



Department for
Business, Energy
& Industrial Strategy

Government Response to Carbon Capture Usage and Storage: Market Engagement on Cluster Sequencing

Consultation closed: 10 March 2021



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Section 1: Introduction

The Prime Minister's Ten Point Plan for a Green Industrial Revolution sets out a commitment to deploy two Carbon Capture Usage and Storage (CCUS) clusters by the mid-2020s and a further two by 2030. The 'CCUS: Market Engagement on Cluster Sequencing' consultation set out a potential approach to allocating support to CCUS clusters to enable the above commitment to cluster sequencing and deployment, as well as the ambitions to capture 10 MtCO₂ per annum and to have 5 GW of low carbon hydrogen capacity by 2030.

This document provides a summary of the responses received throughout the consultation as well as rationale behind the decisions subsequently made by government in relation to the consultation content. The impact of these decisions, and the participant next steps, are outlined in 'Cluster Sequencing for CCUS Deployment: Phase-1'. The decisions taken by government that are discussed in both documents have been informed by responses to the consultation.

Although this document will respond to all sections of the consultation, government will look to publish further information on Phase-2 of the cluster sequencing process in due course.

1.1 Summary of responses received

We received 78 direct responses to the consultation either via email or the online portal, and a further 16 letters written to BEIS Ministers responding to the consultation. Over half of these responses were from businesses and organisations, including large multinationals and SMEs, directly involved in cluster decarbonisation. The remainder came from local authorities, trade associations, academics, private individuals, MPs on behalf of their constituencies, and other interested parties.

1.2 Summary of stakeholder engagement

We conducted a series of engagement sessions, alongside the CCUS consultation, with key stakeholders and interested parties. We held an initial open engagement event hosted by the CCSA (leading industry body) and potential applicants were then invited to attend individual engagement sessions with BEIS; an offer taken up by a range of clusters and projects.

This response also considers additional engagement that has taken place during 2021. This includes ongoing work with the CCUS Expert Groups and continued engagement with industry on the CCS Infrastructure Fund, Net Zero Hydrogen Fund, and sector business models.

We also received and considered consultation responses from the Scottish and Welsh governments, and will continue to work with the relevant devolved administrations to ensure that the proposed policies take account of devolved responsibilities and policies across the UK to facilitate successful deployment.

1.3 Overview

This government response is split into four overarching sections in line with the consultation:

- [Two-phase approach](#)
- [Entry into Phase-1](#)
- [Cluster sequencing process](#)
- [Final project allocation](#)

A summary of each section is set out below.

1.4 Next steps

Government has considered the responses to the consultation which have informed our approach to the CCUS Cluster Sequencing Process. The Phase-1 Launch Document, published alongside the government response, sets out the finalised details of the first phase of the cluster sequencing process; and provides guidance and supporting information for clusters seeking to participate. More information on Phase-2 of the process will be published later this year.

The UK government recognises the importance of ensuring the whole of the UK decarbonises in order to meet our legally binding net zero emissions by 2050 target, and we are clear that in order to reach net zero all industrial clusters will need to decarbonise, with CCUS continuing to play a key enabling role in this transition. We will continue to engage with each of the devolved administrations to develop our approach the delivery of CCUS across the UK. In order to facilitate this work, we continue to be open to any CCUS projects across the UK identifying themselves to us.

Section 2: Two-phase approach

2.1 Track-1 and Track-2

The Prime Minister's Ten Point Plan committed to supporting the deployment of two CCUS clusters by the mid-2020s and a further two clusters by 2030. The consultation set out an approach for sequencing the deployment of clusters across the decade whereby two clusters would be prioritised for deployment in the mid-2020s (Track-1), with a further two clusters to be supported to deployment by 2030 (Track-2). The consultation proposed that the second deployment track would not be named so as to encourage innovation to continue in the sector and encourage a pipeline of projects to develop. It was suggested that the first phase of the process would be launched in April with those clusters sequenced onto Track-1 for deployment in the mid-2020s announced in October of this year.

2.11 Summary of responses

Questions 1-5 of the consultation asked respondents to provide views on the proposed two-phase approach for the Cluster Sequencing Process. 60 responses were received for these questions, as well as a further 16 ministerial letters with comments on the proposed process.

Stakeholders welcomed the clarity, clear timeline and momentum provided by the consultation. The majority of respondents were supportive of the timeline, suggesting that it would be demanding but manageable to adhere to. The rationale for moving quickly, namely to meet our near and long-term carbon emissions targets and to maximise the UK's comparative advantage in the sector, were also fully understood and supported by most.

Nevertheless, despite support for the launch of a process, some respondents expressed concerns in relation to the two-track approach. Respondents argued that all clusters need to decarbonise if we are to reach the net zero commitment, and so government should allow all clusters to develop at their own natural pace, providing the necessary funding at the stages at which clusters need it, rather than staggering deployment. The primary concern was that announcing a single track in October could be very damaging for those not named onto this track, such that investment could be at risk and projects could be delayed or even cancelled altogether. Further concerns included:

- Insisting that clusters follow timelines that are not aligned with their natural development could introduce additional and unnecessary risk to the deployment of CCUS; i.e. that the process could force projects to develop at a faster pace than they might ordinarily do so or, hold other clusters back.
- Some respondents suggested that the process could constrain early ambition; if more than two clusters can be deployed in the mid-2020s, then government should support these clusters to do so.

