

# Public Accounts Committee

## Oral evidence: Carbon Capture and Storage: Progress Review, HC 761

Wednesday 31 January 2018

Ordered by the House of Commons to be published on 31 January 2018.

Watch the meeting

Members present: Sir Geoffrey Clifton-Brown (Chair); Martyn Day; Caroline Flint; Luke Graham; Gillian Keegan.

Sir Amyas Morse, Comptroller and Auditor General, Adrian Jenner, Director of Parliamentary Relations, National Audit Office, Michael Kell, Director, NAO, and Richard Brown, Treasury Officer of Accounts, HM Treasury, were in attendance.

Questions 1-12

### Witnesses

[I](#): Alex Chisholm, Permanent Secretary, Department for Business, Energy & Industrial Strategy, and Ashley Ibbett, Director, Clean Electricity, BEIS.

## Examination of witnesses

Witnesses: Alex Chisholm and Ashley Ibbett.

- Q1 Chair:** This session is a follow-up to our Report on carbon capture and storage. We produced a Report, HC 1036, in the last Session, and we received a response from the Department. This is a session to examine why the Department did or did not agree with our recommendations.

I am very pleased to welcome back to the Committee, in the centre, Alex Chisholm, who has been working very hard this afternoon. He is the Permanent Secretary at the Department of Energy, Innovation and Skills.

**Alex Chisholm:** Business, Energy and Industrial Strategy.

**Chair:** BEIS, indeed. On my left is Ashley Ibbett, the director of clean electricity at BEIS. Welcome to both of you.

- Q2 Luke Graham:** I am conscious of time, so I will try to keep it nice and direct, Mr Chisolm, if that is okay. In the last Report, the PAC recommended that the Department should quantify and publish the impact across the whole economy of delays to getting CCS up and running, and of it not being established at all—CCS being carbon capture and storage. A simple question: why will you not commit to assessing and publishing the costs to the economy of further delays to CCS?

**Alex Chisholm:** I appreciate your direct question. May I make one general point? When we got your Report, we were very happy with it, and we wanted to accept and act on most of the recommendations. We were a little unlucky with the timing, if I can put it like that, because as we were trying to finalise our response to you, we were also trying to finalise the Government's clean growth strategy, which contained a lot of substantive action on that. Unfortunately, we had to reply to you a matter of days before we published the strategy. We could not anticipate what the Government would do. That would not have been appropriate. That is why we have had to reply to you in dribs and drabs. I hope you finally got the overall picture in my letter of 5 January. I am sorry that it has come in pieces.

On your specific question, when we first looked at that, we said, "Look, it's actually a very difficult thing to do." First of all, you are looking at trying to say what the costs are of CCUS technology. As we know from our previous discussions back before March, we do not really know what the economic costs of doing that in the UK are going to be. You are then trying to compare that with other methods of trying to deal with the overall challenge of reducing carbon emissions, which again are changing quite dramatically, as we have seen since we last discussed this—there has been a 50% reduction in the cost of offshore wind. It is a fast-moving situation.



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You then said that you wanted us to take those two major uncertainties and put them in the context of overall economic impacts over a 33-year period. As we know, it is difficult enough to predict what the economy will do over one year, because there are so many different things happening there, so we did not think we could take those two big variables and put them in the context of a massive overall impact over 33 years to a level of robustness that would be feasible. That was the reason. It would be wonderful if someone had that for us—we would love to see it—but we did not think it was feasible. My colleague Ashley Ibbett has pursued the possibility of what can be done in this space, which he will tell you about in a second, and we have come back with a new version of what we think is manageable to try to work with you on this.

**Ashley Ibbett:** That is right. As Mr Chisholm says, it is not a straightforward modelling question, not least since CCS can play a role in different sectors of the economy, be they electricity or the production of hydrogen, which could be used in transport or heat. I discussed this question recently with the chief economist of the International Energy Agency to see whether they had looked at it, given that they have also been pointing out that CCUS is an important tool in decarbonisation. They have not been able to find an analytically robust method for doing that sort of modelling either, but we are in further discussion with them about that to see whether there are experiences we can learn from. We have also asked the CCUS Cost Challenge Taskforce, which we established as part of the clean growth strategy, to look at that as part of their work. It is explicitly in their terms of reference.

Q3 **Luke Graham:** So do we have a timeline for the International Energy Agency to come back to you? I appreciate that the assessment from the impact group will be forthcoming.

**Ashley Ibbett:** The cost challenge taskforce is due to complete its work around the summer, and then we will take their work and produce a delivery report by the end of the year. Our aim is to be able to say something in that delivery report, which we will produce later this year.

Q4 **Luke Graham:** Okay, understood. I appreciate that. Again, we are looking for transparency, and certainly in conversations I have had with proponents of CCS, the more information that has been provided the better, even if it is based on broad scenarios and broad impacts, so we can at least derive some value.

