Subsidy Advice Unit Report on the proposed Industrial Carbon Capture Business Model and Waste Industrial Carbon Capture Business Model Schemes

Referred by the Department for Energy Security and Net Zero

13 November 2024

Subsidy Advice Unit

Part of the Competition and Markets Authority

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1. The Referral

1.1 On 27 September 2024, the Department for Energy Security and Net Zero (DESNZ) requested a report from the Subsidy Advice Unit (the SAU)[1] in relation to the proposed Carbon Capture, Usage and Storage (CCUS) Industrial Carbon Capture (ICC) and Waste ICC Business Models (the Schemes) under section 52 of the Subsidy Control Act 2022 (the Act).[2]

1.2 This report evaluates DESNZ's assessment of compliance (the Assessment) of the Schemes with the requirements of Chapters 1 and 2 of Part 2 of the Act.[3] It is based on the information and evidence included in the Assessment.

1.3 This report is provided as non-binding advice to DESNZ. It does not consider whether the Schemes should be implemented, or directly assess whether they comply with the subsidy control requirements.

Summary

1.4 The Assessment uses the four-step structure described in the Statutory Guidance for the United Kingdom Subsidy Control Regime (the Statutory Guidance) and as reflected in the SAU's Guidance on the operation of the subsidy control functions of the Subsidy Advice Unit (the SAU Guidance).

1.5 In our view, DESNZ has considered in detail the compliance of the Schemes with the subsidy control and energy and environment principles. In particular, we found that the Assessment reflects the following positive features:

(a) It clearly describes the market failures that the Schemes seek to address and how the Schemes will remedy these. In particular, the Assessment usefully considers the impact of other complementary government interventions within the wider CCUS programme aiming to remedy the market failures identified (Principle A).

(b) It clearly explains and evidences how the subsidy would change the beneficiaries' economic behaviour and that the Schemes bring about changes that would not have occurred absent the subsidy (Principle D).

[1] The SAU is part of the Competition and Markets Authority
[2] Referral of the proposed Industrial Carbon Capture (ICC) and Waste ICC schemes by the Department for Energy Security and Net Zero - GOV.UK (www.gov.uk)
[3] Chapter 1 of Part 2 of the Act requires a public authority to consider the subsidy control principles and energy and environment principles before deciding to give a subsidy. The public authority must not award the subsidy unless it is of the view that it is consistent with those principles. Chapter 2 of Part 2 of the Act prohibits the giving of certain kinds of subsidies and, in relation to certain other categories of subsidy creates a number of requirements with which public authorities must comply.

(c) It outlines the design features of the Schemes that contribute to ensuring that the subsidy is proportionate and limited to the minimum necessary (Principle B).

1.6 We have however identified the following areas for improvement:

(a) The Assessment should explain in more detail how DESNZ ensured that negotiations with the beneficiaries led to the minimum necessary revenue support, in particular on key drivers of the subsidy size, including the rate of return on capital (for the capex payment) and the strike price (for the opex payment) (Principle B).

(b) The Assessment should explicitly consider how the impact on competition might change over the timespan of the Schemes, for example, how the beneficiaries may be advantaged over non-subsidised plants as the market moves towards a self-sustained state (Principle F).

(c) The Assessment should explicitly consider whether the Schemes also need to comply with the energy limb of Principle A of the energy and environment principles, as some beneficiaries are active in energy from waste, which is a form of power generation.

1.7 We discuss these areas below, along with other issues, for consideration by DESNZ in finalising its assessment.

The Referred Schemes

1.8 The Government has developed a CCUS[4] programme to help meet the UK's climate change targets and obligations. Through the CCUS programme, the UK government has committed to the delivery of four CCUS clusters[5] to capture 20-30 million tonnes of carbon dioxide (CO_2) per year by 2030. The CCUS programme includes a number of tailored business models to focus on different elements of the programme, including:

(a) Transport and Storage (T&S) companies that transport captured CO_2 produced by a variety of emitters to geological storage sites; and

[4] Carbon Capture, Usage and Storage is the process of capturing CO_2 for usage or for permanently storing it, deep underground, where it cannot enter the atmosphere.
[5] A CCUS cluster is defined as the T&S network and an associated set of capture projects. The first two UK CCUS clusters will be Hynet (located in Merseyside) and East Coast Cluster (located in Teesside and the Humber).

