

INDUSTRIAL CARBON CAPTURE BUSINESS MODEL SUMMARY AND CONSULTATION

UKPIA RESPONSE

Q1. To what extent does the ICC business model represent an investable proposition in the context of known HMG policies, stated ambitions, and the Net Zero commitment?

Generally, the structure of the Industrial Carbon Capture Business Model (ICCBM) does create an investable proposition.

Some elements of the ICCBM could be improved in order to further incentivise investment.

- Capital Grant. It is unclear on the process which applicants must follow to demonstrate that they have raised as much private sector capital as possible. The inclusion of this aspect in negotiations runs the risk of an inconsistent approach between applications.
- In order to increase the incentive for projects to begin, the increase in Capital Grant funding from 50% to 75% should also be considered, subject to appropriate checks on project viability. Further detail on the requirements of this should be provided.
- A 10-year project life is a reasonable place to begin for Capex repayments. It would appear that if the Capex is not repaid after 10 years, then payments will cease, and the emitter becomes liable for the residual costs. This factor may discourage investment and should be considered in more detail, including a re-opener of discussions after 5 years.
- The cap on Carbon Capture Unit Capacity at 110% reduces the ability of the project to make use of available infrastructure to maximise CO₂ capture and storage. While we understand the risks associated with projects over producing CO₂ purely to capture incentives a simple cap may prevent “genuine” emissions from being captured, especially if this is linked to Free Allowances (FA) under the UK ETS.

Similarly, the Carbon Capture Unit may be operated at less than 75% due to market related constraints, or for operational reasons.

The principles of constraints of maximum (110%) and minimum (75%) also apply to the T&S Fees as well and so need to be considered in the same way.

There therefore needs to be a mechanism to allow re-negotiation of the contract should it be required due to circumstances unforeseen at the time of the original contract negotiation.

Q2. To what extent do you consider the ICC Contract will incentivise development of low carbon industrial production that has the potential to operate subsidy free at the end of the ICC Contract term?

Our view is that the ICC contract proposed does have the potential to incentivise development of low carbon production including the ability to operate subsidy free at the end of the contract term.

The ability to extend the contract period after 10 years is welcome, although the mechanism could be refined. The consultation suggests needing to request a one-year extension 12 – 18 months before the end of the period; if 18 months is chosen then this risks needing to apply for a second extension before the end of the 10-year period itself, and prior to the start of the first extension. We would suggest increasing the extension period from one to two years so that this situation does not arise.

Finally, UK low carbon production also relies on having a robust UK industry in which companies choose to invest underlying the carbon capture element. The competitiveness of UK Energy Intensive Industries in key areas needs to be supported. This includes key policy areas such as the UK ETS including addressing the risks of carbon leakage, EII compensation, and high energy costs.

Q3. Does the business model as described in this document and accompanying updates published alongside this publication, create, risk the creation of, or through its approach unsuccessfully protect against the creation of, any perverse incentives for the creation of excess carbon?

We agree that the measures proposed should prevent the creation of perverse incentives for the creation of excess carbon. Section 9 of the consultation does not indicate what would happen should an increase in carbon be justified. One question is whether this increase will be appropriately rewarded under the ICCBM. Further to our response to Q1 it looks to also be subject to the 110% cap.

One example of this scenario may be a refinery Catalytic Cracking Unit, where advances in technology mean that it could be possible to increase the unit feed rate, which would increase the total amount of CO₂ that is being fed to the Carbon Capture Unit.

The capacity limit of 110% may need re-negotiation with the emitter at some point during the ICC Contract Period. We would ask that this point is clarified.

Q4. To what extent do you consider that the proposed negotiations approach will lead to successful agreements of ICC Contracts?

This will depend on the negotiations themselves to a large extent, and the willingness of parties to reach constructive agreements.

We agree that these negotiations are carried out in a fair, and reasonable manner then they will be more likely to lead to successful agreements.

The treatment of the significant risks associated with these projects as outlined in the consultation document will also be a key part of the contract negotiations.

Q5. To what extent does the ICC business model, as delivered by the proposed Contract, succeed in supporting the development of innovative and competitive ICC projects? If not, please explain how the Contract terms inhibit development of innovative and competitive ICC projects?

We agree that the ICCBM as proposed will be a key part of the development of the delivery of ICC projects. We have outlined our concerns regarding contract terms in our response to Questions 1, 2, 3 and 4.

We would also like to reiterate that while it addresses the financial elements of industrial decarbonisation, as we have outlined in our response to Q2, the underlying competitiveness of UK industry will also be key to delivery.

