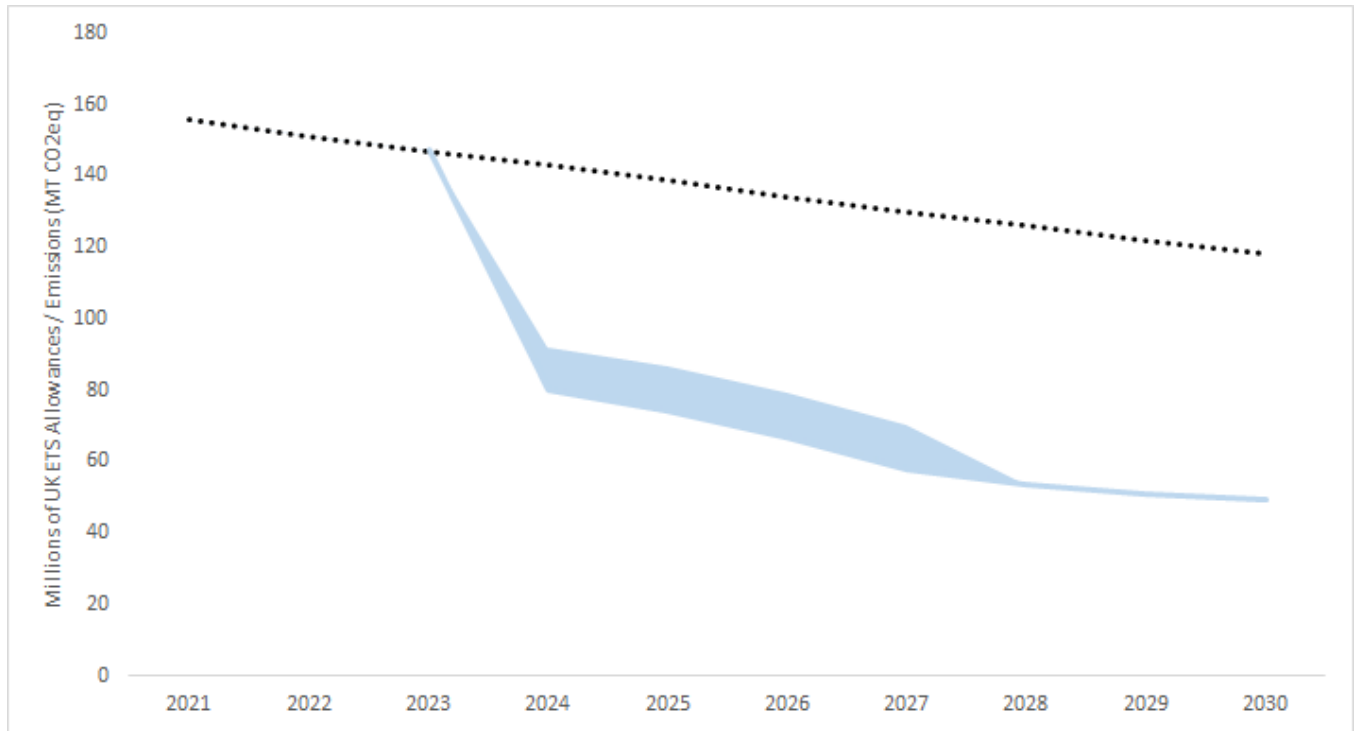
A cap set at the lower end of the range reflects central assumptions accounted for in the Net Zero Strategy, such as emissions reductions. This would be the lower risk approach to ensure we remain on track with the trajectory set out in the Net Zero Strategy to meet carbon budgets and the UK's 2030 NDC, although would result in a larger reduction in the volume of allowances in the market across the remainder of the phase.

A cap set at the top of the range factors in the uncertainty over exact emissions savings across sectors covered by the Net Zero Strategy, and the possibility that emissions reductions could exceed what is necessary to meet the fourth carbon budget. Should policies deliver their full decarbonisation potential, our current assessment is that this could enable the addition of up to *10 million allowances per annum from 2023 up to and including 2027*. Utilising this to support the UK ETS cap could reduce the short-term pressure on allowances in the traded sector and smooth the transition towards net zero.

The Authority is currently minded to set the cap towards the higher end of the range. However the final trajectory, wherever it is set within this range, will be subject to consultee views and updated assessments of emissions abatement progress across all sectors and regions, reflecting different nations' ambition in the 2020s. The Authority will assess the final level of the cap needed in order to achieve the four nations' carbon targets, taking all this evidence into account, and a finalised position will be set out in the government response to this consultation.

It should be noted, although there is potential for exceeding Carbon Budget 4, it is not certain and, therefore, setting a UK ETS cap towards the top of the range could result in the need to find additional emissions reductions in other sectors should policies not deliver their full decarbonisation potential.

Figure 1.2: The currently legislated cap (dotted line), which is not consistent with delivering net zero, will remain in place until end 2023. The illustrative trajectory below, represented as a range, is shaded in blue.



This figure provides an illustration of what the legislated cap may look like using the proposed range above. It should be noted that allowances under the cap are distributed to the market in different ways, including through the auction share, free allocation, new entrants reserve and managing elements of the scheme (e.g. the “flexible share”) – all of which may need to be reset as a result of setting the net zero consistent cap. The legislated trajectory is therefore not a reflection of how many allowances in total would necessarily reach the market in each year. The exact distribution of allowances for different purposes will affect when allowances reach the market over the course of the phase. Notably, the proposals on ‘Smoothing the transition to the net zero consistent cap’ could change the precise trajectory for allowances released in individual years.

A cap set within this range is likely to support the responsibilities of the UK Government, Scottish Government, Welsh Government and Northern Ireland Executive⁵, given their legislated climate targets, recognising the different pathway choices of different nations and the make-up of their industrial sectors. The emissions trajectories of the Scottish Government, Welsh Government and Northern Ireland Executive vary from the UK Government trajectory, albeit in ways aimed at achieving net zero no later than 2050. The Scottish Government will set out the role of the revised UK ETS cap in achieving Scotland’s statutory annual climate change targets in its next climate change plan. Welsh Government’s Net Zero Wales plan sets out the near- and medium-term pathway on the way to net zero by 2050. Placing the UK ETS on a UK net zero pathway supports the carbon reduction ambitions of the Scottish Government, Welsh

⁵ Northern Ireland contributes to UK Climate Change targets, and the NI Executive is currently considering Climate Change legislation

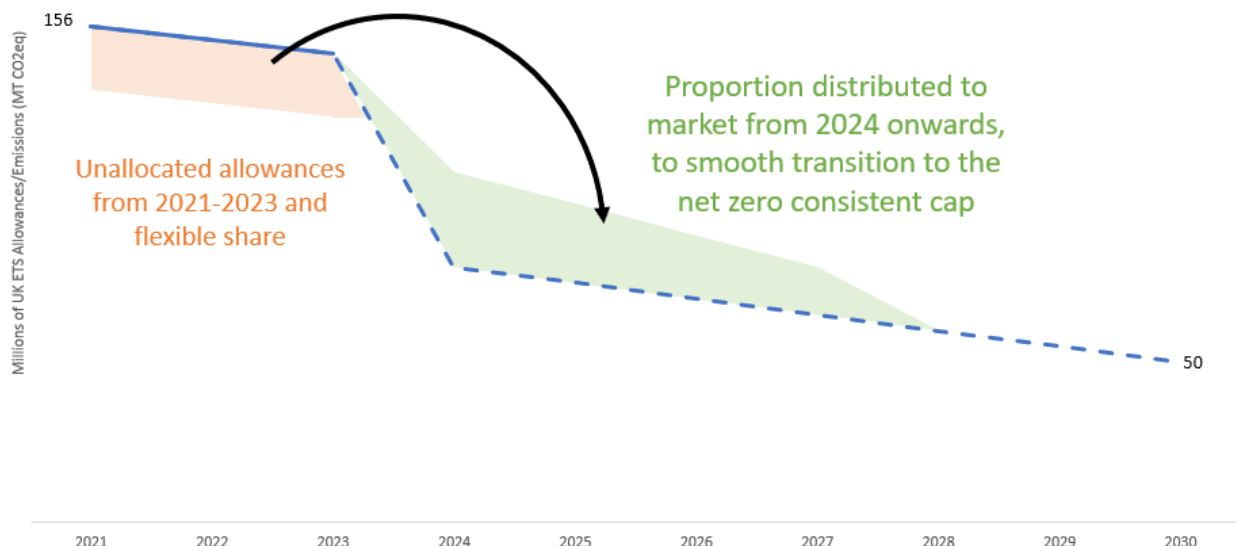
Government, and Northern Ireland Executive. Impacts on individual carbon budgets will be dependent on sectoral and geographical variations in emissions reductions over time.

The final net zero consistent cap level will be decided upon and announced when we respond to this consultation, and may mean a cap tighter than our minded-to position, subject to consultee views and updated assessment of progress against carbon budgets across sectors ahead of the government response to this consultation.

Smoothing the transition to a net zero consistent cap

The implementation of the net zero consistent cap in 2024 will require a significant drop in allowances reaching the market in 2024 compared to previous years. As set out in Chapter 3 on “Options for bringing unallocated allowances and/or flexible share to market”, the Authority is considering bringing a portion of 2021-2023 unallocated allowances and/or flexible share to auction to smooth the transition to the net zero consistent cap.

Figure 1.3: Schematic diagram illustrating how the legislated cap may translate into the total allowances distributed to market over the phase. Recognising the need to manage the transition to the lower cap, the section on ‘Smoothing the transition to the net zero consistent cap’ sets out how unallocated allowances from 2021-2023 and the flexible share can be used to support participants through the transition; this would not change the total volume of allowances created over the phase but would change the precise trajectory of allowances released in individual years. As such, the number of allowances distributed to market each year may be different to the legislated cap. The final net zero consistent cap level and trajectory will be decided upon and announced when we respond to this consultation.



Questions

1) Do you agree with the Authority's proposed range for the net zero consistent cap? (Y/N) Please explain your answer.

2) What do you expect the effect of the cap set at the bottom of the range (i.e. total of around 887 million allowances over the entire phase) to be on your plans for emissions reductions over the 2020s?

3) What do you expect the effect of the cap set at the top of the range (i.e. total of around 936 million allowances over the entire phase) to be on your plans for emissions reductions over the 2020s?

Funding for decarbonisation

The UK ETS Authority acknowledges the significant increase in the price of UK allowances over the past year. While the Authority believes this is due to fundamental market conditions, and reflects the higher costs required to incentivise decarbonisation, it also recognises the importance of supporting firms across the UK with the costs of the transition to net zero.

The four governments have committed to fiscal and policy support for decarbonisation, including:

- The Industrial Decarbonisation and Hydrogen Revenue Support (IDHRS) scheme to fund new hydrogen and industrial carbon capture (ICC) business models across the UK. £140 million to establish the scheme, including up to £100 million to award contracts of up to 250MW of electrolytic hydrogen production capacity in 2023.
- Helping UK industry to decarbonise and improve energy efficiency and industrial processes through the £315 million Industrial Energy Transformation Fund (IETF), (£289 million across England, Wales and Northern Ireland and a £26million contribution to Scotland's own scheme, the SIETF, part-funded and run by the Scottish Government).
- By co-investing with industry in new low and zero emission aircraft technology through the Aerospace Technology Institute Programme, which has been extended to 2031 (currently £150m in 21/22) and announcing a further £180 million at Spending Review 2021 to support the development of the UK Sustainable Aviation Fuels (UK SAF) industry.
- Economy Futures Fund - Environmental Protection Scheme – a Welsh Government discretionary funding programme.
- The Scottish Government's support includes a £500 million Just Transition Fund, £75 million to support the energy transition in Aberdeen and £180 million for hydrogen and CCUS.

We will continue to review whether these are sufficient to support decarbonisation of the UK ETS sectors, and to ensure an equitable balance of contributions from the private and public sectors to the transition to net zero.

Chapter 2: Free allocation review

Introduction

Free allocation of allowances is the main policy instrument through which carbon leakage risk is currently addressed in the UK ETS.

The provision of free UK ETS allowances means an operator needs to buy fewer allowances to cover their emissions, in effect, reducing the carbon price they pay and mitigating the risk of carbon leakage. The incentive to decarbonise is maintained as, in general, recipients of free allocation that decarbonise keep any surplus free allowances. They can sell these on the secondary market to their benefit.

This chapter will focus on changes to free allocations for the stationary sector, with proposals on aviation free allocations addressed in Chapter 5. Details of differing assumptions underpinning the Authority's approach to stationary and aviation free allocations are explored in the analytical annex.

Our initial approach to free allocations for stationary installations under the UK ETS prioritised continuity for operators and is similar to that of the EU ETS Phase IV. In the Government Response to the Future of UK Carbon Pricing consultation⁶, we committed to reviewing the UK's approach to free allocation as the scheme evolves to ensure it is fit for purpose and supports the UK's climate change objectives. We started this review with a call for evidence in spring 2021 and are continuing it as part of this consultation.

This chapter will do three things:

- Set out proposals to align the share of free allocation under the cap, the industry cap, with a net zero consistent cap.
- Set out principles for the second phase of the free allocation review which will focus on changes to the methodology for distributing free allocation.
- Provide the government's response to the call for evidence into free allocation policy and propose technical amendments to the scheme.

Approach to the review

The Authority launched the review into free allocation policy last year with a call for evidence in spring 2021. The indicative timeline below demonstrates the milestones for further consultations and future policy implementation.

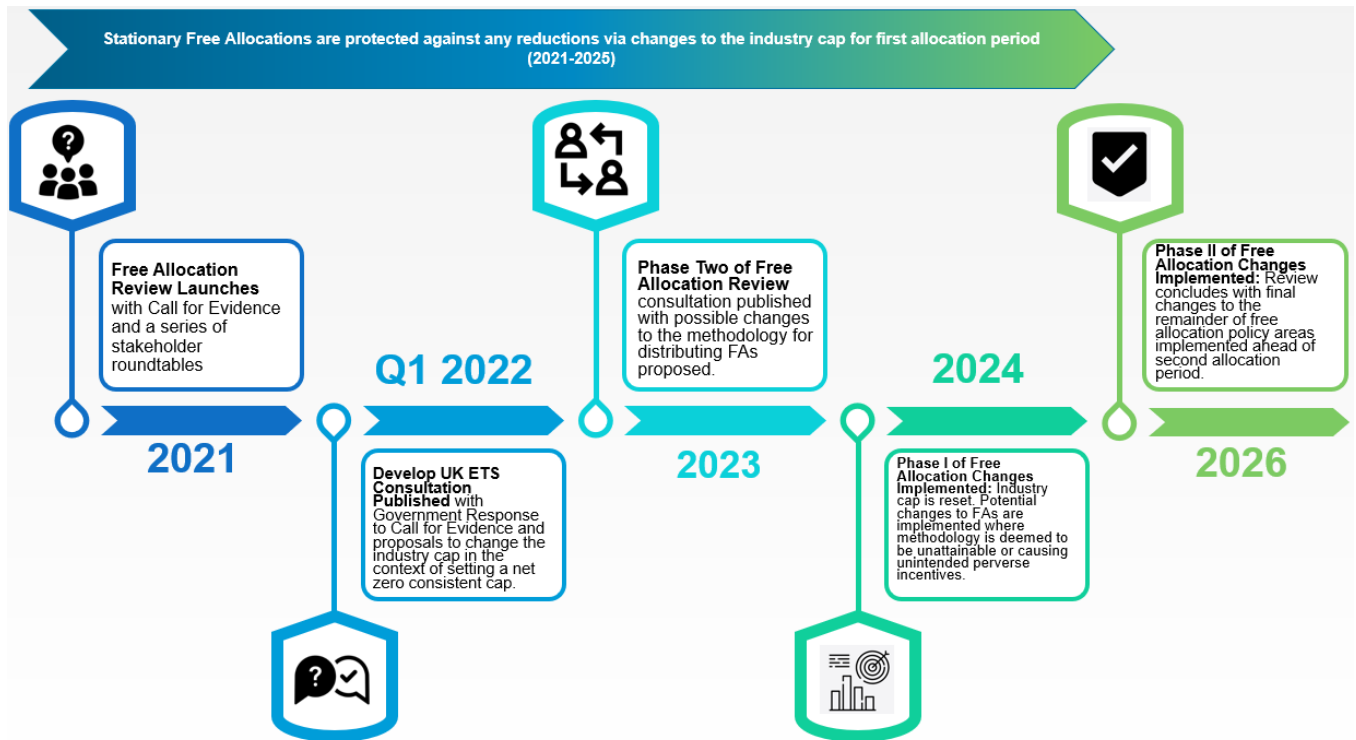
The review will be conducted in two phases. The first phase will look at aligning the share of free allocation under the cap, the industry cap, with proposed changes to the overall UK ETS cap. These top-down changes will be implemented to take effect in 2024, alongside changes to

⁶ <https://www.gov.uk/government/consultations/the-future-of-uk-carbon-pricing>

the UK ETS cap. In addition, we will look to make some technical amendments to the scheme at this stage to address discrepancies.

The second phase of the review will focus on the methodology for distributing free allocation to participants. These bottom-up changes will be implemented to take effect by 2026 to align with the second allocation period of the UK ETS.

Figure 2.1: Free allocation in Phase 1



As we align the UK ETS with our net zero target, we must ensure that the carbon price signal sent to the traded sector is aligned with the pace and scale needed to decarbonise. In light of the proposed reduction in the cap on allowances we must consider how free allocation policy could also change to avoid sending an incoherent signal to the market and to ensure the market continues to function appropriately, mitigating any negative impacts to liquidity.

We also need to consider how we can adapt free allocation policy to better mitigate carbon leakage, ensuring it is targeted for those who are most at risk whilst also providing certainty to operators.

Finally, the scheme should operate in a fair manner, ensuring that operators receiving free allocations are treated the same, outside of any differing policy intent such as benchmarking or the carbon leakage list. This includes considering making amendments to free allocation policy where there are currently perverse incentives or unequal treatment of operators.

Changes to free allocations in the context of a net zero consistent cap

The industry cap sets an upper bound on free allocations that can be issued each scheme year. Under current scheme rules the industry cap is set at the UK's notional share of the EU ETS industry cap for Phase IV of the EU ETS. This equated to around 58 million allowances in 2021 and will reduce annually by around 1.6 million allowances. The industry cap is currently legislated for as fixed numbers and will not automatically change with a revision to the overall cap.

Operator's free allocation entitlement is then calculated via a bottom-up methodology based on risk of carbon leakage, efficiency against a benchmark and historic activity levels. If the number of allowances allocated for free in a scheme year is higher than the industry cap, a cross-sectoral correction factor (CSCF) is applied, which applies a proportionate reduction to each participant's free allocations. If the number of free allocations distributed in a scheme year is lower than the industry cap, these allowances are set aside and can be used in future years to mitigate against application of a CSCF. A breakdown of allowances under the cap can be found in the analytical annex.

As the overall cap tightens to align with our net zero targets, fewer allowances will be available each year over the course of the first phase of the UK ETS (2021-2030). To avoid any unintended impacts to market functioning, stability or liquidity which could arise if free allocations made up the majority of allowances under the cap, we must consider changes to the industry cap. As part of this consultation, we are setting out the broad options and guiding principles we will use to decide which industry cap is most suitable for the scheme going forward.

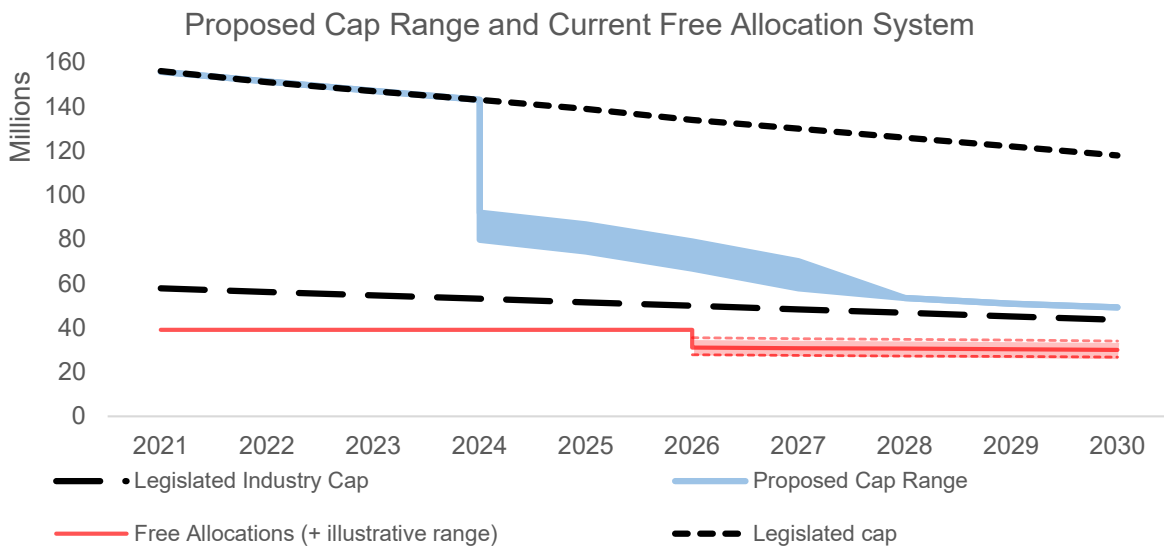
The analysis presented below is illustrative of what a reset industry cap could mean in terms of the year in which a CSCF could be triggered, causing a reduction to participants' free allowances (FAs). The Authority's preferred industry cap option will be decided upon following analysis of these consultation responses and presented in the government response alongside a decision on the absolute level of the cap and impacts analysis.

No change to industry cap (do nothing)

The 'do nothing' scenario, as presented in Figure 2.2, is to not make any changes to the industry cap. The Authority is not minded to progress this as an option; however, it is presented for completeness.

In this graph the revised UK ETS cap range is represented by the blue shaded area, the current legislated industry cap is represented by the black dotted line and the current distribution of free allocation is represented by the red line. It illustrates that without resetting the industry cap the auction share would be greatly reduced over time, potentially impacting market function and reducing liquidity.

Figure 2.2: Presenting no change to the industry cap



FAs from 2026 onwards are not yet defined under current rules, and would depend on updates to benchmarks, as well as any changes in activity levels, and market entry & exit. The diagram reflects a plausible range of what the level of FAs may be if current rules were applied **for illustrative purposes only**. It does not represent an upper/lower bound on FAs and **it is not a projection**.

Source: BEIS analysis of UKETS Data

For the first allocation period, 2021-2025, the industry cap is currently higher than the number of free allocations we have published in the Allocation Table, restricting the number of allowances which can enter the market via auction or be freely allocated.⁷ Without resetting the industry cap in 2024 these unallocated allowances would continue to accumulate over the Phase I of the UK ETS. The options for use of the 2021-2023 build-up of unallocated allowances will be explored later in Chapter 3.

To maintain the market signal which the UK ETS sends to incentivise participants to decarbonise, it is desirable that auctioning continues to be the main way of bringing allowances to the market, ensuring that a price on emissions is established. As stated in the ‘Business competitiveness in industrial sectors and the role of carbon pricing policy in the UK – report’, the EU ETS has historically shown that the policy of substantial free allowances comes at various costs, including delayed decarbonisation among those sectors receiving free allocations.⁸ Research from the International Swaps and Derivatives Association has also shown that higher amounts of free allocations in an emissions trading scheme can result in lower prices as fewer allowances need to be purchased for compliance.⁹

Based on stakeholder engagement it is understood that many operators tend to use their free allocations for compliance. This means that if allowances are not brought to market via auctioning it is unlikely they will find their way to the secondary market. Therefore, if free allocation were to make up a larger share of the overall cap, this would reduce the steady

⁷ <https://www.gov.uk/government/publications/uk-ets-allocation-table-for-operators-of-installations>

⁸ <https://www.gov.uk/government/publications/business-competitiveness-in-industrial-sectors-and-the-role-of-carbon-pricing-policy-in-the-uk>

⁹ International Swaps and Derivates Association. [Role of derivatives in carbon markets](#)

regular injection of new allowances to the primary auction market which may cause liquidity to reduce and impact the market’s functioning.

We also know from empirical studies of operating markets that, overall, markets with higher levels of free allocations have lower liquidity, though it should be noted that increasing prices could change this.^{10,11}

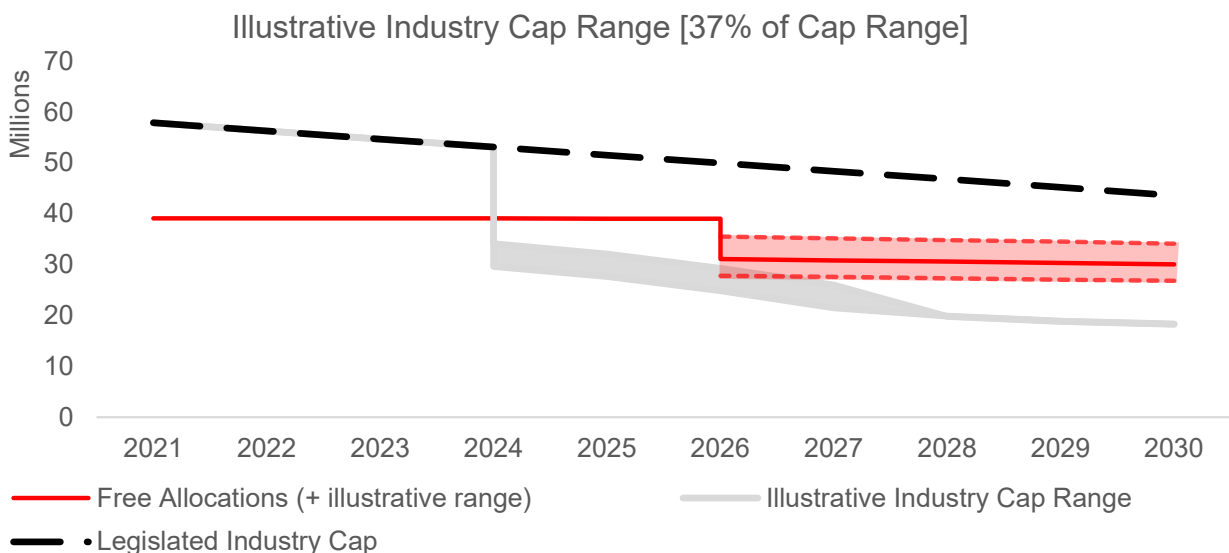
Secondary market activity may also reduce if fewer auctioned allowances were available, causing knock on impacts on the supply and demand of allowances. Price discovery would be less efficient if a reduction in the size of the primary market resulted in less trading activity on the secondary market.

Resetting the industry cap

This proposal would reset the industry cap to make up a percentage of the overall cap rather than being set as fixed numbers, as in current legislation. Due to the impacts to market functioning and liquidity, credibility of the UK ETS as an environmental policy and incentive to decarbonise as set out above, the Authority is minded to pursue this approach.

An illustrative representation of what a reset industry cap could look like, at 37% of the revised cap range, is presented in Figure 2.3 below. This illustrative figure has been selected as it is the current share of industry cap under the cap so could be seen as maintaining the status quo.

Figure 2.3: Presenting resetting the industry cap



FAs from 2026 onwards are not yet defined under current rules, and would depend on updates to benchmarks, as well as any changes in activity levels, and market entry & exit. The diagram reflects a plausible range of what the level of FAs may be if current rules were applied **for illustrative purposes only**. It does not represent an upper/lower bound on FAs and **it is not a projection**.

Source: BEIS analysis of UK ETS Data

¹⁰ Suk, Sunhee & Lee, SangYeop & Jeong, Yu. (2017). The Korean emissions trading scheme: business perspectives on the early years of operations. *Climate Policy*. 18. 1-14. 10.1080/14693062.2017.1346499.

¹¹ Easwaran Narassimhan, Kelly S. Gallagher, Stefan Koester & Julio Rivera Alejo (2018) Carbon pricing in practice: a review of existing emissions trading systems, *Climate Policy*, 18:8, 967-991, DOI: [10.1080/14693062.2018.1467827](https://doi.org/10.1080/14693062.2018.1467827)

In this illustrated example the industry cap range has fallen below the level of free allocations which have been published in the Allocation Table. The Authority is mindful of the impacts that may be felt by operators which receive free allocations as the net zero consistent cap is implemented and we are committed to ensure that these are mitigated in the near term, giving industry time to adapt and factor these into their investment decisions. If a CSCF is triggered before 2026, due to the level of industry cap chosen by the Authority, we will use our reserve of unallocated allowances or the flexible share to mitigate against any reduction to free allocations for the first allocation period, 2021-2025. More information on these proposals can be found in Chapter 3.

This signal should also provide operators clarity over the likely trajectory for their free allocations from the second allocation period allowing them time to factor this into their decarbonisation planning.

The Authority will also consider using a lower or higher proportion of the overall cap than 37% and will set out the exact figures as well as reasoning for this decision as part of the government response. When looking to reset the industry cap, the Authority will take into consideration:

- The year in which the industry cap falls beneath the level of free allocations. If this is before 2026, as stated above the Authority is committed to mitigate against any application of a CSCF.
- The distribution of allowances under the cap, and ensuring auctioning remains the primary means of distributing allowances.
- Impacts on liquidity caused by changes to the industry cap and absolute level of the cap.
- The cost to government through foregone revenue via the issuance of free allocations versus the affordability of decarbonisation technologies for businesses.

Questions
<p>4) Do you agree with the Authority's minded to position to reset the industry cap, as presented above? (Y/N) Please explain your answer.</p> <p>5) Do you agree with the rationale put forward to support decisions the Authority will make in the future if resetting the industry cap? (Y/N) Please explain your answer, and set out if there are any other aspects you think we should take into consideration.</p> <p>6) Do you have a preference for a tighter or looser proportion than 37% for the industry cap? (Y/N) Please explain your preference.</p>

Changes to the methodology for distributing free allocation

The resetting of the industry cap would result in an absolute reduction in free allocations during Phase I of the UK ETS. In line with current legislation, this reduction to free allocation could

result in the implementation of a CSCF. The Authority is aware that this method of altering the distribution of free allocations does not take into consideration the differing leakage risks for sectors.

As part of the next stage of the review the Authority will look at the current methodology for distributing free allowances and will explore ways to better target free allocations for those most at risk of carbon leakage and ensure they are fairly distributed. We will consult on these proposals no later than the end of 2023 and will implement any changes to take effect by 2026 to align with the second allocation period of the UK ETS.

The future consultation will broadly fall into three areas, each with options for changes to policy levers. These are: changes to eligibility for free allowances; changes to the way we calculate free allowances; or changes to other free allocation rules such as new entrants reserve or activity level change rules.

Based on the responses that we received via the recent call for evidence, the Authority proposes the following principles by which we will make future changes via the policy levers listed above.

- Principle One – To ensure that the UK ETS appropriately mitigates carbon leakage risk caused by the carbon price it sets, ensuring a true reduction to global emissions.
- Principle Two – To take into consideration the availability and affordability of decarbonisation technologies for UK ETS sectors.
- Principle Three – Future changes to Free Allocation policy will align with our wider climate targets.

The Authority will consider the compatibility of Free Allocation policy with our Net Zero target and other domestic and international targets as we make any future changes.

Questions
<p>7) Do you agree with the principles set out above, by which we will propose future changes to free allocation policy? (Y/N) Please explain your answer or whether there are any others you would like us to consider.</p> <p>8) Do you agree with the proposal to not use a cross-sectoral correction factor to reduce free allocations proportionally for sectors, but to find alternative means of better targeting those allowances? (Y/N) Please explain your answer.</p> <p>9) Are there specific elements of free allocation design with regards to eligibility, calculations, or other rules where you would like to see changes made, if you have not already flagged these via your call for evidence response? (Y/N) Please explain your answer and how they would align with the principles we have proposed.</p> <p>10) Are there alternative areas you think we should consider making changes to, or alternative methodologies for the provision of free allocations which you would like us to consider? Please set these out and explain your rationale.</p>

We will aim to consult on the future changes in 2023. This timeline will also allow us to have a clearer picture of the changing landscape of alternative carbon leakage mitigation policies, pathways for decarbonisation of different sectors and business models for the implementation of decarbonisation technologies such as CCUS and hydrogen.

We will implement changes to free allocation methodology ready for 2026 free allocation. This ensures that no reductions to free allocations will be made due to the setting of the net zero consistent cap until we are able to ensure a better targeting of those free allocations for sectors at risk of carbon leakage. It is also likely that by the mid-to-late 2020s other policies and technologies to support industry in the transition from a high-carbon to low-carbon economy will be more widely available or affordable.

If the Authority finds there to be specific issues with benchmarks or applications of the carbon leakage list which are unattainable for industry in a UK context, areas of the policy which are causing unintended perverse incentives, or unequal treatment of participants outside of the current policy intent, we will aim to implement these changes as soon as is practicably possible following the second consultation point and no later than 1 January 2024.

Question

11) Are there changes which you have not already flagged to us as part of your call for evidence response which you believe should be implemented sooner than the above timetables? (Y/N) Please explain your answer.
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Broad approach to other carbon leakage mitigation policies

The aim of free allocation policy is to mitigate against carbon leakage; however, the root of this problem does not stem solely from the UK's carbon pricing but also the lack of a global carbon price resulting in competitiveness distortions. The changes that we propose as part of this free allocation review will be designed to mitigate against leakage risk faced by industry in the short and medium terms, and at least for the first phase of the UK ETS. After this time, we will look to other potential options for mitigating carbon leakage risk.

As discussed in HMT's Net Zero Review¹² and UK Government's Industrial Decarbonisation Strategy¹³, a range of approaches could potentially help to address this. Carbon leakage is caused by different countries mitigating emissions at different rates. So, the first step is to use climate diplomacy to encourage our trading partners to ambitiously mitigate climate change in coordination with each other to reduce the leakage risk across economies. Carbon leakage risk will also reduce where there is demand for low-emissions products and consumers decide to make green choices. We expect this demand will grow over time and as set out in the Industrial Decarbonisation Strategy, the UK Government is developing a range of 'demand-

¹² <https://www.gov.uk/government/publications/net-zero-review-interim-report>

¹³ <https://www.gov.uk/government/publications/industrial-decarbonisation-strategy>

side' policy levers to support the growth of the market for low emissions products, including product emissions labelling and green procurement.

The Authority will be publishing more analysis on the possible risks of carbon leakage from the UK in further consultations as part of the Free Allocation Review. This will inform possible changes to free allocation policy to better improve carbon leakage mitigation within the UK ETS. The UK Government also launched a call for evidence into demand-side policies in December 2021, which covered a range of policy approaches including mandatory product standards ¹⁴. More details can be found below on this policy mechanism. Any policy will be evidence-based, proportionate and account for future carbon leakage risks.

¹⁴ <https://www.gov.uk/government/consultations/towards-a-market-for-low-emissions-industrial-products-call-for-evidence>

Other carbon leakage mitigation policies

Carbon Border Adjustment Mechanisms (CBAMs)

As set out in HMT's Net Zero Review a range of approaches could potentially help address carbon leakage, of which Carbon Border Adjustment Mechanisms are one. A CBAM is "a measure applied to traded products that seeks to make their prices in destination markets reflect the costs they would have incurred had they been regulated under the destination market's greenhouse gas emission regime." (Cosbey A. et al., 2012)

Any trade policy measure must comply with our international obligations, including under the World Trade Organisation and our Free Trade Agreements. Any policy measure should be evidence-based, proportionate and forward looking and would need to consider the specific needs of the Least Developed Countries (LDCs).

Carbon border adjustments should be considered as a part of an international, multilateral effort which is the best way to prevent carbon leakage, and we will continue to monitor global policy developments on this.

Demand side policies for industrial decarbonisation – Mandatory product standards

As set out in the Industrial Decarbonisation Strategy, the use of mandatory standards to set an upper limit on the emissions associated with industrial products placed on the UK market is one medium-term demand-side mechanism which could be used to support reductions in industrial emissions, and in turn mitigate carbon leakage.