(b) Multiple bespoke business models for CO_2 emitters seeking to deploy carbon capture technology. These include business models for Power CCUS,[6] ICC and Waste ICC and CCUS-enabled hydrogen production.

1.9 This report relates to the business models for ICC and Waste ICC. The Schemes have been designed to incentivise industrial and waste management facilities to deploy and operate CCUS technology. The estimated combined budget for the Schemes is up to £8.3 billion.[7]

1.10 Eligible projects submitted applications to the Schemes against eligibility criteria.[8] Following a competitive process, two industrial and two waste facilities have been selected (the Projects). The Schemes require the Projects to become operational by the end of 2027.

1.11 The Schemes incorporate two elements: (a) capital grant and (b) revenue support.

(a) The capital grant will fund the capital costs (capex) of carbon capture equipment. It will be capped at a maximum grant amount and a maximum grant intensity (less than 50% of eligible capex).

(b) The revenue support consists of private law contracts between industrial and waste facilities and the Low Carbon Contracts Company Ltd (the Counterparty) to provide ICC and Waste ICC with a revenue stream in the form of a payment per tonne of captured CO_2. The contracts will have a lifespan of an initial 10-year period with possible annual extensions for up to a further 5 years. The Counterparty will provide support through three separate cashflows, with an additional cashflow for ICC projects:

(i) Cashflow 1: The capex component covers repayment of, and a rate of return on, capital investment in carbon capture equipment. A fixed annual payment rate (per tonne of captured CO_2) will be negotiated with the recipient, accounting for the value of the project's capital grant (see 1.11 (a)) to avoid subsidising the same costs.[9]

(ii) Cashflow 2: The operational cost (opex) component covers the operational expenses of carbon capture. It will be calculated as the difference between the strike price – a negotiated price that reflects the project's operational costs of carbon capture – and a 'reference price'

[6] Designed to support CCUS-enabled power generation by incentivising natural gas fired power facilities to install and operate equipment to capture the CO_2 produced when generating electricity, for transport to a permanent storage site.
[7] DESNZ explained that the estimated budget is a hypothetical maximum in a high-cost scenario and 'should not be read as an expected budget or create any legitimate expectation of spend.'
[8] This included the project having access to a carbon transport solution and storage site.
[9] Payments at this fixed rate will be made over a minimum of 5 years for ICC projects, or 8 years for Waste ICC projects. The longer repayment period accounts for the lower demand risk for Waste ICC projects. This stems from the prevalence of longer-term contracts and lower exposure to international competition.

[10]– which represents the avoided carbon costs of buying allowances under the UK Emissions Trading Scheme (ETS).[11] For Waste ICC and during ICC project extensions only, symmetric payments will apply – ie if the reference price is higher than the strike price, the emitter will pay back the difference.[12]

(iii) Cashflow 3: The T&S component will cover fees paid by the recipient to T&S companies for transporting and storing the captured CO_2.

(iv) Cashflow 4 (only applicable to ICC projects): ICC projects will be required to forfeit a proportion of their free allowances (FAs).[13] Through this cashflow, projects will be compensated for the forfeiture of these FAs at the value of the reference price.

1.12 The Projects will initially be prohibited from generating and selling Greenhouse Gas Removal (GGR) credits,[14] but the Counterparty may decide to lift restrictions as markets develop. Facilities would however only be able to keep 10% of GGR revenue; the remaining 90% would be deducted from contract payments.

1.13 DESNZ explained that the Schemes are schemes of Particular Interest because they allow for the provision of one or more Subsidies of Particular Interest to be given.[15] In particular, DESNZ explained that the intended subsidies for prospective ICC & Waste projects will exceed the threshold of £10 million.

1.14 DESNZ explained that ICC and Waste ICC Business Models are distinct subsidy schemes due to different market characteristics but have been referred to the SAU together because they share the same enabling legislation, payment structure, and support the deployment of similar carbon capture technology.

