

Next Generation Carbon Capture Industry Engagement Workshop

1. Introduction

This report summarises findings from the 'Next Generation Carbon Capture Technology' industry engagement workshop held on 30 September 2021. The workshop was managed by AECOM, hosted by the UK Carbon Capture and Storage Research Centre (UK CCSRC), with technical input from Jon Gibbins of the University of Sheffield and BEIS.

The purpose of the workshop was to engage with representatives from a range of industry sectors. As well as stimulating enthusiasm, the workshop facilitated open discussion and promoted opportunities for collaboration in relation to next generation carbon capture technologies. Participants were encouraged to share their views on opportunities and barriers relating to the development and deployment of carbon capture technologies. Feedback on opportunities and barriers is contained in the WP 2 report (that will be published by BEIS in May 2022), all other feedback from the workshop is reported in this document.

Following an introductory presentation by AECOM the workshop had two interactive sessions. During the interactive parts of the workshop information was gathered from participants by asking multiple choice questions and collecting comments made anonymously on different subjects. While all responses were made anonymously, attendees were asked to provide an indication of the industry sector that they were affiliated with. The X-Leap software platform was used to anonymise and facilitate the interactive part of the workshop.

The workshop was well attended with 135 participants attending in total. Participants included representatives from all the anticipated industries. There were consistently high levels of engagement from attendees, with up to 80 responses in each X-Leap question and over 100 comments made during the opportunities and barriers open discussion. This high level of participation from a variety of sectors resulted in a wide range of opinions being expressed and meant that valuable information was obtained.

Some key messages from the workshop were:

- Carbon capture was seen by most participants as having greater potential to decarbonise than either fuel switching or process modification. Although, it should be noted that these results were obtained from attendees of an event relating to carbon capture, so attendees may be more likely to view it positively as a decarbonisation approach.
- Solvent-based technologies with improvements were seen as being the most promising next generation carbon capture technology.
- Most attendees anticipated deployment of carbon capture, and other decarbonisation technologies, by 2030.
- The majority of participants anticipated carbon capture technologies being capable of capturing more than 90% of total emissions from their plant.
- 'False starts' in the carbon capture industry have been a source of frustration and have the potential to undermine investor confidence.

The questions asked during the workshop were intended to provide insight into the current thoughts and opinions of different industrial sectors on a range of issues relating to the deployment of carbon capture technology. Participants were presented with simple multiple-choice answers to a range of questions to allow them to express their opinions. The answers to many of the questions asked were more complex than could be covered by multiple choice answers and will depend on a wide range of interrelated factors. Furthermore, questions may have been interpreted differently by different participants which may have affected their answers. This should be taken into consideration when drawing any conclusions from the results obtained.

The inputs provided by participants represent the anonymously expressed opinions of the individuals who attended the workshop, and for some industry sectors there were only a small number of attendees. Therefore, the results obtained do not necessarily represent the wider views of the industries concerned.

2. Interactive Session Results

2.1 Potential to Decarbonise

The question asked to participants in this section was 'Please select and rank the approaches that have the greatest decarbonisation potential for your sector.' Three options were given and were to be ranked in order, with the top approach being the option with the greatest potential. There were 80 responses to this question and the average (mean) ranking for each approach is given in Figure 1. A breakdown of the results by sector is given in Figure 2. The 'petro-chem, fertilisers and fine chemicals' sector was omitted from this graph because no responses were obtained.

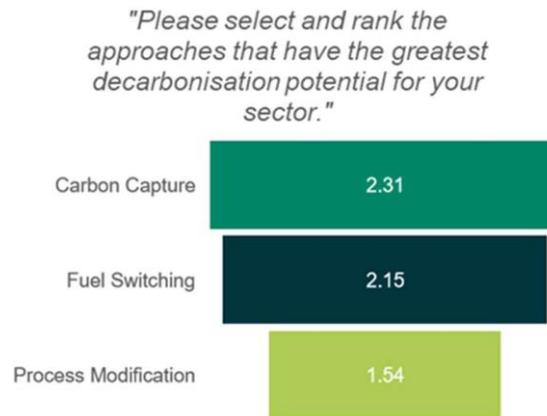


Figure 1. Decarbonisation approach ranking results.

