EUROPEAN PARLIAMENT

Policy Department
Economic and Scientific Policy

WORKSHOP
Assessing the Commission's Proposal on Carbon Capture and Storage

28 May 2008

Consolidated texts

IP/A/ENVI/WS/2008-09

PE 404.908

This workshop was requested by the European Parliament's Committee on the Environment, Public Health and Food Safety. (Ref to contract: IP/A/ENVI/FWC/2006-172/lot1C1/SC17)

Only published in English.

Proceedings — Jason Anderson, *Institute for International and European Environmental Policy (IEEP)*

Administrator:
Marcelo SOSA
Policy Department A: Economic and Scientific Policy
DG Internal Policies
European Parliament
Rue Wiertz 60
B-1047 Brussels
Tel: +32 (0)2 284 17 76
Fax: +32(0)2 284 90 02
E-mail: Marcelo.sosa@europarl.europa.eu

Manuscript completed in June 2008.

The opinions expressed in this document do not necessarily represent the official position of the European Parliament.

Reproduction and translation for non-commercial purposes are authorised provided the source is acknowledged and the publisher is given prior notice and receives a copy. E-mail: poldep-science@europarl.europa.eu.

Table of contents

1. Programme 1
2. Summary of the Findings and the Discussion 2
3. Closing remarks 11

1. Programme

15:05 Welcome and opening – Rapporteur Chris Davies, MEP

15:15 Introduction the proposed CCS Directive - Scott Brockett, European Commission

15:30 Q&A with Scott Brockett

16:00 Experts Panel (10 minute presentations)

1. Nick Riley, British Geological Survey
2. Sanjeev Kumar, WWF
3. Wolfgang Dirschauer, Vattenfall Europe
4. Alain Berger, Alstom
5. Peter Radgen, E.ON
6. Marek Ściążko, Institute for Chemical Processing of Coal

17:00 Q&A with the experts

17.35 State of play in the Council – Barbara Ernst, Slovenian Permanent Representation

17.50 Financing CCS - Jan Panek, DG TREN

18.05 Financing CCS - Ian Temperton, Climate Change Capital

18.20 Q&A

18.50 Closing remarks - Rapporteur Chris Davies, MEP

19.00 Reception (outside the meeting room)

Organised by the Policy Department A-Economic and Scientific Policy and the Secretariat of the Committee on Environment, Public Health and Food Safety (DG Internal Policies), with support from IEEP-Institute for European Environmental Policy.

Contact: Marcelo.Sosa@europarl.europa.eu

Venue: European Parliament – Room ASP 1-E-2. Brussels, Rue Wiertz 60 (main entrance)

Security badges for registered attendees available in the lobby of ASP

2. Summary of the Findings and the Discussion

Welcome and opening

MEP Chris Davies, rapporteur on the directive on the geological storage of carbon, welcomed the participants. He stated that his report would be submitted for translation on June 2. Amendments would then be proposed, followed by a final vote in early October in the Environment Committee and negotiations with the French Presidency and the Council to try to secure an agreement before the end of the year and pass legislation.

Mr. Davies introduced the subject of carbon capture and storage (CCS) by describing it as a technology that some claim can provide a technical fix to buy the world time in its fight against climate change, but that others, e.g. Greenpeace, assert is a diversion from the important effort to increase energy saving and the use of renewables. Mr. Davies stated that the purpose of the workshop is to debate the legislation that is designed to enable the EU's world leadership on CCS.

Introduction of the proposed CCS Directive

Mr. Scott Brockett (European Commission) explained the rationale for the proposed CCS Directive and gave details on the main concerns that have been raised in relation to CCS. The first is environmental security. The directive uses existing frameworks whenever possible and treats CCS similarly to activities of similar risk. Carbon capture, for example, can be regulated using the IPCC industrial emissions Directive already in place. For carbon transport, there are analogies to natural gas transport. The novel element, Mr. Brockett stressed, is the storage of CO_2. Site selection is the crucial phase in securing the environmental integrity of a CO_2-storage project. The presumption for selecting the site is that it is safe and there will be no CO_2 leakage. The proposed directive also provides for a monitoring plan for the actual behaviour of CO_2 in the site to ensure detection of any leakage contrary to expectation. In case of a leak, the Commission has to be notified and corrective steps have to be taken. In addition, the Environmental Liability Directive would be used to deal with any local damage caused by the leak. ETS credits would have to be surrendered for any leakage. The CCS proposal also includes a financial provision for future liabilities. Furthermore, it provides for transfer of responsibility to the state under clear conditions because no commercial entity is long-lived enough to provide the necessary long-term stewardship of CO_2 storage. Mr. Brockett emphasised the need for harmonised CCS policy across Europe to avoid distortion of competition.