[10] For ICC projects, the reference price will be a 'fixed trajectory reference price' that imitates, but is not directly linked to, the ETS carbon price. For Waste ICC, and during any extension period for ICC projects, payments will be directly linked to the ETS price. As the Waste sector will only be subject to the ETS from 2028, the initial price will be zero.
[11] The UK Emissions Trading Scheme (ETS) is a cap-and-trade system which caps the total level of greenhouse gas emissions, creating a carbon market with a carbon price signal to incentivise decarbonisation. Participants in the scheme are required to obtain and surrender allowances to cover their annual greenhouse gas emissions.
[12] For Waste ICC only, symmetric payments are capped such that projects will not pay back more than they have received from the scheme.
[13] Under the UK ETS, a certain number of FAs are allocated to emitters. Emitters who decarbonise can therefore potentially generate extra revenue from the sale of FAs they no longer need higher ETS carbon price while receiving support based on a lower fixed reference price.
[14] Facilities using biogenic material can earn revenue by capturing CO_2 and selling GGR credits.
[15] Within the meaning of regulation 3 of The Subsidy Control (Subsidies and Schemes of Interest or Particular Interest) Regulations 2022 which sets out the conditions under which a subsidy or scheme is considered to be of particular interest.

2. The SAU's Evaluation

2.1 This section sets out our evaluation of the Assessment, following the four-step structure used by DESNZ.

Step 1: Identifying the policy objective, ensuring it addresses a market failure or equity concern, and determining whether a subsidy is the right tool to use

2.2 Under Step 1, public authorities should consider compliance of a subsidy with:

(a) Principle A: Subsidies should pursue a specific policy objective in order to remedy an identified market failure or address an equity rationale (such as local or regional disadvantage, social difficulties or distributional concerns); and

(b) Principle E: Subsidies should be an appropriate policy instrument for achieving their specific policy objective and that objective cannot be achieved through other, less distortive, means.[16]

Policy objectives

2.3 The Assessment states that the policy objective of the Schemes is to incentivise the deployment and operation of carbon capture technology by industrial users and residual waste management facilities, which cannot be decarbonised through the use of other technologies/pathways.

2.4 The Assessment explains that the objective is linked with the government's targets in relation to net zero. The UK government has ambitions to reduce industrial emissions by 63-75% by 2035 and at least 90% by 2050.

2.5 In our view, the Assessment clearly describes the specific policy objective of the Schemes and helpfully articulates how the policy objective of the Schemes interacts with the UK government targets in relation to net zero and the CCUS programme.

Market failure

2.6 Market failures arise where market forces alone do not produce an efficient outcome. When this arises, businesses may make investments that are financially rational for themselves, but not socially desirable.[17]

[16] See Statutory Guidance, paragraphs 3.32 to 3.56 and the SAU Guidance, paragraphs 4.7 to 4.11 for further detail.
[17] Statutory Guidance, paragraphs 3.35-3.48.

2.7 The Assessment describes the following market failures:

(a) Coordination failure: The Assessment highlights how ICC and Waste ICC need an operational T&S network to install capture technology, and T&S operators need assurance of carbon emissions to develop the T&S network. It explains that this creates a coordination failure, deterring investors, as both technologies must be deployed together. This coordination failure is exacerbated by the fact that investors and developers are exposed to risks arising from other components of the network over which they have no control.

(b) Imperfect information – 'first mover disadvantage': The Assessment identifies several factors which impact current market conditions and create a disincentive for developers to become a first mover in the nascent CCUS industry in the UK by deploying ICC and Waste ICC. These include uncertainty regarding the cost of capture equipment, operational costs, T&S costs, cross-chain risks (such as availability and performance of the T&S network) and uncertainty around future carbon prices.

(c) Negative externality: The Assessment explains that businesses do not face the full cost of CO_2 emissions because carbon prices are not high or stable enough in the near term to fully reflect the true societal cost of these emissions. The Assessment explains that, while carbon capture technology presents a way to reduce CO_2 emissions, emitters have no financial incentive to install these technologies as they are currently significantly more expensive than operating unabated. It also explains that businesses experience no or only minimal corresponding increase in product value for being low carbon.

2.8 The Assessment describes how the Schemes will remedy these market failures by lowering the costs for first mover projects and de-risking investment by covering the cost of developing and operating carbon capture plants. It also explains that, alongside developing the Schemes, the government will coordinate the deployment of the entire CCUS network, including supporting the establishment and operation of T&S networks, which will protect ICC and Waste ICC projects against risks outside their control.

2.9 In our view, the Assessment clearly describes and evidences the market failures that the Schemes seek to address and how the Schemes will remedy these. In particular, the Assessment usefully considers the impact of other complementary government interventions within the wider CCUS programme aiming to remedy the market failures identified.