- The suggested approach could create tension between clusters which would reduce collaboration and knowledge sharing. For first of a kind (FOAK) projects, collaboration is vital to defining and implementing best practice.
- A perceived lack of cohesion with other programmes in BEIS such as the Industrial Strategy Challenge's Fund's Industrial Decarbonisation Challenge programme, meaning the Front-End Engineering and Design (FEED) studies of those not named onto Track-1 could potentially expire, and/or projects could become non-compliant with their award commitments.

To reflect these concerns, many stakeholders suggested that government should instead opt for a 'readiness assessment' approach. Whilst the exact descriptions of readiness assessment varied between different responses, the essence of the concept is that government should commit to supporting all viable clusters, informed by their natural development timelines, as opposed to being driven by pre-set dates.

There was also near-consensus from stakeholders that, if government does not commit to a readiness approach, additional visibility in relation to Track-2 should be provided. Respondents suggested that this should include both clarity in relation to the timing of Track-2, as well as the process that would be used to select Track-2 clusters and projects. Some respondents also pointed out that any subsequent Track-2 process would need to balance selecting additional cluster locations with selecting a second phase of projects in existing (Track-1) cluster locations. There was a mixed response as to when this clarity would be needed; whilst some suggested further clarity in October would be sufficient, a majority stressed that further information prior to, or by the launch of Phase-1 would be highly beneficial to industry confidence.

There was a mixed response with regards to whether we should name Track-1 clusters only in October, or both Track-1 and Track-2. There was some agreement from respondents that the focus should be on Track-1, to achieve our goal of two clusters by the mid-2020s; whereas others suggested that naming Track-2 clusters in 2021 could potentially mitigate some of the perceived negative impacts of the two-track process described above and help to provide projects and investors with confidence.

2.12 Government's view

Government is committed to delivering at least two clusters by the mid-2020s, and four clusters by 2030 at the latest. We are also conscious that we need all industrial clusters to decarbonise if we are to meet our legally binding net zero targets and understand that clusters have their own expected deployment timelines. The Cluster Sequencing Process is intended to enable government to gather information in relation to the deployment plans of clusters in a fair, transparent and structured way having taken account of proposed deployment timescales as well as key considerations including emissions reduction potential and economic benefits.

We also understand that naming the first deployment track without providing clarity for the second track could deter investment and lead to delays. It was in recognition of that risk that the consultation suggested that we would bring forward details of a process to select

Track-2 clusters alongside the Track-1 result in October. However, we have understood concerns that this may not be sufficient and have provided more clarity in relation to Track-2 in the Phase-1 Launch Document. Specifically:

- **Timing of Track-2** – we have clarified that Track-2 does not mean deployment in 2030, but instead could facilitate deployment from 2027. In line with Track-1, we will assess this deliverability using the cluster’s adjusted Commercial Operation Date (COD). We define the COD as the date when ongoing injection of CO₂ emitter volumes into the store begins¹. If Track-2 clusters represent value for money to the taxpayer, are affordable and are deliverable in 2027 then we would anticipate supporting these clusters to deployment on this timeline. Further, to achieve this timeline we would expect detailed engagement to take place from 2023 and final investment decisions from 2024.
- **Process for Track-2** – we have committed to publishing a document in relation to Track-2 in October alongside the Phase-1 sequencing decision, which will provide more detail in relation to the timeline for Track-2. We would also use the update to provide information on the criteria that will be used to select Track-2 clusters and the support that will be available to them, as well as a potential approach for future project allocation rounds.
- **A flexible approach to Track-1** – we have also emphasised that if more than two clusters are deliverable in the mid-2020s, affordable, and represent value for money to the taxpayer, that government will consider sequencing more than two clusters onto Track-1 for deployment in the mid-2020s.

Whilst we understand the importance of industry confidence and developer timelines and have amended the process to reflect this, any change to the process needs to be balanced against:

- **Value for money** – we believe that it is helpful to retain a degree of tension within the process to encourage clusters and projects to strive to develop the best possible proposals. Retaining this tension can help to drive and demonstrate value for money and deliver positive outcomes for consumers and taxpayers.
- **Deliverability** – supporting four clusters to deployment through the 2020s will be a significant delivery challenge for government. A sequential approach may reduce delivery risk and align with budgetary cycles.
- **Allowing a pipeline to develop** – it is intended that, by not naming both deployment tracks in 2021, that we will enable and encourage a pipeline of future clusters and projects to develop and allow innovation to continue within the sector. This is driven by a concern that if we state a commitment to four named clusters, other clusters - either those in earlier stages of development or potential new ones - may not feel they have an incentive to continue, or to start, developing.

Along with the matters described above, respondents also raised concerns around the potential misalignment between the IDC spend profile and Track-2 timings. We understand this

¹ This should not be taken to represent the definition of the COD that will be used within the T&S business model.

concern and hope that this the detail on Track-2 timelines has helped to mitigate this risk and will facilitate clusters to continue progressing on their natural timelines. We will continue to engage with UKRI on the interaction between the IDC and Cluster Sequencing processes.

To conclude, we are determined to support the deployment of four clusters in the 2020s and are committed to working with the sector to enable this deployment to happen at pace. Beyond this, we will continue to review the UK's plan for CCUS clusters and are aware that all clusters will need to decarbonise in order to meet our net zero targets.