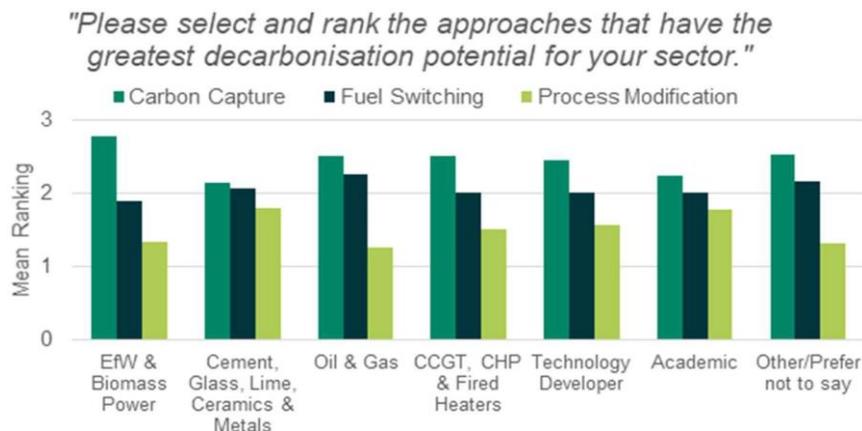


Figure 2. Breakdown of decarbonisation approach ranking results by industry sector.

Key observations from the results obtained from this question are:

- In all industry sectors, carbon capture was considered to have more decarbonisation potential than fuel switching or process modifications. Although, it should be noted that these results were obtained from attendees of an event relating to carbon capture, so attendees may be more likely to view it positively as a decarbonisation approach.
- Carbon capture was viewed particularly favourably in the EfW sector. This may be due to the limited alternatives for decarbonisation in this sector.
- In the cement, glass, lime, ceramics and metals sector there was a more even split between responses on which decarbonisation option offered the greatest potential. This may reflect a greater availability of options in relation to fuel switching, or process modifications, compared to other industries.

2.2 Time to Commercial Deployment

Participants were asked to 'Select the time your industrial sites (or wider sector) might start the first full-scale, or near full-scale, decarbonisation of individual sites.' Only one answer was to be selected. There were 72 responses and the total results are given in Figure 3.

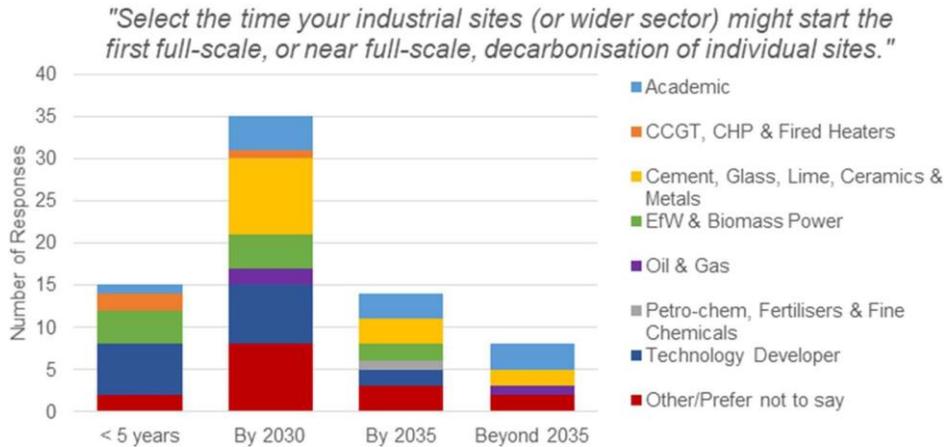


Figure 3. Time to commercial deployment results by sector.

2.3 Most Promising Next Generation Technologies

Participants were asked to 'Please select the most promising next generation technologies for carbon capture.' and given the option to select up to four answers. There were 189 answers selected in total from 77 respondents. A breakdown of the results by sector is given in Figure 4.