He then explained that there are two barriers to CCS deployment in existing legislation. First, the Water Framework Directive will be amended to allow CO_2 storage in saline aquifers in the same way that natural gas is stored in saline aquifers. Second, current waste legislation is not well suited for CCS, so CCS will be outside the waste legislation. Mr. Brockett then went over possible incentives and market measures to encourage CCS, indicating that the EU Emissions Trading Scheme will be the main incentive mechanism for CCS deployment. First, CO_2 captured, transported, and safely stored will be considered as not emitted, so CCS would be saving the carbon cost. Second, there will be no allocation to capture, transport, and storage of carbon. Third, ETS allowances will have to be surrendered for any leakage. Fourth, monitoring and reporting guidelines will be created and will be available by the end of the year.

Mr. Brockett called attention to the fact that there are potentially very substantial revenues available from the switch to auctioning under the ETS provision, up to €30 billion depending on the carbon price. The ETS includes a provision that Member States should use 20 percent of this revenue for climate change mitigation projects.

The proposed CCS Directive also includes measures to ensure a fair market in transport and storage. The Commission will follow how the market develops in reality and address any indication of anti-competitive practices.

Finally, Mr. Brockett the CCS Directive tries to create an enabling framework rather than mandates for CCS. Member States determine whether and where CCS will happen in their territories and companies decide whether to use CCS on the basis of conditions in the carbon market. CCS deployment would depend on two factors – the carbon price and the cost of the technology. Mr. Brockett expressed confidence that the revised ETS will ensure an appropriate carbon price and that the CCS demonstration program will bring the cost of the technology down, ensuring the deployment of CCS.

Q&A with Scott Brockett

Rapporteur Chris Davies noted that letting the market work and not having to buy allowances for CO_2 stored will provide and incentive for CCS, but that the price of power from coal will go up. He asked whether that would encourage the use of renewables and the switch to gas, and deter people from coal-power investment. Mr. Brockett responded that under the baseline scenario, there is a substantial increase in the use of coal. Under carbon market conditions with CCS, there is some CCS deployment, particularly after 2020, and the share of coal in the energy mix is still a substantial, although it's much less than under the business-as-usual scenario. There is some switch to natural and gas.

A participant from the Socialist Group asked whether the 10 or 12 demonstration projects would be able to establish the economic and environmental viability of CCS. He stressed the importance of creating usable technology for industry while ensuring that there are no harmful effects to the environment and human health due to leakage. He also stated that it is crucial that the industry bear the cost of the installations and that control procedures not be entirely down to Member States and paid for by taxpayers. There is a need to introduce CCS on the pan-European level. The participant asked how that would work and if there is any evaluation of the negative effects of adopting this CCS option.

Mr. Brockett responded that it is possible to have 10 or 12 demonstration projects by 2014. He said that the individual components of the demonstration programs are well developed and that what is needed now is an integrated demonstration on the national scale. He explained that time will tell whether the demonstration phase can bring the cost down; however, CCS has been identified as a cost-effective option and needs short-term support. If it turns out not to be cost-effective, it will not be deployed, but the Commission does not expect that to be the case. Mr. Brockett then reiterated the need to balance the need to address climate change against the uncertainties that surround a new technology like CCS. The Commission has decided to balance them by going forward with CCS, but under as stringent a framework as possible. Mr. Brockett agreed that making sure that the major costs lie with the operator is essential, pointing out that the proposed CCS Directive tries to make sure that the operator will pay for CCS to be deployed. In addition, if there's any leakage, the operator will pay for the corrective measures needed and also for any ETS allowances for those CO_2 emissions. Finally, Mr. Brockett said that the Commission has examined the potential negative effects from increased coal pollution and found that market-based CCS deployment leads to reduction in the use of coal, so the environmental impacts associated with the use of coal decrease and there are substantial air quality benefits.

Experts Panel (10-minute presentations)

Nick Riley from the British Geological Survey began his presentation by expressing support for the CCS Directive, stating that failing to support it would mean losing valuable time because there is no way of stabilising CO_2 emissions and stopping climate change without the CCS technology. Projections are for increased emissions as world population increases, people come out of poverty, and energy demand rises. Mr. Riley stated that non-fossil energy technologies do not guarantee that fossil fuels will not be used anyway and that CCS deals directly with the problem. He then called attention to the fact that carbon storage has to perform for thousands of years and that an important question to address is whether leakage can be detected and measured. Mr. Riley provided an example of a project in Westeifel, a natural seepage site in Germany, and expressed confidence that leakage can be detected and fluxes measured very accurately. He then emphasised that storing gas underground is not a new technology. Methane and natural gas are already stored underground in many places in Europe. Mr. Riley concluded that there are many examples of technologies that were deployed in their infancy despite fears (e.g. microwave ovens and mobile phones) and expressed hope that CCS will be allowed through because its benefits far outweigh the risks.