Appropriateness

2.10 Public authorities must determine whether a subsidy is the most appropriate instrument for achieving the policy objective. As part of this, they should consider other ways of addressing the market failure or equity issue.[18]

2.11 The Assessment sets out several alternative policy options that were considered. These include (i) increasing the UK ETS price to the same level as the cost of installing/deploying CCUS, (ii) tradeable Carbon Capture and Storage certificates plus obligation,[19] and (iii) low carbon market creation.[20] The Assessment concludes that these options would not achieve the policy objective primarily because they would not incentivise investment in CCUS projects to the level required.

2.12 The Assessment then concludes that a business model providing financial assistance to supplement the existing ETS incentive and carbon leakage policies for initial projects in the short to medium term is necessary to make CCUS investible. The Assessment includes evidence from international CCUS strategies and lessons learned from previous project attempts, including a National Audit Office inquiry,[21] to support this conclusion. It also demonstrates that participants in a government consultation[22] and other stakeholders such as the CCUS Advisory Group supported this approach.

2.13 In our view, the Assessment demonstrates that DESNZ has considered other ways of achieving its policy objective and clearly explains and evidences why a subsidy was the most appropriate option.

Step 2: Ensuring that the subsidy is designed to create the right incentives for the beneficiary and bring about a change

2.14 Under Step 2, public authorities should consider compliance of a subsidy with:

(a) Principle C: Subsidies should be designed to bring about a change of economic behaviour of the beneficiary. That change should be something that would not happen without the subsidy and be conducive to achieving its specific policy objective; and

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[18] Statutory Guidance, paragraphs 3.54-3.56.
[19] Under this model, Carbon Capture and Storage certificates are awarded per tonne of CO_2 abated, relative to an industry benchmark. An obligation is created and would require the specified parties to ensure a certain amount of CO_2 is captured and stored, with the obligations increasing over time to result in a long term decarbonisation trajectory. The certificates may be used to meet the obligation or traded.
[20] This involves using market mechanisms such as certification, public procurement of low carbon products and regulation of end uses to create a market demand for low carbon products.
[21] Carbon capture and Storage: the second competition for government support
[22] Carbon Capture, Usage and Storage: an update on business models

(b) Principle D: Subsidies should not normally compensate for the costs the beneficiary would have funded in the absence of any subsidy.[23]

Counterfactual

2.15 In assessing the counterfactual, public authorities should consider what would likely happen in the future – over both the long and short term – if no subsidy were awarded (the 'do-nothing' scenario).[24]

2.16 The Assessment sets out a counterfactual scenario in which the market failures and investment risks outlined in Step 1 are too great for the private market to overcome, preventing the deployment of ICC or Waste ICC in the 2020s or 2030s. It states that, whilst ETS prices are inherently uncertain, DESNZ does not expect carbon prices to be high enough to support ICC and Waste ICC[25] absent the Schemes.

2.17 The Assessment states that:

(a) absent the ICC Scheme, industrial facilities could move abroad,[26] which could lower UK emissions. However, the Assessment explains that if the industrial activity continued abroad and UK demand for the product remained the same, global emissions would be unchanged.

(b) absent the Waste ICC Scheme, residual waste management facilities are not expected to have any financial incentive to deploy and operate Waste ICC due to the market failures outlined in Step 1.

2.18 In our view, the Assessment explains that the policy objective would not be achieved in a do-nothing scenario, due to an inability to raise sufficient finance on the private market, thereby preventing the deployment of ICC and Waste ICC in the UK. The Assessment could, however, make better use of available evidence to support the conclusion that, absent the subsidy, ICC and Waste ICC would not be able to access private financing.

Changes in economic behaviour of the beneficiary and additionality

2.19 Subsidies must bring about something that would not have occurred without the subsidy.[27] They should not be used to finance a project or activity that the

[23] See Statutory Guidance, paragraphs 3.57 to 3.71 and the SAU Guidance, paragraphs 4.12 to 4.14 for further detail.
[24] Statutory Guidance, paragraphs 3.60-3.62.
[25] The waste sector is not currently subject to ETS but will be from 2028.
[26] It provides evidence of a BEIS (now DBT) Committee report in support of this assertion.
[27] Statutory Guidance, paragraph 3.64.

beneficiary would have undertaken in a similar form, manner, and timeframe without the subsidy ('additionality').[28]

2.20 The Assessment explains that the Schemes reduce risk to private investors. As a result, the Schemes will change the beneficiaries' economic behaviour by encouraging investment into first-of-a-kind projects, initiating the deployment of ICC and Waste ICC, that otherwise would not have been financially viable.