2.2 Cluster Sequencing followed by project selection

The process described in the consultation is structured into two phases: Phase-1 would sequence two cluster locations and Phase-2 would select the individual projects within, or that could feasibly connect to, these cluster locations and allocate support to these projects.

2.21 Summary of responses

Stakeholders were generally supportive of government taking a cluster-based approach to Phase-1, recognising the importance of the interdependency of the CCUS chain. A number of respondents also acknowledged the importance of an open process to select individual capture projects in Phase-2 – agreeing that all projects, irrespective of their relationship with the Transport & Storage lead (T&SCo), should have an opportunity to enter and be considered. However, there was a mixed response as to whether the Phase-2 project allocation process should be for all projects or, alternatively, just for additional projects beyond the key anchor projects in the cluster.

Some respondents, albeit a minority, agreed with the suggested approach that all projects, whether part of the Phase-1 Cluster Plan or not, should have the same opportunity to enter and be considered. The arguments put forward for this by respondents included fairness, ensuring that government can select the best projects, and facilitating opportunities for remote sites. However, the main argument in support of this approach was that it should be the role of government to determine who should receive government support, and that this should not be determined or influenced by existing corporate relationships.

Nevertheless, a significant number of respondents argued that a fully open Phase-2 project allocation process could be damaging to deployment timelines. Respondents highlighted that the T&S solutions which have been developed based on agreed anchor projects could require significant technical rework, and also that switching projects could increase the cross-chain risk for the whole cluster. Additional concerns included:

- **Collaboration** - there were concerns that the process appears to be competitive and that key projects at most clusters have been developed collaboratively, with companies working together to develop optimal solutions, not against each other to compete for limited funding. Respondents argued that it is important that capture projects should not be in competition with each other; some respondents went on to argue that all projects

that are eligible, positively assessed through evaluation, and represent value for money should be taken forward.

- **Onerous for project developers** - further concerns were also noted around administrative burden; having applied for the Industrial Decarbonisation Challenge last year, some respondents were concerned about repeating the process in 2021 and duplicating efforts. Respondents argued that because capture projects have to contribute to submissions for both Phase-1 in July and Phase-2 in October, a significant amount of time will be spent on applications rather than project development, and that the process could be streamlined to avoid this.

Some stakeholders, as a result of the above concerns, suggested government consider an approach in which key anchor projects, as part of the Phase-1 process would be taken straight through into a negotiation alongside the T&S in October. The Phase-2 process would then be used to determine which additional projects, beyond the anchors, would be supported.

If government is not willing or able to put anchor projects straight through alongside the T&S, several respondents suggested that the gap between the Phase-1 cluster announcement and Phase-2 project selection should be minimised. For this reason, a majority of stakeholders were supportive of the proposed overlay of the start of Phase-2 Project Selection with the end of Phase-1 Cluster Sequencing.

Some other respondents proposed that the project selection phase should be launched at the same time as the cluster sequencing phase, so that government would be able to compare cluster and project applications at the same time.

2.22 Government's view

Government understands the critical importance of integration and collaboration, and recognises that partners and projects within clusters have been working together over several years. We also recognise that in many cases, the first phase of the T&S infrastructure has been designed around specific key project anchors. It is for these reasons that we have designed Phase-1 of the sequencing process to focus on a 'Cluster Plan'; a plan that must outline both sides of the CCUS chain, T&S and capture. We emphasise that this plan should be fully integrated and that highly integrated plans will be looked upon favourably in the Phase-1 cluster assessment. This is something that we stated in the consultation and have emphasised further in the Launch Document.

Government has reflected on some of the alternative proposals outlined in consultation responses, including putting anchor projects straight through or running a single-phase cluster and project selection process, and we have decided to retain a version of the two-phase process outlined in the consultation. We have set out the rationale for this below.

With regards to a process that would allow anchor projects to be sequenced alongside the T&S our view is, on balance, that this would not be appropriate for three reasons.

Firstly, government's view is that all projects should have the opportunity to be considered, irrespective of their relationship with the T&S provider. This is important for fairness and also to ensure that potentially high-performing projects are appropriately and fairly considered.

Secondly, and relatedly, we do not consider it appropriate for a commercial entity to effectively determine who does or does not receive a Dispatchable Power Agreement (DPA), Industrial Carbon Capture Contract or any other form of government support.

Finally, it is important that we deliver the first carbon capture clusters in the UK in a way that represents value for money for consumers and taxpayers alike. A process that allows government to consider and compare a full breadth of options can help to deliver this outcome.

A single-phase process in which government would put out a call to both clusters and individual capture projects at the same time has also been considered. Whilst this approach would have some benefits, it would be likely to delay the launch, prolong the Cluster Sequencing Process and delay the cluster decision. The delay would be the result of the project allocation process being less developed than the cluster process, such that we would not be able to launch in May. The single-phase process would also create a higher volume of content to review within the assessment window, which would take longer to conclude. This conflicts with the feedback received from the majority of respondents that we should be moving forward with the Cluster Sequencing process at pace.

However, whilst we have decided not to fundamentally alter the process, we think that it is important to emphasise that the timeline outlined in the launch document states that capture project negotiations are expected to begin from November 2021 onwards. As a result, there is already flexibility built into the timeline to progress specific projects soon after the cluster decision, should government consider that to be the optimal outcome once all the relevant information has been received. Specifically, we think it is right that in a scenario in which an anchor project on the Cluster Plan has performed well in the assessment and there are no other applicants in Phase-2 or any applicants that meet the eligibility criteria then government will endeavour to progress the original Cluster Plan project through to project negotiations, subject to due diligence and value for money considerations. Whereas, in a scenario in which there is either a concern about an early Cluster Plan project and/or greater optionality of projects to choose from, we think it is right that government takes the time to reach a potentially more optimal allocation outcome for consumers and taxpayers.