If government chooses to pursue a mandatory standards regime, and potential legal and trade barriers can be overcome, mandatory standards could be introduced in some sectors over the course of the mid to late 2020s. To limit complexity, it is likely that any new policy would apply to a small group of priority sectors or products at first, with more sectors or products added over time once systems are established. Out to 2050, mandatory product standards could become incrementally more stringent as the definition of a low emissions product narrows, supporting our carbon pricing policy in enabling industrial decarbonisation. Further research and analysis, as well as public consultation, would be required before this policy could be introduced. The UK Government published a call for evidence related to this policy, 'Towards a market for low emissions industrial products', in December 2021. Responses to the call for evidence will inform the next stage of policy development, including a public consultation on policy design planned for autumn 2022.

It will be important to ensure industry are not double-compensated for their carbon leakage risk, and we will work to ensure that there is harmony between the introduction of any new demand-side measures and existing policies. The UK Government are committed to working with industry to ensure these policies are designed in a way that has the best impact for our climate targets.

Question

12) Are there other carbon leakage mitigation policies which are not already being considered by the UK Government, Scottish Government, Welsh Government, and DAERA, as listed above, which you would like to flag to us? (Y/N) Please explain your answer.

Government response to the call for evidence into stationary free allocation policy

The call for evidence sought views on how our use of free allocations could better incentivise emissions reduction, and protect energy intensive, trade exposed industries from the risk of carbon leakage. The call for evidence received over 60 responses from a range of stakeholders, including industry, academia and think tanks. As a supplement to the call for evidence, we also held a series of roundtable discussions.

Transparency, certainty and decarbonisation pathways

Several responses highlighted the need for certainty with regards to future free allocation policy, emphasising the increased risk of investment leakage. This was raised particularly by those with international parent companies, who may choose to invest in jurisdictions with fewer or more stable environmental regulations. In addition, many respondents called for clarity around the decarbonisation strategies and pathways of the UK Government, Scottish Government, Welsh Government and DAERA, and requested an assurance that free allocations would continue to be supplied until such time that abatement technologies are widely available. A number of sectors also highlighted concerns around the step-change between high-carbon and low-carbon economies in the UK, some flagging the geographical and infrastructural barriers to access low carbon technologies.

We note the arguments that some respondents made for transparency around decarbonisation strategies and pathways. When making changes to free allocation policy we will ensure consideration of the UK Government's recent publication of the Industrial Decarbonisation Strategy¹⁵, the Net Zero Strategy¹⁶, the Scottish Government's Climate Change Plan¹⁷, Welsh Government's Net Zero Wales Plan¹⁸, and Northern Ireland's Draft Green Growth Strategy¹⁹, Energy Strategy – Path to Net Zero Energy²⁰ and Draft Environment Strategy²¹. These publications all set out a policy pathway to net zero for sectors that currently receive free

¹⁵ <https://www.gov.uk/government/publications/industrial-decarbonisation-strategy>

¹⁶ <https://www.gov.uk/government/publications/net-zero-strategy>

¹⁷ <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/>

¹⁸ <https://gov.wales/net-zero-wales>

¹⁹ https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/Green%20Growth_Brochure%20V8.pdf

²⁰ <https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Energy-Strategy-for-Northern-Ireland-path-to-net-zero.pdf>

²¹ <https://www.daera-ni.gov.uk/sites/default/files/consultations/daera/Draft%20Environment%20Strategy.PDF>

allocation which the Governments that make up the Authority are committed to delivering. The UK Government will also continue to ensure join up between the UK ETS and future proposals regarding Carbon Capture Usage and Storage (CCUS) and hydrogen, including proposed business models for these technologies.^{22, 23}

A number of responses called for stable carbon pricing policies, highlighting the number of upcoming consultations and changes in various areas of government, including changes to the UK ETS as well as the indirect cost compensation scheme²⁴ and red diesel reforms.

Linking with the EU ETS

Some stakeholders expressed a preference to link the UK ETS to the EU ETS, emphasising the importance of a level playing field between UK, European and global competitors. Respondents were concerned about increased carbon leakage risks if the UK ETS were to diverge from EU ETS policy and creation of barriers that could potentially impede linkage of both schemes. More information on the Authority's approach to international cooperation can be found in the introduction to this document.

Interaction with other environmental policies

Several respondents emphasised the need for consideration of other environmental regulations and policies that could affect the ability for UK industry to remain competitive. They highlighted a desire for the Authority to consider the effects of other parts of the regulatory framework, most notably any changes to industrial electricity pricing policies.

We acknowledge respondents' comments regarding the consideration of the impact of environmental policies in the round. The Authority will work closely with other government departments in each administration ahead of consulting on future changes to free allocation policy to ensure the cumulative burden on participants is taken into consideration.

Free allocation methodology – Benchmarking and the carbon leakage list

There were a variety of views on the use of EU benchmarks and the EU carbon leakage list. Some respondents highlighted benchmarks which they felt were unattainable in the UK due to differing climates, policies and availability of resources. All sectors emphasised that due to higher electricity costs in the UK, many abatement options via electrification are not currently cost effective. For these reasons some were in favour of transitioning to benchmarks based on UK industries and UK data. However, others noted that due to a low number of sites in the UK, it could be challenging to create appropriate UK specific benchmarks for some industries.

Several stakeholders requested a transparent review of the FA methodology and data inputs. To avoid mistakes being made in the UK ETS, respondents suggested that regulators publish

²² <https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models>

²³ <https://www.gov.uk/government/consultations/design-of-a-business-model-for-low-carbon-hydrogen>

²⁴ A scheme to compensate those electricity intensive industries deemed to be exposed to a significant risk of carbon leakage due to the indirect emission costs of the UK ETS and Carbon Price Support.

more precise, high quality and definitive benchmarking and activity monitoring guidance for operators and verifiers.

Some respondents suggested that a carbon leakage list based on UK industries carbon leakage risk would be more appropriate for a standalone UK ETS. A number of sectors also requested that a tiered carbon leakage list be considered when aiming to better target free allocations, whilst others were opposed to these suggestions. Some respondents requested that the carbon leakage list be made part of UK law, so that complaints regarding methodology may be brought to the Authority and UK Courts. This is in fact already the case, as the carbon leakage list is applied in UK law pursuant to the retained version of the UK Free Allocation Regulation.

The Authority will approach any future changes to free allocation methodology, including possible changes to benchmarking or the carbon leakage list, with full transparency. More details about future proposals can be found in the 'Free Allocation Technical Changes' section of this consultation.

Impacts of the COVID-19 pandemic

Many sectors flagged concerns with the Activity Level Changes rules due to the impacts of the COVID-19 pandemic, requesting that these years should be discounted as a 'force majeure' event. Some respondents also flagged the differing treatment between incumbent sites and new entrants under these rules.

Electricity generators

Many respondents flagged concerns around how installations are currently classified as electricity generators within the UK ETS²⁵. They requested that the definition of an "electricity generator" be reviewed to limit perceived unintended negative impacts on free allocation.

Free allocation technical changes

When considering changes to free allocation, the UK ETS Authority is conscious of balancing the need to provide operators with sufficient time to comment on and adapt to these changes, and the need to take immediate action where not doing so would have a detrimental impact on the functioning of the market and its participants.

The UK ETS Authority is considering the following proposals which have a significant impact in the first years of free allowance allocation for a subset of operators, do not require a fundamental rethinking of free allocation methodology and are deliverable in the short term.

²⁵ Northern Ireland electricity generators participate in the EU ETS by virtue of the Ireland / Northern Ireland Protocol.

Proposal one: amendment to the Activity Level Changes Regulation due to the 2020 COVID year

A number of respondents to the call for evidence from the ceramics, cement and oil and gas industries raised concern that the COVID-19 pandemic would have a significant impact on their free allocation of allowances due to the Activity Level Changes rules.

The Activity Level Changes Regulation²⁶ currently outlines that each scheme year operators of installations included in the Allocation Table must submit a verified Activity Level Report, which will include activity level data from the previous year. If the average activity levels (calculated from the previous 2 years activity levels) shows an increase or decrease in activity of 15% or more from historic activity levels, the installation's free allocation of allowances is recalculated. For example, in 2022, the average activity levels from 2020 and 2021 will be compared to historical activity levels to determine whether activity has changed by 15% or more. The free allocation for 2022 may then be adjusted.

For many operators, activity levels in 2020 are predicted to have dropped significantly due to the exceptional nature of the COVID-19 pandemic. This may cause reductions in free allocation in 2021 and 2022 if the 15% threshold is met.

For operators whose emissions reduced proportionally with output, the Activity Level Changes policy will be working exactly as intended: they will have received more free allocation in 2020 than they should have to cover their (reduced) emissions. Activity Level Changes will therefore rectify this by reducing their free allocation of allowances in following scheme years.

In the example set out in Table 2.1, reduced activity in 2020 and 2021 causes the Activity Level Changes to be triggered in 2022, as the average activity in that period is 850 tonnes, which is 15% lower than historical activity levels. As emissions reduce in line with output, free allocation covers a higher proportion of emissions in 2020 and 2021. Activity Level Changes therefore reduce free allocation for the operator in 2022.

Table 2.1: Example Activity Level Changes and the effect on free allocation

	2019	2020	2021	2022
Output (tonnes)	1000	750	950	1000
Emissions	1000	750	950	1000
Free Allocation (pre-ALC)	500	500	500	500
Historical Activity Level (tonnes)	1000	1000	1000	1000

²⁶ Commission Implementing Regulation (EU) 2019/1842, as it forms part of domestic law, amended by Schedule 2 to the Greenhouse Gas Emissions Trading Scheme (Amendment) Order 2020

2-year average activity level (tonnes)	1000	1000	875	850
ALC trigger (Y/N)	N	N	N	Y
Free Allocation (post-ALC)	500	500	500	425
Free Allocation coverage rate (FA/Emissions)	50%	66.7%	52.6%	42.5%

However, some operators saw significant reductions in output without a corresponding and proportional decrease in emissions, due to a number of reasons associated with the specific industrial process(es). This means that these operators had a comparatively lower proportion of emissions covered by free allowances during the COVID-19 impacted year(s), whilst also having their free allowances reduced through Activity Level Changes due to reduced output in following years. This will increase their costs and put them at a higher risk of carbon leakage.

In the example set out in Table 2.2, reduced activity in 2020 and 2021 causes the Activity Level Changes to be triggered in 2022, as the average activity from in that period is 850t, which is 15% lower than historical activity levels. However, as emissions do not reduce in line with output, free allocation covers the same proportion of emissions in 2020 and 2021, and Activity Level Changes lead to a reduction in free allocation in 2022.

Table 1.2: Example Activity Level Changes and impact of output reduction without emissions reduction

	2019	2020	2021	2022
Output (tonnes)	1000	750	950	1000
Emissions	1000	1000	1000	1000
Free Allocation (pre-ALC)	500	500	500	500
Historical Activity Level (tonnes)	1000	1000	1000	1000
2-year average activity level (tonnes)	1000	1000	875	850
ALC trigger (Y/N)	N	N	N	Y
Free Allocation (post-ALC)	500	500	500	425

Free Allocation coverage rate (FA/Emissions)	50%	50%	50%	42.5%
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The Authority is currently considering two options for 2022 Activity Level Changes:

Option 1: Maintain the current application of the Regulation for the 2022 Activity Level Changes process.

Option 2: Amend the Activity Levels Changes Regulation to omit the 2020 COVID year in the calculation of change in activity level in 2022, for those operators who can demonstrate to the Authority significant discrepancies between reductions in output and emissions caused by the COVID-19 pandemic. This option may be considered by the Authority if robust evidence that could apply across all UK ETS sectors is provided to the following questions by respondents. This option may incur delays in the Activity Level Changes process in 2022.

Questions
<p>13) Should the current rules be maintained for the 2022 Activity Level Changes process? (Y/N) Please explain your answer.</p>
<p>14) What accurate, robust and verifiable data could you provide to the Authority to evidence that the discrepancy between reductions in output and emissions was caused specifically by the COVID-19 pandemic?</p>
<p>15) How should the determination of “significant discrepancies between reductions in output and emissions” be made? Which data should be used in making this determination?</p>
<p>16) Should specific thresholds be set between the reduction in output levels and reduction in emission levels for operators to be eligible to have the 2020 Covid year omitted from the 2022 Activity Level Changes calculation? (Y/N) Please explain your answer.</p>
<p>17) If the 2020 year is omitted, which years should be taken into account in the calculation of Activity Level Changes in 2022? Please explain your answer.</p>

Proposal two: amendment to the Activity Level Changes Regulation to take into account the turn-off of activity for maintenance or planned down time

A number of respondents to the call for evidence from the chemicals and oil and gas sectors raised that the Activity Level Changes rules would cause significant reductions in free allocation when activity was turned off for maintenance or planned down time.

Under current Activity Level Change rules, if an operator were to turn-off their activity to undergo maintenance or improvement works, and this led to average activity levels (calculated from the previous 2 years activity levels) decreasing by 15% or more compared to historic activity levels, they would see a reduction in their free allocation of allowances.

The Authority has considered this carefully and do not intend to make changes to the Activity Level Changes Regulation to take into account the turn-off of activity. This is because whilst the COVID-19 pandemic was an exceptional event, which could not be planned for, operators can plan ahead for the turn-off of activity and should be encouraged to do so as efficiently as possible.

Furthermore, during the time that activity is turned off, emissions will also reduce, which means that operators will have received more free allocation than they should have to cover their reduced emissions. The Activity Level Changes will, as intended, rectify this by reducing their free allocation.

Question
18) Do you agree that no changes should be made to the Activity Level Changes Regulation to take into account the turn-off of activity? (Y/N) Please explain your answer.

Proposal three: Activity Level Changes and treatment of existing/new sub-installations.

A number of respondents to the call for evidence from the minerals and tarmac sectors raised concern that the current Activity Level Changes Regulation can treat installations differently when investments are made to increase production capabilities. Following investment, there can be a difference in the resulting increase in free allowances that are distributed to operators based on whether they are already part of the UK ETS (incumbents) or new entrants.

With the current Activity Level Changes rules, when an existing sub-installation makes investments to increase production capabilities leading to increased output, free allocation of allowances increases gradually over two years to account for this increased output.

For new entrants and new sub-installations of incumbents, this same investment would receive the full amount of free allocation from the first year of operation. This is because for the first and second year of operation, new entrants and new sub-installations receive free allocation based on the activity level of each year respectively. For example, if an operator establishes a new sub-installation which starts normal operation in January 2022, this sub-installation will receive its 2022 free allocation of allowances following its new entrant application and its 2022 free allowances will be calculated based on 2022 activity levels.

This difference in treatment between existing sub-installations and new sub-installations may disincentivise operators to invest in their production capabilities, as well as create domestic competitive distortions.

The Authority proposes to amend the Activity Level Changes Regulation to treat existing sub-installations in the same way as new sub-installations when existing installations make investments to increase production capabilities. This would mean that incumbent sub-installations would receive increased levels of free allocation from the first year of operation, following increased production levels.

Question

19) Do you agree with this proposed change? (Y/N) Please explain your answer.
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20) How can operators provide evidence that their increase in output is due specifically to investments to increase production capabilities?

Proposal four: putting current benchmark values in UK law.

A number of respondents to the call for evidence from the lime, minerals and cement sectors suggested that reviews of UK ETS benchmark methodology should be handled by the Authority, instead of the European Commission.

The United Kingdom has left the European Union, and therefore it is expected that UK policies will be set by Administrations within the UK, not the European Commission.

The UK Free Allocation Regulation²⁷ currently applies EU ETS benchmarks for the calculation of free allocation in the UK ETS. Benchmarks are adopted under EU law and made applicable in UK law by reference in the UK Free Allocation Regulation. This means that if the EU were to make changes to benchmarks in the future, these would automatically apply to the UK ETS.

The Authority will be considering changes to benchmarks as part of the review. A first step to any changes could be to incorporate benchmark values, as they currently stand, directly into UK law, so that these benchmarks are fixed in time.

We are minded to bring current benchmark values into UK law, by direct inclusion in UK ETS legislation. Should the Authority wish to change the policy position from current benchmarks, it may then do so through changes to UK ETS secondary legislation.

Question

21) Do you agree with this proposed amendment? (Y/N) Please explain your answer.

²⁷ Commission Delegated Regulation (EU) 2019/331 of 19 December 2018, as it forms part of domestic law, amended by Schedule 1 to the Greenhouse Gas Emissions Trading Scheme (Amendment) Order 2020 and article 30 of the Greenhouse Gas Emissions Trading Scheme (Amendment) Order 2021

Proposal five: amending the electricity generator definition to only consider electricity exports in the baseline period

A number of respondents to the call for evidence from the chemicals, ceramics and oil and gas sectors raised concerns that the current definition of electricity generator in the UK ETS does not allow operators to make changes to their classification as an electricity generator, leading to reductions in their free allocation of allowances.

In the UK ETS, electricity generators are not eligible for free allocation, except in relation to measurable heat produced by means of high efficiency cogeneration or exported for the purpose of district heating. This is because electricity generation is not an activity which is deemed at risk of carbon leakage, as the carbon cost of electricity production can be passed through to the consumer.

Installations are classified as electricity generators if they have produced electricity for sale to third parties since 2005 and if their only regulated activity is the combustion of fuels. If they are classified as an electricity generator, operators do not currently have a way of modifying their classification. Changes in circumstance or industrial processes, such as putting a stop to the exporting of electricity, do not change the electricity generator classification. Furthermore, the amount of exported electricity is not currently a factor in the classification as an electricity generator. Installations may be classified as such for very minimal, or one-off, electricity exports.

The Authority proposes to amend the electricity generator definition to consider electricity exports in the baseline period, rather than electricity exports since 2005. This would provide the possibility for operators to change their electricity generator status for future allocation periods, should they put a stop to the export of electricity for sale to third parties prior to the baseline period.²⁸ This proposal would not apply for the 2021-2025 allocation period, as the electricity generator classification for this period was already determined by the Authority as per current legislation.

Questions
22) Do you agree with this proposed amendment? (Y/N) Please explain your answer.
23) Should minimal or one-off electricity exports be excluded from the electricity generator classification? (Y/N) Please explain your answer.

²⁸ For the 2026-2030 allocation period, the baseline period is 2019-2023.

Proposal six: Combined Heat and Power (CHP) plants and electricity generator definition.

A number of respondents to the call for evidence from the food and drink sector raised concern that they were classified as an electricity generator due to the export of excess electricity generated by Combined Heat and Power (CHP) plants on their site.

As mentioned in the previous section, electricity generators are limited in their eligibility for free allocation. CHP plants operating independently for the sole purpose of power generation are classified as electricity generators because their main function is to generate and export electricity for sale to third parties. Some operators have also invested in on-site CHP plants to generate heat and power for their industrial activity. These operators may export the excess electricity that is generated to the grid, which can lead to the whole installation (the part related to the industrial activity and the CHP) being classified as an electricity generator if their only regulated activity is the combustion of fuels, as per the current electricity generator definition.

CHP, the simultaneous generation of heat and power, can currently provide a cost-effective approach for making carbon savings. This is particularly the case for CHPQA (CHP Quality Assurance) certified CHP. The CHPQA scheme, an annual assessment process, ensures that all CHP plants that benefit from government support meet a minimum level of energy efficiency.

However, the low-carbon credentials of CHP compared to unabated natural gas fuelled grid electricity is expected to gradually start to fall, as grid electricity improves its energy efficiency. UK Government is currently in the process of reviewing CHP policy. A call for evidence was recently published on how UK Government will support CHP in the future given the decarbonisation objectives, which closed on 20 December 2021, and a summary of responses will be provided in due course.²⁹ Making a change to the electricity generator definition to exclude CHP may risk providing an incentive for further investments in CHP when future policy is being reviewed.

The Authority proposes two options:

Option 1: Maintain the current rules regarding electricity generator classification and its application to CHP plants.

Option 2: Amend the electricity generator classification to exclude installations that have produced electricity for sale to third parties, if that electricity was produced by means of a CHPQA-certified plant, operating as part of an operator's industrial activity. This would not exclude CHP plants that operate independently from this classification. This would mean that operators who have invested in on-site CHPQA-certified CHP plants to generate heat and power for their industrial activity, and export excess electricity to the grid, will not have their

²⁹

<https://www.gov.uk/government/consultations/combined-heat-and-power-pathway-to-decarbonisation-call-for-evidence>

whole installation classified as an electricity generator. This option would not apply for the 2021-2025 allocation period, as the electricity generator classification for this period was already determined by the Authority as per current legislation.

Questions

24) Should the current rules be maintained? (Y/N) Please explain your answer. If you answered 'Yes' please set out what the benefits of doing so are in your view.

25) Should an amendment to the electricity generator classification be made to exclude installations that produced electricity for sale to third parties, if that electricity was produced by means of a CHPQA-certified plant, operating as part of an operator's industrial activity? (Y/N) Please explain your answer.

26) Should a cap be set on the maximum amount of electricity that can be exported as a condition to this exclusion? (Y/N) Please explain your answer.

27) Do you believe that the Option 2 proposal will support investments in long-term decarbonisation solutions? (Y/N) Please explain your answer.

28) How can operators provide robust evidence that their CHPQA certified CHP plant operates as part of their industrial process, and does not operate independently for the sole purpose of generating electricity for sale?

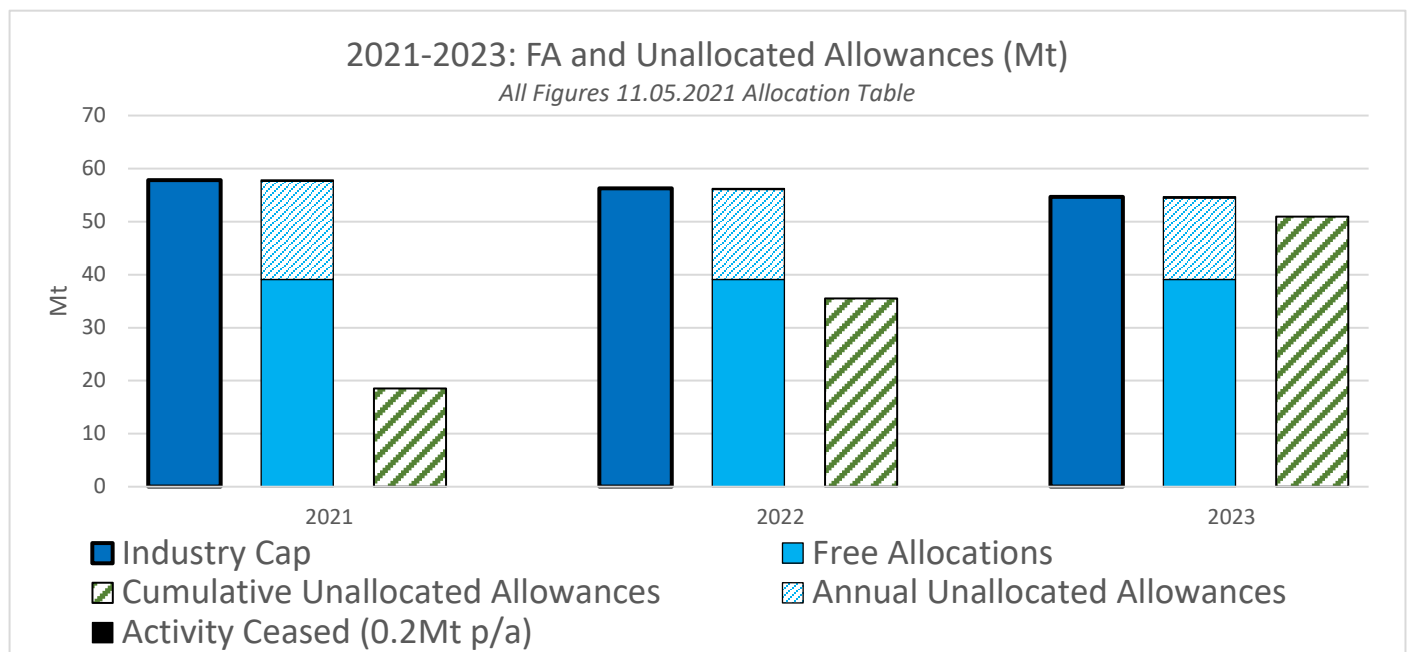
Chapter 3: Unallocated free allowances and flexible share

Unallocated allowances result from the number of free allowances distributed to operators being below the industry cap, which sets the maximum number of free allowances that can be allocated to stationary operators, in a given scheme year. For example, in 2021 39Mt free allowances were allocated to operators with an industry cap of 58Mt, leading to unallocated free allowances totalling close to 19Mt.

This is because the UK ETS industry cap was initially set at the UK’s notional share of the EU ETS industry cap for Phase IV of the EU ETS. As the sector make-up of operators in the EU ETS and UK ETS is different, and that UK operators are on average less production-intensive than EU operators, free allowances to be allocated to operators were therefore significantly lower than the industry cap.

Figure 3.1 displays the industry cap for each scheme year between 2021-2023, free allowances allocated to stationary operators and the resulting unallocated allowances, which can build up year on year.

Figure 3.1: Industry cap for each scheme year, 2021-23³⁰



Source: BEIS analysis of UKETS Data

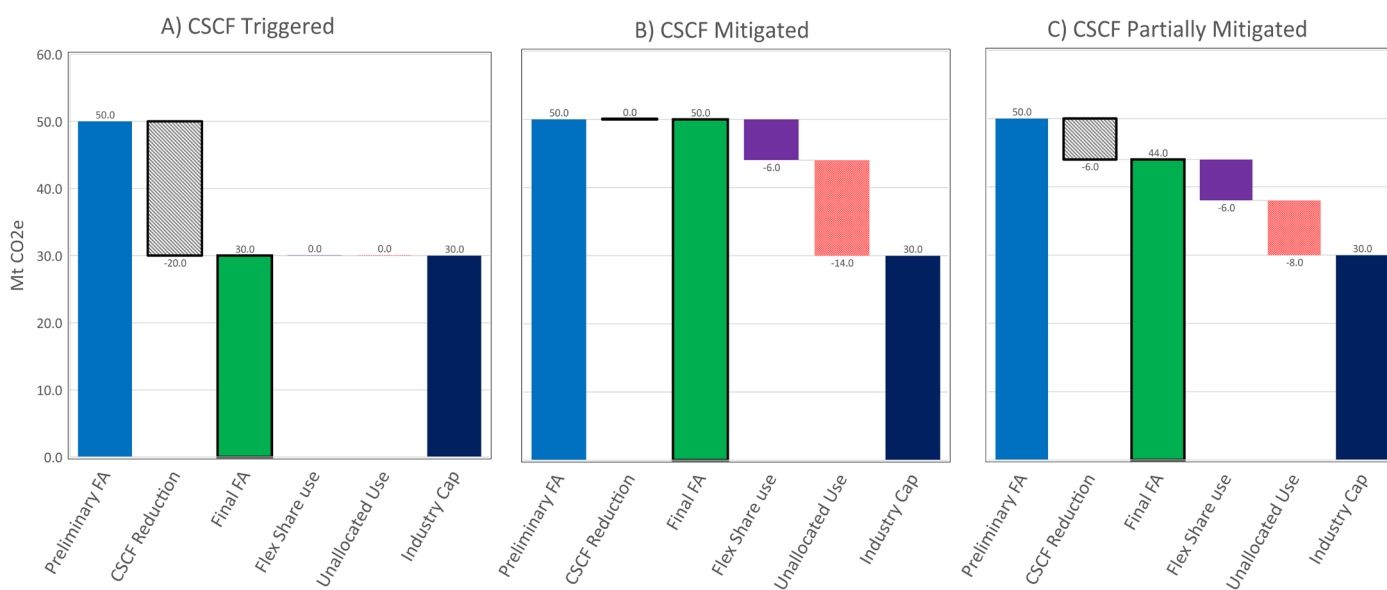
The flexible share is a pot of allowances representing 3% of the cap for the 2021-2030 trading period (41Mt allowances).

³⁰ 'Activity Ceased' represents allowances that would have been allocated to operators that ceased operation prior to 2021; these allowances are not issued to operators

Unallocated allowances and the flexible share currently serve two functions in legislation:

- They can be used to mitigate the application of a CSCF. Using unallocated allowances or the flexible share to “top-up” the industry cap can prevent a CSCF from being applied, and therefore prevent reductions in free allocation. Figure 3.2 provides an illustrative example of how the flexible share, unallocated allowances and CSCF interact. Over the 2021-2025 allocation period, as free allowances were beneath the industry cap, no CSCF was applied, as announced on gov.uk.³¹

Figure 3.2: Illustrative example of how the flexible share, unallocated allowances and the CSCF interact



In all scenarios, the preliminary free allocations exceed the industry cap. *All figures are for example purposes only.*

A) Flexible share and unallocated allowances are not available. The CSCF triggers and reduces free allocations to the industry cap for this year.

B) Flexible share and unallocated allowances are available. The CSCF is mitigated and free allocations exceed the industry cap for this year.

C) Flexible share and unallocated allowances are available. They are **not sufficient** to fully mitigate the CSCF. Free allocations still exceed the industry cap for this year, but not by as much as B).

- They can be drawn from by the Cost Containment Mechanism (CCM)³². The CCM is a tool for the Authority to intervene if auction prices are elevated for a sustained period, causing market instability. In the event that the CCM is triggered, and an intervention is decided by the Authority, the volume of allowances to be auctioned can be increased in several ways, including the auctioning of unallocated free allowances.

³¹ See section on free allocation of allowances at: <https://www.gov.uk/government/publications/participating-in-the-uk-ets/participating-in-the-uk-ets>

³² See section on the CCM at: <https://www.gov.uk/government/publications/uk-emissions-trading-scheme-markets/uk-emissions-trading-scheme-markets>

Options for bringing unallocated allowances and/or flexible share to market

Neither unallocated allowances nor the flexible share have so far been utilised through existing mechanisms in legislation. This pool of allowances is expected to grow in the 2022-2023 period, as free allowances will continue to be below the industry cap. If unused by mechanisms currently in legislation, unallocated allowances over the 2021-2023 period are expected to represent approximately 51Mt allowances, and the flexible share approximately 41Mt allowances. The Authority is considering options to bring these allowances to market and is seeking views from consultation respondents. Please note that these options are not mutually exclusive.

Mitigating against the application of a CSCF

Following the implementation of the net zero consistent cap in 2024, the Authority is considering resetting the industry cap, as detailed in the 'Resetting the industry cap' section of Chapter 2. If this proposal is taken forward, it is possible that the industry cap could fall below the levels of free allocation currently set out in the Allocation Table in 2024 and 2025. To mitigate against impacts to operators, the Authority intends to utilise a portion of **unallocated allowances and/or flexible share to mitigate against the application of a cross-sectoral correction factor prior to 2026. This would preserve the amount of free allocation to be distributed to operators in 2024 and 2025, avoiding reductions in free allocation.**

Question
29) Do you agree that, should the industry cap be reset to a level that would fall below free allocation in 2024 and 2025, a portion of unallocated allowances and/or flexible share should be used, as currently legislated, to mitigate against the application of a cross-sectoral correction factor? (Y/N) Please explain your answer.

Smoothing the transition to a net zero consistent cap and supporting market liquidity

The implementation of the net zero consistent cap in 2024 will require a significant drop in allowances reaching the market in 2024 compared to previous years, as detailed in the "A net zero consistent cap" section.

The Authority is considering bringing a portion of 2021-2023 unallocated allowances and/or flexible share to auction, to smooth the transition to the net zero cap. These allowances are already factored into the cap for Phase I of the UK ETS, and have been taken into account in the proposal for the net zero consistent cap. As such, this would not increase the total number of allowances under the cap over the whole phase, but merely affect when allowances come to market. In practice, this would involve transferring a portion of these unallocated allowances and/or flexible share to the auction calendar in future scheme years, increasing the volume of auctioned allowances in that year. Should the Authority decide to auction a portion of

unallocated allowances and/or flexible share, the decision to do so as well as the portion to be auctioned would be communicated as part of the government response. The exact timing of the release of additional allowances into auction would also need to be considered by the Authority, and this could take place prior to the implementation of the net zero consistent cap.

This would provide a level of support to market participants in the transition to a net zero consistent cap by increasing the supply of auctioned allowances. It would also provide a direct route to market for unallocated allowances and/or the flexible share, supporting market liquidity. The Authority recognises that establishing a new emissions trading market presents a challenge in terms of liquidity being initially limited as there is no historic build-up of allowances to draw from. This was acknowledged in the Authority's CCM statements³³. Liquidity in the ETS markets has grown as an increasing number of allowances have been released via auctions and free allocation. Increasing liquidity further could support the functioning of the market whereas withholding unallocated allowances from the market could reduce opportunities for trading and efficient price discovery.

Bringing a portion of unallocated allowances and/or flexible share to auction would however reduce the pool of allowances that could be drawn from by the CCM in future scheme years, once the allowances have been auctioned. This may, to a certain extent, limit the CCM's ability to mitigate the effects of excessive price volatility. It could also reduce the pool of allowances that can be used to mitigate against the application of a cross-sectoral correction factor post 2026, which may lead to reductions in free allocation in the 2026-2030 allocation period if a cross-sectoral correction factor were to be applied.

Questions

30) Do you agree that a portion of unallocated allowances and/or flexible share should be auctioned to smooth the transition to the net zero cap? (Y/N) Please explain your answer.

31) Do you agree we should consider auctioning a portion of unallocated allowances and/or flexible share before 2024 to support market liquidity? (Y/N) Please explain your answer.

Retaining allowances for market stability

Finally, the Authority intends to retain a portion of unallocated allowances and/or flexible share for market stability uses, which are detailed in the "Summary of existing markets policy in the UK ETS" section in Chapter 4.

Question

³³ <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> and <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>

32) Do you agree that a portion of unallocated allowances and/or flexible share should be retained for market stability purposes? (Y/N) Please explain your answer.

Chapter 4: A call for evidence on future markets policy

Introduction

The launch of the UK ETS on 1 January 2021 and the start of auctions and secondary markets in May 2021 heralded a new phase in UK emissions trading policy. These new markets are becoming firmly established, with 16 auctions of 84 million allowances in total and over 40 million allowances freely allocated during the first half of the first compliance year.³⁴

In this consultation, the Authority is setting out policy proposals on a range of design features, including changes to the cap and free allocation. Along with broader drivers of evolving market conditions in the coming years, the Authority needs to remain aware of how UK ETS markets policy may need to evolve as the UK ETS matures.

In this chapter, we are calling for evidence on UK ETS markets policy. This is the first stage of a two-stage approach to developing proposals on future UK ETS markets policy. The questions in this section seek to establish a framework within which to design ETS markets policies. Subject to responses, we intend to return with detailed markets policy proposals as appropriate in due course. This two-stage approach allows us to engage early while also drawing on more detailed price and compliance data from the 2021 compliance year. This will help to ensure that any eventual proposals build on up-to-date views and quantitative evidence.

We previously committed to consult on our intent to withdraw the Auction Reserve Price (ARP) alongside the net zero consistent cap consultation.³⁵ We are therefore seeking views in this consultation on its withdrawal, the timing of its withdrawal and whether the ARP should be replaced. Subject to responses and the evidence we gather through this consultation, we will return with full proposals for the withdrawal of the ARP in due course.

Markets policies in general

The launch of the UK ETS has created a marketplace in which participants can trade allowances. This includes markets for both UK allowances and their derivatives, such as futures contracts. These provide benefits from gains from trade to participants, including heavy

³⁴ This figure is updated regularly in the normal operation of the scheme. Most recent up-to-date figures can be found here: <https://www.gov.uk/government/publications/uk-ets-allocation-table-for-operators-of-installations>

³⁵ “The government will consult on its intent to withdraw the ARP as part of the planned consultation to appropriately align the UK ETS cap with a net zero trajectory which will be launched later this year.” Gov.uk, ‘Participating in the UK ETS’, Auction Reserve Price. See here:

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

industry, the power sector and aviation.³⁶ Financial intermediaries also provide important liquidity to the scheme.