Q6. We are developing the business model package, including conditions set out in the indicative heads of terms for the CCS Infrastructure Fund Grant Funding Agreement, such that there is equitable apportioning of risk inherent to a FOAK project between both the developer and HM Government. To what extent do you consider risk is sufficiently balanced to enable investment in projects and value for money for taxpayers? If not, please identify those areas of the business model package where risk apportionment is disproportionate?

Broadly the business model package provides an equitable apportionment of risk. In terms of managing the operating risk, the reopener is only available after one year of operation. We would suggest that other re-openers down the line would also be advantageous as costs can change significantly over the project timeline; for example, during the current cost of living crisis and unusually high inflation levels have a material impact on both fixed costs such as labour rates and variable costs such as energy costs. Alternatively, the emergence of an unexpected failure mechanism (for example, gearbox failures in wind turbines in the renewable electricity sector) may introduce a technology risk after a period of operation in excess of 1 year.

In summary, the ability for a later re-opener after 1 year will ensure that projects continue to operate over the expected timeline.

Q7. To what extent do the payment mechanics proposed for the main contract term and for the extension period(s) offer a fair balance of financial return, risk and protection in circumstances where costs and market circumstances diverge from expectations?

Broadly, the mechanics proposed would seem to offer a fair balance of return, risk, and protection where costs and market circumstances diverge from expectations.

The Capex repayment rate (CP) is given as $CP = (ACP+RC)/EC *$ where ACP is being defined, EC is the annual CO₂ captured, and RC is the Return Component, which is not yet defined. More information on the RC needs to be provided in the response to this consultation.

- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/984119/industrial-carbon-capture-icc.pdf

Q8a. Included within the business model are proposals for the treatment of UK ETS Free Allowances. To what extent does the proposed treatment of Free Allowances within the business model operate effectively within the UK ETS framework (e.g. timelines, allocation processes etc)?

This is an extremely complex area and crucial to the economics of CCUS projects for industrial emitters.

In our view, the treatment of FAs within the business model does not operate effectively with the UK ETS Framework.

For most industrial installations, the level of FAs is based on industrial benchmarks, rather than an annual capture factor as defined in the consultations. Therefore, forfeiting a number of allowances relative to the capture factor risks distorting the number of FAs for an installation.

Further, given the volatile nature of UK ETS pricing * the price assurance based on a “reference price” does not provide a reasonable level of assurance in this case. Allowance pricing can vary significantly within any given year, so that the compensation offered does not cover the actual costs incurred in trading UK ETS certificates in an open market.

The protection trajectory outlined in the consultation document (e.g., 100% in Year 1 dropping to 50% in Year 10) is inconsistent with the trajectory of FAs available for industrial installations.

Based on our understanding of the annual value of forfeited FAs, the Effective Reference Price applicable to the forfeited FAs could be between Zero and the Base Reference Price. Based on the May 2021 document within the on-line consultation documents, if the quantity of emissions captured and stored by CCUS is less than (or equal to) the Free Allowances for the industrial emitter, then the Effective Reference Price derived from the given formula (Base Reference Price – Annual Value of forfeited FAs) may tend towards zero. Hence, the compensation given to the emitter based on the Effective Reference Price for the forfeited FAs may be almost negligible. This would act as a disincentive for investment as well as improving the efficiency of the Carbon Capture Unit and is an undesirable outcome which needs to be reviewed and clarified as part of this consultation process.

In summary, we have concerns regarding the divergence between the ICCBM and the UK ETS in key areas. Given the financial implications of this, this raises potential concerns on CCUS project economics and the incentives for investment.

We would be happy to discuss these concerns with the BEIS Team in more detail.

* <https://www.reuters.com/world/uk/britain-triggers-cost-curb-measure-co2-scheme-december-2021-12-01/>

Q8b. In light of the key principles that have guided ICC business model design, namely the development of a deliverable, investable business model that supports effective decarbonisation whilst delivering value for money for taxpayers, to what extent do you consider that the proposed treatment of UK ETS Free Allowances complies with these principles? How would you account for UK ETS Free Allowances within the business model in light of these principles?

We do not agree that the proposed treatment of UK ETS FAs complies with the principle of supporting effective decarbonisation. As we have outlined in our response to Q8a, we have a number of concerns over the treatment of FAs in the ICCBM which could lead to uncertainty over project economics, and we would be happy to discuss with the BEIS Team in more detail.

Q9. Recognising that the ICC Contract has been drafted to offer consistency with the AR4 CfD and the Dispatchable Power Agreement contracts where appropriate and applicable, are there any areas of the ICC Contract where this consistency has not been achieved, inconsistencies are inappropriate, or where the ICC Contract does not reflect the business model as described in this document and accompanying updates published alongside this publication?