Throughout the Phase-2 project assessment we expect to value a given project's ability facilitate timely delivery and integration with the relevant T&S solution, noting that if government does decide to enter negotiations with any projects not included on the original Cluster Plan, we are committed to working with the T&S provider and the wider cluster to ensure it understands the implications for the delivery of the cluster.

Section 3: Entry into Phase-1

3.1 Eligibility criteria and definition of a CCUS cluster

This section of the consultation set out the proposed Phase-1 eligibility criteria and rationale behind these requirements. We proposed three Phase-1 eligibility criteria: the cluster must credibly demonstrate that it can be operational by 2030; the cluster must be in the UK; and the cluster must meet the definition of a CCUS cluster. We defined a CCUS cluster as a T&S network (incorporating the onshore and offshore network and offshore storage facility) and an associated first phase of at least two carbon capture projects.

3.1.1 Summary of responses

We received 50 responses on the eligibility criteria, with most agreeing that the eligibility criteria seemed suitable, with several in accord with the importance of achieving T&S resilience through the requirement that a cluster must have its own store. A small number noted that eligibility criteria may need to evolve over time as technology and learnings impact on design requirements. As noted in the previous section, several respondents questioned the need for an eligibility assessment given that the Industrial Decarbonisation Challenge (IDC) process has already determined the eligibility of clusters.

While many agreed that our definition of a CCUS cluster seemed appropriate, there were a variety of comments on how it might be modified. There were some general comments that the definition was too vague, while some remarked that it was too narrow. A few respondents thought the definition should be broadened to cover all forms of transport, rather than pipeline alone. There were also some who commented that the definition should not be constrained by requiring at least two carbon capture projects.

A few respondents said that the requirement for a T&S network was overly prescriptive, with some of those highlighting it could rule out some clusters from applying for Track-1. Others expressed the opinion that the definition disadvantages dispersed sites without a T&S network to connect to. A minority suggested including non-UK-based storage in the definition, stating it could be an interim solution for projects that can deploy ahead of the corresponding T&S network.

On Track-2 clusters specifically, many agreed that the storage requirement should be relaxed, and a few respondents noted that the definition of a Track-2 cluster could be broadened. Reasons given included the need to account for onshore terrestrial storage and shipping terminals, and the fact there may be more than one T&S provider in a cluster. There were remarks that one store per cluster would not be enough to support the volume of capture projects needed in 2020s and 2030s, and that the T&S entities (T&SCos) must be incentivised to bring forwards more T&S capacity. On the visibility of Track-2, a few mentioned the need for the government to provide details of an allocation framework.

3.12 Government's view

Government is committed to screening Cluster Plans against the three proposed eligibility criteria.

Deployment of CCUS across this decade is considered to be valuable to government as a foundation for net zero and meeting our legally binding commitments. It will also make an important contribution to the UK's emissions reductions targets under the upcoming carbon budgets, while maximising the UK's comparative advantage in the growing global CCUS market.

Government is committed to supporting decarbonisation across the UK and meeting the individual but interlinked net zero targets for the UK, Scotland, and Wales. As discussed in the consultation, it is important that the Track-1 clusters selected enable the UK to achieve store resilience, while our proposal to relax the storage requirement for Track-2 will ensure clusters without a T&S network are able to apply for support.

Government is satisfied with the requirement that a Track-1 cluster should have an associated first phase of at least two carbon capture projects, as this condition restricts entry to those clusters which can demonstrate a coordinated, full-chain proposal. This reflects the inherent interdependency of the CCUS chain, while developing multiple projects per cluster also helps to achieve resilience and diversity.

In response to the concerns raised around Track-2 visibility, we have clarified in the Phase-1 launch document that Track-2 clusters are expected to be deployed from 2027 if possible. To achieve this, assessment and detailed discussions for Track-2 could take place in 2023, to align with FIDs from 2024 onwards. In cases where Track-2 clusters can move faster than this, we are open to exploring options to accelerate these timings. In October 2021, we intend to set out further detail on Track-2, including around timings, criteria and the project allocation process. We will also intend to clarify any definitional changes to the definition CCUS cluster, in addition to our current minded-to position of relaxing the storage requirement.

3.2 T&SCo as Cluster Lead

The consultation set out a suggestion that the Transport & Storage organisation (referred to as 'T&SCo') should act as 'Cluster Lead'. This would involve collecting the information required for the Phase-1 submission from the individual capture projects; and submitting this information to government alongside its own T&S proposal.

3.21 Summary of responses

Many respondents agreed with our proposal for the T&SCo to take on the role of Cluster Lead, though some challenges were noted. Several noted that a conflict of interest may arise for a T&SCo that is associated with a particular project, when competing projects or storage assets request to connect to its network. Suggested solutions to this issue included ensuring there is sufficient oversight of the T&SCOs, through having transparent governance procedures

in place, or the use of an independent company to oversee the process. Further, some suggested that projects should therefore not be required to submit commercially sensitive information as part of the Cluster Plan. A few stakeholders suggested that T&SCos should not have any management role in the selection, regulation and operation of facilities in the clusters.