The second speaker was **Wolfgang Dirschauer, from Vattenfall Europe**. Mr. Dirschauer began his presentation by stating that the world is unlikely to stop using fossil fuels. There is an abundance of relatively cheap coal. CCS is crucial to decoupling the use of coal from CO_2 emissions. He said that the EU cannot influence the use of coal worldwide but can offer CCS technology as a temporary solution and a bridging technology. Mr. Dirschauer then stressed that CCS will only happen if there's a business case for it. Deploying CCS is challenging and it's an ambitious scenario to be making investment decisions while still conducting tests and running demo plans. The goal is to have 500 MWel demo CCS plants by 2015 and apply CCS to commercial plants (>1000 MWel) by 2020. Mr. Dirschauer stated that Vattenfall is investing millions of Euros in feasibility studies at one major plant, at Jänschwalde. The intention is to build a 500 MW demo. There are also plans to invest in a new 400 MWel plant in Denmark (in Nordjyllandsvaerket). Mr. Dirschauer concluded that Vattenfall's commitment to CCS has progressed beyond the initial R&D stage, but there are some serious uncertainties. He called attention to the need for infrastructure, a legal framework, and incentives for investment.

Mr. Davies then introduced **Mr. Alain Berger from Alstom**. Alstom is one of the companies working on technologies for CCS. Mr. Berger began by stating that the deployment of CCS is urgent because fossil fuels are here to stay, so it's critical to capture the CO_2 emitted from burning fossil fuels. He said that Alstom expects to be able to offer post-combustion technology commercially in 2015, meaning that there will be guarantees for price, scale, and performance. Oxy-combustion, the second family of capture technology, will be available commercially a year later. Pre-combustion technology is expected to be available commercially around 2020. However, large demo projects must be launched soon to meet the 2015 target. Mr. Berger also emphasised the need to start to quickly develop pipeline technology for CO_2 transport. He expressed confidence that the large demo projects in capture, transport, and storage technology can be delivered, but said that regulation, market mechanisms, and incentives are needed.

Mr. Davies asked how long it would take for a CCS plant to start operating? Mr. Berger explained that building a CCS plant takes 4 to 5 years.

The fourth speaker was **Sanjeev Kumar from WWF**. He began his presentation by pointing to Europe's large contribution to historic CO_2 emissions globally, stating that the EU has a moral duty to reduce its own emissions before asking other countries to do the same. He highlighted the fact that European countries give substantial aid to the coal industry and stated that the EU ETS gives windfall profits to power generators. Mr. Kumar called for ensuring that, when and if CCS is financed, the discussion is redirected away from conventional fossil fuels.

He indicated several solutions. First, if new plants are built, total emissions should be below a CO_2 threshold, allowing for other lower carbon alternatives to develop and receive investment, e.g. power generation from renewables and energy efficiency. Second, the "capture ready" concept has to be eliminated because it would allow for conventional coal plants to be built. Third, carbon storage should be funded from the public purse because it is crucial to know if it works. Finally, Mr. Kumar pointed out that an important issue is intellectual property rights because if the public is paying for CCS, it should get something in return.

The fifth speaker, **Peter Radgen from E.ON**, addressed the current state of CCS technology and financing. He explained that there are three main technology routes: post-combustion, oxy-combustion, and pre-combustion. The three key technological challenges are: 1) the need to reduce the additional energy requirement (carbon capture increases energy consumption at the plant); 2) the need to size up demo projects to commercial power plants of up to 800 MW; 3) the impact of impurities in the CO_2captured on the capture process, on transport, and on storage; and 4) the long lead times for new plants (it takes 5 years to get a CCS plant to operate). Mr. Radgen recommended EU and Member State support for R&D efforts and continued pilot testing of technologies. He suggested that technological improvement may be more important than large scale demonstration and that it is crucial for the equipment cost to go down.

Mr. Radgen then addressed the important issues around financing and funding CCS, noting that the main problems include the high additional cost for first-of-its-kind plants, and the uncertainties about which is the best technology route and what the carbon price will be. Among the key challenges is to provide first-mover incentives – public money at the EU or MS level – for CCS, a risky investment. It is important to tap revenues from emission allowance auctioning as a source of funding and to make CCS economically viable in the long term based on market mechanisms (e.g. ETS). Mr. Radgen recommended developing a consistent set of demo projects, avoiding making unproven CCS technology mandatory, and supporting technology-neutral competition. He emphasised that the main funding should be allocated where the additional costs occur, and that's usually at the capture site.