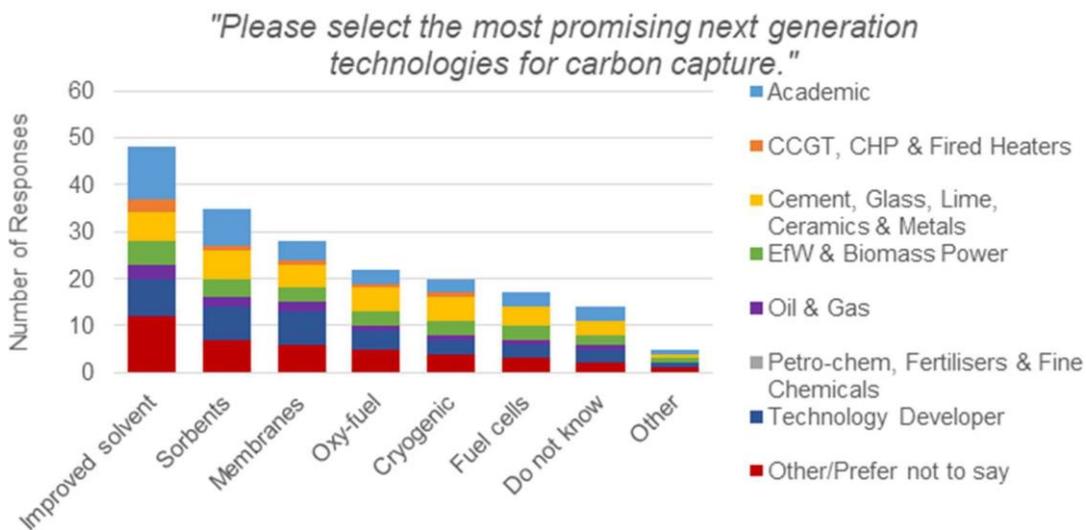


Figure 4. Most promising next generation technology results by sector.

2.4 Carbon Capture Deployment

There were five questions asked in this section regarding expected time and scale of carbon capture deployment. For each question, one answer could be selected and there were between 35 and 40 respondents to each question. The results from these questions are displayed in Figures 5 to 9.

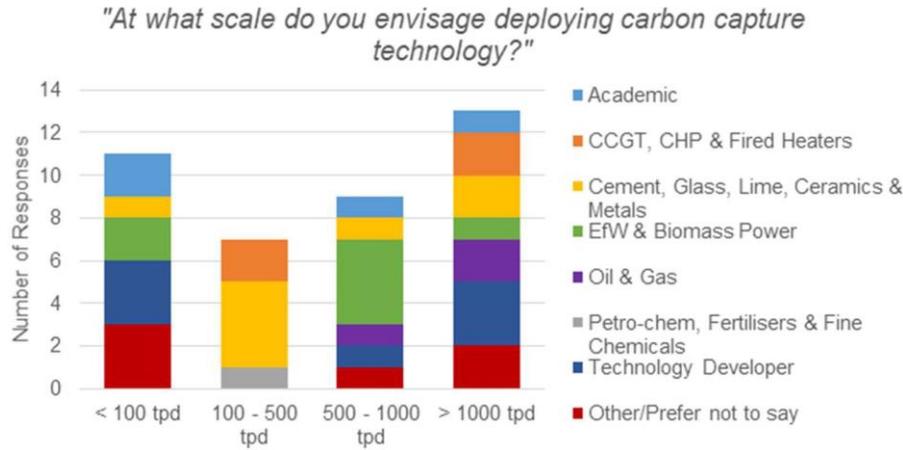


Figure 5. Carbon capture technology deployment scale results by sector.

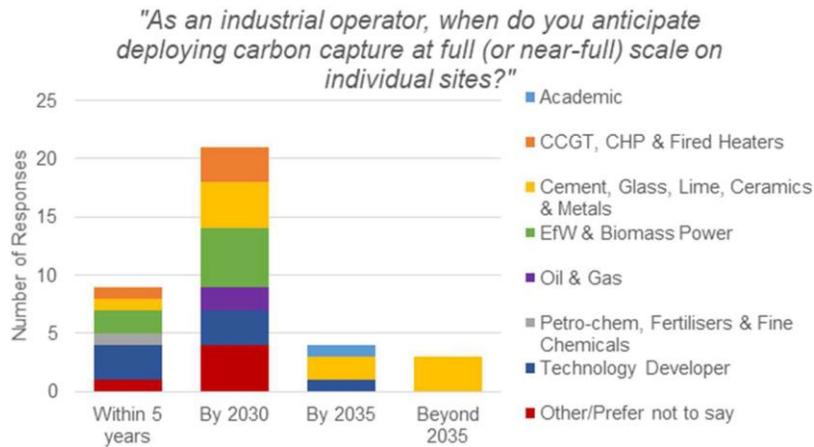


Figure 6. Carbon capture deployment timeline results by sector.