Several stakeholders believed clusters should decide on their own Cluster Lead, as clusters will know who is best-suited for their own needs. One suggested that a consortium-based Lead might be best, particularly where there may be multiple T&S options in the cluster. There was also a suggestion that flexibility should be built in so the Cluster Lead can change over time, as the relevant ownership of the T&SCo may evolve over time.

3.22 Government's view

Government notes the concerns in relation to the potential competition issues and/or conflicts of interest that could arise as a result of the suggestion that the Cluster Lead should collect and submit information on behalf of relevant capture projects. Specifically, government understands a minority of prospective capture projects may be reluctant to share with Cluster Leads the information that is needed for the purposes of preparing an application. We understand that the reasons for this reluctance include the fact that some Cluster Leads may be responsible for and/or have an interest in prospective capture projects that intend to participate in Phase-2. Therefore, there is a risk that a prospective capture project would be sharing commercially sensitive information with a Cluster Lead, which would be an actual or potential competitor in the Phase-2 process.

To mitigate these risks we have included guidance on competition law risk and anti-competitive behaviour in the Section 2 of the Phase-1 launch document. The purpose of this guidance is to remind potential participants of relevant competition law, explain why compliance is important, highlight that BEIS is aware of this risk and recommend appropriate safeguards that could be put in place to ensure compliance. We have also reserved the right to reject a compromised cluster if BEIS considers that there has been any co-operation or collusion which actually or potentially undermines or distorts competition in order to ensure action can be taken if issues arise in practice.

To be able to facilitate the safeguards required to enable the Cluster Lead to be able submit a single submission on behalf of the cluster as a whole we have decided to make it a requirement that the entity primarily responsible for the T&S should act as the Cluster Lead. Whilst we recognise that some respondents have called for flexibility, and specifically that the Cluster Lead should be the entity that the cluster considers to be most appropriate to fulfil this role, we think that this is outweighed by the importance of putting in place the safeguards described above. Specifically, these safeguards would not be possible if, for example, a capture project was acting as the Cluster Lead.

3.3 Appropriateness of an MoU to signal commitment

The consultation set out that the Cluster Plan must include a commitment from each individual emitter. Our suggested level of commitment was a signed Letter of Intent or Memorandum of Understanding (MoU) in place between the Cluster Lead and each emitter, at the point of entry into Phase-1. This would protect against emitters being double-counted in multiple cluster proposals, and provide government a level of assurance that the CO₂ volumes from these projects will materialise.

3.31 Summary of responses

A large number of respondents remarked that an MoU was appropriate level of commitment from a capture project for it to be included on the Cluster Plan. Some caveated this, however, stating that ahead of Final Investment Decisions, a stronger agreement would need to be in place.

Several viewed that a collaboration agreement would be preferable to, and stronger than, an MoU. A small number remarked that while an MoU would likely be sufficient for non-anchor projects, a stronger agreement should be in place for anchor projects. A few also suggested a demonstration on how much has been invested to date by the capture company should also be considered when assessing commitment levels.

There were a few comments on the difficulty in committing to a project without clarity around business models, in particular for hydrogen and industrial capture, which are less advanced in their development than the power business model.

3.32 Government's view

In response to respondents who flagged that collaboration agreements would be a stronger form of agreement, we have clarified in the Phase-1 launch document that evidence of collaboration between cluster organisations could take the form of an MoU or something stronger if possible. We see an MoU as a minimum level of commitment, and recognise there are stronger forms of commitments such as draft Heads of Terms and collaboration agreements; having these stronger commitments in place may taken into account when assessing a cluster's submission against the Deliverability evaluation criterion.

However, we understand that stronger agreements may not be feasible for all projects at this stage. Government notes the difficulty in making commitments without full clarity on business models in place, which is why MoUs were suggested as a minimum level of commitment.

3.4 Remote sites and shipping

As set out in the consultation, we are aware of several carbon capture and hydrogen proposals being developed within clusters that do not contain a storage proposal, and a range of individual capture projects being developed at remote sites, outside of industrial clusters. The

consultation set out that government does not want to rule out any such projects, and provided suggestions on how these projects can participate in the Cluster Sequencing Programme.

3.41 Summary of responses

Many respondents emphasised the importance of remote sites and shipping capability in achieving large-scale decarbonisation, with several asking for greater emphasis to be placed on incentivising the development of shipping capabilities. However, some of those who noted this also recognised the importance of developing storage sites as soon as possible.

Several respondents stressed the importance of Track-1 clusters demonstrating an ability or optionality to accept CO₂ by ship, and that this should be considered in the assessment of cluster plans. Reasons given included:

- Creation of a market for CO₂ storage, so capture projects can be confident that storage locations will be available.
- Opportunity to ship CO₂ between clusters in the event of disruptions at stores, providing resilience.
- Creates the option of exporting the UK's carbon sequestration capabilities and expertise.
- Increases trade opportunities by enabling imports of CO₂.

Several also emphasised the importance of shipping for Track-2 clusters, in particular to enable projects without pipeline links to stores.

Many also highlighted the importance of reflecting shipping in the development of business models. One remarked that the detail on shipping provided in the business models should ensure that opportunity to progress shipping projects is aligned with the Track-2 timeline.