2.21 The Assessment explains that the ongoing revenue support will enable projects to obtain private capital for initial costs by creating a certain stream of revenue (provided that the beneficiaries meet the required performance levels) which makes ICC and Waste ICC projects attractive for investors. The Assessment also states that the Schemes will support the CCUS project only and not subsidise any costs related to the beneficiaries' underlying business.

2.22 The Assessment states that the capital grant is designed to fill capital financing gaps which prevent initial projects from deploying the carbon capture plant but can also reduce the overall level of subsidy.

2.23 The Assessment explains that various processes have been put in place to ensure that costs funded through the Schemes will incentivise the Projects to meet the policy objective. For example, projects will only be paid the full capex amount, including return, within a specific target time period if they capture the expected amount of CO_2 and projects will be required to meet certain milestones and performance requirements to receive payments.

2.24 The Assessment notes that the Schemes include some project costs incurred prior to the final investment decision (FID).[29] It explains that DESNZ would need to be satisfied that the pre-FID spend is allowable, economic, efficient and effective through the cost assessment process to be recoverable through the Schemes.

2.25 The Assessment states that, through the wider CCUS programme, government will provide certainty over the establishment of the wider CCUS cluster, mitigating cross-chain risks, which will ensure the private sector considers these projects as investible and can raise private investment and that the model is deliverable.

2.26 In our view, the Assessment clearly explains and evidences how the subsidy would change the beneficiaries' economic behaviour and that the Schemes bring about changes that would not have occurred absent the subsidy.

[28] Statutory Guidance, paragraphs 3.63-3.67.
[29] When the decision to made to make financial commitments to the beneficiaries is taken by the UK government.

Step 3: Considering the distortive impacts that the subsidy may have and keeping them as low as possible

2.27 Under Step 3, public authorities should consider compliance of a subsidy with:

(a) Principle B: Subsidies should be proportionate to their specific policy objective and limited to what is necessary to achieve it; and

(b) Principle F: Subsidies should be designed to achieve their specific policy objective while minimising any negative effects on competition or investment within the United Kingdom.[30]

Proportionality

2.28 The Assessment describes multiple design features of the Schemes that contribute to ensuring that the Schemes are proportionate and limited to the minimum necessary. These include details on the size of the subsidies, the selection process and eligibility criteria, ringfencing, payments in arrears for the capital grant, payments linked to performance criteria, provisions for payment suspension and clawback, and an ongoing monitoring and evaluation process.

2.29 On the size of the subsidies to be awarded under the Schemes, the Assessment explains that the amount of the capital grant will be determined through bilateral negotiations with the recipients and capped (see paragraph 1.11a), with the beneficiary raising the rest through private capital. Capital costs have been scrutinised by external technical advisors, the DESNZ technical assurance team and DESNZ analysts. The Assessment also discusses the size of each cashflow under the revenue support and how they were determined (see paragraph 1.11b).

2.30 In our view, the Assessment sets out in detail aspects of the Schemes design that help ensure that they are proportionate and limited to the minimum necessary to achieve the policy objective, in line with the Statutory Guidance. However, the Assessment should explain in more detail how DESNZ ensured that negotiations with the beneficiaries led to the minimum necessary revenue support, in particular on key drivers of the subsidy size such as the rate of return on capital (for the capex payment) and the strike price (for the opex payment). The Assessment could also better evidence how the caps on the grant funding were determined.[31]

Design of subsidy to minimise negative effects on competition and investment

2.31 In line with the Statutory Guidance, the Assessment sets out several elements of the Schemes design (in addition to those related to proportionality discussed

[30] See Statutory Guidance paragraphs 3.72 to 3.108 and the SAU Guidance, paragraphs 4.15 to 4.19 for further detail.
[31] Including how the level of grant funding could impact the rate of return on capital received by the beneficiary as part of the revenue support.

above) which are relevant to minimising distortive impacts including the nature of the costs being covered, the timespan of the subsidies, performance criteria, and contractual restrictions.