We highlighted in our Report that “the Department did not allocate the risks appropriately between the government and developers, meaning at least one of the...projects was likely to have been unviable.” Those are the previous projects, which were put through at a cost of around £168 million. To the best of my knowledge—I may be countered by the Chair or by someone else—that £168 million investment did not yield a fantastic return. Taking those learnings into account, how will you ensure that the latest review of how to allocate risks is more effective than those used in the past?

**Ashley Ibbett:** This is a question we are looking at as part of the work we set out in the clean growth strategy. We are looking at the framework and models that could be used to bring forward CCUS in the UK. Indeed, today the Department published work it commissioned from a company called Pale Blue Dot to look at some of the different delivery models for bringing forward CCS. They looked at 11 options, from which they identified four lead options. We will be taking that output and working on it further during the course of the year, with the aim of producing a further report on that later this year.

**Alex Chisholm:** Just to add to that, one of the things you encouraged us to do before was to look at international examples of where CCUS has been successfully deployed. We found 21, one of which is in China, and Pale Blue Dot was one of the companies advising on that. We are actively trying to make sure we learn from where it is possible elsewhere.

You also may have noticed that, previously, we were talking about CCS—carbon capture and storage. We are now talking about CCUS—carbon capture, use and storage—because we think that is important to improve the economics of it. Of those 21, 16 involve the use of the carbon dioxide, mostly to try to improve the efficiency of hydrocarbon extraction, but there may be other uses as well. We are interested in that area, too.

Q5 **Luke Graham:** This Committee would have appreciated having that report published first thing this morning, so we could have targeted some additional questions. That is just for future reference.

I am conscious of time, but one conclusion in the Report was about the influence of the Treasury on energy policy. The Public Accounts Committee felt that Treasury, rather than BEIS, is determining energy policy. Although it is led by BEIS, the Treasury will always have a heavy influence. We want to follow up on that. What is being done to make sure the Treasury is on side as a stakeholder rather than dictating to you?

**Alex Chisholm:** I had the Treasury beside me last time I gave evidence, so perhaps I am able to speak even more freely. Even though they are not here with me, I will say that we work extremely closely and well with them. We need to do so, because we are spending a lot of taxpayers' money to achieve our goal of decarbonising the economy, so clearly they have got to be comfortable with the way we do that and the efficiency of it.

We have worked very closely with the Treasury on this next phase of CCUS. They have been involved right from the beginning in planning the approach not only to the £100 million we are putting into the new innovation projects, but to the work of the new taskforce. We also worked together on the new control framework, which is the overall level of expenditure that consumers have to sustain to support this. They are actually going to be sitting on the CCUS cost taskforce.

We think we are very joined-up. You can test us the next time we are before you on this topic, and you can invite the Treasury along to test that directly. We really have tried to develop this as a joint approach.



Q6 **Chair:** On that topic, what do you think would be a suitable timeframe for doing your work on evaluating this Report, so we can have another look at this?

**Alex Chisholm:** We are committed to doing the deployment pathway over the course of this year. When that has been published, that would be a natural opportunity to have a good discussion about it. We are very hopeful about it. I sometimes feel frustrated in our discussions about carbon capture and storage. You are looking back on the termination of the second project, but in reality, as a Department, we are back a third time to try to make a success of it. We think it is very likely to play an important part in the overall effort to decarbonising the economy at the lowest cost. Lots of international studies, as well as our own studies and scientific work here, show that CCUS is likely to be a key part of the overall solution.

Q7 **Chair:** And the significant change is the US bit. Does that transform the economics of it?

**Alex Chisholm:** It should certainly help a lot. A big focus of our new work is not just on using CCS within energy production. In lots of industrial areas, quite a number of the projects we are working on—you perhaps saw this from the clean growth strategy—are in Grangemouth, Teesside and areas like that. This could mean that traditional, heavy-industry sites have a new lease of life as part of the low-carbon economy. They are very excited about that.

**Ashley Ibbett:** We announced £20 million-worth of funding for carbon capture and usage pilots, and there is a process under way now of talking to potential projects around the country and getting them to take advantage of that funding.

**Luke Graham:** This is the last point from me. We definitely encourage you to offer those sums in those competitions, but please can you ensure that you have a robust business case and that the returns are clear, especially for the taxpayer? In our constituencies, frontline local councils are being cut heavily, so we really need to be able to say, "These things are great for innovation and new technology, but due diligence has been done. This is the return we are getting on them, and this is the number of jobs created as a result."

**Sir Amyas Morse:** A couple of things occurred to me as I was listening to this good news story. First, I would be interested to understand why your stance has changed from when you cancelled the project. Secondly, the main international comparator where large amounts of carbon dioxides are being used is in connection with shale gas extraction. Is that part of your scenario for making commercial use of this?

**Alex Chisholm:** To deal with each of those questions—thank you very much, Amyas—first, the circumstance is that the second competition was cancelled by the Government. We had a big discussion about it when we were giving evidence before. What we are approaching now is very different. This is much more about innovation. We are not, at this stage,

talking about actual deployment of a live, fully functioning, fully scaled CCS project.