3.42 Government's view

Government appreciates that not all projects will have pipeline access to storage, therefore the ability to ship CO₂ is important to achieving our decarbonisation ambitions. As such, clusters are asked in the Cluster Plan to present a qualitative account of their plans for future CO₂ shipping capability within both the Emissions Reduction and Learning and Innovation criteria. Government will also use Phase-2 to provide an opportunity for capture projects in remote sites to come forward to be compared against the emitters that have been included within the Phase-1 Cluster Plan. We will bring forward further details on support for remote sites and shipping in our October 2021 update.

As we continue to develop the business model for CO₂ transport and storage we will also consider the importance of CO₂ shipping in delivering emissions reductions across the UK and from international customers and how an economic regulatory regime can best facilitate this.

Section 4: Phase-1 cluster sequencing process

4.1 Proposed evaluation criteria and associated weightings

This section set out a proposed approach for assessing the eligible clusters by describing the five assessment criteria (Deliverability, Emissions Reduction, Economic Benefits, Cost Considerations and Learning & Innovation) and their relative weightings. It also addressed what we've called portfolio considerations, factors which relate specifically to how the Track-1 clusters perform in combination, rather than individually.

4.11 Summary of responses

Questions 11 and 12 asked respondents to provide views on the five criteria to be used within the cluster assessment, as well as their relative weighting ranges. We received 62 responses in relation to these questions.

The overall response to the evaluation criteria was positive with most respondents agreeing with the approach taken. The majority of responses agreed with the five criteria set out as well as the focus on the Deliverability and Emissions Reduction criteria suggested by the weighting ranges. Most respondents thought this was a sensible approach as they recognised the importance of developing the technology at scale and the urgency with which CCUS is required to meet CO₂ reduction targets.

In addition to the overarching comments described above, a large number of respondents thought a thorough assessment of the credibility of information submitted by the clusters would be critical to delivering two CCUS clusters by the mid-2020s. A number of responses highlighted the need for suitable technical expertise to be involved in the execution of the assessment process. Many others stressed that the evaluation process and methodology should be clearly explained. It was also noted by some that the stage of development of the CCUS and hydrogen business models would limit the reliability of certain information. For example, several responses noted that it would not be possible for risk allocation, return expectations or financing plans to be assessed in a meaningful way.

Respondents also raised a number of more specific points. Firstly, for emissions, several respondents warned against 2027 being used as a cut-off point for emitters to be included on the Cluster Plan and to contribute to quantitative metrics, stating that government should instead look for a longer-term pipeline of future projects. Secondly, several respondents also highlighted the importance of delivering CCUS in a way that maximises the economic opportunity to the UK – through the development of high-skill, high-wage jobs. Finally, of those that responded to the Learning and Innovation criterion, there was a consensus as to the importance of sharing of information and knowledge, with some suggesting a required minimum level of information sharing would be both reasonable and beneficial.

Many also highlighted that the diversity of capture projects within a cluster was important; in addition, others argued that it could also be important to consider diversity of storage opportunities within the cluster. Others highlighted it could also be helpful to consider the cluster's flexibility to interact with other clusters (e.g., through shipping) which would contribute to overall cluster resilience.

With regard to the relative weightings, the majority of respondents agreed with the proposed ranges. A small number of respondents raised concerns regarding the focus on deliverability, suggesting that this could result in a compromise in project quality or delays if schedules turned out to be unrealistic. A number of respondents also suggested that the weighting for the Cost Considerations criterion should be increased to the upper bound of its weighting range (in the consultation, this upper bound was 20%) whilst a similar number highlighted the importance of delivering Economic Benefits and that this should be reflected in the weightings. Some respondents also warned against the use of minimum performance 'thresholds' within the scoring, noting that this any such threshold could be challenging to set in advance of receiving cluster submissions.

4.12 Government's view

In the context of the broad support for the evaluation criteria, we are proceeding with the five headline criteria as described in the consultation. We have however, in recognition of the feedback received, made some changes within the methodology. We also clarify some specific points below.

Government recognises that encouraging credible submissions and ascertaining the credibility of any information submitted will be essential to delivering a robust sequencing result and ultimately to the deployment of CCUS within the UK. There is therefore a significant focus on credibility throughout the application questions within the Cluster Plan and the approach to the scoring methodology. For example, where data is assessed to be clearly incorrect it will be adjusted or removed and where assessors have doubts in relation to credibility of information a credibility factor may be applied. Refer to Section 2 and 3 of the Launch Document for further detail on this.

We are also aware that clusters and projects will be at different stages of development and therefore, rather than being prescriptive as to how credibility should be demonstrated, the onus will be on the developers to provide suitable documentation to demonstrate the credibility of their proposal. Please refer to the Launch Document for specific examples of this. Government will draw on the experience of our technical and commercial advisors to interrogate submissions and will use structured clarification rounds and engagement in the assessment window where we have concerns about information submitted.

Some respondents expressed concerns about a potential 2027 cut-off date for individual emitters to be included on the Phase-1 Cluster Plan. We have moved away from this approach in the Launch Document. All emitters for which there is a level of commitment in place (MoU or equivalent) will be eligible to be included on the Cluster Plan and will contribute to the CO₂ abatement by 2030 quantitative metric, as long as these emitters are considered to be

credible. Please refer to the Launch Document for further discussion of credibility factors and how they will be applied. Potential projects beyond 2030 will also be considered through the qualitative future abatement beyond 2030 sub-criterion.