2.32 It also sets out a number of market conditions which limit potential distortions to competition. These include that there is currently a limited market for low carbon products, other countries are granting subsidies for similar purposes, and that, in the waste market there are capacity and geographic constraints and relatively stable demand.

2.33 In our view, the Assessment demonstrates how several design features of the Schemes contribute to minimising any negative effects on competition and investment within the United Kingdom.

Assessment of effects on competition or investment

2.34 The Assessment sets out the impacts of the Scheme on several markets, including:

(a) CCUS market. The Assessment states that, as the CCUS market is currently nascent, and expected to grow, the risk of distortion is low. It explains that the Schemes help to overcome investment barriers and lack of incentives, therefore limiting potential distortions. The existence of international subsidies for similar projects also limits the extent of potential distortions.

(b) Greenhouse Gas Removal (GGR) market. The Assessment states that projects may potentially generate additional revenue from selling GGR credits[32] compared to unabated competitors who do not receive a similar subsidy.

(c) Waste management market (including energy from waste).[33] The Assessment states that waste is bulky and of relatively low value and tends not to travel long distances to be processed. The market is therefore localised. It explains that the beneficiaries will be able to pass on carbon pricing costs to their customers via gate fees[34] (in the same way as unabated competitors). The Assessment states that there would be minimal impact on gate fees as these mostly come from Local Authorities on long term contracts, and the subsidy reference price is linked to the carbon price which should limit potential distortions. The Assessment also states that there are

[32] Under the Scheme's rules, facilities using biogenic material can earn revenue by capturing CO_2 and selling GGR credits. Initially, the Projects will be prohibited from generating and selling GGR credits, but the Counterparty may decide to lift restrictions as markets develop. If lifted, facilities can keep 10% of GGR revenue, with 90% deducted from contract payments.
[33] The energy from waste industry consists of incineration of residual waste with energy recovery in the form of electricity and/or heat.
[34] The Assessment explains that the primary source of revenue generated by energy from waste is gate fees, ie the revenue paid to energy from waste businesses by its customers to process their waste.

restrictions in place which should limit Projects' ability to manipulate feedstocks to increase biogenic content and achieve a greater reward.

(d) ICC product market for cement. Cement is a key input in the construction industry, and the primary ingredient in concrete. The Assessment states that there are no other cement plants within a 50-mile radius of the beneficiary's plant, and only four within 100-miles (which are all in close proximity to each other). The Assessment explains that beneficiaries of the Schemes would be able to provide customers with a low carbon product sooner than competitors (who rely on future CCUS policy development to decarbonise).

(e) ICC product market for hydrogen. The Assessment explains that the ICC plant that was selected for the Scheme is the largest on-purpose hydrogen plant[35] in the UK where hydrogen is sold to a third party rather than used on site, with the majority of hydrogen being supplied to a single customer under a long-term contract. The Assessment considers that the nearest alternative existing plant does not compete to a meaningful extent for customers, but a shortlisted project under the Hydrogen Production Business Model could compete in the future for ongoing custom once the long-term contract expires.

2.35 The Assessment explains that several mechanisms of the Scheme could provide a competitive advantage to beneficiaries compared to competitors, either because those mechanisms could contribute to generating additional revenue,[36] or because the ICC and Waste ICC contracts alter the exposure to carbon price policy.[37]

2.36 The Assessment explains that only projects which can connect to a T&S pipeline were able to apply for the Schemes, geographically limiting potential beneficiaries and potentially disadvantaging competitors unable to access the opportunity. However, given the geographic constraints of T&S networks and the limited development of a non-pipeline transportation market, the Assessment states that it was not possible to widen the scope of the selection process.

2.37 The Assessment also states that the beneficiaries being able to create a differentiated product to unabated competitors could give them the ability to charge a 'green premium' (leading potentially to higher profit per unit) or increase their market share if there is demand for a greener product.[38]

[35] On purpose hydrogen plant is where hydrogen is not the by-product of another process.
[36] Through the rate of return on capital as part of the revenue support and, for ICC, potential gains if the UK ETS price exceeds the reference price.
[37] This includes protected FA against changes in Government policy.
[38] This risk is more limited in the waste market where many contracts are long term and are geographically constrained.