**Sir Amyas Morse:** So this is a research project, essentially—

**Alex Chisholm:** It is to try to deal with what we thought was the essential challenge: to identify new methods to be able to do this economically, at lower cost. It is a cost-challenge group. If we can do that, we are most keen to do this in the UK; but we do not envisage actually rolling that out at scale until the beginning of the 2020s and potentially the 2030s. So it is longer term. That is an important difference.

In looking at the CCUS, I was simply making the point that just regarding carbon dioxide as a waste product that has to be stored, which is obviously expensive even if you can make use of existing reservoirs, such as we fortunately have beneath the North sea, does not seem economic: there are only one or two examples. A lot of projects have been cancelled because people are not prepared to persist with this after big overruns in lots of different countries, not only the UK.

When we are looking at what will improve the economics, we are obviously particularly interested in treating the products as very useful. Some of those, as my colleague, Ashley Ibbett argued, include hydrogen. If we move to using hydrogen as an important feedstock for heating systems in this country, we will need a lot of hydrogen, which we do not have very much of at the moment. That would transform the economics of CCUS, but there are obviously lots of other wider questions about the economic viability.

**Ashley Ibbett:** There are some interesting examples of other uses of CO<sub>2</sub> to make products, for example in cement production as well as ideas around enhanced oil recovery, which is where it has been proven economic—

**Sir Amyas Morse:** It is not unreasonable for me to have raised the question of shale gas, because at the moment it is one of the largest commercial uses of CO<sub>2</sub> internationally.

Q8 **Caroline Flint:** You mentioned industrial-scale CCS, such as the Teesside Collective, which I understand could be constructed to an industrial scale by the mid-2020s. In 2012, the Government forecast the late 2020s before we saw commercial-scale CCS, and I understand that in a parliamentary answer—I think on 27 November—the Government now say the early 2030s. Why should investors have confidence that the Government timetable will not continue to slide as it has done already for the development of CCS over the past seven years?

**Alex Chisholm:** We are trying to find a viable economic deployment route for CCUS alongside other alternative ways of achieving the overall goal of decarbonising the economy. There are lots of moving parts within that, so it is no surprise that the estimates will vary over time. In fact, it would be very puzzling and concerning if they did not vary, because there is such a lot of change in the technological background and what it is possible to do





with different technologies. We will have a much better handle on that when we have finished the work that we are doing this year for the deployment pathway. That is really what the deployment pathway is to show: what looks to be a viable economic route of bringing it into the UK? I do not know what date they will come up with.

**Ashley Ibbett:** We are working very closely with the Teesside Collective and other projects around the country. We have been funding the Teesside Collective, and have given over £1 million towards the work that they are doing to look at how they can develop a CCUS proposition in the Teesside area. Part of the work we are doing this year, again through the industrial strategy, is to work with these different clusters around the country to see what scope there is for them to develop proposals.

**Q9 Caroline Flint:** I have to say that some of the innovation in this area has not just happened in the past two years, but there does seem to be a significant change in the Department's attitude to broaden its scope, which is welcome. But the Government's response to the Committee on Climate Change report on the Government's clean growth strategy stated: "The government should not plan to meet the 2050 target without CCS." Are there additional costs to meeting our climate targets if commercial-scale CCS is delayed until the early-2030s?

**Alex Chisholm:** Not the 2030s necessarily, no. We are pretty confident in the judgment of the CCC that, if you look at the overall path from here to 2050, it is difficult based on current information to see how it is economically efficient not to have CCS. We agree with that, but the precise timing between the 2020s and 2030s continues to update. Even since the Energy Technologies Institute did their report in January 2016, it has changed a lot because of the key variable there of wind, for example—the expected cost of that will be very different.

**Q10 Caroline Flint:** Do you think there will be additional costs to meet our targets if commercial-scale CCS was further delayed to the 2040s?

**Alex Chisholm:** On current information, that looks more likely, yes.

**Q11 Caroline Flint:** To go back to the first question at the top of this mini-session of a very long afternoon, I understand from your answers that you are trying to look at how best you can look at estimating what delays in the development of CCS and its other applications will cost. That is correct.

**Alex Chisholm:** To the extent it is possible, I was just trying to give a sense of how it is a very difficult thing to do at a high level of robustness.

**Q12 Caroline Flint:** But do you see it as a priority? Given the two failed competitions before and the delays involved, is that your best ability working with others? It should be a priority to be able to benchmark and look to the future and what the costs might be if decisions are not made and we do not see this series of potentially important developments in terms of meeting our energy and climate targets as well as jobs.



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**Alex Chisholm:** We have certainly taken that very seriously. We have not just made a casual request to a group of people to think about it; it is actually written into the terms of reference for the CCUS cost challenge taskforce to report back to us on that. To the extent it is an answerable question, we are very keen to have the best available answer now.

**Chair:** Mr Chisholm and Mr Ibbett, thank you both very much indeed—particularly you, Mr Chisholm. It has been a long afternoon and you have given us a great deal of your knowledge and wisdom.