On the subject of minimum thresholds, we have decided against using such thresholds in the scoring as we think that it could be challenging to agree appropriate thresholds in advance. However, whilst specific thresholds will not be used, government will not sequence any cluster onto Track-1 unless we have a high degree of confidence that the cluster has the potential to be deliverable, affordable and value for money.

For the weightings, we have increased the economic benefits criterion weighting to the higher bound of the bracket set out in the consultation. This is to reflect government's commitment to the green recovery and to delivering net zero in a way that delivers jobs and growth. CCUS and hydrogen have the potential to make a material contribution to these objectives and it is vital that we capitalise on the opportunities associated with early cluster deployment to maximise the benefit to the UK economy. Government considers the final weightings to reflect the balance of programme objectives.

4.2 Portfolio factors

4.21 summary of responses

Question 13 asked respondents for views on the proposed portfolio selection approach and the portfolio factors included. We received 43 responses in relation to this question.

The majority of respondents supported both the overall portfolio approach and the individual portfolio factors. There was broad agreement that such an approach could improve the overall outcomes for the UK of early CCUS deployment.

However, some responses did highlight a risk that the portfolio approach, if not applied correctly, could undermine the five evaluation criteria. Other specific points raised included suggestions that the list portfolio factors could be broadened out to include other strategic objectives, such as delivering on the UK's hydrogen ambitions. Some respondents commented on the relative importance of the different portfolio factors – these responses were mixed.

Several respondents used this section to ask for further clarity in relation to the affordability envelope and how affordability constraints would be incorporated into the assessment.

4.22 Government's view

We have made the decision to incorporate portfolio factors into the assessment and will proceed with the same four portfolio factors as set out in the consultation: multiple stores, diverse stores, diverse capture projects and affordability. For the respondents that suggested using cluster-level portfolio factors, this is already considered in the evaluation within the Emissions Reduction and Learning and Innovation criteria

Section 4 of the Launch Document describes the way portfolio factors will be brought into the assessment. Here we have tried to be as clear as possible regarding the way portfolio factors will be considered, to give as much visibility to applicants as possible, whilst also creating the flexibility required to deliver a strong portfolio of projects and the best outcome for the UK.

In relation to affordability, to be sequenced onto Track 1, clusters will have to be affordable in terms of their draw on both capital and revenue envelopes. Clusters will need to be affordable against these constraints individually but also in combination with any other cluster(s) sequenced onto this first track. We have recommended that a Cluster should submit what it considers to be its core concept to BEIS for evaluation.

Section 5: Final project allocation

5.1 Allocation of first contracts

The last section of the consultation explored the final project allocation phase of the proposed Cluster Sequencing Process. This included the proposed approach to allocating the first industrial carbon capture and power contracts.

5.11 Summary of responses

In the 40 responses to this section of the consultation, there was broad support behind the approaches proposed for allocating the first power and industrial carbon capture contracts. Respondents agreed that the use of bilateral negotiations would be an appropriate approach for initial, First-of-a-kind (FOAK) projects, and would maintain pace while acknowledging FOAK risks, project maturity and wider strategic aims.

Several respondents recommended that government ensure that the process for allocating support to different capture applications should be objective, technology neutral and non-discriminatory such that projects of a given technology type are not given favourable treatment relative to others.

Respondents noted that different industries will have different challenges and requirements with respect to the installation of carbon capture facilities and this is likely to mean a significant range of costs per ton depending on industry type and highlighted insuring diversity of projects and industries should be an important consideration for government in any competition. Respondents were also generally in support of the approach to remote sites, noting that some industries may be disadvantaged if remote sites were not included in Phase-2. They also commented that the industrial and hydrogen business model workstreams are not currently as developed as the power business model, and the need to ensure that industrial projects are not disadvantaged as a result.

A number of respondents suggested that FOAK projects should see a broader negotiation of contract terms beyond price alone, to ensure that risks are shared appropriately between projects, the government and, for power contracts, consumers, to ensure value for money. However, many also emphasised that speed should be an important factor. Respondents argued that negotiations, in particular with anchor projects, need to be concluded without significant delay as their conclusion provides clarity to the cluster and T&S company on the volumes, timing and location of CO₂ to be transported and stored, which in turn would allow for FEED work to commence.

There were some concerns around how government will ensure consistency between the separate and independent negotiations that will be undertaken with T&S, power, industrial, and hydrogen projects. If this is not managed appropriately this could lead to risks not being adequately addressed across the chain. There was an ask for further information, including requesting that the Government publish indicative terms for

negotiations, and an envisaged schedule, ahead of the Final Investment Decision phase to provide confidence to investors and business in preparation for those discussions.

Finally, respondents generally encouraged moving to a more competitive process in the future (for example, beyond Track 1) to award contracts, noting that this would drive value for money.

5.12 Government's view

Government welcomes the broad support behind the proposed bilateral negotiations process in allocating first contracts to power and industrial carbon capture projects. If multiple projects were sufficiently developed, government would then look, where possible, to run parallel bilateral negotiations with multiple projects, for a limited number of contracts. We intend to proceed with this approach as the means for allocating early capture project support, and as outlined in the [two-phase approach section](#) above, this will be an open process.

In the Phase-1 Launch Document we have provided further information in relation to the allocation process for power, industry and hydrogen, including an outline of the eligibility criteria for Track-1 capture projects. Further information on Phase-2 will be published alongside launch in August.

We will continue to work with power, industry and hydrogen stakeholders in the development of these business models and intend to publish further updates on the power and industrial business models alongside this, and the Phase-1 Launch documents.