Some volatility is an inherent and positive attribute of market systems. However, the gains from trade in emissions trading also rely on stable markets that can instil short and long-term confidence for market participants. To strike a balance between evolving price discovery and stable price signals, ETS design can be supported by a range of ETS markets policies, including market stability mechanisms (e.g. auction reserve prices, supply adjustment mechanisms).

We define ETS markets policies more broadly to include other scheme design features that promote market stability (e.g. clearing process for auctions). We also consider wider regulatory provisions that apply to emissions trading (e.g. the UK Market Abuse Regulation³⁷) that support market integrity. This allows us to consider all relevant drivers of market conditions together and ensure that we are taking a holistic approach to ETS markets within the context of the scheme's ambition, as set by the cap.

Issues that ETS markets policies can guard against

Excessive price fluctuations

Price movement sends a useful price signal to market participants about developments in the market, informing abatement investment decisions. However, in the case of a sustained price shock, this can undermine the functioning of an ETS. For example, carbon prices that persistently spike could leave participants little time to make abatement investment that may take some years to come to fruition. In extreme scenarios, this could negatively affect firms' ability to operate and to deliver abatement.

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 can then assess the nature of the price movements in question and decide whether and to what extent to intervene by bringing increased supply to current auctions. The EU ETS has a similar mechanism.³⁸ This approach still allows prices to rise in the longer term as the threshold also evolves as current higher prices feed into the historic average price over time.

³⁶ Benefits comprise of participants having access to cheaper forms of decarbonisation (through purchasing allowances) where their own costs of abatement are relatively higher, or profiting from abating and selling allowances where their cost of abatement is relatively lower than other participants in the wider market.

³⁷ UK MAR includes the following legislation, technical standards, and guidance: [EU Market Abuse Regulation](#) as amended by the [Market Abuse Exit Regulations 2019](#); [FCA Technical Standards relating to UK MAR](#); [ESMA Guidelines](#) and ESMA questions and answers that existed before the end of the transition period; and FCA guidance from the [FCA Handbook](#). For more information, see here: <https://www.fca.org.uk/markets/market-abuse/regulation>

³⁸ For more information on the EU ETS Article 29a process, see: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02003L0087-20200101&qid=1624268729553>

There has been some research into the implications of sustained downward price shocks.³⁹ However, such research has focused on cases, for example in the EU ETS, where prices fell to near zero. There are also no current examples of market stability mechanisms that counter sustained downward price shocks in a similar manner to the CCM as opposed to countering prices below a given absolute threshold.⁴⁰ This is potentially due to modest carbon prices historically that have left little space between carbon prices and zero. As with rising prices, a falling price is not in itself an issue. However, a sustained downward price shock could theoretically undermine participants' ability to plan investments in the longer term.

Guarding against demand shocks

In an ETS with a fixed cap, the supply of allowances is fixed. In the absence of any mitigating policies, any change to demand will be passed through entirely in prices.⁴¹ These shifts in demand can stem from changes in economic conditions, complementary policies or the development of new abatement technologies. This can lead to increased price volatility. A persistent demand shock can also lead to a large surplus of emissions allowances accumulating. This can depress prices in the longer term, reducing the incentive for participants to invest in abatement technologies.

To make the supply of allowances into the market more responsive in the shorter term (i.e. 1-2 year period) to prices and the supply-demand balance, ETSs can amend the supply of allowances into the market in response to market conditions. This 'supply adjustment' is triggered in two main ways at present in other ETSs internationally: on the basis of the total number of allowances in circulation; and on the basis of price.

Quantity-triggered supply adjustment

This type of supply adjustment is triggered by the total number of allowances in circulation (TNAC). An example of this approach is the Market Stability Reserve (MSR) in the EU ETS. It aims to address any supply-demand imbalances in the EU ETS and improve the EU ETS' resilience to future shocks.^{42, 43} Allowances are added to, or released from, the reserve if the TNAC figure passes defined trigger thresholds.⁴⁴ The TNAC calculation is undertaken after compliance each year, with the figure published in May. From 2023, allowances held in the MSR above the previous year's auction volume will be cancelled.

³⁹ For an example, see Koch et al., 2014, 'Causes of the EU ETS price drop: recession, CDM, renewable policies or a bit of everything? – New evidence'. Available at:

<https://www.sciencedirect.com/science/article/abs/pii/S0301421514003966>

⁴⁰ The price-triggered supply adjustment section outlines examples in California, Quebec and the Regional Greenhouse Gas Initiative. However, these are triggered by absolute price thresholds, rather than relative price thresholds as is the case with the UK ETS CCM and the EU ETS Article 29a mechanism.

⁴¹ For example, if demand rises with fixed supply of a good, there is increased scarcity. This increases prices, all other things being equal.

⁴² ICAP report 2021: https://icapcarbonaction.com/index.php?option=com_attach&task=download&id=723

⁴³ Additional information on the MSR can be found here: https://ec.europa.eu/clima/policies/ets/reform_en

⁴⁴ When the volume of allowances in circulation falls below 400 million, allowances are released from the reserve with an amended auction calendar making these allowances available for auctioning. When the total number of allowances in circulation is above 833 million, allowances are withheld from auctions and placed into the reserve.

Price-triggered supply adjustment

This type of supply adjustment is triggered if allowance prices cross pre-defined price thresholds. When these thresholds are crossed, regulators can release or withdraw a limited number of allowances from a reserve. California and Quebec have run Allowance Price Containment Reserves (APCRs), as well as the Reserve Tiers introduced in 2021.⁴⁵ If a given price threshold is exceeded, a separate reserve sale auction is triggered where a fixed quantity of additional allowances is offered for sale.

Similarly, the Emissions Containment Reserve (ECR) in the Regional Greenhouse Gas Initiative (RGGI) is triggered if allowance prices fall below an absolute trigger price. When triggered, a pre-determined number of allowances are withheld from auctions by the regulator, reducing supply.

High prices

While allowing prices to fluctuate in an ETS is central to its market-based benefits, prices can reach levels that decision-makers deem to be unreasonable or excessive.⁴⁶ Jurisdictions such as New Zealand and California set hard limits on how high allowance prices can rise by introducing a price ceiling. At a given price, entities can buy allowance substitutes that are not included in the cap but can still be submitted for compliance purposes. These hard price ceilings can therefore lead to the cap being breached.

Low prices

If the supply of allowances exceeds demand, allowance prices can fall to levels that do not provide sufficient incentives for participants to invest in emissions abatement. The potential for prices to fall to very low levels can also cause unhelpful uncertainty for participants who are making long-term investment decisions.

In response, jurisdictions such as the UK ETS and the RGGI have introduced auction reserve prices in auctions. Any bids in auctions below the auction reserve price are not accepted, providing a minimum price in auctions.⁴⁷ Any unsold allowances from the auction can then be redistributed to subsequent auctions, transferred into a reserve or cancelled.

Liquidity

The level of liquidity in a market describes how quickly a given asset can be bought or sold without requiring large movements in its price. A more liquid market is associated with reduced volatility, giving participants more long-term certainty about price stability and therefore allowing them to better plan investments in decarbonisation. Market exchanges that match

⁴⁵ California and Quebec's markets are linked through the Western Climate Initiative.

⁴⁶ We distinguish here between prices that are rising relative to historic prices and high prices in an absolute sense. While these are often addressed together, the mechanisms to guard against each type of market conditions are different.

⁴⁷ Prices can still fall below this level in the secondary market. As demand shifts from auctions to the secondary market for this cheaper price, the secondary market price would be expected to rise, bringing it closer in line with the auction reserve price.

buyers and sellers help to support liquidity when compared with purely 'over the counter' (OTC) trades. Financial intermediaries trading in ETSs can play an important role in providing this liquidity as well as policies such as partial clearing in auctions.⁴⁸

Market abuse and destabilising behaviour

Behaviour such as insider dealing and market manipulation is considered to be market abuse, as it can lead to disorderly market conditions, affect the price formation process and create an un-level playing field between participants. Where markets that do not have appropriate arrangements to identify, monitor and prevent market abuse, this risks compromising the integrity and the orderly functioning of that market. This in turn can reduce the confidence of investors in the attractiveness of that market.

To protect against market abuse, financial markets, including ETS markets, are subject to regulatory regimes which prohibit abusive behaviours. These regimes guard against the unlawful disclosure of inside information, insider dealing and market manipulation by requiring persons to have certain arrangements in place to reduce the risk of market abuse and give powers to financial services regulators to identify and take action against market abuse where it does occur.

There are a range of additional protections against market abuse that can be employed in ETSs. In the UK ETS, a maximum bid-size, or any other remedial measures necessary to mitigate an actual or potential discernible risk of market abuse, money laundering, terrorist financing or other criminal activity, as well as anti-competitive behaviour, may be imposed by the appointed auction platform after consulting the FCA and the auctioneer. In the Nova Scotia ETS, bid size limits limit the number of allowances for which an entity (or group of entities in concert) can bid.⁴⁹

Question
33) Are there features of ETS markets that that put them at greater risk of market abuse than other financial markets? (Y/N) If so, what features and why?

⁴⁸ Under partial clearing, allowances can be sold at an auction without auction bids covering the total number of allowances offered at that auction.

⁴⁹ For more information, see here:

https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=88.

Evolution of the UK ETS in the coming years

In the context of UK ETS policy development in the coming years, we should be prepared for evolving market conditions for ETS participants, starting by understanding the potential drivers of these changes.

UK ETS policy design changes

This consultation's net zero cap proposals involve a faster declining cap over time, further reducing the quantity of emissions permitted during Phase I of the UK ETS. A reduction in supply would reduce the overall quantity of emissions allowances and the number of allowances in circulation, with the potential to significantly affect the manner in which primary and secondary markets in the UK ETS operate.

This consultation also outlines future changes to the number of allowances allocated for free. By changing the number of free allocations given to different sectors, this could lead to variation in levels of auction and secondary market participation within and between sectors.

UK ETS scope changes

In the government response to the 'Future of UK Carbon Pricing', the Authority committed to continue to explore options for expanding carbon pricing. In Chapter 7 and 8, the Authority sets out its initial proposals to deliver on this commitment, including expanding the UK ETS to domestic maritime and waste incineration, and a call for evidence on the potential role of the UK ETS as a long-term market for greenhouse gas removals.

These changes to our carbon pricing policy will likely have effects on the UK ETS and how it operates. Where sectors are included in the UK ETS, expanding carbon pricing could help to support liquidity by increasing the number of market participants. Including these new sectors could also help to deliver more cost-effective decarbonisation across the whole economy.

International context

As jurisdictions worldwide work to reduce emissions in line with domestic and international commitments, developments in the international climate policy environment will remain important. For example, the recently agreed rules for Article 6 of the Paris Agreement, along with the implementation of proposed market regulation measures in the coming years such as the EU carbon border adjustment mechanism, will influence the way allowances flow and are accounted for across national and regulatory boundaries.⁵⁰ International cooperation, for example through linking of carbon markets, may require coordination of market stability policies to ensure their effectiveness.

⁵⁰ For more information on Article 6 of the Paris Agreement, see here: <https://unfccc.int/process/the-paris-agreement/cooperative-implementation>

Questions

34) Are there other drivers of evolving market conditions that future UK ETS markets policy should take into account? (Y/N) If so, what are they? What evidence do you have to support your view?

35) What impacts do you envisage that these drivers could have in the UK ETS in the coming years, particularly in relation to market stability and integrity? What evidence do you have to support your view?

Objectives for markets policy as the UK ETS matures

In this section, we propose five objectives for UK ETS markets policy in the coming years. These take into consideration the issues that markets policies can guard against and the summary of potential drivers of evolving market conditions outlined above. While providing an important framework in which to assess our markets policies, in practice these objectives may conflict and will need to be balanced against each other.

The feedback on these objectives and the gathering of further evidence on market conditions in the coming months will inform detailed policy development and further consultation on the details of potential changes to markets policy.

Cross-cutting objectives

Provide long-term reassurance to participants with a rules-based approach to any Authority intervention

The Authority has an important role in providing a predictable and consistent policy environment for UK ETS participants. Policies that have unclear or subjective triggers can introduce uncertainty for participants if they feel unable to predict government intervention that could impact their investment decisions. We therefore propose providing clear triggers for Authority intervention and pre-determined limits to the discretion of any government intervention. This should not preclude rapid action from the Authority to address new or unforeseen circumstances, but any such action should be weighed against the clear benefits of a predictable policy environment. The Authority should also allow space for the market to resolve short term issues by itself where appropriate, helping to avoid unnecessary interventions where possible.

Design any market stability policies to reduce the ability of any entity to ‘game’ the policy

The design of a policy should minimise the risk of the policy being triggered when the issue that it guards against is not present. If a policy is triggered by developing market conditions over time, there is a risk that targeted non-compliance activity in the market could cause the policy to be triggered instead. Policies should therefore be designed to reduce the risk of

entities ‘gaming’ a policy. This objective should also capture the dynamic nature of market activity and the potential for attempted ‘gaming’ of policies to evolve over time.

Policy-specific objectives

Counter excessive unexpected and destabilising upward and downward price and/or demand shocks in the market as appropriate

By guarding against these shocks, we are seeking to support the smooth operation of the scheme. This in turn can provide the stability that will help ETS participants in making longer term abatement investment decisions. We do not currently propose guarding against high and low prices through price floors and price ceilings. These interventions could impede price discovery and, in the case of hard price ceilings, endanger the integrity of the net zero consistent cap.

This objective is neutral between price-triggered and quantity-triggered mechanisms as there are potential merits to both approaches. We will provide more detailed proposals for how future market stability policies in the UK ETS could be triggered in due course.

Support price discovery and liquidity in UK ETS markets

The liquidity of markets for allowances and their derivatives in the UK ETS provides useful benefits in achieving cost-effective and efficient abatement across different firms and sectors. Allowing space for price discovery also underpins the crucial market-based benefits of an ETS. We will therefore seek to support liquidity and price discovery through UK ETS markets policies.

Guard against market abuse and activity that could significantly destabilise UK ETS markets

To protect the integrity of UK ETS markets, future markets policy should continue to guard against market abuse. In addition, the Authority should explore other financial market policies that could provide additional protections to UK ETS auctions and secondary markets.

Question
36) Do you agree that these are the right objectives for markets policy as the UK ETS matures? (Y/N) Please explain your answer.

Summary of existing markets policy in the UK ETS

Below we outline our current market stability policies, mapping them against the typology of ETS markets policies outlined above. Aside from questions on the withdrawal of the ARP, the below questions are for evidence gathering purposes only and do not indicate that the Authority is minded to change any policies.

Auction Reserve Price (low prices)

The ARP is set at £22 per emissions allowance, with any bid below this price not accepted. It guards against low prices and helps to provide certainty around minimum prices during the transition from the EU ETS to the UK ETS. We intend to withdraw the ARP in due course and are interested in views as part of this consultation on how this should take place.

Firstly, we are seeking views on the timescales for withdrawal of the ARP. This could take place on a number of timelines, including: as soon as possible; as part of the introduction of a potential wider markets policies package; alongside the introduction of the net zero consistent cap; or on another timescale. We are also interested in views on whether the ARP should be replaced by another mechanism. This mechanism could guard against the same issue as the ARP (low prices) or could address the related issue of rapidly falling prices.

Questions
<p>37) On what timescale should we look to withdraw the ARP: as soon as possible; as part of the introduction of a potential wider markets policies package; alongside the introduction of the net zero consistent cap; or another timescale? If another timescale, what timescale? Why that timescale?</p> <p>38) Should the ARP be replaced by another mechanism? (Y/N) If so, what type of mechanism should replace it and why?</p>

Cost Containment Mechanism (rapidly rising prices)

The CCM provides a process by which to address elevated prices through the auctioning of additional allowances from within the cap.

The CCM is triggered if the average price for one allowance on secondary futures markets is more than:

- During year one, an amount equal to two times the average price in the preceding two-year period for three consecutive months;
- During year two, an amount equal to two and a half times the average price in the preceding two-year period for three consecutive months; and
- During year three, an amount equal to three times the average price in the preceding two-year period for six consecutive months.

If the CCM is triggered, the members of the Authority convene to discuss what, if any, intervention should take place. If the CCM is triggered, the Treasury may authorise:

- Changes to the distribution of auctioned allowances within a calendar year;

- Increases to the volume of allowances to be auctioned in a given year by bringing auctioned allowances forward from future years;
- The release of allowances for auction from the industry cap that are not freely allocated through the Allocation Table;
- The release of allowances in the flexible share for auction;
- The release of up to 25% of the allowances held in the New Entrants Reserve for auction in that calendar year; or
- The release of allowances from the market stability mechanism account for auction in that calendar year.⁵¹

As set out in Chapter 3: Unallocated Allowances and Flexible Share, the Authority is considering bringing a portion of unallocated free allowances and/or flexible share to auction and is intent on utilising a portion to mitigate against the application of a cross-sectoral correction factor if the industry cap is reset. The Authority will ensure that a portion of these allowances will also remain available for market stability uses.

Following a period of rising UKA prices in 2021, the CCM was triggered in both December 2021 and January 2022. In both instances, the Authority decided against intervening to increase allowance supply.⁵² As we reflect on our existing markets policies, we would like to get detailed feedback on the policy's design and process.

Questions
<p>39) Do the thresholds for triggering the CCM remain fit for purpose? (Y/N) If not, how should they be amended?</p>
<p>40) Do the intervention options available to the Authority remain fit for purpose? (Y/N) If not, how should they be amended?</p>
<p>41) Following the triggering of the CCM in December and January, are there elements of the CCM process or design that could be improved? (Y/N) If so, what are they and how can they be improved?</p>

⁵¹ This account is currently empty. The section on 'Auction Process' details how this account can currently be stocked while the section on 'The Market Stability Mechanism Account' asks whether the Authority should consider stocking the account with allowances.

⁵² For December 2021, see Authority statement here: <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>

For January 2022, see Authority statement here: <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>

Auction process (liquidity, market abuse/destabilising activity)

UK ETS auctions are single round, uniform-price, sealed bid auctions that take place fortnightly. Allowances are distributed across the calendar year in accordance with the auction calendar which is published in advance.⁵³ The 2022 auction calendar spreads allowances evenly across the year (subject to variations of 500 allowances). Allowances can still be sold at auction even if not all allowances are bid for, with the auction partially clearing. This aims to limit any reduction in supply from low demand and helps allowances to flow more easily into the market. Unsold allowances can be rolled over to the subsequent four auctions up to a limit of 125% of their original volume, after which allowances are moved into the market stability mechanism account. This is currently the sole mechanism that can populate the market stability mechanism account.

A maximum bid-size, or any other remedial measures necessary to mitigate an actual or potential discernible risk of market abuse, money laundering, terrorist financing or other criminal activity, as well as anti-competitive behaviour, may be imposed by the appointed auction platform after consulting the FCA and the auctioneer.

Questions
<p>42) Does the current auction process remain fit for purpose? (Y/N) If not, how should it be amended?</p> <p>43) Are there other measures that the Authority should consider to further support liquidity in the UK ETS? (Y/N) If so, what are they?</p>

The market stability mechanism account

The market stability mechanism account functions as a reserve where allowances can be transferred if auctions repeatedly clear below their full volume (see 'Auction Process' section above). Allowances in this account can also be used as a source of allowances in any CCM intervention (see 'Cost Containment Mechanism' section above). This account is currently empty as no allowances have been transferred from auctions. Exploring options to top up this account with allowances could maintain the optionality available to the Authority if the CCM were triggered in the future.

Questions

⁵³ See 2022 auction calendar here: <https://www.theice.com/publicdocs/circulars/21184.pdf>

44) Should the Authority consider stocking the market stability mechanism account with allowances? (Y/N) Please expand on your answer and if Y, provide views on how the account should be stocked.

Banking and borrowing of allowances

As outlined in the Government Response, allowances remain valid indefinitely with entities being able to 'bank' allowances without limitation. Entities that receive free allocation can also 'borrow' allowances by using current year free allocation to comply with the previous year's compliance obligation, except across phases.⁵⁴ These policies enable participants to smooth short-term price fluctuations and help them to be more flexible in meeting compliance obligations.

Questions

45) Does the current banking and borrowing policy remain fit for purpose? (Y/N) If not, how should it be amended?

⁵⁴ For example, 2022 free allocation received before the 2021 compliance deadline in April 2022 could be used for 2021 compliance purposes.

Chapter 5: Aviation

Introduction

The Authority is seeking to support the decarbonisation of aviation in a way that preserves the benefits of air travel and maximises the opportunities that decarbonisation can bring. In July 2021, the UK Government published the Jet Zero Consultation setting out a vision for how the sector could reach net zero by 2050.⁵⁵ By providing the right policy framework, the UK ETS will continue to be a vital component of the sector's road to net zero.

The sector currently contributes to around 2.5% of global CO₂ emissions, as well as affecting the climate through non-CO₂ impacts.⁵⁶ We understand the devastating impact the COVID-19 pandemic has had on the industry and the UK Government and Devolved Administrations are committed to supporting the sector's recovery. At the same time, whilst the medium-long term impact of COVID-19 is not yet fully understood, the Net Zero Strategy published in October 2021 shows that international aviation and shipping are expected to become the UK's largest residual emitting sectors by 2050, with the majority of the emissions from aviation, making it one of the biggest decarbonisation challenges.⁵⁷ Therefore, it is imperative the sector builds back greener.

The sector has already made great strides, by investing in greener technologies, improving operations, and phasing-out older aircraft. However, more will be needed to reach the UK's net zero aviation ambitions.

The implementation of carbon markets is key to achieving net zero UK aviation. The UK is among 107 states that are voluntarily participating in the Carbon Offsetting and Reduction Scheme for International Aviation, CORSIA. Aircraft operators also participate in the EU ETS and, since January 2021, the UK ETS. The UK ETS covers domestic flights, flights from the UK to the European Economic Area (EEA) and flights between the UK and Gibraltar. In 2019, these flights made up 44% of all commercial flights to and from UK airports.⁵⁸ The EU ETS covers flights within the EEA, flights from the EEA to Switzerland and flights from the EEA to the UK.

Now that the UK ETS is fully established, the Authority is reviewing UK ETS aviation policy to ensure that the scheme continues to develop in a way that supports our ambition for net zero by 2050 in the most cost-effective way. This consultation includes a number of UK ETS aviation policy elements, for which the Authority proposes different implementation timelines based on previous stakeholder engagement, their current stage of development and interactions with broader policy. We would also encourage aviation respondents to engage with wider UK ETS proposals outlined in chapter one to align the UK ETS cap with a net zero trajectory. The Authority will ensure changes to aviation policy consider changes to the UK

⁵⁵ <https://www.gov.uk/government/consultations/achieving-net-zero-aviation-by-2050>

⁵⁶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7468346/>

⁵⁷ <https://www.gov.uk/government/publications/net-zero-strategy>

⁵⁸ DfT analysis of Civil Aviation Authority airports data.

ETS cap trajectory and welcome views on the effect of the three cap options proposed, either as part of your responses to this chapter, or directly to the questions posed in chapter one.

Aviation free allocation

This consultation section is independent of the proposals for stationary free allocation in chapter two and includes:

- A summary of the 2021 call for evidence responses on aviation free allocation policy

A summary of UK government commissioned economic research on the impacts of carbon pricing on the UK aviation sector

A government response on the call for evidence and consultation questions on UK ETS aviation free allocation objectives

Options for amending the trajectory and distribution of aviation free allocation.

Responses to this consultation will inform the review. We will confirm our final approach for aviation free allocation when we respond to this consultation, with changes implemented by January 2024.

Sustainable Aviation Fuels

The Authority is reviewing how the UK ETS incentivises Sustainable Aviation Fuel (SAF) uptake to support broader Jet Zero proposals,⁵⁹ including:

Proposals to ensure UK ETS SAF policy remains workable in the short-term

Questions to help us refine and improve the way SAF is treated, reported and incentivised under the UK ETS, in light of the proposed SAF mandate for fuel suppliers

Any future proposals and changes to UK ETS policy would also consider the outcome of the Jet Zero Consultation and associated policy development, such as the UK Government's SAF mandate consultation.⁶⁰

Scope expansion: non-CO2 impacts

The UK ETS applies to some additional greenhouse gases other than carbon dioxide (CO₂) for certain sectors. For the aviation sector, the UK ETS currently only covers CO₂ emissions, though aviation also affects the climate through non-CO₂ impacts. This consultation:

Poses high-level questions to gather evidence on the feasibility and appropriateness of expanding the scope of the UK ETS to incorporate non-CO₂ impacts of aviation.

We do not propose making any long-term changes to UK ETS policy regarding aviation non-CO₂ impacts by January 2024. Responses to this section will help inform future policy

⁵⁹ <https://www.gov.uk/government/consultations/achieving-net-zero-aviation-by-2050>

⁶⁰ <https://www.gov.uk/government/consultations/mandating-the-use-of-sustainable-aviation-fuels-in-the-uk>

development and our approach will continue to be driven by the latest scientific understanding of aviation non-CO₂ impacts. We are also considering whether there may be short-term measures to account for non-CO₂ impacts in the interim.

Scope expansion: UK to Switzerland flights

Since our departure from the European Union, flights between the UK and Switzerland are not covered in either the UK ETS or Swiss ETS creating a gap in ETS coverage. This consultation:

Proposes to include flights from the UK to Switzerland in the UK ETS from the 2023 scheme year.

International cooperation

The Authority is considering UK ETS interaction with CORSIA and cooperation with other carbon markets worldwide. The UK's Department for Transport consulted on implementing CORSIA in 2021, including six high-level options for how CORSIA could interact with the UK ETS on flights in the scope of both schemes. The Department is carefully considering the approach to CORSIA implementation and will consult further in due course, seeking to have all legislation for CORSIA and any consequential amendments that may be required to the UK ETS in force by 1 January 2024.

This consultation asks for feedback on how international ETS cooperation should be prioritised to improve operational features of the UK ETS.

Virtual site visits

The Authority proposes removing the need for physical site visits to verify aviation annual emissions reports to reduce unnecessary burdens on business. We will aim for changes to be implemented by January 2023.

Aviation free allocation

GLOSSARY OF KEY TERMS

Competitiveness: the capacity and ability of a firm or sector to gain and maintain a profitable, sustainable market share relative to rivals.

Competitive disadvantage: where a climate mitigation policy increases costs for operations within the policy area (e.g. geography, sector, jurisdiction), and (some) businesses in the policy area experience a significant adverse impact on their competitiveness.

Carbon leakage: where production and associated greenhouse gas emissions are displaced in ways that would not have happened if the pricing of emissions across jurisdictions was implemented in an equivalent way.

Aviation cap: The total annual allowances set aside to be distributed to the aviation sector in the EU ETS.

Network carriers: operate hub-and-spoke networks, which connect origins and destinations through one or more hub airports.

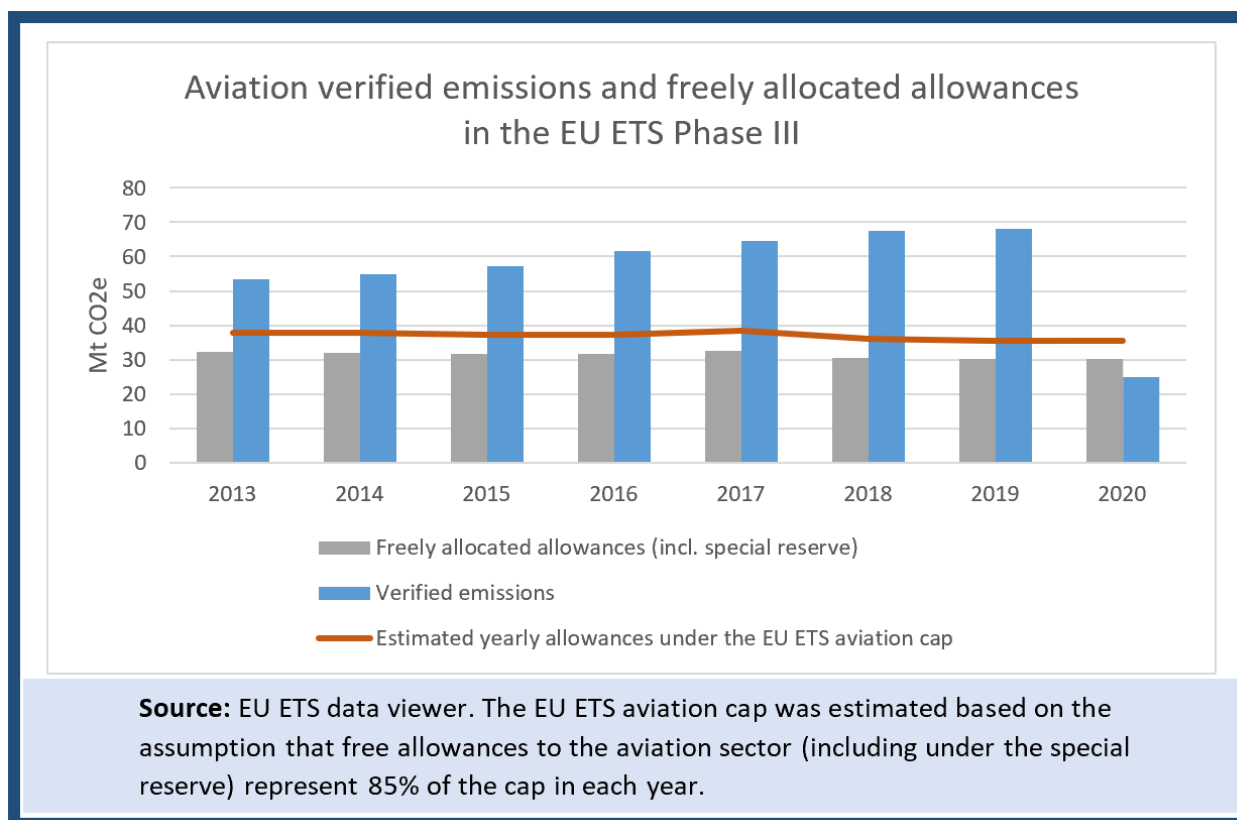
Low-cost carriers: offer point-to-point connections, low fare prices and basic levels of service. They tend to operate out of secondary airports with lower aviation charges.

Free allocation is a policy instrument that aims to mitigate carbon leakage and competitiveness risks associated with carbon leakage. Aircraft operators receive a proportion of UK ETS allowances for free, which they can use towards their scheme obligations. Under Phase III of the EU ETS (2013-2020), 82% of allowances in the aviation cap⁶¹ were allocated to airlines for free and 3% were held in special reserve to be allocated to new participants and fast growers. This is demonstrated in the below graph compared to actual emissions:

Figure 5.1: Aviation emissions and free allocation⁶²

⁶¹ The aviation cap is the total annual allowances set aside for the aviation sector. During Phase III of the EU ETS, 210,349,264 allowance (plus 116,524 allowances from 2014 to account for Croatia's integration).

⁶² <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>. Under Phase III of the EU ETS aircraft operators were able to use either aviation allowances or stationary allowances for compliance purposes. Verified emissions exceeded the EU ETS aviation cap each year of Phase III, except in 2020 due to reduced activity levels as a result of COVID-19.



The methodology for calculating aviation free allocation entitlement is independent to the allocation methodology for stationary installations, and as such, is being reviewed separately to the proposals for stationary allocation in chapter two. Currently, the methodology mirrors that of the EU ETS as a temporary approach to ensure a smooth transition for aircraft operators from the EU ETS to the UK ETS. In the Government Response to the Future of UK Carbon Pricing consultation,⁶³ the Authority announced a review into aviation free allocation policy to ensure it is aligned with UK ETS objectives.

Now that the UK ETS is established, the Authority is reviewing free allocation policy to assess its suitability in mitigating against carbon leakage and competitiveness risks associated with carbon leakage and determine any new objectives in the context of a UK ETS. The aim of this review is to answer two fundamental questions:

1. Is there still an appropriate rationale for an aviation free allocation policy in the UK ETS?
2. How should the distribution and trajectory of aviation free allocation be calculated?

⁶³ <https://www.gov.uk/government/consultations/the-future-of-uk-carbon-pricing>

FREE ALLOCATION METHODOLOGY

The number of free allowances each aircraft operator may be entitled to is based on their tonne-kilometre (TKM) data activity from 2010 unless it applied for a UK ETS free allocation entitlement as a beneficiary of the EU ETS special reserve. An aircraft operator's free allocation entitlement is calculated by multiplying the aviation benchmark by the verified 2010 aviation activity and by the reduction factor for the scheme year. The aviation benchmark is the same as the EU ETS (0.642186914222035 per 1000 TKM), which was calculated by dividing the aviation cap by the sum of all the 2010 TKM reported flights to and from the EEA. The reduction factor for each year of the 2021-2025 allocation period is set out in UK ETS legislation and is line with the current EU ETS aviation free allocation trajectory:

$$\text{Free Allocation} = \text{benchmark} \times 2010 \text{ TKM data} \times \text{reduction factor}$$

Summary of call for evidence responses on aviation free allocation policy

As part of the review, the Authority sought evidence on how aviation free allocation policy can better support UK ETS objectives of incentivising emissions reductions, whilst mitigating carbon leakage and competitiveness risks. This included a series of round table discussions with aviation industry stakeholders seeking quantitative and qualitative evidence on carbon leakage and competitiveness, and areas for improvement with the current policy.

Summary of responses: rationale for an aviation free allocation policy

Aircraft operators provided a range of views. One aircraft operator indicated that, given the lack of low carbon alternative fuels for aviation in the short-term, free allocation should continue until viable abatement opportunities are available. Another aircraft operator noted the impacts of the COVID-19 pandemic on the aviation sector and stated that free allocation should be maintained until the sector has recovered.

An aircraft operator added that free allocation is crucial to avoid the price of carbon spiking to levels that would cause airlines to stop operating, adding that revenue generated through aviation's inclusion in the UK ETS should be reserved for aviation decarbonisation efforts. An aircraft operator further stated that reducing free allocation would risk the UK ETS drawing funds out of the sector when large capital injections are required for research and innovation.

One aircraft operator favoured retaining free allocation whilst gradually reducing both the cap and number of free allowances available over time to ensure that airlines can be on a trajectory to net zero, without curtailing the benefits the sector brings socially and economically.

One respondent challenged the rationale for an aviation free allocation policy. They argued there is minimal risk of carbon leakage under the current scope of the UK ETS and there are no benefits to airlines to offshore (relocate operations abroad), noting that no aircraft operators have offshored since the inclusion of aviation in the EU ETS. They also raised concerns that free allocation is an opaque government subsidy benefiting a sector that is already highly

subsidised and protected. They added that to achieve Paris Agreement and domestic CO₂ targets, carbon pricing must create an effective market-based policy signal that reflects the actual societal cost of carbon intensive consumption based on the ‘polluter pays’ principle.

Summary of responses: how should the distribution and trajectory of free allocation be calculated?

Five of the aviation industry respondents to the call for evidence raised concerns with the current distribution of the free allocation of allowances for the sector. Three respondents highlighted significant competitive distortions amongst aircraft operations within the scope of the ETS because of its original design for large installations. One aircraft operator highlighted that the current methodology is highly distortive between different types of flight operations (freight vs passenger), which has led to a disproportionate and inequitable allocation between scheme participants. Four respondents raised concerns with the use of historical data and highlighted that the benchmark year of verification (2010) needs to be updated to reflect current aviation activity.