UKPIA is unable to comment on this in detail.

Q10. In the business model update and draft ICC Contract, we have set out our view as to how government and Emitters should share the impact and costs of key risks (including in relation to Qualifying Changes in Law and termination events). We have also set out our proposals relating to the payment of compensation following the occurrence of such risks, with the aim that such compensation i) is proportionate, ii) gives Emitters sufficient protection to ensure that the underlying industrial facility is not rendered uneconomic, the possibility of deploying CCUS is still achievable and that the ICC Contract is investable/bankable and iii) is limited to what is necessary to provide such protection. The proposed compensation considers the extent to which Emitters can themselves partially mitigate some of these risks, just as they would have to in a situation where government subsidy is not required because the market appropriately prices in the cost of CO₂ emissions and CCUS deployment is sufficiently de-risked. In any scenario, are there specific costs which you feel government has not considered and are not protected via either i) the proposed business model compensation or ii) compensation

UKPIA is unable to comment on this in detail.

Q11. ICC projects will be part of a wider CCUS network. A T&S Prolonged Unavailability Event would have a significant impact on any project connected to the network, including those projects holding ICC Contracts. We need to consider how to best manage this interface risk. We have set out an initial minded to position on the termination right where there is a T&S Prolonged Unavailability Event, which seeks to balance the risk held by investors in the ICC project and investors in transport and storage and the wider network. Do you consider that there is a fair allocation of risk between the different interests in relation to Termination for T&S Prolonged Unavailability Events? If not, please provide your rationale.

We consider that the proposals offer a fair allocation of risk in this regard.

Q12. Where the business model calculates payments using a market carbon price – i.e. in the extension period of ‘generic’ ICC Contracts and potentially in the Waste ICC Contracts – our preference is to use a monthly-averaged carbon price, calculated for each calendar month. We have also considered using a daily market carbon price. Please provide your considerations on these two options.

Markets can react to events; for example, the market carbon price could increase on a day-by-day basis in reaction to a T&S outage due to a perceived need for emitters to emit additional CO₂ in order to continue operations *. This may not be fully reflected in the monthly average price.

A daily UKA Futures market price has the potential to offer a better coverage of the costs incurred by emitters. However, this quote has low liquidity so may not adequately protect emitters from price risk due to its volatility.

Given the issues outlined above, at this time it is difficult to suggest an optimum solution on this occasion. However careful consideration is needed to prevent perverse outcomes such as industrial emitters shutting down in the event of a T&S outage, which may cause resilience issues (for example localised fuel supply problems or fertiliser shortages).

* <https://carbon-pulse.com/152173/>

Section B: Waste ICC Contract

Q13. As explained in section 20 on the Waste ICC Contract impacts on waste hierarchy, we consider that the support proposed to be provided to waste management CCUS projects through the Waste ICC Contract is unlikely to create perverse incentives that undermine the waste hierarchy (for example, by creating perverse incentives to send waste that could have otherwise been used further up the waste hierarchy towards waste recovery processes such as EfW, ATT or ACT processes). Do you agree? If not, how do you consider that support provided through the Waste ICC Contract can mitigate this risk? Please set out any evidence behind your response.

We agree that this approach broadly prevents perverse incentives. However, given the increasing call on the use of waste (for example in Recycled Carbon Fuels ^{a)} or in Plastics derived from Pyrolysis Oil material ^{b)}) then competition exists for this material.

The incentives for the eligibility of Waste CCS projects need to be carefully weighed against the schemes calling for waste as a feedstock.

We agree that monitoring of waste compositions and volumes is important, both in terms of the ICCBM and the wider economy as a whole to ensure that the call for waste as a feedstock does not lead to perverse outcomes.

- a) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1001880/targeting-net-zero-next-steps-for-the-renewable-transport-fuels-obligation-government-response.pdf
- b) <https://britishrecycledplastic.co.uk/the-future-of-recycling/>

Q14. What methodologies do you consider would be most appropriate to monitor the waste compositions and volumes being processed at waste management facilities receiving a Waste ICC Contract? The purpose of such monitoring would be to ensure that data is collected on waste composition and volumes to help monitor whether there is any unintended impact on these as a result of any support provided by Waste ICC Contracts. How frequently do you think any monitoring and reporting of waste compositions should occur? Please explain the rationale behind any methodologies you consider to be appropriate and the frequency of monitoring and reporting you consider to be most appropriate.

This is out with UKPIA's area of expertise and we are unable to comment in detail.