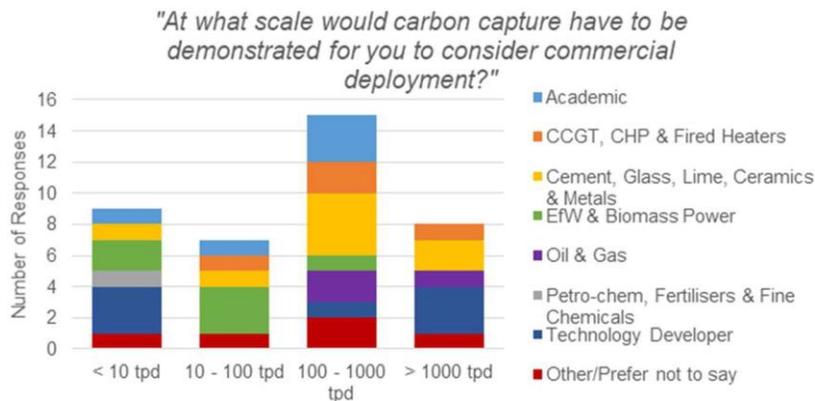


Figure 7. Carbon capture technology demonstration scale results by sector.

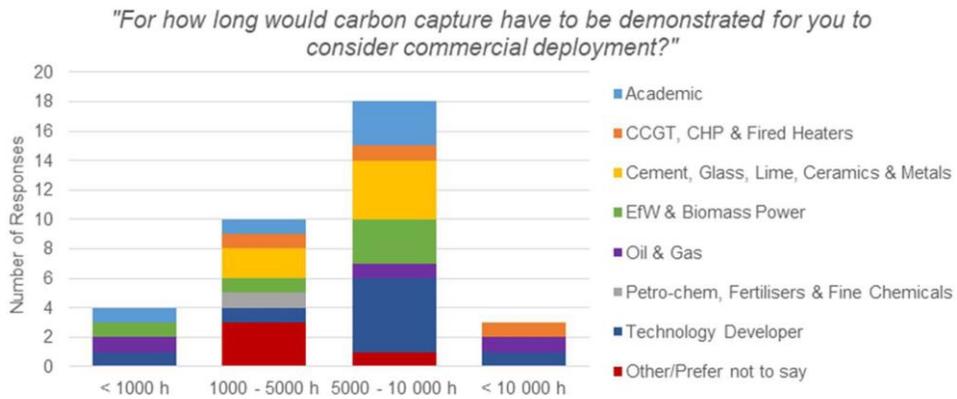


Figure 8. Carbon capture demonstration time results by sector.

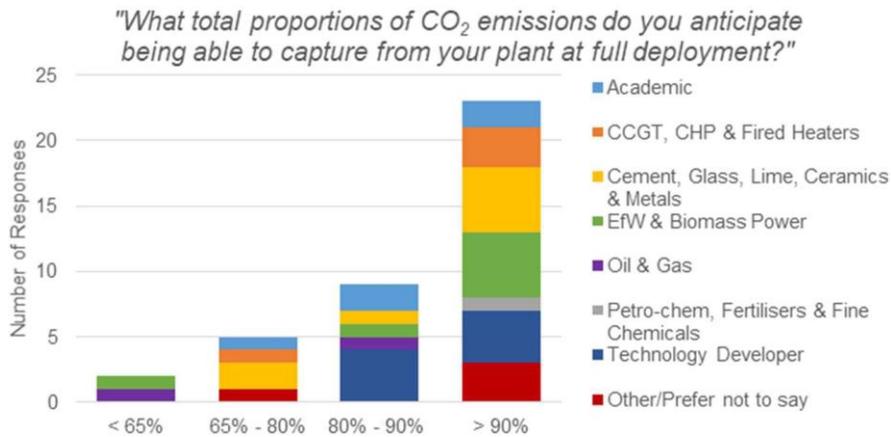


Figure 9. Anticipated CO₂ emissions captured results by industry sector.

3. Future Engagement

There will be a progress update given on this assignment at the second industry workshop in early 2022. This workshop will give technology developers an opportunity to present their technologies, as well as providing a platform for further interaction and industry engagement.

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