Summary of responses: International and wider carbon pricing considerations

Four respondents expressed a preference for aligning internationally with other carbon pricing schemes, such as the EU ETS and Swiss ETS, to mitigate any negative competitiveness impacts which may be caused by diverging schemes. An aviation trade body favoured the development of a global system which can be applied internationally whilst maintaining the environmental ambitions of an ETS, highlighting that alignment is a great opportunity for the UK to play a leading role on a global approach for tackling aviation emissions. Four aircraft operators emphasized the increasing administrative burden on operators who already have to comply with two schemes and highlighted the possibility of additional administrative burdens on the sector as more countries develop their own carbon pricing systems.

Summary of economic research on the impacts of carbon pricing on the UK aviation sector

Alongside the call for evidence, the UK Government’s Department for Transport and the Department for Business, Energy and Industrial Strategy jointly commissioned an external economic research study to develop a robust evidence base on the extent to which potential aviation carbon pricing policies applied to UK departing flights could lead to carbon leakage and competitive disadvantage. The research was composed of two complementary workstreams:

- Qualitative assessment of ETS design options for aviation free allocation in the UK ETS
- Quantitative assessment of illustrative carbon pricing scenarios to test how carbon leakage and competitive disadvantage vary under different design options

Qualitative assessment of ETS free allocation design options

The study explores key free allocation methodologies that could be applied to an ETS. Based on a literature review, six illustrative free allocation design features were developed and assessed in detail. Within each design feature, a set of design options were evaluated against UK ETS objectives for effective carbon pricing policy and compared against the current free allocation methodology.

The six design features identified for variation within the design of the UK ETS were: defining the benchmark for short-haul and long-haul flights, updating the activity data from its current base year of 2010 to a more recent year, changes in the adjustment factor applied to free allocation, and introducing a reserve of allowances for fast growing operators and new entrants. The assessment concluded that the current free allocation methodology, which was in place under the EU ETS since 2013, has the potential to create competitive distortion between operators in the UK aviation market. This is because free allocation is primarily based on historic activity data (from 2010) and does not reflect subsequent changes in operations. As a result, the share of free allowances relative to activity levels on UK ETS routes now varies drastically between different operators. A change in policy design could help alleviate this, e.g., by updating the activity year to better reflect current market conditions.

The study explains that aviation free allocation has the effect of a lump-sum endowment to operators that does not vary with a change to capacity, effectively reducing fixed costs. The study found that a change in free allowances does not affect the direct margin of a given route and generally operators should continue to operate at the same capacity. Therefore, the level of free allocation does not generally influence operators' abatement decisions.⁶⁴ An exception to this finding occurs where a reduction in free allowances impacts upon profitability to the extent that an operator may choose to exit the market or scale back operations. Where routes continue to be commercially viable, other aircraft operators may be expected to increase supply, or 'backfill'.⁶⁵ However, there is a risk that in some instances, for example where route profitability is marginal and routes are uncompetitive, the withdrawn capacity is not replaced leading to a sustained reduction in capacity or reduction in competition on a route.

Quantitative assessment of illustrative carbon pricing scenarios

Twenty illustrative policy scenarios were assessed over the period 2021-2035, combining different UK ETS design characteristics, including variations on the UK ETS carbon price, CORSIA and UK ETS interaction options, and free allocation trajectories and methodologies. Recognising that there are a wide range of CORSIA and UK ETS interaction options that might be taken forward, the study modelled three options from among those included in the Department for Transport's initial 2021 consultation.⁶⁶ This selection was made as a proportionate and representative means of illustrating the range of impacts that the wide

⁶⁴ An operator's decision to invest in abatement opportunities is influenced by the direct cost and revenue associated with an additional unit of capacity. Higher carbon prices increase the price of burning fuel, which affects the cost of adding capacity, influencing marginal abatement decisions. The level of free allocation does not vary with capacity, and therefore does not influence marginal abatement decisions.

⁶⁵ The degree to which backfill will occur on a given route depends on a range of factors including the level of demand for services and level of existing competition on the route.

⁶⁶ <https://www.gov.uk/government/consultations/implementing-the-carbon-offsetting-and-reduction-scheme-for-international-aviation/implementing-the-carbon-offsetting-and-reduction-scheme-for-international-aviation-corsia>

variety of interaction options could have and is not a statement of government preferences or policy. We are carefully considering our approach to CORSIA and UK ETS interaction and will consult separately in due course.

The study found minimal risk of carbon leakage under the current scope of the UK ETS. Firstly, this is because CO₂ emissions were projected overwhelmingly to decrease both inside and outside UK ETS scope when carbon pricing is applied to aviation. This is because the vast majority of passengers take round trips, and so a decrease in demand and emissions on flights in scope of the UK ETS is found to be matched by an equivalent decrease in demand and emissions outside its scope. The study found minimal impact on the number of passengers transferring through UK hub airports because the vast majority of UK international-to-international transfer flows are long-haul and are minimally impacted by the UK ETS.⁶⁷

Under all illustrative policy scenarios considered, UK aircraft operators were shown not to be significantly disadvantaged compared to their non-UK competitors, as the UK ETS does not treat UK and non-UK airlines differently. However, the impact of the UK ETS is higher for regional airlines compared with network and low-cost carriers. This is because a larger portion of regional airlines' route networks are covered by the UK ETS.

Impacts of carbon pricing on airport passenger demand and profit were shown to be higher for airports outside London. These airports have a higher proportion of flights covered by the UK ETS and cost pass-through from operator to passenger is assumed to be higher for less congested airports, leading to higher estimated changes in ticket prices. As such, there is potential for current carbon pricing policies to create competitive disadvantage between network and regional carriers, and between London and non-London airports. However, the study found this did not result in carbon leakage.

Under all free allocation trajectories analysed in the study (ranging from the current trajectory to 2024 withdrawal), changes in free allocation had negligible impact on carbon leakage and did not affect airport competitiveness. For airline competitiveness, faster withdrawal of free allocation was associated with higher operating costs, although the study found annual changes were below maximum yearly change in operating cost per revenue tonne-kilometre seen during the 2007-08 or 2014-16 fuel price fluctuations. Where free allowances were phased-out, regional airlines were shown to be likely to experience proportionately higher changes in revenue tonne-kilometre costs per year than other airlines. Out of the characteristics examined, the UK ETS carbon price had the largest impact on outcomes.

Although the study identified some competitiveness risks associated with a carbon pricing policy and the withdrawal of free allowances, these impacts were found to have minimal impact on carbon leakage.

⁶⁷ The study also qualitatively assessed a number of carbon leakage channels that were found to have an insignificant impact on carbon leakage, this includes: reassignment of high emissions aircraft towards/away from UK ETS routes; changes in fuel tankering; changes in destination choice; changes in spending on non-aviation activities.

The full report of the economic study contains a detailed summary of the findings of the impacts of carbon pricing on the UK aviation sector and can be accessed on [Frontier Economics' website](#).

Government response to the call for evidence into aviation free allocation policy

Rationale for an aviation free allocation policy

Both the call for evidence and economic research have provided valuable qualitative and quantitative evidence on the current free allocation policy and its impacts on aircraft operators in the UK ETS. Both have informed the following questions and policy options for consultation and will contribute to the evidence base informing future policy decisions relating to carbon pricing policy for the aviation sector.

Currently, free allocation is the main policy instrument through which carbon leakage and competitiveness risks associated with carbon leakage are mitigated against in the UK ETS. As stated, the Authority is reviewing its suitability in achieving these objectives in the aviation sector and determining new objectives in the context of a UK ETS. Given that the economic research identified minimal carbon leakage and associated competitiveness risks under the current scope of the UK ETS, we are consulting on options to increase the rate at which aviation free allocations are phased-out.

We welcome further evidence and views on the suitability of aviation free allocation policy with regards to mitigating carbon leakage and competitiveness risks associated with carbon leakage. We also welcome views on whether there are alternative objectives for aviation free allocation that should be considered. The outcome of this review will also consider wider UK ETS policy, such as the setting of a net zero consistent cap trajectory, ensuring that aviation free allocation policy is aligned with the Authority's net zero ambitions.

Questions
<p>46) Do you agree with the conclusion of the study that risk of carbon leakage is minimal for the UK aviation sector under the current UK ETS scope? (Y/N) Please expand on your answer and give evidence where possible.</p>
<p>47) Do you have any additional views on the economic research study and its conclusions? (Y/N) Please expand on your answer and give evidence where possible.</p>
<p>48) Do you agree that if there are minimal risks of carbon leakage and competitiveness risks associated with carbon leakage from the UK ETS for the aviation sector, free allocation should be withdrawn or phased-out? (Y/N) Please expand on your answer and give evidence where possible.</p>

**49) Are there any other reasons for maintaining free allocation in the UK ETS? (Y/N)
Please expand on your answer and give evidence where possible.**

Aviation free allocation trajectory

In light of the research and evidence outlined above, the UK ETS Authority is considering the impacts of and options for withdrawing free allocation for the aviation sector at different rates, including the following three policy options. Any changes would take into consideration the responses to questions set out in the above section: Rationale for an aviation free allocation policy, and would begin to take effect from the start of 2024.

- **Early phase-out:** The rate at which free allocation entitlement reduces will increase so that full auctioning will apply from 2026.
- **Intermediate phase-out:** The rate at which free allocation entitlement reduces will increase so that full auctioning will apply no later than 2028.
- **Later phase-out:** The rate at which free allocation entitlement reduces will increase so that full auctioning will apply from the start of 2031.

The three trajectory options would result in a greater decline of an aircraft operator's free allocation entitlement compared to the current year-on-year reduction set out in UK law.⁶⁸ Given the impacts of COVID-19 on the aviation sector and expected increase in operating costs associated with the phase-out of free allocation, the Authority is seeking views on whether a linear year-on-year reduction would be preferable in the above scenarios, or whether alternative options should be considered. For example, a weighted approach could see smaller annual reductions to free allocation entitlement in the immediate years and greater reductions in later years. There will also be an opportunity to evaluate the impacts of any chosen aviation free allocation trajectory as part of the whole scheme review in 2028, at which time we will assess whether further UK ETS aviation policy changes may be necessary as a result.

Some aviation industry respondents to the Call for Evidence also favoured maintaining free allocation until the sector has recovered from the impacts of COVID-19. We recognise the sector is currently experiencing financial difficulties and will take this into consideration when assessing possible trajectories.

Questions

50) Please provide views on the three proposed options for aviation free allocation, as well as how the trajectory should be set, such as a linear or weighted approach?

51) Should the UK ETS Authority consider free allocation trajectory options that could maintain aviation free allocation entitlement past the first phase of the UK ETS (2030)?

⁶⁸ Currently, an operator's free allocation entitlement reduces by a constant amount every year. This amount is equal to 2.2% of the operator's (or applicant's) historical aviation activity figure multiplied by the benchmark.

Are there other free allocation trajectories you think the Authority should consider? (Y/N) Please expand on your answer and give evidence where possible.

Distribution of aviation free allocation

We received significant qualitative and quantitative evidence that the current distribution of free allowances amongst participants in the UK ETS does not reflect current activity levels. As such, we are looking to address how free allocation should be distributed amongst eligible aircraft operators in the UK ETS in an equitable and proportionate way. The economic research explored different design options for free allocation policy, assessing their merits and disadvantages. We are considering potential options to address variations in aircraft operators' free allocation entitlement relative to their UK ETS activity levels.

Since the inclusion of aviation in the EU ETS in 2012, aviation free allocation entitlements have been based on 2010 activity data. The aviation benchmark was also calculated by dividing the aviation cap by the sum of all operators' submitted 2010 TKM data on the full scope of the EU ETS. Not updating this approach has led to inconsistencies between the level of free allocation distributed amongst operators and current aviation activity.

Most aircraft operator respondents to the Call for Evidence raised the issue that free allocation is not proportionately distributed amongst scheme participants and favours airlines with greater 2010 activity data. The UK ETS includes a reserve of free allowances set aside for stationary installations who become eligible for UK ETS participation (the New Entrants Reserve) but there is no equivalent for aircraft operators that started operating post-2014.

The Authority is considering updating the activity year used to calculate free allocation entitlement, taking into account COVID-19 impacts on aviation activity in recent years. According to the economic research study, regular updates to activity data have the potential to mitigate the impacts associated with the lack of a new entrant policy. However, aircraft operators do not currently have a requirement to collect and submit TKM data regularly.

Any future changes would be proportionate to the consultation outcome on aviation free allocation trajectory and would seek to minimise the administrative burden associated with any further data collection exercise.

Questions

52) Should the UK ETS aviation free allocation methodology be updated to use a more recent year? (Y/N) If yes, which year and why? How often should UK ETS aviation activity data be updated in the future? Please expand on your answer and give evidence where possible.

53) Do you think that the aviation benchmark should reflect UK ETS aviation activity? (Y/N) Please expand on your answer and give evidence where possible.

54) Do you think the UK ETS aviation free allocation policy should account for changes in aviation activity and new entrants? (Y/N) Please expand on your answer and provide evidence where possible.

55) How often should aircraft operators report their TKM data under the UK ETS? Alternatively, are there other appropriate data sources the UK ETS could use to monitor aviation activity? Please expand on your answer and provide evidence where possible.

Additionally, some aircraft operators currently receive more free allowances than their total verified emissions. Depending on the future trajectory for aviation free allocation, the Authority may consider technical improvements to the current methodology, such as a cap on the total amount of allowances aircraft operators are eligible to receive compared to emissions reported. These are being considered as alternative measures that could be implemented without increased administrative burden, should the current methodology be maintained.

Question

56) How can we ensure free allocation entitlements, including in a transition to full auctioning, are proportionate and equitable for all UK ETS aircraft operators?

The current UK ETS free allocation policy also does not differentiate between the type of route operated by aircraft operators, for example all domestic routes are treated the same, despite significant variation in the types of aircraft, size of route, competition, frequency, etc. In the case where free allocation is removed or reduced, the economic research study identified possible impacts on regional connectivity as regional operators' experiencing a loss of profitability are more likely to react by exiting unprofitable or less profitable routes that are not subsequently backfilled. The UK Government's objective is to ensure all nations and regions of the UK have the domestic and international air transport connections that local communities and businesses rely on whilst ensuring that we are meeting our net zero commitments.

Question

57) Are there ways we could mitigate any unintended impacts on regional connectivity that may arise due to changes to aviation free allocation, through the UK ETS or by other means? (Y/N) Please explain your answer and provide evidence where possible.

Sustainable aviation fuels

Sustainable aviation fuels (SAF) are one of the key technologies identified to help decarbonise the aviation sector. Aircraft operators that use qualifying SAF can claim a corresponding reduction in their UK ETS obligations. This is the first year that SAF will be reported to a UK

regulator for any carbon pricing obligations and the UK ETS Authority is working closely with regulators to operationalise this policy.

Currently, where SAF meeting the sustainability criteria set out in the Renewable Transport Fuel Obligation (RTFO) are reported on UK ETS routes, they are zero rated and do not incur surrendering obligations under the UK ETS.⁶⁹ This means that all SAF is treated equally, and the greenhouse gas (GHG) emissions generated through production or transport of the fuel are not taken into account.

Under the RTFO, GHG savings are calculated on a lifecycle basis, i.e. the emissions resulting from cultivation of the feedstock (in the case of crop derived fuels) as well as the production and transport of the fuel to its end use are included when calculating the GHG emissions that results from the final fuel. Given that the production, refining and use of SAF may still lead to aircraft operators emitting GHG emissions, the Authority is reviewing how these emissions should be treated under the UK ETS.

It is anticipated that emissions resulting from elements of the fuel life cycle captured by the RTFO (for example the production of the fuel) may be captured by and attributed to stationary installations in the UK ETS. However, this will depend on the fuel production pathway, and some elements of the fuel life cycle (for example the cultivation of feedstocks or transportation of the fuel) may not be covered by the current scope of the UK ETS. We also recognise that fuel production can occur in other territories and that the emissions resulting from this production may not be captured in the carbon registries of the country of production. Therefore, aircraft operators will still use SAF that may have led to GHG emissions across its lifecycle that have not already been accounted for in the UK ETS. We consider it important that the GHG savings resulting from SAF use are not overstated and also that perverse outcomes are not introduced by treating all SAF equally, regardless of these wider lifecycle emissions. Therefore, given that GHG emissions result from fuel production lifecycle stages that may not be accounted for in other parts of the UK ETS, we are seeking views on whether and how these emissions are reflected in the UK ETS for SAF. We would like to gather views on how these interactions should be considered and accounted for in the UK ETS and across wider carbon budgets.

Moreover, the UK Government recently consulted on introducing a SAF blending mandate in the UK.⁷⁰ The consultation proposed prescribing long-term mandatory trajectories for SAF uptake and welcomed views on possible interactions with other UK and international policies, including the UK ETS.

The UK ETS Authority would like to gather further views on how the potential future SAF mandate and UK ETS could interact. In the SAF mandate consultation it was proposed that it would take the form of a GHG reduction mandate with the aim of incentivising and rewarding GHG reductions. Fuel suppliers going beyond the minimum GHG reductions required by a SAF

⁶⁹ For biofuels under the RTFO emissions resulting from the combustion of 'the fuel in use' are considered zero. This is because the biogenic carbon released during the combustion of the final fuel will have been captured during the growth stage of the biomass. This is consistent with the approach taken under carbon budgets. This does not mean that biofuels have zero emissions across their lifecycle.

⁷⁰ <https://www.gov.uk/government/consultations/mandating-the-use-of-sustainable-aviation-fuels-in-the-uk>

mandate would be able to trade credits with those that have not supplied sufficient SAF to meet the mandate, in effect rewarding suppliers that are cutting the emissions intensity of the fuels that they supply. We recognise that aircraft operators would support the continued reduction of UK ETS obligations when using SAF supplied under any future UK SAF mandate, as a means of incentivising uptake, and welcome views on whether this should apply. We consider it critical that emissions savings from the same unit of SAF should only be attributed to climate targets once in any scenario, and welcome views on how this could be reported to reduce the administrative burden for aircraft operators and ensure that SAF usage is only reported under one carbon pricing scheme.

We are proposing that the UK ETS maintains alignment with wider SAF rules to provide clarity for aircraft operators. This includes ensuring that the current UK ETS SAF policy reflects any amendments to the RTFO sustainability criteria, as well as alignment with future SAF policy developments.

Questions

58) How do we ensure that GHG emissions from SAF are accounted for appropriately with respect to aircraft operators' UK ETS obligations?

59) Should emissions reductions delivered through SAF supplied to comply with the proposed SAF mandate contribute towards reductions in UK ETS obligations for aircraft operators? (Y/N)

60) If so, how should supply of SAF and its emissions reductions be reported in a way that ensures SAF usage is only reported under one carbon pricing scheme, whilst minimising the administrative burden for aircraft operators?

61) Do you agree that we should continue to ensure that UK ETS rules keep pace with the latest SAF sustainability criteria? This would include reflecting the latest amendments to the RTFO sustainability criteria. (Y/N) Please explain your answer.

Scope expansion

Non-CO2 impacts

The UK ETS applies to some additional greenhouse gases other than carbon dioxide (CO₂) for certain stationary sectors. For the aviation sector, the UK ETS currently only covers CO₂ emissions, though aviation also affects the climate through non-CO₂ impacts. Therefore, we are exploring the feasibility and appropriateness of expanding the scope of the UK ETS to incorporate non-CO₂ impacts of aviation.

Emissions from oxides of nitrogen (NO_x) and the formation of contrail cirrus, which is the product of water vapour and soot emissions, are considered to have the largest magnitude of

the non-CO2 impacts.⁷¹ There are measures currently in use to address these impacts and many help to reduce both CO2 emissions and non-CO2 impacts. For example, international engine standards are in place to limit NOx emissions and NOx landing charges at airports help to manage air quality, but also benefit the climate. Sustainable aviation fuels (SAF) achieve CO2 emissions savings whilst also reducing emissions of soot particulates and therefore contrail formation.⁷²

In 2020 the European Commission published a report providing analysis of the non-CO2 impacts of aviation.⁷³ The report outlined potential policy measures for consideration and estimated timescales for implementation. This included consideration of a SAF mandate, which the UK Government consulted on in 2021. It also considered changes to air traffic management (such as avoidance of ice supersaturated areas) to reduce contrail formation. For NOx emissions, it considered expanding the scope of the EU ETS to include NOx emissions or applying a levy on aircraft NOx emissions. The report also identified that, whilst the scientific understanding of non-CO2 impacts has developed substantially, there are still multiple challenges for policy development that would need to be addressed to take any of these policy options forward.

In particular, there are a number of uncertainties regarding the magnitude of non-CO2 impacts and for effective means of monitoring them. For example, NOx emissions are understood to increase the levels of ozone (leading to warming) and decrease ambient methane and stratospheric water vapour in the atmosphere (leading to cooling), with a net warming effect. The warming effect of NOx is short term, lasting less than a month.⁷⁴ It is also important to note that, while the historical impact of NOx is a net warming effect, this is not fixed and there are future scenarios in which NOx could lead to a net cooling effect, depending on the background concentrations of other pollutants.⁷⁵ Whilst monitoring of NOx emissions for the landing and take-off cycle is well established, monitoring cruise, and therefore full flight emissions, is not. Most importantly, however, the choice of the climate metric used and time horizon considered significantly vary the relative warming effect of NOx relative to CO2. There is currently no scientific consensus on the 'correct' metric to use.

Despite these challenges, scientific understanding of the magnitude of NOx emissions is greater than that of contrail cirrus formation. Therefore, we are initially interested in gathering evidence about the possible inclusion of NOx emissions in the UK ETS for the aviation sector. The EU report identified a five-to-eight-year implementation period for inclusion of NOx emissions in the EU ETS, if outstanding research issues are overcome. We would look to consult again before deciding whether to bring aviation NOx emissions within scope of the UK ETS.

71 <https://doi.org/10.1016/j.atmosenv.2020.117834> See Figure 3. Note that the scale of these effects varies significantly. Warming from contrail cirrus is around two times that of CO2, whereas warming from NOx is around half that of CO2. However, the confidence level for these figures is 'low'.

72 <https://doi.org/10.5194/acp-14-11-2014>

73 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2020:277:FIN>

74 <https://doi.org/10.5194/acp-13-2793-2013>

75 <https://doi.org/10.1016/j.atmosenv.2020.117834>

Although we are primarily considering NOx emissions at this stage, we would also welcome evidence on whether other non-CO2 impacts, such as contrail cirrus, could be targeted through expanding the scope of the UK ETS. We do not propose making any long-term changes to UK ETS policy by January 2024. Responses to this section will help inform future policy development and our approach will continue to be driven by the latest scientific understanding of aviation's non-CO2 impacts. We welcome views on any potential near term measures, such as charges within the UK ETS, to account for non-CO2 impacts in the interim. We also recognise that there are several measures outside of the UK ETS that can target non-CO2 impacts.

Questions

62) Should we consider capturing aviation's non-CO2 impacts in the UK ETS? (Y/N) Please explain your answer

63) How could we treat NOx in the UK ETS to reflect its differing climate impact compared to CO2?

64) How could we monitor aircraft NOx emissions, whilst seeking to minimise the additional administrative burden for airlines?

65) How could the UK ETS address additional non-CO2 aviation impacts, such as contrail cirrus? Please explain your answer and give evidence where possible.

66) Should we explore any other near term pricing measures, such as charges, to account for non-CO2 impacts whilst consideration is given to full incorporation into the UK ETS? (Y/N) How could these work in the UK ETS? Please explain your answer and give evidence where possible.

UK to Switzerland flights

The EU and Switzerland agreement to link the EU ETS and Swiss ETS came into force in 2020. The EU ETS covers flights from the EEA to Switzerland, whilst the Swiss ETS covers flights from Switzerland to the EEA. Since our departure from the European Union, flights between the UK and Switzerland are not covered in either the UK ETS or Swiss ETS, creating a gap in ETS coverage. The government response to the consultation on the Future of UK Carbon Pricing, published in 2020, committed to include flights departing the UK and arriving in Switzerland within the scope of the UK ETS, if an agreement with Switzerland could be reached. We propose to follow the same departing flights principle as set out in the UK-EU Trade and Co-operation Agreement. This led to coverage of flights between the UK and EEA under the UK ETS and EU ETS without a formal linking agreement.

We would work closely with Switzerland to incorporate flights from Switzerland to the UK in the Swiss ETS, to be implemented in time for the 2023 UK ETS scheme year. In 2019, UK to Switzerland flights included in the EU ETS were responsible for emissions of approximately 0.28MtCO₂, which would equal approximately 2.7% of aviation emissions in the UK ETS if

included.⁷⁶ Given the relatively small amount of additional emissions captured, we do not propose to adjust the UK ETS cap for implementation in 2023. We will account for the inclusion of Swiss flights in proposals to align the UK ETS cap with a net zero trajectory. We will also look to apply the same free allocation rules for UK to Switzerland aviation activity as to the rest of the UK ETS, including any outcomes of the review into free allocation.

The UK ETS was designed with similar features to the EU ETS to ensure a smooth transition for aircraft operators. Now that the UK ETS has been established, we would like to explore how it can be developed to incentivise additional emissions reductions. This includes exploring where there are other carbon pricing gaps for flights departing the UK mainland, for example, to destinations that are not covered by emissions trading schemes or CORSIA. We would therefore like to gather evidence on whether seeking agreement to expand the geographic scope of the UK ETS without linking arrangements should be explored for other flights departing the UK mainland that are not covered by carbon pricing schemes.

Questions

67) Do you agree that flights from the UK to Switzerland should be included in the UK ETS from January 2023? (Y/N) Please expand on your answer and give evidence where possible.

68) Do you agree that this aviation activity should be subject to the same free allocation rules and review outcomes as the rest of the aviation sector in the UK ETS? (Y/N) Please expand on your answer and give evidence where possible.

69) Do you agree that we should not adjust the current UK ETS cap to account for the inclusion of UK to Switzerland flights? (Y/N) Please expand on your answer and give evidence where possible.

70) Are there any other flights departing the UK mainland that are not covered by carbon pricing schemes that we should seek agreement with the destination state or territory to include in the UK ETS? (Y/N) Please expand on your answer and give evidence where possible.

International ETS co-operation for aviation

The UK ETS is currently a standalone scheme with no linking arrangements. However, given the aviation sector's international nature, many aircraft operators will have obligations under both the UK ETS and other emissions trading schemes, such as the EU ETS. They are therefore subject to separate regulations and regulators for each scheme. This contributes to on-going compliance burdens as well as verifier fees, both of which will depend on the size of the aircraft operator's annual emissions. We would like to gather evidence regarding

⁷⁶ Internal analysis of 2019 Eurocontrol data.

compliance with multiple schemes, which will help to inform international engagement and potential co-operation on operational features of the scheme.

Multilateral co-operation on carbon pricing might include the exchange of information, sharing best practice and promoting integrity of systems. Under the Trade and Cooperation Agreement (TCA) the UK and EU agreed to cooperate on carbon pricing and dialogue continues to be important as both the UK and EU strive to reach ambitious climate targets. The Authority also engages regularly with other jurisdictions on the importance of international cooperation on carbon pricing and the important role international carbon markets can play. We would like to gather evidence on how international co-operation can benefit aircraft operators' experience of complying with the UK ETS.

Questions

71) What areas of co-operation between the UK ETS and other emissions trading schemes, such as the EU ETS, do you think should be prioritised for aviation?
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72) How can operational features of the UK ETS be simplified for aircraft operators through co-operation with other schemes?

Virtual site visits

UK ETS verifiers are normally required to conduct a site visit as part of the verification process. However, a provision permitting virtual site visits in serious, extraordinary and unforeseeable circumstances was introduced during the COVID-19 pandemic.

As UK ETS participants are based around the world, permitting verifiers to conduct virtual site visits in normal circumstances would reduce the administrative burden, costs, and emissions from travel for both aircraft operators and verifiers and may allow verifiers to extend their services to a greater number of geographical areas. The use of remote site visits would be subject to risk assessment and appropriate conditions, including, possibly, the need for approval by the Regulator and actual site visits on a periodic basis. This would complement the approach for CORSIA, in which remote verification is considered an option where the verifier has assessed it is appropriate and has coordinated with the administering State. The remote site visit option would be available in addition to the current option for simplified verification for small emitters.

Question

73) Should we permit verifiers of aviation activities to conduct remote site visits if an appropriate risk assessment has been carried out and any precautionary conditions, such as Regulator approval, have been met? (Y/N) Please explain your answer.
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Chapter 6: Expanding UK ETS coverage within covered sectors

Introduction

In this chapter, we consider a number of opportunities to expand the coverage of the UK ETS within sectors already covered by the scheme. By increasing the coverage of the scheme to include additional gases and activities, we are able to provide additional opportunities for cost-effective emissions reductions.

Options for expanding the scope of the UK ETS to sectors not already covered by the scheme are explored in Chapter 6.

Upstream oil & gas – Venting & flaring

Sector overview

Greenhouse gas emissions from the UK onshore and offshore upstream oil and gas sector are currently partly covered by the UK ETS. We are consulting here on increasing this coverage. This section constitutes:

- a consultation on carbon dioxide venting and;
- a call for evidence on remaining un-covered emissions from the sector, including from methane, nitrous oxide and non-combustion processes.

It is of relevance to the oil & gas sector; it is also relevant for any other industrial sectors where venting and/or flaring of GHGs occurs.

In 2020, the estimated annual emissions for upstream oil and gas production were 16.8 MtCO₂e of which 14.9 MtCO₂e (89%) was priced within the UK ETS.⁷⁷ The UK ETS currently covers reported carbon dioxide emissions from the upstream oil & gas sector including the production, flaring and transport of hydrocarbons. These activities are covered by the regulated activity “Combustion of fuels on a site where combustion with a maximum total rated thermal input exceeding 20 megawatts” and the regulated greenhouse gas is carbon dioxide (CO₂). The UK ETS does not currently cover GHG emissions from venting or non-combustion processes and does not cover methane (CH₄) or nitrous oxide (N₂O) emissions from any of the sources identified above.

⁷⁷ BEIS analysis based on BEIS 2020, Final UK Greenhouse Gas Emissions National Statistics, <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020>

Table 6.1: GHG emissions in 2020 from upstream oil and gas production (Mt CO₂e, AR5 with feedback GWPs)⁷⁸

	CO ₂	CH ₄	N ₂ O	GHGs
Combustion (excluding flaring)	12.11 *	0.10 ***	0.26 ***	12.47
Flaring	2.80 *	0.31 ***	0.03 ***	3.14
Venting	<0.01 **	0.54 ***	<0.01 ***	0.54
Non-combustion (process emissions, oil/gas terminal storage, oil loading)	0.40 ***	0.25 ***	<0.01 ***	0.65
Total Upstream Oil and Gas Production	15.31	1.20	0.29	16.81

* Currently included in the UK ETS

** Consulting

*** Calling for Evidence

Defining flaring & venting:

Flaring and venting are controlled processes to dispose of gas, essential for emergency and safety purposes on oil and gas installations, and in situations where it may not be feasible for the gas to be used, exported or re-injected. Flaring is the ignition of gas, and venting is the release of unignited gas.⁷⁹

Cold flare is gas passing through the flare without ignition – effectively venting of gas through the flare system. This refers to the period of time where there is no combustion (or zero combustion efficiency).⁸⁰

Methane slip refers to small quantities of methane which evade combustion in flares or combustion plants during the combustion of hydrocarbons, and instead enter the atmosphere as unburnt methane. Typically, the majority of the methane and other hydrocarbons in the fuel are oxidised into carbon dioxide in the combustion process, but a small quantity of unburnt hydrocarbons (UHC) are emitted as well.

The nature and extent of methane slip is largely a function of the type of combustion equipment, design technology, maintenance, and its operating duty. For some combustion equipment types methane slip is very low if equipment is well maintained and is operating

⁷⁸ BEIS and OGA analysis based on BEIS 2020, Final UK Greenhouse Gas Emissions National Statistics, <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020>

⁷⁹ Oil & Gas Authority 2021, Flaring and venting guidance, <https://www.ogauthority.co.uk/news-publications/publications/2021/flaring-and-venting-guidance/>

⁸⁰ Ibid.

within intended conditions. However, this methane slip may increase at low (turndown) loads. For some equipment types, methane slip can be higher due to the inherent technical design challenges. Design specifications and field test experience allow operators and industry to characterise methane slip for different equipment types. This is an ongoing area of industry research and development and field verification.

Reasons for consulting and calling for evidence

The establishment of the UK ETS presents an opportunity to review and increase the coverage of emissions across the upstream oil and gas sector that are captured by the scheme. Any changes considered would be consistent with health and safety objectives, as set out in the section on safety flaring and venting below.

Increasing UK ETS coverage of the upstream oil and gas sector would provide an additional driver for the decarbonisation of the sector and would allow us to go further than the EU ETS and other emissions trading schemes globally. It would work in synergy with planned and existing policies:

- The North Sea Transition Deal (2021), agreed between the UK Government and industry, commits the North Sea to becoming a net zero basin by 2050, with a key aim being the electrification of offshore platforms. As part of the deal, industry committed to the Methane Action Plan which aims to promote continuous reductions in methane emissions.
- The UK is a signatory of the World Bank “Zero Routine Flaring by 2030” Initiative, which aims to reduce emissions from flaring and achieve no routine flaring by 2030.
- The North Sea Transition Authority Strategy (2021) requires industry to operate in a way consistent with net zero ambitions, lowering production emissions and making serious progress on the solutions that can contribute to the UK achieving net zero. This includes industry reducing as far as reasonable in the circumstances greenhouse gas emissions resulting from sources such as flaring and venting, and power generation.
- The North Sea Transition Authority (NSTA) issued updated flaring and venting guidance in June 2021, which sets out a tougher approach to driving reductions, through clear principles and using the OGA consenting regime and stewardship activity.
- In December 2021 the UK Government launched a consultation on the design of a Climate Compatibility Checkpoint for oil and gas. This Checkpoint will help ensure that any future licenses are only awarded on the basis that they are aligned with the Government’s broad climate change ambitions, including the UK’s target of reaching net zero by 2050. The consultation ended on 28 February 2022, and UK Government will make an announcement on the design of the Checkpoint in due course. As the Checkpoint will focus on future licensing, existing licensed areas are not affected.
- The Scottish Government’s £75 million Energy Transition Fund, which is supporting projects in the oil, gas and energy sectors that contribute to the transition to net zero.

This includes support to the Net Zero Technology Centre with projects that are transforming the North Sea energy system and have a focus on emissions reduction.

- The UK is a signatory to the Global Methane Pledge announced at COP26, an initiative to reduce global methane emissions, including an aim to reduce global methane emissions by at least 30 percent from 2020 levels by 2030.

Increasing coverage of the UK ETS may help avoid perverse incentives. For example, the current exclusion of venting from the UK ETS may incentivise increased venting in development proposals as an alternative to flaring, as it is currently the option with the lowest financial costs associated.

Proposed changes

We are considering changes to expand the current scope of emissions in this area and this section constitutes:

- a consultation on the inclusion of carbon dioxide venting;
- a call for evidence on the inclusion of methane emissions from the upstream oil and gas sector, including from venting, cold flaring, methane slip and fugitive emissions; and
- a call for evidence on the Monitoring, Reporting and Verification (MRV) of remaining greenhouse gas emissions from the upstream oil and gas sector, namely emissions of nitrous oxide and from non-combustion processes

CO₂ venting consultation:

Inclusion of carbon dioxide from venting in the UK ETS could be achieved using the existing MRV regime. Under the existing regime, installations must install meters to measure ETS covered emissions. In some instances, it may not be appropriate for a meter to be installed – either due to technical infeasibility, or if a cost-benefit analysis shows that meter installation is too expensive given the scale of emissions for the improvement (the cost-benefit analysis process is set out in the monitoring and reporting regulations). In these circumstances, and subject to regulatory approval, an alternative calculation approach is used to estimate the emissions covered by the UK ETS.