In January 2021 we also commissioned an independent investigation on the potential commercial frameworks that could support Bioenergy Carbon Capture and Storage (BECCS) Technologies, including FOAK BECCS projects, the results of which we will publish later this year.

We are designing Phase-2 to ensure consistency where possible between the negotiations that will be undertaken with T&S and capture projects. Government will ensure that project negotiations provide the right balance to achieve value for money while not disrupting overall project delivery.

We welcome the understanding that this model and process are expected to evolve, and that government may move towards a more competitive process going forwards.

5.2 Flexibility of project allocation

The consultation also asked stakeholders to comment on the feasibility of capture projects switching clusters (if their first-choice cluster is not sequenced onto Track-1), and the concept of naming reserve Track-1 clusters in instances where an original Track-1 cluster could not progress.

5.21 Summary of responses

The consultation asked whether it would be feasible for a capture project that had planned to connect to a cluster that was not sequenced onto Track-1 to submit a bid onto a Track-1 cluster if their original cluster had not been selected. There were many responses of in principle agreement, with an understanding that the process should allow for flexibility as FOAK projects develop and evolve.

However, many respondents questioned whether it would be feasible for projects to switch cluster, given geographical constraints, and the reliance on an appropriate connection route, which some suggested may be via shipping. This would likely require proximity to port facilities and the presence of loading and off-loading facilities at each end of the transportation route, which would also improve the contingency and future-proofing arrangements at each site. Given the probable requirement for shipping, there were concerns that making this connection would be more expensive. There was therefore the view that government should provide more detail on what it would take for a project to be 'credible' in its attempt to change cluster.

There was also a view that it may require a significant rework of the T&S infrastructure for both the Track-1 cluster and the project's original cluster, were the move successful. This reshaping of the project would also potentially require further commercial agreements and relationships to develop, with some concerned that the flexibility may inhibit investor confidence in the original cluster programme. It was argued that T&S networks would likely be designed to be commissioned and used by the originally proposed capture projects and will need close coordination in engineering and would have been in development for a significant length of time. There was also concern that a project switching from a Track-2 to a Track-1 cluster could undermine the structure and viability of a Track-2 cluster.

The consultation also explored the concept of reserve clusters. Out of the 49 responses to this section, the majority of responses were positive, with an understanding that having a reserve list is a necessary approach to ensure resilience and flexibility in the programme and to allow another cluster to progress if negotiations with one of the original Track-1 clusters stalls and has no reasonable prospect of progress. However, a majority also stated that switching out a Track-1 cluster should only occur as an action of last resort, and that the conditions in which this may occur should be clarified before negotiations with any cluster starts, to provide confidence to developers and investors, as the implications of swapping out a cluster creates a level of risk for all emitters.

Respondents were also keen to stress that it should be recognised that there are scenarios where a project may be substantially delayed by an event beyond their control. Under these circumstances, it was argued that government should still support progress and delivery of the project. Some proposed that if this occurs in a Track-1 cluster, then a Track-2 cluster should be allowed to 'overtake' the Track-1 cluster without the Track-1 cluster being 'switched'. If government were to take the decision to swap one cluster for another, it should also be made clear to the original Track-1 cluster what support they will receive, to ensure that

the cluster can still progress. It was also requested that the Government provide more information to clarify the circumstances under which this could happen.

Lastly, there was a view that selecting reserve clusters could also give the impression that those clusters (if not brought forward into Track-1) would definitely be selected for Track-2, and that government would need to take steps to ensure that other clusters continue to develop plans to submit for Track-2.

5.22 Government's view

Government intends to continue with an open Phase-2 and will allow clusters that were not sequenced onto Track-1 to submit a bid onto a Track-1 cluster if their original cluster had not been selected. This is to allow for a flexible and resilient programme.

We recognise that, for the majority of projects, this change of cluster is unlikely to be feasible given geographical constraints, and technological and/or economic reasons outlined in the stakeholder responses above. However, while it may only be applicable to a small minority of projects, we view that it is sensible to retain the option, as it would allow government to consider the maximum breath of options which will give us the opportunity to select the highest performing projects while driving value for money.

On reversing the tracks government understands the concerns raised and that the prospect of a reversal may have negative impacts on business and investor confidence. In section 3.5 Decision-Making Process and Announcement of the Phase-1 Launch Document we set out potential scenarios where we may look to a reserve cluster, such as failure to agree terms in negotiations on the support package for one or more projects in the cluster, to the point that the cluster overall is deemed to no longer be viable or optimal in the round.

It is important to note that, when assessing cluster applications and selecting Track-1 clusters, government will undertake a robust and thorough assessment which will aim to avoid a scenario where a Track-1 cluster is unable to deliver, and 'reversing the tracks' will only occur as a last resort.

As outlined earlier in this document, we have provided further information around Track-2 in both the Government Response and the Launch Document. This includes clarification that Track-2 does not mean deployment in 2030 but instead deployment from 2027-2030; and that if more than two clusters are deliverable, value for money and affordable in the mid 2020's the government may consider sequencing more than two clusters onto Track-1. Government will publish a document in relation to Track-2 in October alongside the Phase-1 result that will provide more detail in relation to the timeline, criteria and support for Track-2.

This publication is available from: www.gov.uk/government/consultations/carbon-capture-usage-and-storage-market-engagement-on-cluster-sequencing

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