Finally, Mr. Radgen talked about the proposed CCS Directive. He said that it would provide the necessary legal basis for CO_2 storage. It is of foremost importance to show the feasibility of safe, long-term storage of CO_2. The key challenges include: 1) proving the usability of storage sites; 2) achieving public acceptance; 3) planning CO_2 transport infrastructure, which can take a long time to build; and 4) defining balanced responsibilities and liabilities for the risks associated with storage. Mr. Radgen recommended that the duration of exploration permits (currently two years) be extended to allow for careful examination of storage sites. He suggested that a more precise definition "capture ready" be adopted to avoid exaggerated requirements, especially for storage options. In addition, he proposed that regular storage permit reviews should not be required, but should only happen for a specified reason, and that issuing permits should be a matter for Member States, with the EU performing only a monitoring function. Finally, Mr. Radgen said that the ETS should include all possible storage options.

He concluded by noting that an investment in a technology portfolio is necessary, but that in the long term the market should decide which is the most cost-effective option.

Mr. Davies asked Mr. Radgen to elaborate on the point that technology development may be more important than demo plants. Mr. Radgen responded that E.ON supports the demonstration plants, but that it is also necessary to develop small-scale pilot projects to fully develop the technology.

Next, Mr. Davies introduced **Mr. Marek Sciazko from the Institute for Chemical Processing of Coal**. Mr. Sciazko first pointed out that an important aspect of the CCS discussion should be the power mix in each country. For example, Poland is using largely coal for power generation – 96 percent of its electricity is produced from coal – and switching to a low-carbon economy is a complicated task, particularly in the context of rising GDP and energy demand. Mr. Sciazko questioned whether it's possible for Poland to make the switch to natural gas and renewables, which are not readily available in Europe and their price would be very high. The dependence of Polish power generation on domestic coal is the highest in the EU, but it also provides Poland with security of supply. However, currently Poland is producing about 1000 kg CO_2/MWh, while the average for a EU15 country is 417 kg CO_2/MWh. Mr. Sciazko said that the disparity will result in very different final costs of electricity after applying CCS and will impact national economies and industry competitiveness. Other countries dependent on coal include Estonia, Bulgaria, Romania, and the Czech Republic among others. Mr. Sciazko indicated that Poland agrees with the CCS approach, but that policies should take into account local market differences and legislation like the LCP Directive that requires Poland to close 12,000 MW of power by 2016. He concluded that the implications of the CCS Directive should be carefully evaluated, especially for countries that are heavily dependent on coal, to avoid creating an uncompetitive situation in power generation.

Q&A with the experts

Mr. Sciazko's presentation was followed by a Q&A session with the experts.

- The first question was from the Green Party and it concerned how the demonstration projects will be chosen and distributed among Member States. A second question was about the costs associated with monitoring. Mr. Brockett responded that the main issue is not how demo projects will be distributed but how they will be coordinated, and pointed out that Mr. Jan Panek would elaborate on the issue later in the workshop. Mr. Brockett said that standard estimates put monitoring costs at about €0.5 per ton of CO_2, which is much smaller than other technology costs. Mr. Davies added that it is still unclear where the demo projects will be, but that the French Presidency is committed to creating an action plan.
- A participant directed a comment at Mr. Riley. She said that it is not appropriate to be talking about "minimal" CO_2 leakage, but instead the discussion should be about "no" leakage. She also called attention to studies that suggest that monitoring at Sleipner, a saline aquifer storage project in Norway, is not extensive enough. Mr. Riley began his answer by saying that fossil fuels will still be used even without CCS, pointing to the Poland example. He stated that leakage is undesirable and that the directive is very clear that no permit will be issued until it is shown that the intention is for no leakage.

However, he remarked, human error is possible and the legislation should have the ability to deal with that. Mr. Riley also said that the Sleipner project has been one of the most transparent. Mr. Berger backed Mr. Riley, mentioning that six major European geological surveys have studied the Sleipner data. He invited the audience to visit www.co2store.org where the data are available.