2.38 In our view, the Assessment identifies various competitive impacts that could arise from the Schemes and explains how the Schemes have been designed to limit potential distortions. However:

(a) It should explicitly consider how the impact on competition might change over the timespan of the Schemes, for example, how the Scheme's beneficiaries may be advantaged over non-subsidised plants as the market moves towards a self-sustained state.

(b) It could explain in more detail how competition could be impacted in the relevant ICC product markets, particularly cement. This could include how increased revenue could impact the beneficiaries' market position and competitors, and how this could affect the competitive dynamics in the market. It could then consider how significant any competition distortions arising from the subsidy may be.

Step 4: Carrying out the balancing exercise

2.39 Public authorities should establish that the benefits of the subsidy (in relation to the specific policy objective) outweigh its negative effects, in particular negative effects on competition or investment within the United Kingdom and on international trade or investment.

2.40 The Assessment lists several expected benefits of the Schemes, including:

(a) Incentivising industrial and residual waste management facilities to deploy CCUS technology, which will help meet the UK's statutory decarbonisation targets. The Assessment provides estimated figures for CO_2 savings associated with the ICC and Waste ICC to 2037 (noting that not all of the savings will be delivered by the projects supported under the Schemes).

(b) Establishment of the first business cases of successful ICC and Waste ICC projects in the UK, which is expected to de-risk technologies, boost investor confidence, and contribute to the development of a self-sustaining CCUS market which relies less upon government support.

(c) Reducing the cost of meeting carbon targets. The Assessment notes that early deployment of CCUS would allow a more gradual approach to decarbonisation compared to reducing emissions at a much greater speed and much greater expense in the future

2.41 The Assessment then discusses potential negative effects of the Schemes, including on competition and investment (see paragraph 2.34-2.37), possible environmental impacts during the construction phase, how the use of some CCUS

solvents may produce polluting emissions and the potential for adverse impacts on the waste hierarchy.[39]

2.42 The Assessment then concludes, having considered the benefits of achieving the policy objective, that these outweigh the identified negative effects.

2.43 In our view, the Assessment clearly sets out the positive effects of the Schemes in relation to the policy objectives, its geographic impacts, as well as potential negative impacts, and balances them in line with the Statutory Guidance. The Assessment could further attempt to quantify the overall scale of the negative effects, or provide some qualitative considerations, to support its conclusion on the balancing exercise. In addition, having identified reducing the cost of meeting carbon targets as a potential benefit of the Schemes, the Assessment could more clearly set out the nature of these cost savings and how they will be realised.

Energy and Environment Principles

2.44 This section sets out our evaluation of the Assessment against the energy and environment principles.[40]

2.45 DESNZ has conducted an assessment of the Schemes against Principles A, B and H. We have not identified any other principle that should have been addressed as part of the assessment.

Principle A: Aim of subsidies in relation to energy and environment

2.46 Subsidies in relation to energy or the environment should be aimed at (1) delivering a secure, affordable and sustainable energy system and a well-functioning and competitive energy market, or (2) increasing the level of environmental protection compared to the level that would be achieved in the absence of the subsidy. If a subsidy is in relation to both energy and environment, it should meet both limbs.[41]

2.47 The Assessment explains that the Schemes aim at incentivising the deployment of carbon capture technology by industrial users and waste management facilities as these have no viable alternative to achieve decarbonisation. In the absence of ICC and Waste ICC deployment and operations, the facilities would be expected to continue emitting CO_2, which might also undermine the wider CO_2 T&S network and other projects such as power CCUS.

[39] The waste hierarchy sets out five steps for dealing with waste, ranked according to environmental impact Guidance on applying the waste hierarchy - GOV.UK (www.gov.uk)
[40] See Schedule 2 to the Act, and Statutory Guidance, Chapter 4.
[41] Statutory Guidance, paragraphs 4.19-4.28.

2.48 It also refers to a number of measures to mitigate potential local environmental impacts related to construction works and CCUS solvents. ICC and Waste plant operators must, for instance, apply the Environment Agency's guidance and undertake a risk assessment when completing permit applications to avoid and control emissions. The contracts signed by ICC and Waste ICC projects also represent and warrant that the required authorisations for their construction have been obtained.