We are now consulting on extending this MRV regime to cover carbon dioxide from venting. This would mean that meters to measure emissions from carbon dioxide vents would be installed as standard on new installations (subject to threshold requirements – see below). Existing installations (again, subject to threshold requirements) would be required to install a meter or justify use of the calculation method due to technical infeasibility or cost-benefit analysis. The cost of meter installation would be borne by operators, as is consistent with current practice.

A minimum threshold on which to report vented carbon dioxide may need to be set; alternatively, any venting of carbon dioxide could be included in the UK ETS. If a threshold is set, this could either be applicable to installations that already carry out a regulated activity by virtue of the 20MWth combustion threshold, or an alternative threshold that is specific to

vented carbon dioxide could be set. If the latter were chosen, upstream oil and gas installations which do not meet the 20MWth combustion threshold but do meet this venting threshold would then be in scope of the UK ETS for their vented CO₂ emissions. We are seeking views on what, if any, threshold should be set.

We propose that UK ETS obligations would fall on the operator of the installation that emits vented CO₂, as is consistent with the current regulations. We do not propose providing any free allocation of allowances for the venting of carbon dioxide, as is consistent with the existing UK ETS approach of not providing free allocation for inherent carbon dioxide which is part of a commingled gas that is combusted.

We understand that the majority of vented carbon dioxide is emitted in the upstream oil and gas sector. However, some other traded sectors, such as chemicals and petrochemicals manufacturing, may also vent carbon dioxide in some instances. We are therefore interested in gathering views on other sectors and installations affected by these proposed changes, and the size of emissions this represents.

If subject to the outcome of this consultation, we decide to adopt these changes, we propose that they are brought in by 1 January 2024 to align with the normal UK ETS compliance cycle.

Questions

74) Do you agree with the inclusion of CO₂ venting from upstream oil and gas in the UK ETS, and with the approach outlined above regarding MRV, meter installation, point of obligation, and timings? (Y/N) Please provide evidence to support your answer where possible.

75) What threshold, if any, should be set for CO₂ from venting? Please give evidence to support your answer where possible.

76) How would inclusion of CO₂ from venting incentivise behavioural change and/or decarbonisation? For example, would it incentivise improved design, the use of Carbon Capture and Storage (CCS) or other abatement? Please explain your answer.

77) How would the inclusion of CO₂ from venting interact with existing and announced policies and regulations (including any relevant non-decarbonisation policies)?

78) Is the sector likely to be impacted by the inclusion of CO₂ from venting in the UK ETS? (Y/N) If so, how would the sector be impacted? For example, could early decommissioning or security of supply be concerns? Please give evidence to support your answer.

79) What other traded sectors, if any, vent CO₂? What are the likely number of installations and scale of emissions? Should these proposals be applied to these sectors? Please provide evidence to support your answer.

Methane call for evidence:

The offshore oil and gas sector has developed the Methane Action Plan 2021 which aims to promote continuous reductions in methane emissions and establishes a UK Continental Shelf baseline with specific methane emissions reduction targets. This includes reduction of methane by 50 percent compared to 2018 by 2030, committing to 0.20 percent methane intensity by 2025 and aiming to stop all routine flaring by 2030. All companies and installations are encouraged to voluntarily create individual action plans by the end of 2022. The Methane Action Plan should improve the MRV of methane emissions from venting and flaring offshore. Learnings could also be applied to onshore emissions.

If vented methane from the upstream oil and gas sector came into scope of the UK ETS, the existing MRV regime could be extended to apply to methane. Therefore, if the existing MRV regime were extended to vented methane, meters to measure vented methane emissions and gas composition through analysis on hydrocarbon vents would be installed as standard on new installations. Existing installations would be required to install a meter or justify use of an alternative calculation method based on unreasonable costs. The cost of meter installation would be borne by operators, as occurs with existing metering requirements.

We understand that the majority of vented methane is emitted in the upstream oil and gas sector. However, we understand that some other traded sectors, such as chemicals and petrochemicals manufacturing, may also vent methane in some instances. We are therefore interested in gathering views on other sectors and installations affected by these proposed changes, and the size of emissions this represents.

The MRV of methane slip in combustion plant and in combustion flares would not necessarily need new metering. It could potentially be handled using existing ETS activity data for combustion of fuel and flaring, combined with an agreed set of ETS emission factors for methane slip. For offshore oil and gas, it is envisaged that appropriate emission factors could be derived from data obtained as part of stack emissions compliance monitoring programmes, or from updates to the existing methodology for calculating methane emissions from fuel activity data under the Offshore Combustion Installation (Pollution Prevention and Control Regulations 2013 (as amended)) (SI 2013/971). This approach could be consistent with the current method of estimating mass emissions of methane and other pollutants (such as oxides of nitrogen). Emissions factors could be improved by characterising methane emissions across the normal working load and efficiency range of combustion plant.

A similar approach could be adopted for onshore methane slip, or an alternative approach could be adopted. The UK currently reports GHG emissions according to the Global Warming Potentials (GWP) of the IPCC's Fourth Assessment Report (AR4), where methane's GWP is 25. The UK has committed to report GHG emissions in AR5 GWPs no later than 2022, for reporting in 2024. This would change methane's GWP to either 28 or 35, dependent on whether the methodology with or without feedback is chosen.

Under the UK ETS, methane could be converted to its carbon dioxide equivalent by multiplying the mass of methane emissions by the appropriate GWP. Alternatively, another method could be used.

We propose that UK ETS obligations would fall on the operator of the installation that emits vented methane, as is consistent with the current regulations. A minimum threshold on which to report on vented methane may need to be set; alternatively, any venting of methane could be included in the UK ETS. If a threshold is set, this could either be applicable to installations that already carry out a regulated activity virtue of the 20 MWth combustion threshold, or an alternative threshold could be set (e.g., specific to vented methane). The threshold would determine which installations would fall in scope of the UK ETS.

We propose that these changes could be brought in from January 2026, with MRV data being submitted at the same time-period as the applications for the second free allocation period (mid 2024) which includes baseline data from the period of 2019-2023. However, we will consult further prior to finalising any decisions and are presently calling for evidence and industry views. In doing so, we are conscious of the potential scope and benefits to align with the milestones of the offshore sector's Methane Action Plan (MAP), if appropriate.

Questions

80) Do you agree with the sources of methane from upstream oil and gas as venting, cold flaring, methane slip, fugitive emissions, and other process emissions? (Y/N) Please explain your answer.

81) How could methane emissions from the sources identified above be accurately MRV'd? In particular, how could methane slip and fugitive emissions be accurately measured or estimated?

82) Do you agree that the Methane Action Plan could be used to support and provide data for MRV to occur? (Y/N) Please explain your answer.

83) How should methane emissions be converted into CO₂ using a common standard or other approach? In your answer, please consider Global Warming Potentials and atmospheric lifetime.

84) Do you agree with the approach outlined above, regarding point of obligation and timings? (Y/N) Please provide evidence to support your answer.

85) What, if any, is a suitable threshold for the inclusion of methane from upstream oil and gas in the UK ETS? Please explain your answer.

86) How would inclusion of methane from upstream oil and gas emissions incentivise behavioural change and/or decarbonisation?

87) What other traded sectors, if any, vent methane? What are the likely number of installations and size of emissions? Should these proposals be applied to these sectors? Please provide evidence to support your answer.

Safety venting and flaring call for evidence

Currently under the UK ETS, safety flaring is granted free allocation of allowances. We are now calling for evidence on how safety flaring should be interpreted for the purposes of free allocation, to ensure that only flaring which is necessary for safety reasons receive free allocation, ensure that unsafe behaviour is not incentivised, and avoid perverse incentives in flaring for the purpose of receiving free allocation.

It may be that some cold flaring and venting of methane is necessary for safety reasons. Current UK ETS regulations provide free allocation of allowances for safety flaring which results in carbon dioxide emissions, and a similar approach could be adopted for safety cold flaring and venting of methane.

Questions
<p>88) Is some cold flaring and venting necessary for safety reasons? (Y/N) If so, how could we identify cold flaring and venting of methane conducted for safety reasons as opposed to routine cold flaring and venting? For example, should it be aligned to the Categories of Flaring and Venting defined by the OGA?</p> <p>89) Should there be a free allocation of allowances for safety cold flaring and venting of methane? (Y/N) Please provide evidence to support your answer.</p> <p>90) How should safety flaring be interpreted for the purposes of free allocation?</p>

Remaining upstream oil and gas emissions call for evidence

As set out above, carbon dioxide from combustion and flaring is already priced within the UK ETS. We have set out proposals for including carbon dioxide venting and called for evidence on the inclusion of methane above. Remaining sectoral emissions arise from non-combustion processes (process emissions, oil/gas terminal storage, oil loading) and from the gas nitrous oxide (from combustion, non-combustion processes and flaring). We are committed to ensuring that the UK ETS is robust and covers the most appropriate scope of emissions for each sector. We are therefore calling for evidence on the feasibility of reliably quantifying and auditing the following emissions:

- Non-combustion processes: MRV methods would need to be developed for non-combustion processes, and consideration of the effort required would need to be taken.
- Nitrous oxide: Gas use for fuels and flaring is measured, and additionally gas composition is known in terms of nitrogen content. This would aid the MRV of nitrous oxide, however challenges remain in determining the exact quantity of nitrous oxide emitted as a result of combustion.

Questions

91) Do you agree with the remaining sources of upstream oil and gas emissions as non-combustion processes (process emissions, oil/gas terminal storage, oil loading) and as N₂O (from combustion, non-combustion processes, and flaring)? (Y/N) Please explain your answer.

92) How could the GHG emissions identified above be accurately quantified? How could they be MRV'd?

CCUS & Transportation

Background

As set out in our Net Zero Strategy, the UK CCUS policy commits to two industrial clusters by the mid-2020s, four sites by 2030 and the aim of capturing and storing between 20-30 MtCO₂ a year by 2030.⁸¹ A number of these proposed sites are developing options for the transfer of CO₂, both domestically and internationally, from emitters to geological storage facilities. As well as transport by pipelines, these options would use various forms of transport, including shipping, rail, barge, and road.

Currently the UK ETS does not recognise the transportation of CO₂ via these other means of transport for permanent geological storage in the same way as it does via pipelines.⁸² Future industrial sites are likely to be dissuaded from looking for a non-pipeline solution to CO₂ abatement as CO₂ not transported via pipeline would be subject to the full carbon price in the current UK ETS legislation. Practically, this would mean operators would have to surrender allowances for each tonne of CO₂ transported via any means other than pipeline, even if it resulted in sequestration of the CO₂ in geological formations.

Proposal

We propose that in addition to allowing for transport via pipeline, the UK ETS be expanded to allow for the transportation of CO₂ through other forms of non-pipeline transport (e.g.. shipping, rail and road) by including them as a regulated activity.

Questions

93) Do you agree with the Proposal that the UK ETS be expanded to allow for the transportation of CO₂ through other forms of non-pipeline transport (i.e. shipping, rail and road)? (Y/N) Please explain your answer.

⁸¹ Pages 21 and 33:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1028157/net-zero-strategy.pdf

⁸² <https://www.legislation.gov.uk/uksi/2020/1557/made>

94) Do you have any evidence to suggest how expanding the UK ETS to include other forms of CO₂ transport may impact the wider UK ETS or other policy areas of the Governments of the UK, either positively or adversely? For example considering the impacts of emissions produced by chosen means of transport. (Y/N) Please explain your answer.

95) What mitigation strategies, if any, do you believe should be applied in relation to CO₂ emissions associated with all forms of CO₂ transport for CCUS (eg. emissions produced by a cargo ship or those associated with the operation of pipelines)? For example, a mitigation strategy might include the requirement for a chosen means of transport to adhere to emissions standards, net proportion of emissions delivered criteria (after deduction of emissions from transportation) or similar sustainability criteria.

Biomass

Introduction

We are consulting on the treatment of solid and gaseous biomass under the UK ETS, in cases where it is combusted as a fuel by energy intensive industries and power generation sectors in scope of the ETS. We are not consulting on biofuels for transport in this section. We are consulting on the following:

- Solid biomass such as forestry by-products, sawmill residues, waste wood or energy crops that can be used for solid biomass production.
- Liquid biomass (or bioliquids) such as waste fats, oils, grease that can be used for liquid biomass production.
- Other wastes, sewage sludge, slurries or distillery by-products that can be processed through Anaerobic Digestion (AD) to produce gaseous biomass and can be further processed into biomethane.

Currently under the UK ETS, 'sustainability criteria' are applied to bioliquids. These requirements are intended to ensure that only sustainable liquid biomass is used and operators are not given any financial incentive to use biomass that has a negative impact on the environment, including on land use and biodiversity. If the sustainability criteria are met, UK ETS operators may apply a zero emission factor for their biomass, thereby reducing their reportable emissions from the combustion of biomass and do not therefore need to surrender allowances to cover those emissions. The existing sustainability criteria applied to liquid biomass under the UK ETS are laid out in Article 17(2) to (5) of Directive 2009/28/EC (the Renewable Energy Directive).⁸³

⁸³ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0028&from=EN#d1e2001-16-1>

In installations (i.e. those in energy intensive industries or the power generation sector but excluding energy from waste, which is currently out of scope of the UK ETS), solid and gaseous biomass are primarily combusted to generate heat and power. Currently in the UK ETS, for installations which burn both biomass and fossil fuel, the combustion of solid and gaseous biomass is always ‘zero-rated’. No sustainability criteria are in place within the UK-ETS for these fuels, and therefore zero-rating is applied in the UK ETS regardless of the sustainability of the biomass. To note, we are calling for evidence separately on the inclusion of EfW and waste incineration with no energy recovery in the UK ETS in Chapter 7 of this consultation.

Installations that only use biomass as a fuel (i.e. do not burn any fossil fuels) are currently exempt from participation in the UK ETS. Combustion units that only use biomass as a fuel are also not included in certain circumstances.

For Hospital and Small Emitters (HSEs), an emissions factor of zero is applied to all biomass, including liquid biomass. Emissions from biomass are also not included when calculating an emissions target and when determining whether an installation’s reportable emissions exceed the emissions target. These exclusions apply regardless of the sustainability of the biomass.

The scope of this section is the treatment of biomass under the current UK ETS. The possible future role of Bioenergy with Carbon Capture and Storage (BECCS) to provide greenhouse gas removals within the UK ETS is therefore outside the scope of this section. Responses regarding the role of BECCS within the UK ETS are welcomed and respondents should refer to the call for evidence on the role of Greenhouse Gas Removals in Chapter 8 to submit relevant evidence.

A case for change

The zero-rating of emissions from solid and gaseous biomass is a result of the Authority having mirrored the approach in Phase III of the EU ETS when designing the UK ETS. The Authority now has the opportunity to align the treatment of biomass in installations with other UK policies. Sustainability criteria are currently applied to solid, liquid, and gaseous biomass in other UK policies, such as in the Renewables Obligation⁸⁴, Contracts for Difference⁸⁵, and Non-Domestic Renewable Heat Incentive⁸⁶ schemes. These criteria are some of the most stringent sustainability criteria globally and cover solid, liquid, and gaseous biomass.

We are seeking evidence as to whether a more consistent approach to biomass between the UK ETS and other UK policy areas, such as biomass sustainability policy in the heat and power sectors, would be beneficial to participants in the UK ETS.

Recently, a UK Government call for evidence was completed on “the role of biomass in achieving net zero” which covers biomass supply, end use, sustainability, and innovation.⁸⁷ The Scottish Government published a Bioenergy Update earlier in 2021 which set out plans to

⁸⁴ <https://www.ofgem.gov.uk/environmental-and-social-schemes/renewables-obligation-ro>

⁸⁵ <https://www.gov.uk/government/publications/contracts-for-difference/contract-for-difference>

⁸⁶ <https://www.gov.uk/non-domestic-renewable-heat-incentive>

⁸⁷ <https://www.gov.uk/government/consultations/role-of-biomass-in-achieving-net-zero-call-for-evidence>

develop a strategic framework for the best use of biomass.⁸⁸ Given that biomass is a developing policy area, there may also be an opportunity to further develop the approach to biomass in the UK ETS in future, and we welcome suggestions here too.

Proposed changes

The Authority proposes that:

- We apply sustainability criteria to solid, liquid and gaseous biomass for all installations, using a set of criteria mirroring one of the UK policies which already applies these standards, ensuring a more consistent approach to biomass between the UK ETS and the relevant biomass policies in each sector. We are seeking views on which set of criteria to apply, as different criteria are applied in different policy areas.
- Require that for installations and combustion units which generate energy (power, heat, etc.) solely through biomass combustion to be exempt from the UK ETS, they must exclusively burn biomass which adheres to the relevant sustainability criteria. Failure to make these changes would perpetuate an asymmetry between policy applied to biomass-only installations and installations which separately burn both biomass and fossil fuels.
- For HSEs, require that the sustainability criteria are applicable for the purpose of (a) assessing eligibility to be a HSE in the second allocation period, (b) calculating of emissions targets and (c) determining whether an installation's reportable emissions exceed the emissions targets. An emissions factor of zero would also only apply to biomass that meets the sustainability criteria. We propose that this change come into effect from the start of the second allocation period.

Questions
<p>96) Do you agree with the proposal that we implement sustainability criteria for solid, liquid and gaseous biomass for installations? (Y/N) Please explain your answer.</p> <p>97) Which sustainability criteria should the UK ETS apply to solid, liquid and gaseous biomass (RO, CfD etc.), and would there be any value in developing UK ETS specific criteria? Please explain your reasoning.</p> <p>98) What are your views on the proposal that for installations and combustion units which only burn biomass to be exempt from the UK ETS, operators must only use sustainable biomass?</p> <p>99) What are your views on the suggestion that from the start of the second allocation period in the HSE scheme, sustainability criteria will be applied to biomass for the purpose of assessing eligibility, when calculating an emissions target for the</p>

⁸⁸ <https://www.gov.scot/publications/bioenergy-update-march-2021/>

installation and when determining whether an installation's reportable emissions exceed the emissions target?

100) Do you have any evidence regarding how applying sustainability criteria for solid and gaseous biomass in the UK as proposed may impact the UK ETS and/or other policy areas? (Y/N) If so, please provide this in as much detail as possible.

101) Going forward, is there anything else you think we should consider regarding biomass in the UK ETS?

20MWth threshold and 3MW aggregation threshold call for evidence

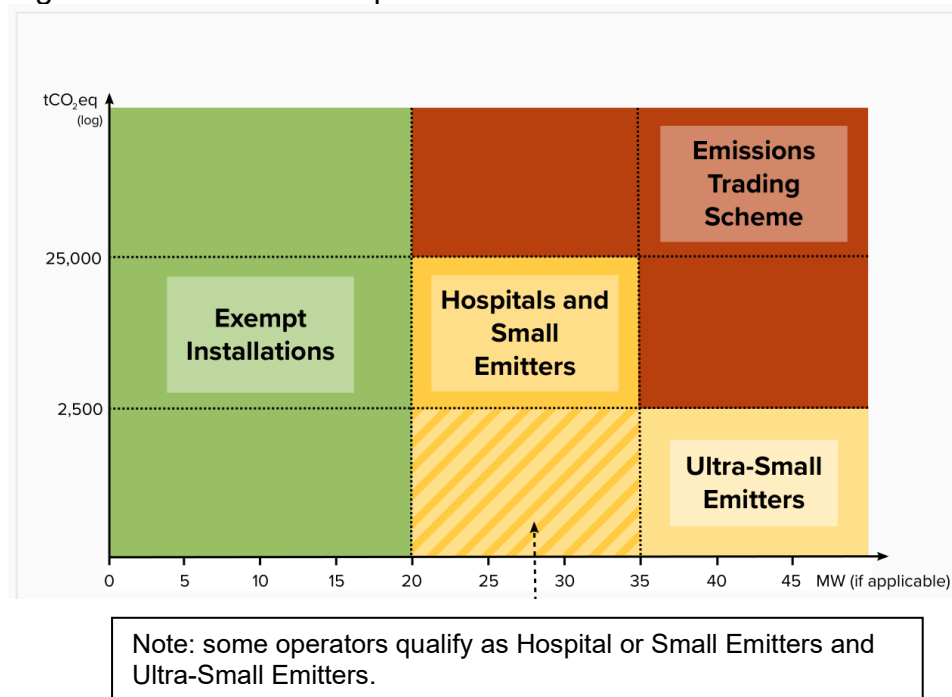
Introduction

Currently, there is a minimum threshold for participation in the UK ETS on the basis of certain activities. Under the Greenhouse Gas Emissions Trading Scheme Order 2020 (The Order), the threshold for combustion has been set such that only installations where the combustion of fuels in units with a total rated thermal input exceeding 20 megawatts are operated are required to participate in the UK ETS. Additionally, installations which operate above the 20MWth threshold but below 35MWth may qualify for Hospital and Small Emitters (HSE) status while installations operating above 20MWth but have low emissions qualify as Ultra-Small Emitters (USE). This Call for Evidence examines whether this threshold (hereafter 'the 20MWth threshold') as well as the 3MW aggregation threshold is set at the correct level to meet the overall policy objectives of the UK ETS.

Objective of the 20MWth threshold

The 20MWth threshold exists to help the installations that are considered too small to bear the compliance burdens of the UK ETS by relieving them of these obligations. Some costs associated with compliance are fixed regardless of the size of installation, and the burden is therefore proportionally higher for smaller installations.

Figure 6.1: UK ETS exemption thresholds



A case for more evidence

There is emerging evidence indicating that the current 20MWth threshold could be failing to meet ETS policy objectives (see Table 6.2 for a full breakdown of activities) by shielding some high emitting generators from the carbon price, and we are looking for further information to explore this further. For example, the threshold appears to encourage increased fragmentation in industry, with the concentration of small installations (below the threshold) increasing while emissions remain static in the market overall. Currently evidence as to how many combustion units exist under the 20MWth threshold is lacking but preliminary analysis has suggested that they might account for almost a third of industrial emissions. It also appears that exempting these organisations impacts capacity markets, as in recent auctions a high percentage of Capacity Market agreements were awarded to carbon emitting gas generators smaller than 20MW. This could be because of the competitive advantage afforded by not paying the carbon price⁸⁹ and the cost of compliance with the ETS monitoring, reporting and verification requirements.

Additionally, under current rules, total rated thermal input of combustion units operated on a site is calculated by adding together combustion units with a rated thermal input above 3 megawatts. We need more evidence to assess if this threshold also has a distortive impact on market signals.

We would consider a change in the threshold if it can create a more level playing field by requiring more installations to consider the carbon price. This should not be at the expense of creating adverse distortions in the markets in which these installations operate nor should it create disproportionate compliance burdens for them.

⁸⁹ <https://www.gov.uk/government/publications/transitioning-to-a-net-zero-energy-system-smart-systems-and-flexibility-plan-2021>

Next steps

If there is enough evidence that the current 20MWth and 3MWth threshold are causing adverse effects and that it should be modified, we will consult in due course on policy and legislative changes.

Questions

We invite responses in part or in full to the following questions. For these questions, we are particularly interested in installations whose activities fall under those listed in Table 1 (see Annex).

102) Do you have data on the number, scale and/or emissions level of installations that are currently not monitored under the UK ETS because of the two thresholds? (Y/N) If so, please provide this where possible.

103) Do you have data regarding the abatement costs of installations paying the carbon price and those not (i.e., exempt, USE, HSE)? (Y/N) If so, please provide this where possible.

104) Do you have data regarding the compliance costs of installations and likely compliance costs of those outside of the UK ETS (i.e., exempt, USE, HSE)? (Y/N) If so, please provide this where possible.

105) Do you have evidence of distortion in relevant markets caused by the 20MWth threshold (e.g., in the form of smaller installations coming on to the market at an increasing rate)? (Y/N) If so, please provide this where possible.

106) Do you have evidence of adverse interactions of the current threshold level with other UK Government or Devolved Administration policies (e.g., with Carbon Price Support)? (Y/N)

107) Do you believe there is other evidence that should be taken into account when considering lowering the 20MWth threshold? (Y/N) If so, please provide this.

108) Do you believe that there is a case for lowering the 20MWth threshold to bring more operators of combustion units under the scope of the UK ETS? (Y/N) If so, please state why?

109) Do you have evidence of distortion in relevant markets caused by the 3MWth threshold for calculating total thermal input? (Y/N) If so, please provide this where possible.

110) Do you believe that there is a case for removing the 3MWth threshold to bring more operators of combustion units under the scope of the UK ETS? (Y/N) If so, please state why?

111) Do you believe the UK ETS is an appropriate policy to ensure the decarbonisation of small power generators in alignment with Net Zero? (Y/N) If yes, please say why. If no, what other policies do you think may be preferable?

Annex

Table 6.2 - Activities for which a 20MWth threshold is currently in place (from the Order Schedule 2, Table C)

Activity description
Combustion of fuels
Production or processing of ferrous metals (including ferro-alloys and "processing" includes processing in rolling mills, re-heaters, annealing furnaces, smitheries, foundries, coating and pickling)
Production of secondary aluminium
Production or processing of non-ferrous metals (including production of alloys, refining and foundry casting, and including fuels used as reducing agents)
Drying or calcination of gypsum or production of plaster boards and other gypsum products
Production of carbon black involving the carbonisation of organic substances such as oils, tars, cracker and distillation residues

Chapter 7: Expanding the UK Emissions Trading Scheme to new sectors

Introduction

The UK ETS currently applies to energy intensive industries, the power generation sector and aviation.⁹⁰ In the Government Response to the 'Future of UK Carbon Pricing', the Authority committed to continue to explore options for expanding carbon pricing.⁹¹ Now that the scheme has been established, the Authority is determined to evolve the scheme so that it continues to play a key role in meeting our ambitious climate targets.

Why are we expanding the UK ETS?

The strength of emissions trading lies in its ability to bring market mechanisms to bear to ensure the cost of carbon is factored into participants decisions. The UK ETS gives businesses the maximum flexibility to decide how to deliver emissions reductions. This ensures that, as we progress to meet our net zero commitments, decarbonisation will happen where, and how, it is most cost effective.

Our approach to bringing more of the economy, and more of our carbon emissions, within the UK ETS will increase the benefits gained in four primary ways.

- As new sectors transition into the UK ETS, this will ensure a greater proportion of our emissions are capped and thus limited – helping ensure we meet our ambitious climate commitments.
- In line with the polluter pays principle, a greater proportion of our greenhouse gas emissions will face a cost rather than externalising that cost to society. This will provide a wider disincentive to pollute and encourage development and uptake of lower carbon alternatives.
- A larger UK ETS market (and thus a larger pool of participants) will ultimately continue to ensure decarbonisation takes place where it is most cost effective to do so. Trading across a larger pool of participants can improve market liquidity and reduces economy-wide abatement costs. It also provides flexibility for businesses on how and when they invest in emissions reduction.
- Applying the polluter pays principle to new sectors will provide a market incentive to reduce emissions by investment (e.g., in adoption of new technologies). Doing this via the UK ETS will provide a long-term signal by using a declining cap on emissions. With clear long term policy certainty provided by the cap, investors and innovators know there will be a market for net zero solutions and abatement options.

⁹⁰ Northern Ireland electricity generators participate in the EU ETS by virtue of the Ireland / Northern Ireland Protocol.

⁹¹ <https://www.gov.uk/government/consultations/the-future-of-uk-carbon-pricing>

How are we initially expanding the UK ETS?

This chapter contains two proposals:

- A consultation on expanding the UK ETS to domestic maritime by the mid-2020s
- A call for evidence on expanding the UK ETS to waste incineration and energy from waste by the mid to late 2020s

Next steps

The Authority will use consultation responses to inform further policy development. Further detail on next steps for implementation will be set out in the government response to this consultation.

The proposals outlined above are the first step in expanding emissions trading.

The Authority will explore expanding the scheme to more sectors of the economy including high emitting sectors and will look to provide further proposals in due course. As stated in the UK Government's Net Zero Strategy and the Welsh Government's Net Zero Wales Plan (2021-25), we want to reduce electricity costs so when the current gas price spike subsides, we will look at options to shift or rebalance energy levies (such as RO and FiTs) and obligations (such as ECO) away from electricity bills over this decade. This will include looking at options to expand carbon pricing and remove costs from electricity bills while ensuring that we continue to limit any impact on bills overall.

Reducing emissions from domestic maritime – a consultation on expanding the UK ETS to domestic maritime

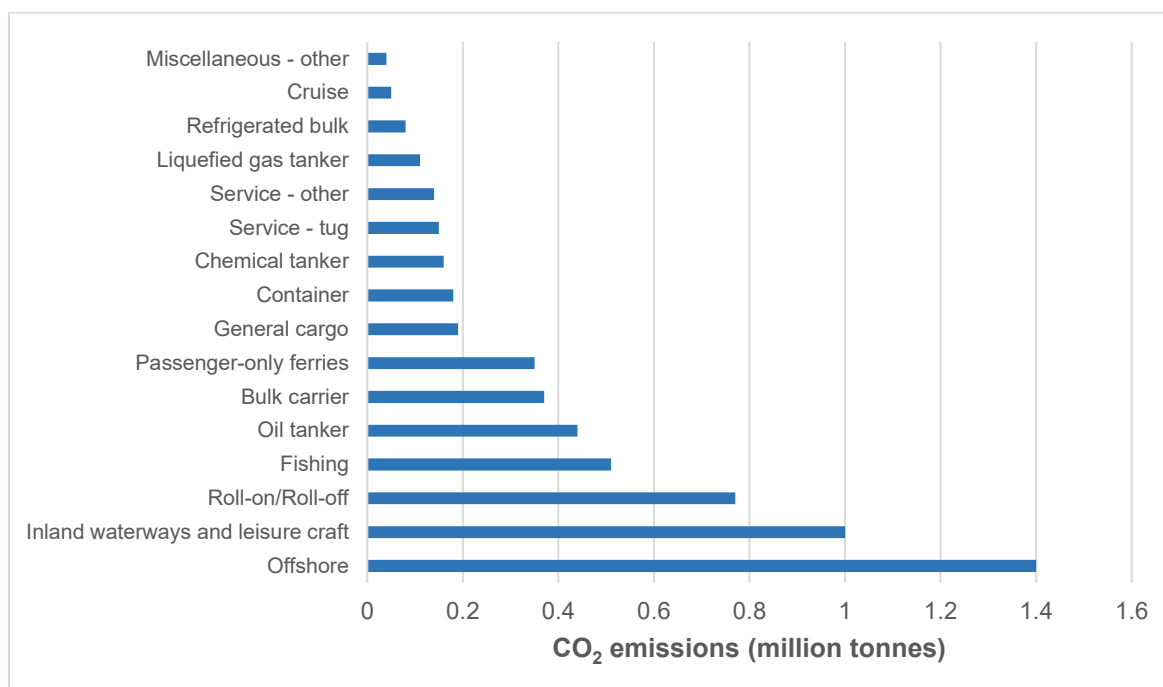
Context

In 2019, domestic shipping activity was responsible for around 6.0 MtCO₂e, representing around 5% of UK domestic transport greenhouse gas emissions.⁹² This meant domestic shipping was responsible for more emissions than the UK rail and bus network combined. Figure 7.1 below shows how the carbon dioxide emissions from UK domestic shipping were split between different vessel types in 2019, with the largest contributor being offshore vessels.

⁹² <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020>

Note: includes fishing and excludes military shipping.

Figure 7.1: Carbon dioxide (CO₂) emissions from UK domestic shipping in 2019 by vessel type (million tonnes of CO₂)⁹³



In 2021, the UK Government published the Transport Decarbonisation Plan (TDP) setting out government decarbonisation commitments across the transport sector, including maritime.⁹⁴ This included commitments to consult on a Course to Zero, exploring possible domestic maritime decarbonisation trajectories to achieve net zero emissions by 2050, or earlier if possible. The UK Government acknowledges our ports and harbours have a key role to play in achieving our net zero targets. A call for evidence has recently been launched to gather information on the benefits, costs and potential options for enabling the commercial roll out of shore power in the UK.⁹⁵

In January 2022, the Renewable Transport Fuel Obligation (RTFO) was extended making renewable fuels of a non-biological origin for marine use, such as hydrogen and ammonia, eligible for incentives under the RTFO.⁹⁶ In addition, research and development funding to technology innovation programmes, such as £23m to the Clean Maritime Demonstration Competition, has been allocated to support the acceleration of maritime decarbonisation.⁹⁷

Following the UK Government’s commitment in the TDP to investigating the use of economic instruments in decarbonising domestic maritime, and the Authority’s commitment to explore expanding the scope of the UK ETS to other sectors, this consultation outlines our proposal for the extension of emissions trading to domestic maritime emissions. We propose to include domestic maritime within the UK Emissions Trading Scheme by the mid-2020s and will aim to provide more details on timing for implementation later this year.

⁹³ Source: UK National Atmospheric Emissions Inventory (2022).

⁹⁴ <https://www.gov.uk/government/publications/transport-decarbonisation-plan>

⁹⁵ <https://www.gov.uk/government/consultations/use-of-maritime-shore-power-in-the-uk-call-for-evidence>

⁹⁶ <https://www.gov.uk/government/publications/renewable-transport-fuel-obligation-rtfo-compliance-reporting-and-verification>

⁹⁷ <https://www.gov.uk/government/publications/clean-maritime-demonstration-competition-cmdc>

We are not considering policies for decarbonising international maritime in this consultation but continue to fully support the work of the International Maritime Organization (IMO) to tackle global shipping emissions. We will continue to monitor developments of international and regional carbon pricing instruments covering shipping emissions and consider how these might interact with our domestic policy in the future.

There are a range of barriers to the uptake of emissions reductions options by domestic maritime. At present, maritime fuel prices do not reflect the costs of their greenhouse gas and air pollutant emissions meaning that there is currently a suboptimal incentive for investment in emission reduction options. This challenge has been cited by industry as a major reason for the slow uptake of energy efficiency technologies in shipping. Technology to allow low and zero emissions operations is also developing, but still in the early demonstration stages.

There are also significant split incentives for vessel owners where, due to chartering arrangements, the party responsible for paying for the fuel was in many cases not the party who owned the vessel. This holds back investment in vessel efficiency as the ultimate owner may not benefit from investing in fuel consumption improvements, and a charterer may not wish to make a capital investment in a chartered asset. A number of other barriers are discussed in research commissioned by UK Government.⁹⁸

Due to the diversity of activity in the sector, and the UK government collecting both data on maritime activity and maritime fuel sales, there are a range of options for inclusion of all, or part of the sector within the UK ETS. This consultation proposes a lead option for expansion of the UK ETS: applying the UK ETS to ship owners or operators on the basis of vessel activity. The considerations of this approach, along with two alternative options, are covered below. We are seeking views on whether the lead option would be appropriate for the sector, or whether the alternatives are preferable.

Policy design – General principles

Our aim is to price in some of the externalities of conventional marine fuels, therefore encouraging investment in energy efficiency and alternative fuels. We propose that, under all options, emissions would be calculated based on the volume of fuel multiplied by the carbon intensity⁹⁹ of these fuels, using the following calculation:

Amount of greenhouse gas emissions for which liable = volume of fuel used on a qualifying journey x carbon intensity of fuel type

Carbon intensity is the amount of carbon dioxide (CO₂) equivalent (by weight) which is emitted per unit of energy used, so in this case per unit of maritime fuel used. The UK Government greenhouse gas reporting conversion factors would be used as the basis of the carbon

⁹⁸ Research on the 'Identification of market failures and other barriers to commercial deployment of emission reduction options' is available at: <https://www.gov.uk/government/publications/clean-maritime-plan-maritime-2050-environment-route-map>

⁹⁹ See the latest UK government conversion factors and methodology document <https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses>

intensity of these fuels, recognising that further work may be needed to reflect current marine fuel blends or innovative new fuels.

We will seek to design the policy to avoid double charging of emissions. The UK approach will include a process of review so that if the international community adopts measures that impact on a UK scheme, we can evaluate and redesign relevant parts of the scheme which may be affected by double charging or to include gaps that are identified.

For all options outlined below, it is likely that thresholds for inclusion will apply, at least initially, to avoid burdening smaller participants. In addition to this, we do not intend for UK Government non-commercial maritime activity to be in scope of the scheme following the approach normally taken under the Merchant Shipping Act 1995, however these are still covered by the need to decarbonise their operations in line with the UK's net zero commitments. For example, the Ministry of Defence has recently published a Climate Change and Sustainability Strategic Approach that sets out the ambition, the principles and the methods needed for UK Defence to meet the challenge of climate change, in line with our commitment to net zero 2050.¹⁰⁰

Questions

112) Do you agree with our proposal for calculating emissions, based on volume of fuel multiplied by the carbon intensity as per the most recent UK Government greenhouse gas reporting conversion factors? (Y/N) Please explain your answer considering:

- Whether additional marine fuels need conversion factors developed
- What consideration needs to be given to blended fuels, or renewable and partly renewable fuels.

Lead option – UK ETS inclusion on an activity basis

Under this option, domestic shipping would be defined on a vessel activity basis. This would be modelled on the current treatment of aviation within the UK ETS.¹⁰¹ This option would be applicable to domestic journeys only, and we propose to define this as a journey which starts and finishes in a port located in the United Kingdom. This would therefore cover UK-UK routes, including between Great Britain and Northern Ireland. It is not our intention to cover any international journeys, or journeys between the UK and Crown Dependencies, and Overseas Territories. The Authority will continue to monitor international and regional developments in carbon pricing for the maritime sector and ensure that domestic policy is compatible with this, and that regions of the UK are not disadvantaged. We are particularly aware of potential impacts on connectivity between Northern Ireland and Great Britain and are keen to gather views on this through this consultation.

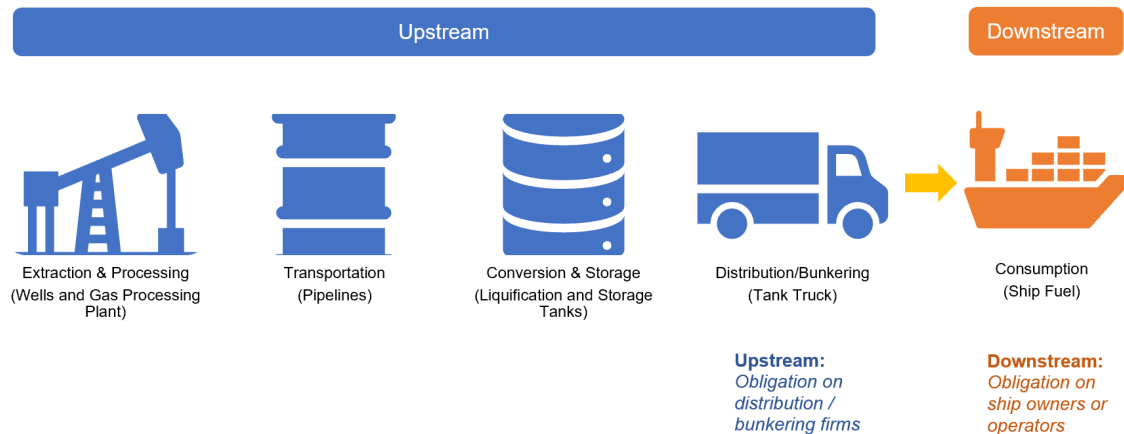
¹⁰⁰ <https://www.gov.uk/government/publications/ministry-of-defence-climate-change-and-sustainability-strategic-approach>

¹⁰¹ It should be noted that whilst UK domestic flights, flights between the UK and Gibraltar, and flights departing the UK to European Economic Area states are covered by the UK ETS, we are only proposing to cover domestic routes for maritime.

Point of obligation

The UK ETS could be applied either upstream or downstream, as shown in Figure 7.2 below. Under this lead option, the obligation for compliance would be placed downstream in the supply chain on either the vessel owner, or the vessel operator.

Figure 7.2: The two levels at which the UK ETS could be applied: upstream and downstream



Monitoring, reporting and verification

There is already legislation in place for the monitoring, reporting and verification (MRV) of CO₂ emissions from ships. From 1 January 2018, large ships calling at an EU/EEA port were subject to the EU MRV regime. The EU Regulation which established the European regime (Regulation (EU) 2015/757) was supplemented in UK domestic law by the Merchant Shipping (Monitoring, Reporting and Verification of Carbon Dioxide Emissions) and the Port State Control (Amendment) Regulations 2017 (SI 2017/825) and retained under the EU (Withdrawal) Act 2018, subject to amendments needed to make it operable in a UK-only context.

Ships within scope of the UK MRV began monitoring their fuel consumption and CO₂ emissions from 1 January 2022. Ships can use a variety of fuel types and each has its own emission factor according to the amount of CO₂ emitted per tonne of fuel consumed. The approach to reporting emissions might need to be revised to meet the specific requirements under this proposal, as the current MRV regulation is focused on larger international vessels calling in the UK, rather than vessels operating between UK ports.

The MRV regulations apply to vessels undertaking certain activities and operating on certain routes if they are over 5000 gross tonnage (GT). For this reason, we are minded that the UK ETS will apply to vessels over this threshold. This would have the benefit of capturing the largest vessels whose operators may be experienced and already equipped for collecting and reporting emissions data for the MRV. It would also avoid placing additional burden onto smaller craft, such as fishing vessels or other lighter craft. We are keen to seek views on this threshold for the UK ETS and coverage of the sector through the consultation.

In practice, inclusion within the UK ETS would require operators to determine the volume of fuel used in each qualifying domestic journey; and then multiply this by UK Government greenhouse gas reporting conversion factors to determine emissions. This would be reported

to the UK ETS regulator on an annual basis, and sufficient UK ETS allowances would need to be obtained and surrendered. Additional inspection and enforcement powers may need to be added to the UK ETS to reflect the nature of shipping.

Considerations

This option has been selected as the lead option for expanding the UK ETS to domestic maritime, because it is likely to capture more emissions than an obligation which is levied upstream. This option could reduce the prospect of gaming of the system and limit carbon leakage which could occur if applying the ETS to fuel supplied, as it would capture activity regardless of fuel source. In addition, it could allow greater flexibility for larger vessel operators who could use MRV data generated for the scheme to plan vessel activity and improvements.

Under this option especially, the potential for double charging could be a higher risk if action is taken by the IMO to regulate the global community, as the activity of larger vessels could be captured through an IMO scheme as well. Should this option be taken forward, we would closely monitor any developments on the international stage and adapt the UK scheme accordingly.

Alternative option 1 – Inclusion on a fuel supplied basis

This approach would cover fuel supplied to the domestic maritime sector. This would be defined on the basis of intended use of the fuel supplied, with international marine bunkers¹⁰² excluded from the UK ETS. International marine bunkers refers to the fuel supplied to marine vessels travelling on international routes, specifically where the next port of call is abroad.

Point of obligation

Under this option, the obligation to account and pay for emissions would be placed at the top of the distribution chain (see Figure 7.2 earlier), at the point where fuel passes the Fuel Duty point. This is the point where fuel becomes liable for excise duty in the UK or, for fuels which may not be subject to excise duty, a similar assessment point. This would mean that all shipping fuels sold domestically are included, therefore capturing all forms of fuel-using domestic ships which refuel in the UK.

Monitoring, reporting and verification

In this approach the obligations to monitor, report and verify would sit with marine fuel distribution or bunkering firms and would not have direct consequences for individual vessel owners or operators. In practice, this would mean that fuel distribution or bunkering firms would report the volumes of fuel sold to vessels on domestic voyages at the duty point, multiplied by the carbon intensity as outlined above. Should this option be taken forward, we would consider whether a threshold should be applied.

To exclude international maritime bunkers from the scheme, we propose two options:

¹⁰² As defined in the Digest of UK Energy Statistics. <https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2020>

- Using HMRC fuel data which covers the split of international vs domestic bunker sales, we could exclude any fuel supplied to international bunkers. This would require the marine fuel distribution or bunkering firm evidencing and reporting the volumes for this purpose which would not apply to their total, thereby reducing their emissions and subsequent obligation.
- Adapting the bunker delivery note system currently in place, we could allow vessels operating in international trade to inform their fuel distributor or bunkering firm and purchase fuel excluded from the scheme. The fuel distributor or bunkering firm would record the end user information to calculate their liability in the same way as outlined above.

Considerations

This option has some benefits. In placing the obligation in the fuel distribution chain, it could reduce the overall administrative burden of the scheme, as fewer operators would need to participate actively in the scheme. Applying the UK ETS to the total fuel sold would likely increase the costs of marine fuel at point of supply and no additional monitoring or reporting action would be needed by the sector.

However, fewer emissions are likely to be captured by this option, because currently some of the fuel used domestically is purchased overseas. On top of this, levying additional cost on maritime fuel sold in the UK may incentivise efforts to evade the system. This could result in more maritime operators purchasing fuel overseas to avoid compliance, therefore leading to carbon leakage for the domestic maritime sector. It would also mean that the decarbonisation incentive from the policy would no longer apply if fuel purchased overseas did not have an associated carbon price.

It also means that vessel operators and owners, who have the ability to reduce emissions through new technology or behaviour change are not directly impacted by the scheme. This may weaken the decarbonisation incentives caused by applying the UK ETS to the sector.

Alternative option 2 – A hybrid approach

We recognise that the domestic maritime sector is complex and includes a wide range of differing vessel operators. This third option utilises a hybrid of the two approaches above, which may be beneficial in recognising the diversity in the sector.

Point of obligation

In this option, some participants within the sector – likely smaller vessels – would be covered by placing an obligation on marine fuel distribution or bunkering firms, while larger vessels that are more able to engage with the UK ETS would be covered on an activity basis. The options would be mutually exclusive with vessels sitting under one or the other.

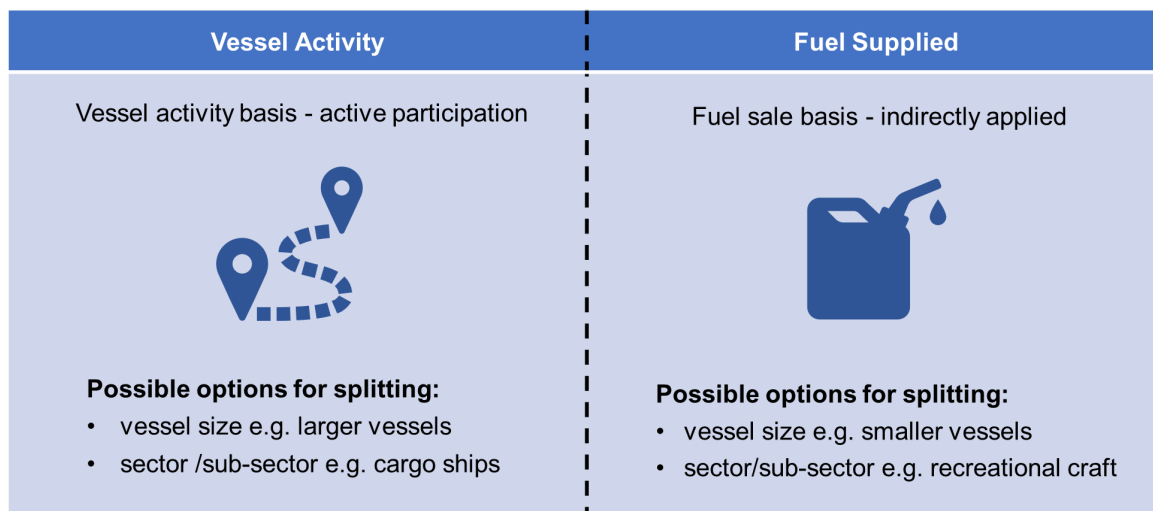
This option would necessarily need a distinction to be made between what falls within each approach. There are broadly two options to do this, although a combination approach could also be taken:

- Applying a cut-off in vessel size. The use of existing maritime cut-offs such as ‘under 24m’ or ‘under 400gt’ would likely simplify the implementation.
- Define by sector or sub-sector. For example, (and not prejudicing consultation outcomes) a decision could be taken that all recreational craft would sit under the fuel supplied approach, while all cargo ships would be included on an activity basis.

Monitoring, reporting and verification

A hybrid approach would require marine fuel distribution or bunkering firms to be obligated for one set of vessels, with another set of vessels included on an activity basis. In practice, this would mean that vessels under the fuel supplied option would pay for emissions indirectly as in alternative option 1 above. For vessels covered on an activity basis, they would be responsible for monitoring, reporting and verifying emissions, and surrendering the required number of allowances themselves, as outlined in the lead option. There may be merit in applying a threshold under which no vessels are covered by a carbon price, and this will be considered should the option be taken forward.

Figure 7.3: Potential split between activity-based and fuel supplied approaches under a hybrid option



We recognise that this hybrid approach would mean that there is a high risk of double charging for those vessels included on an activity basis, who would also have indirectly paid for emissions through their fuel supplied. We have identified two potential options to avoid this:

- Marine fuel distribution or bunkering firms would report and evidence volumes of fuels delivered to or purchased by maritime operators which are covered by the activity-based approach. This will be subtracted from their total volume sold, thereby reducing their obligation. We would expect this to result in a lower cost of the fuel purchased by these businesses.
- Operators covered by the activity-based approach would report and evidence the volume of fuel purchased. They could then apply for a discount or rebate for the additional costs of their fuel attributed to the fuel supplied approach.

Considerations

The benefit of a hybrid system is that it may offer a more environmentally effective and administratively appropriate way to incorporate domestic maritime in an ETS. However, there would be an increased legislative and administrative burden in running a hybrid scheme.

There are also additional risks such as the potential for increased gaming of the system by vessels on the border between the schemes. There is also the possibility that competitor vessels could be captured by different regimes as a result of relatively minimal differences, although these risks already exist to a large extent with the current regime for shipping.

Questions

113) Do you agree that our lead option to extend emissions trading to domestic maritime based on vessel activity is the most appropriate? (Y/N) Please explain your answer considering:

- Whether you agree with the proposed definition of a domestic journey, and whether this creates any loopholes which need to be addressed.
- Whether the scheme should be applied to ship owners or ship operators.

114) Do you agree with the proposed threshold for the lead option of 5000GT? (Y/N) Please explain your answer considering:

- Whether there be a de minimis threshold within this, based on emissions or number of journeys, for example.
- What other thresholds could be used instead, or in the future.

115) Would applying MRV requirements on an activity basis be possible and practical within existing processes and data collection? (Y/N) Please explain your answer considering whether additional processes would be required to identify domestic journeys.

116) How high do you consider the risk of gaming/non-compliance to be under the lead option? In your answer, please consider:

- How could it be designed out of the system.
- Whether the risk is lower under either of the alternative options.

117) Do you think there should be any specific exemptions to applying emissions trading to domestic maritime? (Y/N) Please explain your answer including what, if any, exemptions there should be.

118) Do you prefer one of the alternative options? (Y/N) Please explain your answer. It would be particularly helpful to understand:

- For the fuel supplied approach, whether MRV requirements are possible and practical within existing processes and data collection.

- For the hybrid approach, how the split between the two approaches would be determined, and how a mechanism to avoid 'double charging' of emissions could be designed.

Wider impacts of applying emissions trading to domestic maritime

Decarbonisation Impacts

Decarbonising domestic transport is a key step in achieving our national commitment to net zero, and as highlighted in the Transport Decarbonisation Plan, the use of economic instruments in the maritime sector is a major area of interest both nationally and at the IMO.

One of the key barriers to decarbonising shipping activity is that fuel prices do not currently fully reflect the environmental costs (e.g. climate change) that result from the use of these fuels.¹⁰³ Research, commissioned by the Department for Transport when developing the 2019 Clean Maritime Plan, underlined that a price signal would be a highly effective driver for change in the domestic maritime sector, and would encourage investment in both energy efficiency in the near term and alternative, lower carbon fuels in the medium to long term.

It is expected that including domestic shipping in an emissions trading scheme would be an effective policy to support the sector's decarbonisation. In particular, by putting a price on the greenhouse gas emissions covered by the scheme, this would strengthen the incentive of the domestic shipping sector to adopt fuels with lower greenhouse gas emissions, fit technologies to improve fuel efficiency, and take other actions to reduce greenhouse gas emissions, such as introducing more efficient operating practices. This is because, under an emission trading scheme, there would be a greater financial reward for taking steps to reduce the greenhouse gas emissions covered by the scheme, as this would reduce the costs of surrendering allowances to comply with the policy.

However, it is recognised that there are a range of barriers to the uptake of emissions reduction options by domestic shipping, and that carbon pricing will not necessarily overcome all of these barriers. This is why the UK Government is taking forward a broader package of interventions to support the decarbonisation of domestic shipping. The UK Government will keep this package of interventions under review and introduce further interventions where warranted.

More broadly, there is the potential for this policy to have unintended consequences which could include attempts to game the system, the possibility for carbon leakage risks or the potential for modal shift away from maritime transport to alternative modes. We would like to explore the possible risk of this through further policy work and analysis, including any mitigations which could be taken to address this, and will set out further thinking in due course. We are also keen to seek views through this consultation.

¹⁰³ Research on the 'Identification of market failures and other barriers to commercial deployment of emission reduction options' is available at: <https://www.gov.uk/government/publications/clean-maritime-plan-maritime-2050-environment-route-map>

Distributional and market Impacts

We are committed to ensuring this policy does not unduly impact some parts of society over others and will provide more information on this in the Government response to the consultation. It is expected that including domestic shipping in the UK ETS would raise the costs of supplying domestic shipping services. The domestic shipping sector provides a wide range of different services, so there is the potential that a range of different distributional impacts could arise. For example, depending on the scope of the UK ETS, the services covered may include the transportation of cargo and passengers, the provision of other services (such as vessels supporting the installation and maintenance of offshore wind turbines), amongst other activities.

There are a number of different factors that will influence the scale of the distributional impacts that would arise in practice. These include the magnitude of the carbon price introduced by the UK ETS, how much of this is passed on to end customers, how significantly this affects the price of the different services offered by the sector, and the nature of the end customers, amongst others. We have placed a particular focus in this consultation on understanding the impacts on participants in the domestic maritime sector, including on those involved in ferry services in the UK.

More broadly, many maritime businesses in the UK are small and medium enterprises, and may not have the capital reserves to be able to invest in new vessels or significant retrofits to reduce their emissions in the near term. As a result, where they fall in scope of the scheme, they may be impacted more significantly by cost increases. We are keen to understand the impacts of the scheme on smaller businesses through this consultation, and to take this into consideration as we develop the policy further.

Questions

119) Do you consider that providing carbon pricing will drive decarbonisation in the domestic maritime sector as outlined above? (Y/N) Please explain your answer.

120) Besides carbon not being fully priced into the market, what other market failures and barriers are present and what policies would be needed to support the UK ETS in decarbonising domestic maritime? In your answer, please consider how this may change over time.

121) How might the UK ETS interact with existing and planned policies in the maritime sector, including any relevant non-decarbonisation policies?

122) How would application of the UK ETS to the domestic maritime sector impact participants (including ship owners, ship operators, fuel suppliers) and consumers? In your response, please provide evidence where possible and consider:

- Small and medium size operators
- Island communities
- Competitiveness impacts and carbon leakage risks

- Decarbonisation impact for different vessel types and maritime sub-sectors

123) Have you identified any other impacts, distributional or otherwise, arising from this proposal, which have not been captured by other questions? (Y/N) Please explain your answer, including how any concerns could be addressed.

Reducing emissions from waste – a call for evidence on expanding the UK ETS to include waste incineration and energy from waste

Overview

The remit of proposed UK ETS expansion covers waste incineration with no energy recovery, and energy from waste (EfW).

There are different types of EfW: incineration (or combustion) with energy recovery (also known as conventional EfW and currently the most common way of recovering energy from waste that cannot be or is not currently reused or recycled) - and Advanced Thermal Treatment (ATT)/Advanced Conversion Technology (ACT) - which covers gasification and pyrolysis. These technologies differ in how waste is processed, and energy is liberated for recovery. Combustion directly releases the energy in waste, whereas pyrolysis and gasification thermally treat waste to generate secondary products (gas, liquid and/or solid) from which energy can be generated.

The principal purpose of EfW is to reduce the amount of residual waste going to landfill and to recover some value from waste as a resource.¹⁰⁴ This is in accordance with the Waste Hierarchy (see Figure 7.4) and facilitates the recovery of energy products from waste such as electricity, heat, or renewable transport fuels. Only materials that cannot be re-used or recycled with a smaller environmental impact, and would otherwise go to landfill, should be used for energy recovery.

EfW plants emitted 6.2 MtCO₂e in 2019,¹⁰⁵ representing ~1% of total UK emissions.¹⁰⁶ Emissions from residual waste treated at EfW plants, which is predominantly mixed black bag waste, are typically assumed to be 50% from biogenic material and 50% from fossil material. Whilst total carbon dioxide emissions will vary depending on the precise composition of residual waste managed, according to the Department for Environment, Food and Rural Affairs (Defra), EfW (even in electricity-mode only) is less carbon intense when processing municipal waste when compared to landfill (landfill emitted 14.2 MtCO₂e in 2019).¹⁰⁷ If heat from the EfW process is utilised, EfW is an even better option. All governments across the UK have policies in place to reduce the amount of waste produced, increase recycling and reduce the amount of residual waste sent for treatment. Whilst this will alter the composition of waste entering landfill or EfW in the future, this is with the target of achieving net zero.

If not treated at EfW plants, residual waste tends to be landfilled but much of this waste could have been recycled if it had been collected separately. As of December 2020, there were 52 fully operational EfW plants in the UK according to data from Defra. It is estimated that the total

¹⁰⁴ Residual waste is waste that cannot be or is not currently re-used or recycled.

¹⁰⁵ https://naei.beis.gov.uk/reports/reports?report_id=1015.

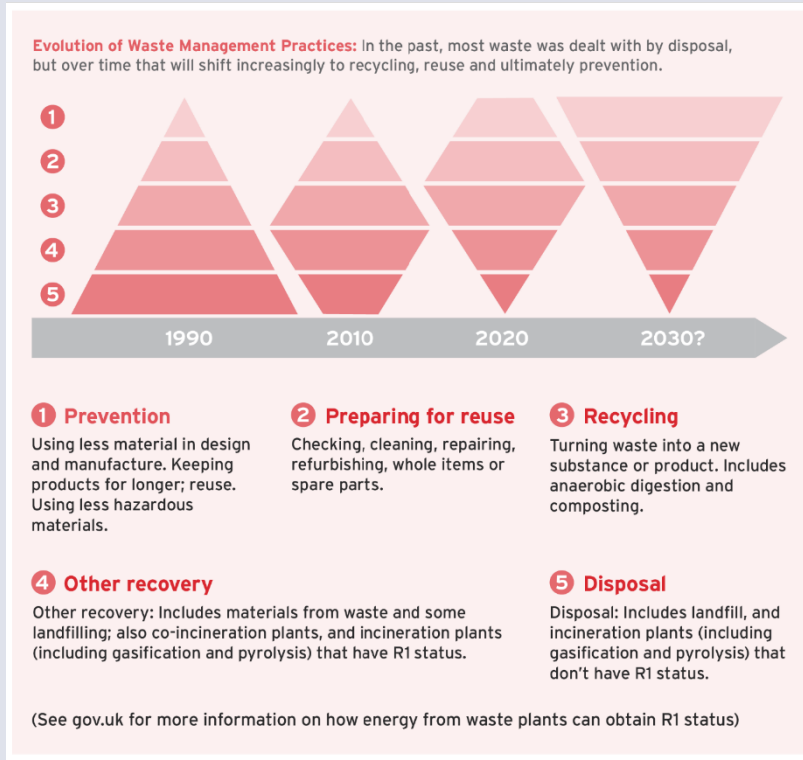
¹⁰⁶ Total UK emissions were 454.8MtCO₂e in 2019. Source: 2019 UK Greenhouse Gas Emissions, Final Figures (2021), available at: <https://www.gov.uk/government/collections/uk-territorial-greenhouse-gas-emissions-national-statistics>

¹⁰⁷ <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2019>

power generated by EfW plants in the UK in 2020 was 7,762 GWh,¹⁰⁸ approximately 2.5% of total UK generation of 311,997 GWh.¹⁰⁹

Figure 7.4: The waste hierarchy

The “waste hierarchy” ranks waste management options according to what is best for the environment. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g. landfill).



Source: Waste Management Plan for England (2021)^{110, 111}

Residual municipal waste is processed at EfW plants. In contrast, some non-municipal wastes, such as certain healthcare wastes, are incinerated at plants that do not recover energy.

¹⁰⁸ https://www.tolvik.com/wp-content/uploads/2021/05/Tolvik-UK-EfW-Statistics-2020-Report_Published-May-2021.pdf

¹⁰⁹ <https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes>

¹¹⁰ <https://www.gov.uk/government/publications/waste-management-plan-for-england-2021>

¹¹¹ “R1” Recovery status is the definition in the revised Waste Framework Directive for a ‘recovery’ operation. For municipal waste incinerators this is based on a calculation of a plant’s efficiency in converting tonnages of municipal waste to energy. Plants operating at or above the stipulated thresholds can be classified as ‘recovery operations’ for the purposes of the waste hierarchy. Incinerators operating below the threshold are classed as ‘disposal’. There is currently no requirement in the Environmental Permitting (England and Wales) Regulations 2016 (EPR) for municipal waste incinerators to achieve R1 status or have their performance assessed against the R1 formula. For non-municipal waste incinerators, designation as R1 depends on criteria set by the Competent Authorities, which are the Environment Agency, the Scottish Environment Protection Agency, Natural Resources Wales, and the Northern Ireland Environment Agency.

Incineration of waste at plants that do not recover energy represented 0.3 MtCO₂e in the 2019 Greenhouse Gas Inventory.¹¹²

Why we are exploring expanding the UK ETS to cover emissions from waste incineration and EfW

In their recently published progress report, the CCC stressed that Government needs to “address with urgency the rising emissions from, and use of, Energy from Waste”. The report recommended that Government consult in 2022 on the introduction of a carbon tax (either as part of the UK ETS or a separate instrument) aimed at curbing rising emissions from EfW.¹¹³ This call for evidence seeks to understand how the UK ETS could be expanded to cover waste incineration and EfW.

The UK ETS may help raise the efficiency of conventional EfW plants by incentivising more plants to supply heat (i.e. heat offtake), or by potentially encouraging residual waste to be recovered in a way which lowers overall carbon emissions, such as chemical recycling.

The UK ETS could provide an incentive for the development and uptake of decarbonisation technologies or practices to reduce emissions from waste incineration and EfW, principally by strengthening long-term investment incentives. For example, by enhancing the pre-treatment of waste before it is incinerated to reduce fossil plastic in the waste stream (a costly and intensive process).

The UK ETS could also incentivise investment into Carbon Capture and Storage (CCS) to reduce CO₂ emissions from EfW, depending on wider availability of the technology and infrastructure, and cost-benefit to the plant. Due to biogenic content present in waste streams, we recognise in the future that operators may be able to generate ‘negative emissions’ as a result of applying CCS equipment to EfW plants, depending on the level of biogenic CO₂ captured. For the purpose of this call for evidence, negative emissions are not covered. We will ensure that this proposal is aligned with future UK Government and Devolved Administration policy on negative emissions.

Approach to expanding the UK ETS to cover emissions from waste incineration and EfW

This section provides detail on the timing and scope for expansion, how emissions might be measured, and the potential impacts of this policy.

Timing

To align with wider waste reforms later this decade, we propose to explore expanding the UK ETS to waste incineration and EfW by the mid-late 2020s. This policy will consider wider changes to the UK ETS later this decade, and options for how to introduce a new sector into

¹¹² https://naei.beis.gov.uk/reports/reports?report_id=1015.

¹¹³ The report and recommendations are available at: <https://www.theccc.org.uk/publication/2021-progress-report-to-parliament/>

the UK ETS. We aim to provide more guidance to stakeholders on timing as part of the government response, after considering call for evidence responses.

Questions

124) Do you agree with the proposed timing for when waste incineration and EfW could be introduced into the UK ETS? (Y/N)

125) For operators of waste incinerators, EfW plants, and local authorities (LAs), please outline the steps that you will need to take, and the time required to prepare for the expansion of the UK ETS to waste incineration and EfW.

Point of obligation

Our starting proposition is that the UK ETS should cover the incineration of fossil material by all waste incinerators. This means the UK ETS obligation for robust monitoring, reporting and verification (MRV) would be placed on all operators of waste incinerators. For EfW, this would mean conventional incineration and ATT/ACT (pyrolysis/gasification) would fall under the scope of the UK ETS and pay a carbon price according to their greenhouse gas emissions.

Incinerating waste can destroy harmful pathogens and therefore there are cases where incineration is the best and only legal option (e.g., certain healthcare wastes). The extent to which carbon pricing should apply to these waste streams and facilities processing these waste streams will need to be carefully considered.

Further consideration will also be required as to whether ETS obligations will only apply to incinerators operating above the 20MWth threshold, in line with current and future UK ETS rules.

Current UK ETS rules relevant for incineration

Incineration rules: If the primary purpose of an installation is the incineration of hazardous or municipal waste, then the installation is currently excluded from the UK ETS. The combustion of solid and gaseous biomass is currently entirely zero-rated in the UK ETS, meaning any installation burning biomass has not needed to surrender allowances for the proportion of its emissions accounted for by that solid or gaseous biomass.¹¹⁴ For bioliquids, this is only zero-rated if ‘sustainability criteria’ are met as referred to in the Order establishing a UK ETS. Furthermore, the UK ETS currently only covers activities involving combustion of fuels in installations operating above the 20MWth threshold. We are reviewing the suitability of this threshold and whether to apply sustainability criteria to solid, liquid, and gaseous biomass for all installations in Chapter 6 of this consultation document.

¹¹⁴ Biomass refers to any material of biological origin (including wastes) which is used as fuel for bioenergy (conventional combustion, gasification, energy from waste and low-carbon fuels like biofuels and hydrogen) or in products (such as chemicals, bio-plastics and timber for construction).

Simplified schemes for small businesses: There are also two simplified schemes for smaller businesses to reduce administrative burden. The Hospital and Small Emitter (HSE) Scheme covers hospitals and installations that emit less than 25,000 tonnes of carbon dioxide (or its equivalent for other greenhouse gases) each year and have a thermal input, if applicable, of less than 35MW. These installations are still required to reduce their emissions through a system of emissions targets. The Ultra Small Emitter (USE) Scheme covers installations that emit less than 2,500 tonnes of carbon dioxide (or its equivalent for other greenhouse gases) each year. These installations are still required to monitor their emissions.¹¹⁵

We will review the sector to assess any risk of carbon leakage for relevant UK waste incinerators and EfW plants. This analysis will take into consideration the potential interactions with wider government policy.

Questions

126) Do you agree that the UK ETS should be expanded to include waste incineration and EfW? (Y/N) Please outline your reasoning, including alternative options for decarbonisation of the sector outside of the UK ETS.

127) Do you agree that all types of waste incinerators should be included in the UK ETS? (Y/N) If you believe certain incineration activities should be exempt, e.g. incineration of hazardous or certain healthcare waste, please provide details and specify which waste stream.

128) Do you believe ATT should be included in the UK ETS? (Y/N) What challenges could arise as a result of including ATT, if any, that are different to conventional waste incineration plants?

129) Do you agree that the point of MRV obligation for the UK ETS should be placed on the operators of waste incinerators and EfW plants? (Y/N) Please outline your reasoning in as much detail as possible and provide evidence to support your views.

130) If the point of MRV obligation is placed on operators of waste plants, should waste companies/operators or customers (either LAs or commercial and industrial customers) be responsible for meeting compliance obligations? (Y/N) Please outline your reasoning in as much detail as possible and provide evidence to support your views.

131) Do you believe that the Small and Ultra Small Emitter schemes that are currently available to eligible UK ETS participants should also be available to waste incinerators and EfW plants? (Y/N) Please provide details including, where relevant, whether your organisation is likely to be eligible for these schemes based on current rules.

¹¹⁵ <https://www.gov.uk/government/publications/participating-in-the-uk-ets/participating-in-the-uk-ets#simplified-provisions-for-small-emitters-and-hospitals-and-ultra-small-emitting-installations>

Monitoring, reporting and verification (MRV) of emissions

Waste incinerators, including EfW plants, are required by UK law to monitor some of their emissions (currently excluding CO₂) to air continuously (on site) and others periodically (using accredited contractors). Emissions to water and composition of ash residues are also monitored at regular intervals. This data is reported to the Environment Agency, the Scottish Environment Protection Agency, Natural Resources Wales, and the Northern Ireland Environment Agency. There is also provision within UK law for Small Waste Incineration Plants to be regulated by LAs.

Waste incinerators and EfW plants process both fossil and biogenic material. We propose that the ETS obligation would apply to the processing of fossil waste only, in line with IPCC standards on estimating the climate impact of waste incineration.¹¹⁶ When combusting mixtures of fuels from fossil and biogenic origin, it is often difficult to determine the exact ratio of biogenic and fossil CO₂ in the total CO₂ that is emitted through the stack gas. This is because the biogenic and fossil composition of the combusted fuels is not always known or cannot be determined with sufficient accuracy.

What type of waste is burnt in an incinerator?

A typical black bag of residual waste will contain a mixture of different content, such as paper, food, plastic, clothes, glass, and metal. Some of these wastes, e.g. food, originate from biological sources, i.e. plants, and the carbon stored in them is known as biogenic carbon. Some of the waste materials, including plastics, are made from fossil fuels (such as oil) and the carbon stored in them is known as 'fossil carbon'. Some waste material contains a mixture of biogenic and fossil carbon (for example, clothes contain cotton/polyester mixes), while other wastes will contain little or no carbon (e.g. metals). It is important to understand if carbon in waste is biogenic or fossil in origin for two reasons: (i) biogenic and fossil waste behave differently in landfill (for example, plastic does not generally decompose whereas biogenic material releases methane), and (ii) biogenic and fossil carbon are accounted for differently in terms of their contribution to global emissions.¹¹⁷ The IPCC have agreed conventions for accounting for biogenic and fossil carbon emissions which are applied in UK standards.¹¹⁸

We propose the following two options to determine the UK ETS MRV obligations for each plant, by estimating the fossil content that is being incinerated or treated.

- **A: Individual plant monitoring:** This approach would require individual operators to determine the ratio of fossil and biogenic CO₂ that is being emitted from their plants. Different methods exist to determine this:

¹¹⁶ https://www.ipcc.ch/site/assets/uploads/2018/03/5_Waste-1.pdf

¹¹⁷ The process of carbon accounting is a way for countries to measure their carbon emissions in line with international standards for measuring and reporting.

¹¹⁸ https://www.ipcc.ch/site/assets/uploads/2018/03/5_Waste-1.pdf

- The radiocarbon (^{14}C isotope) method, based on the measured amount of ^{14}C isotope in a sample, has been applied since the 1950s in a variety of sample types, such as food, fuels, polymers, and atmospheric and combustion CO_2 to determine the ratio of biogenic and fossil carbon.¹¹⁹ Further guidance on how to apply this method is provided in the International Standard ISO 13833:2013.
- The "balance method" is a more recently developed approach, that combines data on the chemical composition of biogenic and fossil organic matter, with routinely measured operating data of the plant.¹²⁰ Similar processes applying stoichiometric methods, for example, can also be used. These methods provide a more accurate estimate of the fossil content burnt by individual plants.
- **B: Emissions factor approach:** This approach would involve using an estimate for the composition of waste (an 'emissions factor'). This emissions factor could be national or regional, e.g. using composition data prepared by WRAP,¹²¹ or each plant could derive their own emissions factor based on international standards for sample collection, preparation and analysis. This factor would then be multiplied by the tonnes of waste processed by a plant to estimate their emissions from burning fossil waste, and therefore determine their obligation under the UK ETS.
- Option B is a simpler method for calculating the emissions from the incineration of fossil material and still ensures that there would be a price on the associated carbon costs of those emissions. However, as the waste processed by incinerators and EfW plants is heterogeneous, the composition could vary significantly within the plant and between plants across the UK. Composition estimates cannot fully account for the heterogeneity of waste being incinerated by different plants, and therefore this approach may not provide individual plants, or those supplying the plant with waste, an appropriate incentive to reduce fossil content.
- Under both options, further mechanisms may be required to ensure emissions can be suitably verified to ensure UK ETS obligations are accurate and enforceable.