2.49 Finally, the Assessment explains that the Schemes will increase the level of environmental protection compared to the level that would be achieved in the absence of the Schemes by allowing for the reduction of carbon emissions. We note that the Statutory Guidance sets out that subsidies and schemes with a specific policy objective of promoting Net Zero will tend to be consistent with Principle A of the Energy and Environment Principles.[42]

2.50 In our view, the Assessment clearly explains and evidences how the Schemes comply with the environmental limb of Principle A of the Energy and Environment Principles. However, it should explicitly consider whether the Schemes also need to comply with the energy limb of Principle A, as some beneficiaries are active in energy from waste, which is a form of power generation.

Principle B: Beneficiary's liabilities as a polluter

2.51 Subsidies in relation to energy or the environment should not relieve the beneficiary from liabilities arising from its responsibilities as a polluter under the law of England and Wales, Scotland, or Northern Ireland.[43]

2.52 The Assessment states that the Schemes take a 'holistic' approach when considering the potential environmental impact of a policy option, such that the amount a polluter pays is kept proportionate with the level of environmental damage and the wider costs and benefits to society of the activity in question.

2.53 The Assessment then states that 'the ICC and Waste ICC BMs do not relieve beneficiaries from their liabilities arising from their responsibilities as a polluter'. The Assessment clarifies that the Scheme supports the capture and storage of CO_2 to prevent pollution. It further explains that beneficiaries' obligations under the UK ETS policy and/or the requirements to pay for residual emissions (for facilities which are not captured) are not altered. Metering requirements are also included in ICC and Waste ICC Contracts to ensure subsidy payments only cover the capture and storage of CO_2.

[42] Statutory Guidance, paragraphs 4.27.
[43] Statutory Guidance, paragraphs 4.29-4.35.

2.54 In the event of a T&S outage or a fault in the T&S Network, the Assessment sets out two options for the emitters to choose from. They can either rely on a different injection route (such as onsite CO_2 storage vessels) and/or release CO_2 into the atmosphere. The latter option leads to a carbon cost under the UK ETS. However, the Assessment states that emitters will receive 'proportionate compensation' in respect of the CO_2 they would have been able to capture absent the T&S constraints which prevent them from using the ICC plant.

2.55 The Assessment also describes a scenario where the T&S Network is fully discontinued. This situation triggers the termination of the ICC contract. In this case, compensation is provided for costs attributable to establishing a capture project which cannot be used for reasons outside of the emitter's control. The emitter, however, remains liable for UK ETS payments related to CO_2 emissions.

2.56 Finally, the Assessment claims that the pass through of T&S charges does not contradict the Polluter Pays Principle as it allows for the cost of capturing carbon to be lower than that of releasing CO_2 into the atmosphere.

2.57 In our view, the Assessment explains at high level, and evidences how the Schemes complies with Principle B of the Energy and Environment Principles. The Assessment could clarify the extent to which it relies on the UK Government's Environmental Principles Policy Statement (EPPS),[44] as it refers to a 'holistic' approach to policymaking. DESNZ could also, in accordance with paragraph 4.33 of the Statutory Guidance, include a clear statement in the terms of the Schemes themselves that the ICC and Waste ICC business models do not relieve beneficiaries from their liabilities arising from their responsibilities as a polluter.

Principle H: Subsidies for the decarbonisation of emissions linked to industrial activities

2.58 Subsidies for the decarbonisation of emissions linked to industrial activities should achieve an overall reduction in greenhouse gas emissions, and reduce the emissions directly resulting from the industrial activities concerned.[45]

2.59 The Assessment states that captured emissions include those caused by the burning of fossil fuels or biomass and related to industrial production processes (such as cement production). It explains that the Scheme will allow for the disposal of CO_2 without venting to the atmosphere and will prevent carbon leakage to other countries. The Assessment states that this will contribute to an overall reduction in greenhouse gas emissions and the decarbonisation of industrial and waste management activities.

[44] The EPPS refers to a 'holistic' approach and includes guidance on the application of the polluter pays principle, among other things. The EPPS is referred to in paragraph 4.34 of the Statutory Guidance.
[45] Statutory Guidance, paragraphs 4.61-4.69.

2.60 In our view, the Assessment explains at high level why DESNZ considers that the Schemes comply with Principle H of the Energy and Environment Principles.

Other Requirements of the Act

2.61 DESNZ confirmed that no other requirements or prohibitions set out in Chapter 2 of Part 2 of the Act apply to the Schemes.

13 November 2024