Questions

132) Which MRV proposal do you believe should be implemented to determine the UK ETS obligation for waste incinerators and EfW plants?

i) If Option A, please provide your views on which methods could be used, along with any information on the practicality of their implementation and likely costs.

ii) If Option B, please provide your views on how these emissions factors should be calculated, along with any information on the practicality of implementation and likely costs.

¹¹⁹ Norton G.A., Devlin S.L., Determining the modern carbon content of biobased products using radiocarbon analysis. *Bioresour. Technol.* 2006, 97 pp. 2084–2090, DOI: [10.1016/j.biortech.2005.08.017](https://doi.org/10.1016/j.biortech.2005.08.017)

¹²⁰ Fellner J., Cencic O., Rechberger H., A new method to determine the ratio of electricity production from fossil and biogenic sources in waste-to-energy plants. *Environ. Sci. Technol.* 2007, 41 pp. 2579-2586, DOI: [10.1021/es0617587](https://doi.org/10.1021/es0617587)

¹²¹ <https://wrap.org.uk/resources/report/quantifying-composition-municipal-waste>

In your answer, please outline how frequently fossil emissions should be monitored under both options and consider whether there are other suitable MRV options that we have not identified.

133) Do you believe that one of the MRV options proposed is more likely to lead to perverse incentives (e.g. more waste diverted to landfill) or to unintended consequences as a result of applying the UK ETS to waste incineration and EfW? Please consider different scenarios and provide evidence to support your views where possible.

134) Do you believe any additional greenhouse gases, other than CO₂, that are emitted by EfW plants or incinerators, should be covered by the UK ETS? (Y/N) If so, please provide details on which gases and how it could work in practice.

Wider impacts of applying the UK ETS to waste incineration and EfW

Distributional and market impacts

We recognise that introducing waste incineration and EfW into the UK ETS will have distributional impacts.

Governments across the UK would need to ensure that applying the UK ETS does not disrupt the waste hierarchy (see Figure 7.4), for example by sending more waste to landfill if it became a less expensive form of waste treatment, or by increasing exports of refuse derived fuel (RDF). Applying an ETS to EfW may create the incentive for local authorities (LAs) to recycle more, however, this would require the necessary recycling infrastructure to support it.

We understand that waste incineration and EfW plants have the option to pass the additional costs of the UK ETS through to LAs and many plants have long-term contracts with LAs. Some additional costs for businesses may also occur as some non-household municipal waste is treated via EfW facilities.

We are keen to understand these impacts, and would welcome views from stakeholders through this call for evidence, so that we can actively consider these impacts when developing the policy further.

Questions

135) How would the application of an ETS to waste incineration and EfW impact stakeholders (including operators of waste incinerators, operators of EfW plants, LAs, consumers, customers)?

136) Could the introduction of a carbon price incentivise waste operators and/or LAs to improve their operations or processes to reduce fossil waste being incinerated? (Y/N) Please outline your reasoning in as much detail as possible and provide evidence to support your views.

137) Could the introduction of a carbon price incentivise LAs to support households to improve recycling practices? (Y/N) Please outline your reasoning in as much detail as possible and provide evidence to support your views.

138) Is there opportunity (in the medium-long term) for the carbon price to incentivise waste operators and/or LAs to invest in carbon capture and storage infrastructure, to reduce fossil carbon emissions? (Y/N) Please outline your reasoning in as much detail as possible and provide evidence to support your views.

139) In the event of the carbon price being applied to waste operators, will waste operators be able to pass through their costs to customers (including LAs)? (Y/N) Please explain in as much detail as possible why, how, and to what extent this may or may not occur.

140) For LA owned plants, would unitary authorities and waste disposal authorities be the only authorities exposed to the carbon price – in the event of waste operators passing through costs? (Y/N) Please explain in as much detail as possible and provide evidence to support your views.

141) Do you believe that government should consider phasing in ETS obligations to the sector over time? (Y/N) If yes, please outline why, how, and to what extent phasing options could be provided.

142) Would operators of incineration/EfW plants be exposed to competitiveness impacts abroad and carbon leakage risk, in the event of being exposed to the carbon price? (Y/N) Please explain in as much detail as possible and provide evidence to support your views.

143) Have you identified any other distributional impacts (including wider environmental or social impacts) arising from this proposal? (Y/N) Do you have views on how government could address these concerns?

Interaction with planned and existing policies

Options to reduce emissions from EfW are currently limited, but likely courses of action include removing fossil carbon content from the waste stream prior to combustion (for example through greater resource efficiency, reduced use and increasing capture for recycling) and fitting CCS on EfW plants.

CCS is likely to play an important role to help meet ambitious climate targets and may provide more optionality for decarbonising to help achieve net zero. The immediate challenge for the sector to deploy CCS at EfW facilities is to deploy a ‘first of a kind’ (FOAK) project(s) to demonstrate the CCS technology in the EfW sector in the UK, reducing the risk and providing learnings for subsequent projects. To facilitate the demonstration of CCS enabled EfW, by providing a commercial model for initial CCS projects in the waste management sector, Government announced in November 2021 that initial waste management CCS projects would

be eligible to apply for support under the Industrial Carbon Capture business model, for Phase-2 of the CCUS Cluster Sequencing process.¹²²

Whilst CCS has the potential to help decarbonise the waste management sector, we recognise that adoption of this technology may be more challenging for waste plants that are located outside the industrial clusters and are further away from planned CCS transport and storage infrastructure. We will use evidence gathered in this call for evidence, and via other means, to consider how effective the UK ETS could be to incentivise CCS uptake for EfW and waste incineration plants across the UK.

All governments across the UK have policies in place to increase recycling and reduce the amount of residual waste sent for treatment. The Resources and Waste Strategy for England sets out how the stock of material resources in England will be preserved by minimising waste, promoting resource efficiency, and moving towards a circular economy.¹²³ The strategy includes commitments to meet a 65% municipal waste recycling rate by 2035 and no more than 10% of municipal waste being sent to landfill. Likewise, Northern Ireland has legislated for a 65% municipal waste recycling rate by 2035 and no more than 10% of municipal waste being sent to landfill, which will require significant changes to how waste is managed.¹²⁴

The Net Zero Strategy also outlined the UK Government's commitment to explore policies to work towards the near elimination of biodegradable municipal waste to landfill in England by 2028. To support this commitment, £295 million of capital funding will be allocated to LAs in England to prepare to implement free separate food waste collections for all households by 2025.

Beyond Recycling, the Circular Economy Strategy for Wales, sets out how addressing resource efficiency and waste will help deliver a net zero carbon Wales by 2050, through transitioning to a more circular economy as part of the journey towards zero carbon.¹²⁵ Targets include reducing avoidable food waste by 50% by 2025 and by 60% by 2030, increasing recycling rates to 70% by 2025, sending zero waste to landfill by 2025, and achieving zero waste by 2050.

The Scottish Government also has several ambitious waste reduction and recycling targets, including to reduce waste arisings by 15% against 2011 levels by 2025; reduce food waste by 33% against 2013 levels by 2025; recycle 70% of remaining waste; and send no more than 5% of remaining waste to landfill.¹²⁶ The update to the Climate Change Plan includes a commitment to develop a route-map to achieving these waste reduction and recycling targets and sets out several policies already in train to reduce waste and increase recycling.¹²⁷

¹²² <https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-deployment-phase-2>

¹²³ <https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england>

¹²⁴ <https://www.legislation.gov.uk/nisr/2020/285/made?view=plain>

¹²⁵ <https://gov.wales/beyond-recycling>

¹²⁶ <https://www.gov.scot/policies/managing-waste/>

¹²⁷ <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/pages/2/>

These recycling targets across the UK are expected to be delivered by significant reforms to how waste is collected for recycling and how packaging can be made more recyclable. The nations' strategies demonstrate government commitment to follow the waste hierarchy and affirms that EfW should only be used to prevent waste that cannot be recycled from being landfilled, which is generally more environmentally harmful.

Government has recently consulted on a suite of collection and packaging reforms to the waste sector which includes greater consistency in municipal recycling collections in England; a Deposit Return scheme for drinks containers in England, Wales, and Northern Ireland; a single use plastics ban in Wales; and an Extended Producer Responsibility scheme for packaging for the UK. These all serve to increase recycling and reduce the tonnage of municipal waste sent for residual treatment.

In addition, the Scottish Government plans to introduce a Deposit Return Scheme on 16 August 2023; are currently distributing the £70 million Recycling Improvement Fund to improve reuse and recycling infrastructure and have laid regulations before Parliament that ban some of the most problematic single use plastic products (expanded polystyrene beverage cups, expanded polystyrene food containers, single-use plastic beverage stirrers, plastic cutlery, straws, balloon sticks and plastic plates). In addition, the Scottish Government have committed to progressing a Circular Economy Bill this parliamentary session, which will put in place legislative measures to support and encourage reduction of consumption, as well as increase reuse, repair and recycling to reduce waste.

The landfilling of biodegradable municipal waste in Scotland will also be banned from 2025 and Scottish Government have committed to extend this ban to include biodegradable non-municipal waste streams, subject to appropriate consultation and work to provide assurance around some specific waste streams.

UK Governments will also consider the impact of this measure in the round with Landfill Tax, Scottish Landfill Tax, and the Welsh Disposal Tax. Key considerations include supporting the application of the waste hierarchy and reduction of overall waste and waste emissions, while encouraging recycling and reuse. In particular, we will seek to ensure this measure does not create perverse economic incentives which encourage certain materials to be diverted back to landfill. For example, we will carefully consider the outcomes of the recent UK Government call for evidence on aspects of Landfill Tax in England and Northern Ireland, which closed on 22 February.

We will also consider the interaction with the Environmental Permitting regime, both in its current format, and in any future version that accommodates new policies or changes.

We will continue to consider the interactions with wider government priorities as we develop our approach, including net zero and UK climate targets, air quality and clean transport.

Questions

144) What additional policies would be needed to support the UK ETS in decarbonising waste incineration and EfW? How would this change over time?

145) How would the expansion of the UK ETS to waste incineration and EfW interact with existing and planned policies in waste incineration, EfW, and waste management more broadly, as well as any other relevant non-decarbonisation policies?

146) Are there other parts of the waste management system that should be included in the scope of the UK ETS? For example, landfill or wastewater. (Y/N) Please explain in as much detail as possible and provide evidence to support your views.

Chapter 8: Calls for evidence on greenhouse gas removals and agriculture and land use emissions

Introduction

In this chapter, the Authority is calling for evidence on the role of the UK ETS as potential long-term market for GGRs and how emissions from agriculture and land use can be suitably measured, reported and verified.

The call for evidence on GGRs explores different phasing options (and timings) of eligible GGR projects for possible earlier inclusion into a future market, the range of associated market criteria that would need to be considered, and the possible impacts GGRs could have on the UK ETS.

The call for evidence on the monitoring, reporting, and verifying (MRV) of agricultural & land use emissions, explores key themes such as barriers to MRV, how to improve carbon auditing and MRV opportunities for the sector.

Greenhouse gas removals – A call for evidence on the role the UK ETS could have as a potential future market

Overview

The primary method of achieving net zero is to take ambitious decarbonisation measures across society. However, there will be sectors such as industry, agriculture and aviation that will be difficult to decarbonise completely by 2050. Greenhouse gas removals (GGRs) will be crucial to compensate for the residual emissions arising from the most difficult activities to reduce or eliminate from within polluting sectors. This approach is supported by the CCC¹²⁸, the Energy Systems Catapult (ESC),¹²⁹ the National Infrastructure Commission (NIC)¹³⁰ and the National Grid ESO (the GB electricity system operator).¹³¹

In this context, the Authority wishes to understand whether and how the UK Emissions Trading Scheme (UK ETS) can be used as one potential approach to support the growth and deployment of GGRs and what impacts GGRs may have on the functioning of the UK ETS.

¹²⁸ CCC (2020), 'The Sixth Carbon Budget: Greenhouse gas removals'. Available at: <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

¹²⁹ Energy Systems Catapult (2020), 'Innovating to Net Zero: UK Net Zero Report', <https://es.catapult.org.uk/reports/innovating-to-net-zero/>

¹³⁰ National Infrastructure Commission (2021), 'Engineered greenhouse gas removals', <https://nic.org.uk/app/uploads/NIC-July-2021-Engineered-Greenhouse-Gas-Removals-UPDATED.pdf>

¹³¹ National Grid (2020), 'Future Energy Scenarios', <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2020-documents>

We are interested in collecting evidence on the benefits and risks of this one potential long-term approach and we remain open to the possibility that other steps, or a mixture of methods, may be better suited to supporting GGRs in future. Complementary to this Call for Evidence, the UK Government will consult in Spring 2022 on preferred business models to incentivise early investment in engineered GGRs, to enable deployment from mid-to-late 2020s.

What are GGRs?

Greenhouse Gas Removals (GGRs) is a term used to describe methods of removing greenhouse gases (GHG) from the atmosphere. There are various terms used to describe methods for atmospheric removal of greenhouse gases, including 'greenhouse gas removals' (GGRs) and 'negative emissions technologies' (NETs). This call for evidence uses the term 'greenhouse gas removals', which is considered to be the term in most widespread use by stakeholders.

There are a diverse range of GGR methods, which are currently at varying levels of development. GGR methods broadly fall into the two categories below*, with each technology at different levels of readiness and Monitoring, Reporting and Verification (MRV) requirements:

Nature-based approaches: could include afforestation, and different types of land, coastal and marine habitat restoration.

Engineered approaches: could include Direct Air Carbon Capture and Storage (DACCS), Bioenergy with Carbon Capture and Storage (BECCS), wood in construction, biochar, and enhanced weathering.

These technologies predominantly remove carbon dioxide (CO₂), however in the future it is likely that GGRs that remove other GHGs such as Methane (CH₄) and Nitrous Oxide (N₂O) will be developed as technology adapts to address other types of GHGs.

**Note: The list of examples is not intended to be exhaustive.*

Existing research

Given the potential importance of GGRs for combating climate change and achieving net zero, there is ongoing academic research into how potential markets for GGRs could be created, the benefits of such markets and any possible impacts. There is a common theme surrounding the need for a robust and credible approach to integrate GGRs into cap-and-trade markets, or to create separate markets for GGRs.

ESC have explored best practices for carbon markets and how different carbon policies could in time be linked to create an economy-wide framework, including a market for GGRs.¹³² The University of Oxford has published a set of principles that outlines how GGRs should be

¹³² Energy System Catapult 'Developing Carbon Credit Markets' February 2021, <https://es.catapult.org.uk/reports/developing-carbon-credit-markets/>

approached as a path to net zero.¹³³ The International Carbon Action Partnership (ICAP) has also published a paper that seeks to understand how GGRs could interact and operate in an ETS.¹³⁴ The NIC has recommended that a future competitive market, such as the UK ETS, is likely to be the most efficient outcome for GGRs and would allow polluters to pay for removals where they cannot fully decarbonise.¹³⁵

The UK ETS as a long-term market option for GGRs

The Authority is interested in exploring the UK ETS as a potential long-term policy support mechanism for GGRs. The CCC has also highlighted the importance of how the UK can support carbon removal markets that could, in the future, allow removals to be integrated into markets like the UK ETS.¹³⁶

We acknowledge that a range of support mechanisms will need to be considered to enable deployment of GGRs in the future. The UK Government has committed to consulting on preferred business models to incentivise early investment in GGRs in spring 2022¹³⁷. However, in this call for evidence, the Authority is seeking to investigate market-based frameworks that could enable the scaling-up of GGRs in the longer-term, such as potentially the UK ETS.

Opportunities

The UK ETS, as a cap-and-trade carbon market, is one important tool to help achieve the UK's target of net zero by 2050 and legally binding climate targets, and is a cost-effective method for decarbonisation. There are several potential opportunities that including GGRs into the UK ETS could provide, for example:

- Sending a market signal to businesses to invest in new low-carbon technologies and drive the price down of GGR technologies;
- Accelerating the development and deployment of both nature-based and engineered GGRs, including less mature technologies;
- Encouraging competitiveness and increased efficiency of GGRs;
- Considering and subsequently maximising the co-benefits of nature-based approaches such as biodiversity, water quality and climate adaptation;
- Providing additional market liquidity as the UK ETS cap allowance falls over time, and;

¹³³ The University of Oxford, 'The Oxford Principles for Net Zero Aligned Carbon Offsetting', September 2020, <https://www.smithschool.ox.ac.uk/publications/reports/Oxford-Offsetting-Principles-2020.pdf>

¹³⁴ ICAP, 'Emissions Trading Schemes and Net Zero: Trading Removals', May 2021, <https://icapcarbonaction.com/en/net-zero-and-ets-paper>

¹³⁵ National Infrastructure Commission (2021), 'Engineered greenhouse gas removals', <https://nic.org.uk/app/uploads/NIC-July-2021-Engineered-Greenhouse-Gas-Removals-UPDATED.pdf>

¹³⁶ CCC, 2021 Progress Report to Parliament, <https://www.theccc.org.uk/publication/2021-progress-report-to-parliament/>

, CCC Sixth Carbon Budget <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

¹³⁷ <https://www.gov.uk/government/publications/net-zero-strategy>, 2021. Wider policies and business models include CCUS, hydrogen production, sustainable aviation fuels and other relevant sectors, along with wider carbon pricing policy.

- Satisfying demand in the long-term from hard-to-abate sectors to help meet the UK's net zero goals and climate targets.

Key considerations

Incentive to decarbonise: Any inclusion of GGRs into a market like the UK ETS should not remove or weaken the incentive to decarbonise for sectors covered by the scheme. It is clear that GGRs must not be a substitute for ambitious mitigation for net zero. For sectors that will be hard to fully decarbonise by 2050, GGRs could help compensate any residual emissions to help achieve our climate goals.

Monitoring, reporting and verification (MRV) of emissions reductions: For GGRs to be added to a market, challenges of additionality, how permanent the carbon removal is, and effective MRV, will need to be addressed and resolved. Overcoming these challenges will be crucial to protecting the integrity of any market such as the UK ETS. The importance and challenge of effective MRV for GGRs was addressed in a recent research report generated by the MRV Task and Finish Group.¹³⁸ Furthermore, the recently established Integrity Council for Voluntary Carbon Markets (IC-VCM) has set out to develop related high-quality global standards and processes.

Further on in this chapter, the Authority is calling for evidence on the potential role of MRV in agricultural business. Where relevant, the responses to this chapter will be considered in the development of any potential future MRV framework for nature-based negative emissions.

Voluntary carbon market: Currently a GGR credit generated via a voluntary scheme cannot be used to fulfil emission compliance obligations in the UK ETS. However, there are many voluntary carbon markets and schemes that include GGR solutions. Within these schemes, businesses, investors, and/or individuals can choose to buy carbon credits to compensate for their corporate or individual carbon emissions through projects such as tree planting. For nature-based GGRs, existing voluntary markets, underpinned by robust standards such as the Woodland Carbon Code, could be built on to attract private investment into nature restoration.

Double counting: Potential inclusion of GGRs in the UK ETS must avoid double-counting with other schemes, as this can damage the integrity of a scheme and could reduce overall environmental benefits. Double-counting occurs when multiple removal 'credits or certificates' are issued for the same removal activity.

Article 6: The agreement at the United Nations (UN) Climate Change Conference of the Parties (COP26), of 'Article 6' which could help establish a framework for countries and companies to exchange carbon credits. The Authority recognises the opportunity of 'Article 6' for countries working to meet their emissions reduction targets and will continue to explore any potential future interactions with the UK ETS.

¹³⁸ <https://www.gov.uk/government/publications/monitoring-reporting-and-verification-of-ggrs-task-and-finish-group-report>. This report brought together Industry and Academics to recommend how UK Government should approach the MRV of negative emissions resulting from various GGR methods and outlines the crucial need for the establishment of MRV protocols across the broad range of GGRs to be robust and rigorous.

Wider land management goals and impacts: With the right requirements, some GGR methods, such as nature-based approaches, can offer additional environmental benefits. Wider land management goals, such as improving biodiversity and sustainable food production, would be important to take into account when considering potential UK ETS inclusion. Local control of projects and benefits to local communities will also need to be taken into account when considering incentives for some GGR methods, such as nature-based approaches.

Phasing and timing: Some methods could also be included in a GGR market earlier than others which are not currently operating or deployed at scale. Any inclusion of GGRs will need to consider the impact of GGRs to the functioning and design of the UK ETS. For any eligible GGRs that could be included earlier in a long-term market, we are exploring different phasing options and policies that could support their deployment and scale-up in a potential market or scheme.

Supporting the development of GGRs

All four nations recognize that different GGR approaches are at different stages of development and the impact the price of GGRs within a market could have on their deployment potential. It is important that policies continue to explore the development of nature-based GGRs while in parallel support innovation and commercial development of emerging engineered technologies.

Given the range of GGR approaches and the differing levels of support needed for deployment, there are various policies across nature-based and engineered GGRs being explored. For example:

- Scottish Government have launched a £180 million Emerging Energy Technologies Fund (EETF) to support the development of Scottish hydrogen and Carbon Capture and Storage (CCS) industries, and support the development of Negative Emissions Technologies (NETs), with £100 million available to support renewable hydrogen projects in line with Scottish Government's Hydrogen Policy Statement. Financial backing of up to £80 million from the EETF is being offered to the UK Government in order to help the development of Scottish Cluster carbon capture projects essential to Scotland's just transition to net zero. The Scottish Government is offering this investment to support the UK Government to seek opportunities to accelerate decarbonisation projects within the Scottish Cluster and provide a clear and definitive route for deployment for the Scottish Cluster within its carbon capture sequencing process.¹³⁹
- The Direct Air Capture and GGR Innovation Programme, launched in November 2020 by UK Government, seeks to support the development of GGRs to help achieve commercialisation.

¹³⁹ <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/pages/2/>, <https://www.gov.scot/news/scottish-cluster-support/>, <https://www.gov.scot/publications/draft-hydrogen-action-plan/pages/5/>

- The Natural Environment Investment Readiness Fund (NEIRF), launched last year by UK Government through the Environment Agency to support innovation and pipeline development for ecosystem services markets, including climate mitigation.
- A consultation in Spring 2022 by UK Government will set out details of preferred mechanisms to incentivise early investment and enable commercial demonstration of a range of GGR technologies from the mid-to-late 2020s. The consultation will consider how GGR incentives interact with wider policies and business models currently under development.¹⁴⁰
- Northern Ireland Executive will continue to explore opportunities for net zero and the possible role GGRs could play.
- Welsh Government will continue to engage in UK-wide activity on removals, for example on legal and regulatory frameworks or governance principles. Welsh Government will also undertake a feasibility study of the different removals approaches, building on existing work in the land use, land-use change and forestry (LULUCF) and agriculture sectors and will use this evidence to inform development of the Welsh Government's net zero pathway.¹⁴¹

Call for evidence

The ETS Authority is launching this call for evidence to help gather views and evidence on how the UK ETS could in time, become a market for GGRs. We are open to the inclusion of GGRs in a market like the UK ETS at some point in the future, subject to the responses received in this call for evidence, but the role of GGRs in any potential market is at an early stage of thinking.

In particular, we are seeking input from the full range of interested parties on the questions below.

Questions: Role of the UK ETS

¹⁴⁰ <https://www.gov.uk/government/publications/net-zero-strategy>

¹⁴¹ <https://gov.wales/net-zero-wales-carbon-budget-2-2021-2025>

147) Do you believe the UK ETS could be an appropriate long-term market for GGRs? (Y/N) Please explain why, highlighting benefits and risks where possible.

148) How could the design of the UK ETS be adapted to include GGRs while still maintaining the incentive to decarbonise for ETS participants?

149) To what extent could the UK ETS price signal incentivise development of the full range of GGRs, including engineered and nature-based GGRs, given the expected differences in the project costs?

150) What impacts or opportunities could arise for the UK voluntary carbon markets, if GGRs were included in a compliance market like the UK ETS? For example, what impacts, or opportunities could there be for voluntary carbon market schemes such as the Woodland Carbon Code?

151) What impacts or opportunities could arise for the emerging markets for wider ecosystem services (e.g. biodiversity, flood management, water quality) if GGRs were included in a compliance market like the UK ETS?

152) Are there any impacts, constraints or unintended consequences that need to be managed if incorporating GGRs within an ETS?

Developing a framework of criteria for eligibility for the UK ETS

We are considering different eligibility requirements for GGRs in a domestic market. These include:

- Robust Monitoring, Reporting and Verification (MRV) of emissions
- Ensuring that carbon removed from the atmosphere is permanent or intended to be permanent. For approaches such as nature-based GGRs that could be impermanent, considering arrangements to minimise the risk and compensate adequately for any re-release of carbon back into the atmosphere.
- Clear property rights for any GGR credits or allowances in the market, to ensure that liability is established and maintained, including in the event of a re-release of carbon back into the atmosphere.

Question

153) Do you think there are other eligibility requirements we should consider and what are these?

Questions: Developing a framework of criteria for eligibility - MRV

154) What MRV criteria need considering for GGRs and what steps need to be taken to ensure a framework of criteria is robust, cost-effective, and scalable?

- a) For Nature-based GGRs
- b) For Engineered GGRs

Questions: Developing a framework of criteria for eligibility - Permanence

155) For GGRs that have a risk of carbon being re-released into the atmosphere, are there any potential solutions we should consider enabling market participation?

156) What are challenges of integrating non-permanent removals alongside permanent removals in the UK ETS and how can these be overcome?

Questions: Developing a framework of criteria for eligibility – Property rights

157) Who should own the rights of a possible GGR allowance or credit in a possible future market - the buyer, or the seller?

158) What can we learn from other countries on ownership and liability for greenhouse gas removals?

Questions: Potential market designs

159) Should GGRs be incorporated into the UK ETS or would it be preferable to establish a separate, but linked, market for GGRs?

160) Are there other market designs or proposals we should consider for longer-term GGR deployment that would be preferable to inclusion in the UK ETS?

Questions: Phasing GGRs into a market

161) How and when could eligible GGRs be phased into a market such as the UK ETS?

162) Should any GGR approaches, or methods be considered for earlier inclusion in a market than others? Why should we consider these?

163) Should we trial eligible GGRs in a market or scheme before fully integrating to an existing market like the UK ETS? How and when could this happen?

Questions: Other sources and evidence

164) Are there any relevant sources of evidence and expertise we should use to help inform our thinking?

Responses to all questions should focus on the below, and where relevant please specify which GGR technology the response relates to:

- *The advantages and disadvantages of including GGRs in the UK ETS as a potential solution for further decarbonisation.*
- *The possible impact on the UK ETS and its design, where relevant.*
- *Potential solutions.*
- *Any future challenges that may remain after a market for GGRs has been established.*

Reducing emissions from agriculture and land use – a call for evidence on how emissions can be suitably measured, reported and verified

Overview

This chapter is concerned with agricultural greenhouse gas emissions on farm, and not from associated embedded emissions from processing and transport emissions of food or associated land use products. It considers the potential role of Monitoring, Reporting and Verification (MRV) in agricultural business, to improve business level decisions, productivity and to reduce greenhouse gas emissions from growing food (whether animal or plant based). MRV provides us with an opportunity to understand more about where emissions in the agriculture sector are coming from, which can in turn also inform decision making by food producers, retailers, and government.

We are not proposing to expand the UK ETS to include agriculture at this time. However, due to limited forthcoming publication opportunities in 2022, the UK Government and devolved administrations regard the publication of this chapter as a suitable opportunity to call for evidence, to start understanding and enhancing the MRV of emissions for agriculture and land use sectors.

As set out in the Net Zero Strategy, we will continue to review the potential role of all measures to support decarbonisation of the sector, including incentive and regulatory measures. We will take into account the relationship between domestic production and imported goods, considering the risk of carbon leakage¹⁴² and possible mitigations. We will continue to support UK farmers to produce high quality goods to high environmental and welfare standards.

In this chapter, the Authority is also calling for evidence on Greenhouse Gas Removals (GGRs) and the role the UK ETS could have as a future potential market for both nature-based and engineered removals. Nature based GGRs can deliver multiple climate benefits and support further environmental goals, such as increased biodiversity, water quality and natural beauty. Some farmers and land managers are already benefitting from the UK Woodland Carbon Code which provides a robust mechanism to generate Domestic Carbon Units from land that is not being used for agriculture. We recognise that the market for these units is currently restricted to demand from organisations in other sectors that have chosen to set voluntary corporate commitments that involve funding nature-based solutions in the UK. We recognise that farmers and land managers will have an interest in whether verified domestic carbon units could in future be sold to firms in sectors covered by the ETS.

Consultees are requested to address comments on farm based GGR's in this chapter.

¹⁴² Carbon leakage is defined here as: the displacement of production, and associated greenhouse gas emissions, in ways that would not have happened if the pricing (or regulation) of emissions across jurisdictions was implemented in an equivalent way.

Background

Land use and agricultural sector emissions derive from a range of sources such as livestock, agricultural soils and fertilisers, stationary combustion, woodland management and off-road machinery.

In 2019, agriculture was responsible for 10% of UK greenhouse gas (GHG) emissions (around 46 MtCO₂e),¹⁴³ which need to reduce to meet our ambitious climate targets. However, there will always be residual emissions created from natural processes harnessed in the production of food and associated land management.

Farms and farmland contribute 'positive' GHG emissions released to the atmosphere from agricultural practices but can also offer the possibility of storing and sequestering carbon through 'negative' emissions from nature-based greenhouse gas removal such as afforestation. As set out in the UK Government's Green Finance Strategy, we are committed to expanding opportunities to use carbon finance to unlock increased investment for nature-based climate solutions. This includes broadening and strengthening the framework of standards and rules for nature-based emissions reduction and carbon sequestration projects, including support for innovation and pilot projects to broaden the range of project types that can be used to deliver verified greenhouse gas reductions in future. A review of implementation of the Green Finance Strategy will be completed later this year. A separate call for evidence in this chapter focusses specifically on GGRs, which includes relevant nature-based approaches.

For the UK to achieve Net Zero GHG emissions in totality across all sectors, it will be necessary to reduce emissions in the agriculture sector and simultaneously enhance carbon storage and sequestration. Apart from unavoidable residual emissions which we know will occur in some sectors, compensation of emissions through nature-based projects should always be in addition to, and not an alternative to, reducing emissions.

Some farm businesses have the potential to 'balance' unavoidable residual positive emissions of production with negative emissions from GGR's within the curtilage of their own operation, for example by creating woodland.

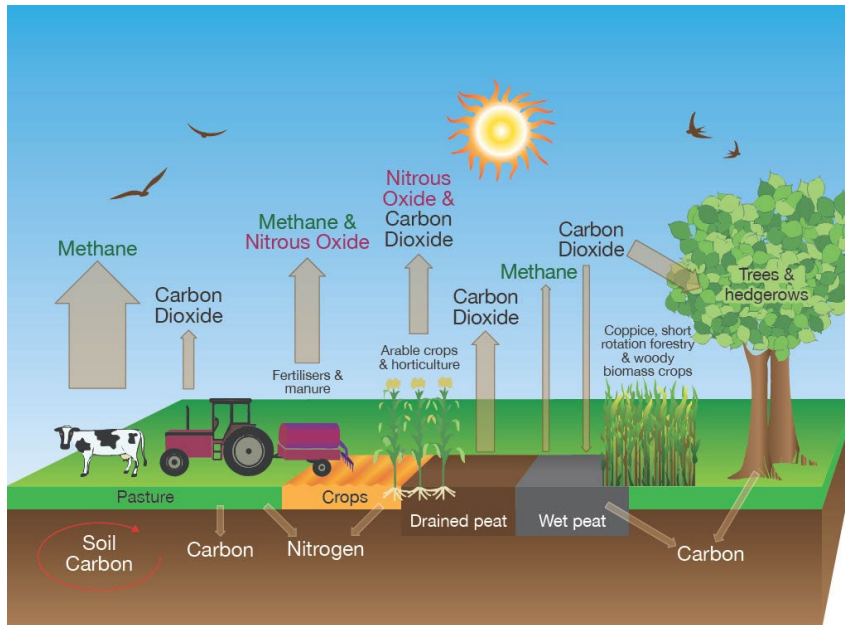
Some farms may also be able to sell carbon services to supply chain partners seeking ways to reduce the carbon content of food products, or to compensate for unavoidable residual emissions from businesses in other sectors. Government is committed to building a supportive policy framework to facilitate and encourage this form of economic cooperation, with robust systems to avoid double counting of emissions reductions and measures to prevent 'greenwash'.

For GGR's to be added to a market, challenges of additionality, how permanent the carbon removal is, effective monitoring, reporting and verification (MRV) and the interaction with wider

¹⁴³ In 2019, agriculture contributed the following proportion of each nation's overall GHG emissions: England 8.4%, Wales 13.8%, Scotland 16.3% and Northern Ireland 26%. <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2019>

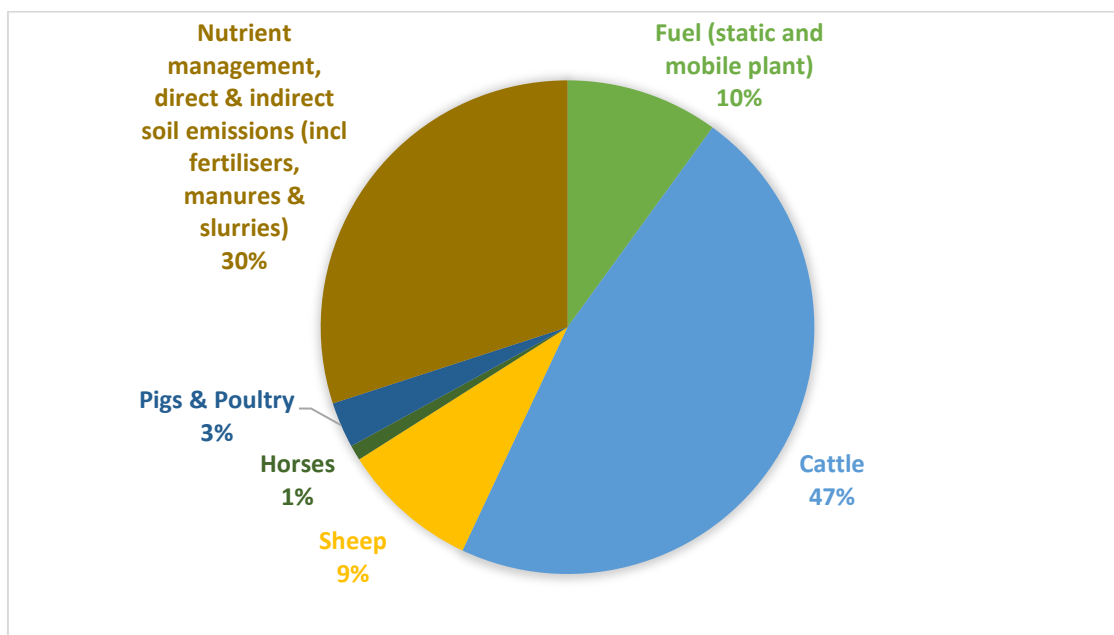
land use policies would need to be addressed and resolved (see the call for evidence on GGR's).

Figure 8.1: Graphic illustrating flow of Greenhouse gas emissions in the Land Use and Agricultural sectors.



Emissions of methane (CH₄, 54%) and nitrous oxide (N₂O, 32%) dominate the sector.¹⁴⁴ Figure 8.2 shows carbon dioxide equivalent (CO₂e) emissions of the given agricultural activity from the total emissions of the Land Use and Agricultural sector.

Figure 8.2: Breakdown of the main sources of all GHG emissions in the agriculture sector (2019/145)



¹⁴⁴ <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2019>

Monitoring reporting and verification of emissions (MRV)

MRV provides a means for transparency and confidence in traded carbon but, in an agricultural context, knowing more about where emissions are coming from can also inform decision making by food producers, retailers, and government. MRV informs of the source and scale of emissions, and so can aid understanding in where to prioritise efforts to mitigate emissions. For example, investments by farmers in new technology and infrastructure, sharing of best practice, design of farm payment schemes such as Environmental Land Management, and campaigns to inform and educate consumers.

Harnessing these benefits requires reliable measurement or estimation of emissions from the production of food, including associated land management activities such as impacts from inputs such as fertilisers.

Introducing MRV can be an effective way to enhance knowledge and technical performance and increase business efficiency.¹⁴⁶ However, there are two key challenges to improving the MRV of emissions in this sector: the lack of an accurate, nation-wide carbon auditing framework, and the readiness of farms to use a tool to measure and report their emissions.

Despite these challenges, the Government and the sector recognises the importance of monitoring, reporting and verification of agricultural emissions - as part of the pathway to decarbonising the sector.^{147,148}

Carbon calculator auditing tools

The UK has an established and effective national-scale accounting system for agricultural GHGs. However, there is currently no system for farm-level monitoring, reporting and verification of emissions. Direct monitoring of emissions at farm level is currently neither practical nor affordable as emissions are often produced at low levels per unit area of land but are cumulatively significant because they are emitted across a large area and by geographically dispersed sources, for example, livestock.

To support decarbonisation, robust and accurate carbon audits which are based on or from business-level data can be valuable in benchmarking performance, and help businesses plan and action decarbonising measures and enhance management of negative emissions.

Carbon audit tools use farm activity data and complex models to estimate farm GHG emissions, including emissions of carbon dioxide, methane and nitrous oxide, based on the best scientific evidence to date, including UK-specific emission factors (EFs) derived from robust observation and measurement trials.¹⁴⁹

When applied at farm level, carbon calculators typically consider both positive and negative emissions: GHG emissions releases, sequestration and avoided emissions, for example

¹⁴⁶ [Farm Advisory Service: enhanced monitoring and evaluation - gov.scot \(www.gov.scot\)](https://www.gov.scot)

¹⁴⁷ [The opportunities of agri-carbon markets.pdf \(onyx-sites.io\)](https://www.onyx-sites.io)

¹⁴⁸ Agricultural Transition in Scotland: first steps towards our national policy; NFU Carbon Calculator Review 2020 <https://www.nfuonline.com/archive?treeid=140961>

¹⁴⁹ Calculators typically utilise Global Warming Potential 100 weighting factors, in accordance with advice from the Intergovernmental Panel on Climate Change (IPCC).

through use of renewable power generation on-farm. Therefore, appropriately deployed calculators or audits could inform MRV requirements for emissions and traded carbon storage in agriculture.

Access to scientifically robust carbon counting tools that are both trusted and practical for use at the farm level is important to enable farmers to unlock private investment to support the transition to low carbon farming. There is sectoral interest and recognition of the benefit of carbon calculators for educating and raising awareness of climate management, and in informing positive behavioural and business change.¹⁵⁰ The deployment of carbon calculators for farms and crofts is currently supported in Scotland, and through the Future Farming Resilience Fund in England.

Although a number of farm carbon assessment tools exist, there is a lack of standardisation and there is significant variability in results for a given business or enterprise between tools. This has led to confusion and lack of confidence within the sector and may be a barrier to uptake.

However, there is existing guidance on farm-scale auditing of emissions. The Publicly Available Specification (PAS) 2050 standard, co-developed by Defra, is freely available via the BSI.¹⁵¹ The PAS 2050 provides information on how to develop specific monitoring, reporting and verification standards for agricultural products. These have been developed for horticultural and seafood products. At present, commercial carbon auditing rarely adheres to the PAS2050 standard and no government-endorsed auditing mechanism is in place.

To effectively monitor, report and verify agricultural emissions, we recognise there is a need to harmonise commercial auditing solutions with common standards or to develop a new government-backed tool. Feedback from farming stakeholders reflect the need for robust tools with improved consistency and confidence in calculator tools that is also user friendly and straightforward.

Business readiness to adopt carbon auditing

Within agriculture, record keeping is varied across sectors and businesses. Significant parts of the agricultural sector currently lack the necessary data, record-keeping or understanding to complete a carbon audit. There can be productivity benefits from improving data collection and record keeping across the sector, especially when used to inform a holistic business (for example, land or farm) management plan.¹⁵² These benefits may extend further into the supply chain, at enterprise level.

At an enterprise or sub-sectoral level, using average emission factors for certain farm systems and activity can be a helpful indicator of performance and identify areas to improve emissions management. However, without more detailed and farm-specific records, there is a risk that using averages from across the sector would penalise those farmers who are reducing their emissions at a faster than average rate. It would also potentially reward those that made less progress. We think that a system which operates as close as possible to the level of individual

¹⁵⁰ NFU Environmental Land Management Scheme Net Zero Test and Trial 28th October 2021

¹⁵¹ <https://shop.bsigroup.com/en/forms/PASs/PAS-2050/>

¹⁵² [Calculating and reducing your carbon footprint | AHDB](#)

farms is preferred. This would potentially be costly to farms unless fully aligned with existing reporting and record keeping, where core data could be used in several ways for business assessment and planning, including carbon calculators.

There are some potential options that could help Government or private markets better measure agricultural emissions:

- a) Focusing enhanced MRV on larger farms (in terms of areas or livestock numbers). Larger farms generally have more detailed record keeping practices and more management capacity. It might be possible to capture a significant proportion of emissions through a minority of the sector by focussing on larger units. This would reduce the total cost of administration.
- b) Focusing enhanced MRV on specific sectors. Some agricultural sub-sectors are more consolidated than others. For instance, the majority of pig and poultry production is undertaken by a relatively small number of large firms. For more fragmented farm types and a large number of smaller holdings, there would be less economies of scale benefits, and transaction costs would be higher as a proportion of farm overall costs. Alternatively, a focus could be on the sectors which create the most GHG emissions, illustrated in Figure 7.2.
- c) In the future, remote sensing may have the potential to monitor changes in emissions directly, but this is beyond the resolution and capability of current technologies. However, earth observation data can play a part in monitoring land use change or changes to farming practices and may provide useful ancillary data to on farm record keeping.
- d) Focusing on supply chain contractual conditions. Several larger retail companies have, or are exploring, carbon auditing of farm businesses under contract to them. Employing a requirement to provide, or achieve, de minimus emissions data or performance in contractual agreements could increase sectoral engagement and baseline data. Commercial sensitivities may be a barrier to utilising this data for MRV.

We are actively exploring how robust and harmonised farm scale MRV can be implemented, and the role of Government support in achieving that. As part of the reform of agricultural policy in England, Government has run an Environmental Land Management trial on carbon calculator tools and whether they can help farmers understand their emissions. The findings of these studies will inform future policy.

There is increasing appetite from the private sector for opportunities to invest in sustainable agriculture including opportunities to work with farmers to manage agricultural carbon. There are however risks that these approaches lack robustness and that any carbon savings lack safeguards. The further development of techniques for monitoring, reporting and verifying agricultural emissions could enable farmers to benefit from this potential source of investment.

Call for evidence

Why we need a call for evidence

The questions in this chapter seek to understand how robust and harmonised farm scale MRV can be implemented, and how it could support decarbonising the agricultural sector. We are looking for evidence on if and why MRV is a challenge in this sector, and the role of Government, businesses, and innovative technologies in overcoming these challenges. The evidence will inform Government's approach to improving MRV in this sector as a valuable tool to help the sector decarbonise.

These questions only apply to business activities within the farm 'gate'.

Call for evidence questions

Questions: Use of MRV

165) For farm businesses: Are you currently using carbon audit tools? (Y/N)

- If so which one(s), and what farm practices or management have you changed as a consequence of using the tool?
- If no, what has prevented you from using these tools?

166) What are the barriers to implementing robust Monitoring, Reporting and Verification of greenhouse gas emissions, and how can we improve record-keeping?

- In the agriculture sector
- In the land use sector

167) Remote sensing technologies and earth observation could be used to compliment carbon reporting tools. Do you have any concerns about utilising this technology and what could reassure you?

168) How can carbon audit & reporting tools be used in conjunction with other business planning mechanisms?

Questions on application of MRV to decarbonise the agriculture sector

Approach to carbon measures for agriculture and land use

As set out in the Net Zero Strategy, government will support a range of measures to decarbonise the agriculture sector, including by providing further funding to support farmers to take up low carbon practices and technologies.

We will continue to review the potential role of all measures to support decarbonisation of agricultural practices, including incentive and regulatory measures. Further investigation is needed to understand how current risks and opportunities could be balanced.

In addition, agriculture policy in the UK is devolved. The interaction between different nations' strategies and policies will need further work to ensure that systems are as joined up as possible and not imposing undue burdens on businesses.

Questions: Application of MRV to decarbonise the agriculture sector

169) How can MRV be best utilised for the purpose of:

- Decarbonising agriculture
- Identifying both emissions mitigating and negative emissions opportunities, e.g. through carbon sequestration
- Attracting investment for carbon management in agriculture and the land use sector?

170) Should eligibility to trade in sequestered carbon on farms be conditional on the vendor demonstrating that an acceptable level of farm emission reduction has been achieved? (Further work would be needed to define 'acceptable' levels of emissions reduction and could be sub-sector or farm specific).

171) Which sectors within agriculture & land use should we prioritise to establish baseline data with MRV?

172) What do you consider Government's role should be in farm and land use based MRV?

- a) Should Government consider mandating the use of MRV for the sector or sub-sectors?
- b) To support this, should Government introduce standardised protocols or tools, beyond the voluntary PAS2050 code?
- c) Or alternatively, should Government provide a standardised framework for the market to develop protocols to achieve the data reporting outcomes required?

173) Is voluntary monitoring, reporting and verification in the agricultural and land use sectors likely to achieve sufficient uptake and accuracy to improve business efficiency, decarbonisation and decision making by farmers, retailers and government?

Chapter 9: Operational amendments to UK ETS

Introduction

The UK ETS was established in 2020, with the Greenhouse Gas Emissions Trading Scheme Order 2020 (the Order)¹⁵³ introducing the majority of legal provisions pursuant to powers in the CCA 2008. Amendments to the Order were subsequently made at the end of 2020 in the Greenhouse Gas Emissions Trading Scheme (Amendment) Order 2020 and provided for, amongst other things, free allocation of allowances and for a registry for the UK ETS.

Since the scheme was established, a number of operational and technical issues have been identified, which we are proposing to resolve through further amendments to the UK ETS legislation. This chapter sets out our proposals for changes to the legislation and seeks your views on the likely impacts of these proposals.

Electricity generators

Current status of policy

Article 2a of the UK Free Allocation Regulation sets out the criteria by which electricity generators (as defined in Article 2(1)(20) of the Free Allocation Regulation) can be eligible for free allocation in the UK ETS.¹⁵⁴ Electricity generators are not eligible for free allocation except in relation to measurable heat:

produced by an electricity generator that produced measurable heat by means of high-efficiency cogeneration over the relevant period, calculated over the relevant period as a whole (Article 2a(1)(b)(i)); or
exported for the purposes of district heating (Article 2a(1)(b)(ii)).

The “relevant period” is defined in Article 2a(2)(a) as:

in relation to a deemed application for free allocation in the 2021-2025 allocation period, the 5-year period beginning on 1 January 2014;
in relation to an application in the 2026-2030 allocation period, the 5-year period beginning on 1 January 2019; and
in relation to a new entrant, the period from the start of normal operation until the end of the year, before the year in which the application is made.

¹⁵³ The Greenhouse Gas Emissions Trading Scheme Order 2020:
<https://www.legislation.gov.uk/ukdsi/2020/9780348209761/contents>

¹⁵⁴ Northern Ireland electricity generators participate in the EU ETS by virtue of the Ireland / Northern Ireland protocol and are not considered in this consultation.

Rationale for change

Currently, electricity generators who have not exported measurable heat for the purpose of district heating in the “relevant period”, but intend to do so in future scheme years, are eligible for free allocation once this has been demonstrated.

However, electricity generators who cannot demonstrate that they have produced measurable heat by means of high-efficiency cogeneration over the “relevant period” are not eligible for free allocation. There is no way for them to receive free allowances during an allocation period if they can subsequently demonstrate that they meet the eligibility criteria set out in Article 2a.

Questions

174) Should electricity generators who have not exported measurable heat produced by means of high-efficiency cogeneration in the “relevant period”, but start to do so in following scheme years, be eligible for free allocation once they can demonstrate that they meet the eligibility criteria? (Y/N) Please explain your answer.

175) Over which period should the determination of whether the measurable heat is produced by means of high-efficiency cogeneration be assessed?

Primary energy savings

Current status of policy

Article 2a of the Free Allocation Regulation sets out that an electricity generator that produces measurable heat via high-efficiency cogeneration in the “relevant period” is eligible for free allocation. For new entrants to the UK ETS, the “relevant period” is defined as the period from the start of normal operation until the end of the year, before the year in which the application is made (Article 2a(2)(a)). This “relevant period” therefore determines the period for undertaking an assessment of whether the cogeneration is high-efficiency (i.e. that the simultaneous generation in one process of heat and electricity provides primary energy savings as compared to the separate generation of such energy).

Rationale for change

Currently, it is possible for the determination of a new entrant’s primary energy savings to be made over a very limited timeframe. For example, if a new entrant that started operating in November 2020 made an application for free allocation in 2021, their primary energy savings would be based on November and December 2020. There is therefore a risk that this data would not be an accurate representation of the operator’s activity.

Explanation of proposed amendment

Amend the UK ETS legislation to set out that new entrants to the UK ETS that are classified as electricity generators, who wish to apply for a free allocation of allowances on the basis that

they produce measurable heat by means of co-efficiency generation, may not apply for a free allocation of allowances from the new entrant reserve until they are able to provide a full calendar year of activity level data. This would allow the determination of whether the cogeneration is high-efficiency to be assessed with this full calendar year of data.

Question
176) Do you agree that in the case of new entrants that are classified as electricity generators and who wish to apply for a free allocation of allowances on the basis that they produce measurable heat by means of high-efficiency co-generation, they may not apply for a free allocation until the operator can provide a full calendar year of activity level data? (Y/N) Please explain your answer.

Flexible share

Current status of policy

Article 20 of the Order sets out the total amount of allowances that can be created by the Authority in a given scheme year. Once created, these allowances are then distributed to the various pots of allowances that constitute the overall cap for the scheme year, such as auctioned allowances, free allowances, the new entrant's reserve and the flexible share. The flexible share is a portion of up to 3% of the cap, 40,984,970 allowances over the 2021-2030 phase, that is held in reserve and can be drawn from by the cost containment mechanism or used to mitigate the application of a cross-sectoral correction factor should it be applied in a scheme year. A cross-sectoral correction factor is applied when the total amount of free allocation to stationary installations is greater than the industry cap, which sets an upper boundary on free allocation for each scheme year.

Rationale for change

Currently, it is not possible for the Authority to create the total amount of allowances from the flexible share in a scheme year, as this would surpass the cap on the amount of allowances that can be created each scheme year set out in Article 20. This could prevent the flexible share from fulfilling its intent to mitigate the triggering of a cross-sectoral correction factor, should it be applied in a scheme year. For example, in 2021 the Authority created allowances destined for auction, free allocation and new entrants, necessary for the smooth operation of the scheme. The Authority was unable to create the total amount of allowances from flexible share (41Mt allowances) as it would have exceeded the cap on allowances that can be created in the 2021 scheme year.

Explanation of proposed amendment

Amend the UK ETS legislation to allow the Authority to create the total number of allowances from the flexible share in a scheme year, in addition to the annual cap.

Question

177) Do you agree that the Authority should have the ability to create the total number of allowances from the flexible share in a scheme year in addition to the annual cap? (Y/N) Please explain your answer.

Permitting, monitoring, reporting & verification (PMRV)

Definition of a verifier

Schedule 5 to the Order modifies Article 3(3) of the Verification Regulation 2018, as it has effect for the purposes of the UK ETS, such that the applicable definition of a verifier is the following:

‘verifier’ means a legal person or another legal entity carrying out verification activities pursuant to this Regulation and accredited by the national accreditation body pursuant to Regulation (EC) No 765/2008 and this Regulation at the time a verification report is issued;

(3a) ‘national accreditation body’ means the national accreditation body of the United Kingdom appointed in accordance with Article 4(1) of Regulation (EC) 765/2008(a);

In practice this means that the Order permits organisations accredited by UKAS to act as verifiers under the UK ETS.

In our response to the ‘Future of UK Carbon Pricing’ consultation in 2020, we said that we would continue to apply the EU ETS legislation on MRV, except in specific areas where we made changes. We therefore propose to delete the redundant phrase ‘or another legal entity’ from the definition above (as was done in the EU 2020 amendments to the Verification Regulation).

Question

178) Do you have any comments on the way that a verifier is defined in the legislation, and in particular do you agree that the phrase ‘or another legal entity’ should be deleted? (Y/N) Please explain your answer.

Permit transfers and splits

Treatment of full transfer and merger

Current status of policy

In the legislation for the UK ETS, where there is a full transfer of a permit to an operator with an installation on the same site, the existing permit of the new operator is varied to include the transferred installation, and the permit of the transferring operator is cancelled. The new operator retains its operator holding account (OHA) and the Regulator must instruct the

Registry Administrator to close the OHA relating to the transferred installation as soon as reasonably practicable. The legislation sets out how the free allocation of allowances for the years after the permit transfer occurs are merged and, if necessary, adjusted in line with the activity level change process.

Rationale for change

Currently, the legislation does not clearly set out whether and if so, how, the free allocation of allowances should be merged, issued and adjusted in the year in which the permit transfer occurs.

Explanation of proposed amendment

We propose to treat allocations differently based on the date of the permit transfer.

1) If the effective date of the permit transfer is before the activity level reporting deadline in a scheme year (i.e. between 1 January and 30 March), the free allocation of allowances for that scheme year (and subsequent years) will be merged. To deliver this, the allocations (for both installations affected by the merger) for the scheme year in which the transfer took effect will be withheld until the allocations have been merged and adjusted in line with the activity level change process. The merged allocation will be determined and adjusted as if the merger had occurred at the start of that scheme year. The Free Allocation Regulation will be amended to provide for this and to require that the new operator must submit an activity level report for the year two years before scheme year in which the effective date of the transfer falls. For example, if the effective date of the transfer is 1 March 2022, the operator must submit a report of its activity levels in 2020 as if the merger had taken place at the start of 2020. This will ensure that the merged allocation may be adjusted in line with the activity level change process.

2) If the effective date of the permit transfer is on or after the activity level reporting deadline in a scheme year (i.e. between 31 March and 31 December), the free allocation of allowances for the year in which the transfer occurs would have been issued to the transferring operator and an activity level report should have been submitted by each operator relating to the separate installations. The allocation for each installation in the year in which the transfer occurs should be adjusted separately in line with the activity level change process. If there has been an over-allocation to the transferred installation, the transferring operator should return those allowances from the OHA of the transferred installation. To make this possible, the instruction from the Regulator to the Registry Administrator to close the OHA relating to the transferred installation should be delayed until the allocation has been adjusted and the transferring operator has returned any over-allocation. As currently provided in the legislation, the allocation for the years after the effective date of the transfer will be merged.

Questions
179) Do you agree that in the case of a full transfer of a permit (with a merger), that allocations for the scheme year in which the transfer occurs should be treated

differently based on the effective date of the transfer? (Y/N) Please explain your answer.

180) Do you agree with our proposed approach? (Y/N) Please explain your answer.

181) Is there an alternative approach that has not been considered? (Y/N) Please explain your answer.

Treatment of partial transfer and split of allocation

Current status of policy

In the legislation for the UK ETS, where there is a partial transfer, a new permit is issued to the new operator and the original permit held by the transferring operator is varied. The transferring operator retains the OHA related to the original installation and a new OHA is opened relating to the new installation. The legislation sets out how the free allocation of allowances for the years after the partial transfer occurs are split and, if necessary, adjusted in line with the activity level change process.

Rationale for change

Currently, the legislation does not clearly set out whether and if so, how, the free allocation of allowances should be split, issued and adjusted in the year in which the partial transfer occurs.

Explanation of proposed amendment

We propose to treat allocations differently based on the date of the partial transfer.

1) If the effective date of the partial transfer is before the activity level reporting deadline in a scheme year (i.e. between 1 January and 30 March), the free allocation of allowances for that scheme year (and subsequent years) will be split. To deliver this, the allocation to the original installation for the scheme year in which the transfer took effect will be withheld until the allocation has been split and adjusted in line with the activity level change process. The split allocation will be determined and adjusted as if the split had occurred at the start of that scheme year. The Free Allocation Regulation will be amended to provide for this and to require that the two operators must submit an activity level report for the year two years before the effective date of the transfer. For example, if the effective date of the partial transfer is 1 March 2022, both operators must submit a report of their activity levels in 2020 as if the split had taken place at the start of 2020. This will ensure that the split allocations may be adjusted in line with the activity level change process.

2) If the effective date of the transfer is on or after the activity level reporting deadline in a scheme year (i.e. between 31 March and 31 December), the free allocation of allowances for the year in which the partial transfer occurs would have been issued to the OHA relating to the original installation and an activity level report should have been submitted for that installation. The transferring operator will be responsible for returning any over-allocation relating to the

year in which the partial transfer occurs. As currently provided in the legislation, the allocation for the years after the effective date of the transfer will be split.

Questions
182) Do you agree that in the case of a partial transfer of a permit, that allocations for the scheme year in which the partial transfer occurs should be treated differently based on the effective date of the partial transfer? (Y/N) Please explain your answer.
183) Do you agree with our proposed approach? (Y/N) Please explain your answer.
184) Is there an alternative approach that has not been considered? (Y/N) Please explain your answer.

Global warming potentials

The UK ETS currently covers the emission of carbon dioxide, nitrous oxide, and perfluorocarbons in the sectors covered by the scheme. Emissions of nitrous oxide and perfluorocarbons are expressed in carbon dioxide equivalent (CO₂e), recognising the different global warming potentials (GWP) of the different gases. GWPs determine the weighting of each greenhouse gas relative to carbon dioxide.

GWPs of greenhouse gases are published periodically by the Intergovernmental Panel on Climate Change (IPCC). The IPCC proposed an updated set of GWPs in their Fifth Assessment Report (AR5) of 2014, affecting a range of greenhouse gases including nitrous oxide (N₂O) and perfluorocarbons (PFCs). For each gas, the report provides two values: one which includes feedback effects, and one which does not.

At the Conference of Parties 24 in 2018, it was agreed that emissions would be reported using the GWP values from IPCC AR5 by December 2024 at the latest. At COP26 in November 2021, it was agreed that without-feedback AR5 values would be used. We propose to apply the without-feedback AR5 values for the purposes of the UK ETS, in line with the decision at COP26.

Changes to GWP values will only affect those operators which produce the non-CO₂ gases in scope of the scheme. The relevant gases are: N₂O from the production of nitric and adipic acids as well as glyoxal and glyoxylic acids; and PFCs from the production of primary aluminium. For all other activities only CO₂ emissions are in scope. Table 9.1 below sets out the GWP values currently used in the UK ETS, namely those from the IPCC's Fourth Assessment Report (AR4), alongside the values from the Fifth Assessment Report (AR5).

Table 9.1: GWP values currently used in the UK ETS

Greenhouse Gas	AR4 GWP	AR5 GWP (without feedback)	AR5 GWP (with feedback)

CO2	1	1	1
N2O	298	265	298
Perfluorocarbons2			
CF4	7,390	6,630	7,350
C2F6	12,200	11,100	12,300

Source: IPCC

Question
185) Do you agree with the proposal that we should apply the AR5 without-feedback values for the purposes of the UK ETS? (Y/N) Please explain your answer.

Updates required to EN ISO 14065

In the UK ETS, operators must monitor, report and verify their emissions, and (if appropriate) activity levels, underpinning their compliance and the environmental integrity of the scheme. Reports must be verified by a verifier accredited by UKAS against the internationally recognised standard ISO 14065. This ISO specifies principles and requirements for bodies that undertake validation or verification of greenhouse gas assertions.

Due to timelines associated with establishing the UK ETS, we implemented the 2013 version of the ISO (ISO 14065:2013). There is now an updated version of ISO 14065 (EN ISO 14065:2020) and over the next three years, UKAS are planning to move verifier’s accreditation to that standard. The Order currently refers to the 2013 ISO.

In addition, ISO 14065:2020 is linked to a new Conformity Assessment Standard – ISO/IEC 17029 for conformity assessment bodies offering validation and verification. When UKAS transition to the new ISO 14065, accreditors will also have to become accredited to ISO/IEC 17029. UKAS’ intent is to transition Verification Bodies to ISO 14065: 2020 and to ISO/IEC 17020 at the same time

We propose amending the Order to reflect the updated version of ISO 14065, to maintain the consistency of UK with international standards.

Question
186) Do you agree that we should amend the Order to reflect EN ISO 14065:2020? (Y/N) Please explain your answer.

Appeal routes

Current status of Policy

In the Order, Article 70 sets out the right of operators, aircraft operators and other persons in the scheme to appeal certain decisions made by the regulator and registry administrator. The UK ETS regulators are the OPRED, EA, SEPA, NRW and the NIEA. The Order does not give operators the right to appeal against decisions made by the Authority.

Rationale for change

To ensure fairness, transparency, and improved accessibility to appeal routes against Authority decisions, we are considering providing a statutory appeal route against a number of decisions made by the Authority. In broad terms the types of decisions which we consider are suitable for a formal appeals route are specific decisions impacting individual operators. These decisions will not include Authority decisions on the overall policy of the UK ETS (e.g. the design of free allocation policy).

Example of decisions which might be provided with a statutory appeal route:

Example 1: The decision that a new entrant application is invalid will have a provided statutory appeal route.

Example 2: The decision that an installation does not meet the conditions to obtain hospital, small, or ultra-small emitter status for the 2026-2030 allocation period.

Question
187) For which other decisions made by the Authority would it be desirable to provide a statutory appeal route?

HSE re-entry to the scheme

Current status of policy

Operators can apply to be Hospitals or Small Emitters (HSEs) if their installations emit less than 25,000tCO₂eq per year, and have a total rated thermal input below 35MWth (when applicable), or if at least 85% of the heat produced by their installations is used by or supplied to one or more hospitals. Being a HSE is designed to relieve some of the compliance burden of the UK ETS by assigning annual emissions targets to those installations based on their historical emissions, instead of requiring them to surrender allowances. These targets decrease every year at the same rate as the UK ETS cap. This is designed to reduce some of the compliance costs associated with participation in the UK ETS, which disproportionately affect smaller operators.

UK ETS operators can apply to be HSEs before the start of each allocation period. For the first allocation period, operators were asked whether they wanted to apply to be a HSE in June 2019, as part of equivalent preparations for Phase IV of the EU ETS. In the Authority's response to the consultation on continued UK membership of the EU ETS for Phase IV, we outlined the plan for those same operators who had successfully applied to be HSEs for Phase IV of the EU ETS to keep this status for the UK ETS. Since then, the Government Response to the consultation on the future of the UK ETS announced a 5% reduction in the UK ETS cap compared to the nominal share of UK emissions in the EU ETS.

The final emissions targets for HSEs under the UK scheme were therefore 5% lower than what might have been expected at the time of application to be a HSE.

Proposal

Application window for re-entry in 2024-2025

Since operators made the decision to be HSEs when expecting a different set of rules than those currently in use (EU ETS Phase IV rules rather than UK ETS), we propose to offer a one-off window for operators HSEs in the first allocation period to re-enter the main UK ETS scheme from 2024 onwards.

The window for application would be open between January 2023 and March 2023 and further guidance would be published in time to apply. This is assuming that legislation implementing this amendment comes into force by January 2023. If not, we will consider a later opportunity to apply for re-entry.

Process for applying for free allocation

Operators re-entering the scheme voluntarily would be eligible to apply for free allocation provided they made an application that was assessed as valid for free allocation under Phase IV of the EU ETS. This procedure would be the same as the one outlined in Schedule 8A of the Order, which was consulted upon in 2021 as a part of the Greenhouse Gas Emissions Trading Scheme (Amendment) Order 2021.

Questions
<p>188) Do you agree that current Hospital or Small Emitters should be offered a window for re-entry into the main UK ETS? (Y/N) Please explain your answer.</p> <p>189) Do you agree that they should be eligible to apply for Free Allocation on the condition that they had made an application for Free Allocation under Phase IV of the EU ETS? (Y/N) Please explain your answer.</p>

Penalties

This section proposes two new penalties. These are new provisions. The penalty amounts have been suggested as they are comparable to similar penalties and are proportionate to the type of breach.

Failure to submit information

This penalty will apply when operators fail to submit the information to regulators detailed in Article 27a of the Order. This relates to information to be submitted before the 2026-2030 allocation period where no application for free allocation is made.

Proposal

Where operators fail to comply with the notification requirements, they should be liable to a penalty of £5,000.

Question
190) Do you agree with the inclusion of this £5000 penalty in the UK ETS? (Y/N) Please explain your answer.

Deficit penalty

Where an operator or aircraft operator fails to surrender sufficient allowances by the surrender deadline, the operator or aircraft operator is liable to a mandatory penalty of £100 (multiplied by an inflation factor) for each allowance that it failed to surrender. The difference between what should have been surrendered and what was surrendered (the 'deficit') is currently added to the operator's reportable emissions or the aircraft operator's aviation emissions for the next scheme year for the purpose of determining the extent of its surrender obligation (see article 34(2) and (3) and Schedule 6, para 4(4) and (5) of the Order). This means that the operator or aircraft operator must surrender in respect of its deficit by the following 30 April. Although in this way the deficit is effectively added to the surrender obligation, a failure to surrender in respect of it will not give rise to another £100/allowance failure to surrender penalty.

In situations where an operator's permit has been surrendered or revoked, the 'surrender notice' or 'revocation notice' requires the operator to surrender allowances by a given deadline. If the operator does not do so, we are also consulting on a proposal that the operator must surrender any deficit in accordance with a notice issued by the regulator.

Proposal

In all cases where an operator or aircraft operator fails to surrender allowances as required by the Order, the deficit will no longer be added to the following scheme year's reportable or aviation emissions; instead, we propose that the regulator must issue a 'deficit notice', requiring the operator or aircraft operator to surrender the deficit of allowances by a deadline.

This deadline will usually be the following 30 April, except in situations such as where the deficit arises in a permit surrender or revocation situation, when the deadline will be set by the regulator. If the operator or aircraft operator does not comply with the deficit notice, we propose that a mandatory penalty should be imposed. The mandatory penalty will be calculated as a product of the number of outstanding allowances and 1.5x the carbon price for the relevant scheme year.

Additionally, we propose that if the deficit is not surrendered within a further month of the deadline, a regulator may issue an 'initial notice' so that a daily penalty starts to accrue until the deficit is surrendered. This daily penalty should be set at a daily rate of £1,000 for each day that the operator or aviation operator fails to surrender the deficit, beginning with the day on which the initial notice is given. There would be no maximum amount, but the regulator would be able to apply its existing discretionary powers when calculating any related penalty notice.

In all cases, when an operator or aircraft operator is required to surrender allowances to account for both their reportable or aviation emissions in a scheme year and a deficit from a previous scheme year, the allowances surrendered will be applied to the deficit first. For example, in the case of an operator with a deficit of 30 allowances and a surrender obligation of 100 allowances, the operator surrendering 100 allowances would result in them having a 0 allowance deficit and a remaining 30 allowances required to meet their surrender obligation.

Questions

191) Do you agree with the recommendation that, instead of the deficit being added onto the next year's surrender obligation, the regulators should be empowered to issue a deficit notice to require operators/aircraft operators who fail to surrender allowances to cover any deficit? (Y/N) Please explain your answer.

192) Do you agree that the deficit penalty should be applied in two parts, the first being a mandatory penalty when an operator or aircraft operator fails to make up a deficit by the date specified in a deficit notice, and the second a discretionary daily penalty that applies if the operator/aircraft operator has not made up the deficit within a month of the deficit notice deadline? (Y/N) Please explain your answer.

193) Do you agree with the suggested penalty amounts, with the mandatory penalty calculated as the number of outstanding allowances multiplied by 1.5x the relevant carbon price and the additional daily penalty set at £1,000 a day until the operator/aircraft operator surrenders the deficit? (Y/N) Please explain your answer.

Surrender and revocation provisions

Under the UK ETS, an operator's permit may be surrendered or revoked. In these cases, a surrender or revocation notice is issued, which contains a number of requirements. For example, if the effective date of a surrender/revocation notice is, say 1 March 2022, the operator is required to:

Report its 2021 emissions by 31 March 2022 and surrender allowances to cover those emissions by 30 April 2022.

Report its emissions from 1 January 2022 to 1 March 2022 and surrender allowances to cover those emissions (including any deficit from the previous year) by the date set in the Surrender / Revocation Notice.

Currently, in non-surrender or revocation situations, if an operator does not surrender enough allowances for the year, the deficit would be added to the reportable emissions figure in the following year (see Schedule 6, para 4), meaning that this deficit must be surrendered by the following 30 April. The operator will also be liable to a civil penalty but paying this penalty does not release it from the obligation to surrender.

In surrender / revocation situations, if the operator does not surrender enough allowances to comply with the requirements of the surrender/revocation notice, it will be liable to a civil penalty. However, there is no express obligation to surrender any deficit of allowances, which is inconsistent with the policy principle that allowances should always be surrendered to cover emissions.

There is no express obligation for an operator to surrender allowances to cover un-reported emissions if an error is discovered in an earlier emissions report after the deadline for surrendering allowances in the surrender / revocation notice has passed. As a part of the surrender or revocation notice, an operator must submit a verified report of reportable emissions covering emissions in the year in which the notice takes effect. There is also no obligation to surrender if the emissions in this report are under-reported.

In summary, there is currently no express obligation upon an operator to surrender a deficit of allowances if any of the following occur:

- Insufficient allowances are surrendered by the operator as required by the surrender / revocation notice
- An error is discovered in an earlier emissions report after the deadline for surrendering allowances in accordance with the surrender / revocation notice has passed
- It is discovered that emissions have been under-reported in the verified emissions report required by the surrender / revocation notice.

Proposal

If an operator fails to surrender allowances by the deadline in a surrender or revocation notice, regulators will have the power to issue a further notice to require the operator to surrender the deficit of allowances, with an associated deadline and penalty.

Penalties for the above should mirror those proposed for failure to surrender allowances to cover a deficit in non-surrender / revocation situations.

Powers should be available to obligate operators to make up for any deficit of allowances from operators who have surrendered their permit or had their permit revoked if historic emission reporting errors are found. For example, a notice in line with the proposals above.

Questions

194) Do you agree with the recommendation that the regulators should be empowered to issue further notice requiring operators who fail to surrender allowances in line with surrender / revocation notices to surrender the allowance deficit? (Y/N) Please explain your answer.

195) Do you agree that penalties for the above should align with those proposed for the failure to surrender allowances to cover a deficit in non-surrender / revocation situations? (Y/N) Please explain your answer.

196) What are your thoughts on implementing powers to pursue operators after their permit has been surrendered / revoked if historic errors are discovered in emissions reporting? Please explain your answer.