- The next question was from the Bellona Foundation and directed at Mr. Radgen. It addressed the price of carbon that would trigger E.ON to introduce CCS on its installations. Mr. Radgen said that with an unproven technology like CCS, power generators will wait to see what the requirements are and which other options are available, and will not take the lead in investing in a new technology. He stated that a price of €35 per ton of CO_2 might be enough to encourage the deployment of CCS. In addition, there will be cost reductions for the CCS technology, so that the necessary price to spur investment may come even further down.
- Mr. Riley responded to a question from the audience about technology for capturing CO_2 from oil industries by pointing out that the use of unconventional oil from oil sands and oil shales will become more common, increasing the importance of having CO_2 capture and storage for those operations. The burning of oil in vehicles must be displaced, and that will involve either hydrogen or electricity. Both of those will require CCS.
- Another question from a participant was about impact of CCS on the Clean Development Mechanism (CDM) and developing countries. Mr. Brockett responded that CCS is not in the CDM in the moment and that it should be recognised. It is very important that CCS demonstration happens in developing countries, and one way of achieving that is to recognise CCS in the CDM.
- MEP Buzek commented that the ETS was introduced from the EU level and that it is necessary to support new technologies from the EU level too, not only because of CCS but because of renewables. He mentioned that the EU has subsidised renewables for many years, and suggested that now it's time for CCS. It's a brand new technology that should be introduced and deployed as quickly as possible from the EU level to influence other countries.
- The next questioned was from a Greenpeace representative who asked what the consequences would be if the EU adopts CCS, but it is not followed by the United States, China, India.
    - Mr. Davies said that the short answer is catastrophe.
    - Rapporteur Avril Doyle, a member of the audience, responded by recounting a recent meeting with United States officials on both sides of the issue, during which it became clear that the United States will give priority to a climate change bill sponsored by the next administration. Ms. Doyle stated that she expects the United States to be on par with the EU by the time of the Copenhagen negotiations.
    - Mr. Riley said that the EU cannot force other countries to adopt CCS, but that going down the renewables-only route does not guarantee the emission reductions needed.
    - Mr. Brockett mentioned that China and India are heavily dependent on coal and that having a technology that will allow for cost-effective reductions of CO_2 from coal will make them more likely to sign up to such commitments.

State of Play in the Council

Next, Mr. Davies introduced **Mr. Barbatovski from the Slovenian Presidency** who substituted for Barbara Ernst from the Slovenian Permanent Representation to give a presentation on the "State of Play in the Council." Mr. Barbatovski said that the proposal from the Commission had arrived at the beginning of the year and it has been the intention of the Slovenian Presidency to tackle the whole package despite time limits. A working group on the environment has reviewed the impact assessment, and, despite some criticisms, there is an agreement on its usefulness in answering important questions. The review was followed by a policy debate in March at an environmental and energy council, during which ministers unanimously stressed the importance of CCS and welcomed it. In March, the European Council stated that CCS should be deployed in an environmentally safe way. The Slovenian Presidency is currently executing a second round of reading the CCS proposal article by article and some issues have emerged, e.g. the review of storage permits, composition of CO_2 stream, transfer of responsibility, financial security, access to transport networks, and capture readiness. Mr. Barbatovski stated that so far the discussion on the technical level has been constructive. He added that the Slovenian Presidency was preparing the environmental and energy councils to take place on the 5th and 6th of June.

Financing CCS

Following Mr. Barbatovski's presentation, Mr. Davies introduced **Mr. Jan Panek, Head of Unit "Coal and Oil," DG TREN.** Mr. Panek began his presentation on financing CCS by highlighting some of the non-legislative hurdles to CCS, namely the economic reality of the technology. He said that the industry is confident that the costs of the technology will come down while the cost of emitting CO_2 will rise. Other hurdles include public acceptance and ensuring that society is comfortable with CCS. This is why demonstration projects become important. Mr. Panek said that there are a number of carbon capture projects already taking place in Europe but at various stages of development. He suggested that the demonstration projects will be recruited from those projects, noting that costs are the problem for the moment. The demonstration projects will happen between 2015 and 2020 when the cost of CCS is expected to still be higher than the cost of emitting carbon, so public funding will be necessary. The assistance required will be around €10 billion.

Mr. Panek emphasised that a coalition of financial sources will be needed. The industry will benefit because CCS would allow continued use of fossil fuels, so industrial commitments are part of the equation. The ETP Zero Emission Power Platform states that the industry is planning to make investments of up to €11 billion into CCS. While a substantial commitment, that is money related to the development and construction of new power plants rather than to demonstration projects. Mr. Panek stated that the money should be coming largely from Member States, particularly those that want to retain coal in their energy mix and therefore have an interest in the CCS demonstration projects. From the EU level, there is financing available from the Seventh Framework Program. That money cannot be directly put into demonstration projects, but can be used in the ongoing research to support the demonstration. Furthermore, there are structural funds that could be of partial assistance in putting together national support schemes for demonstration projects. Mr. Panek added that revenues from ETS auctioning can also be used. He said that the goal is to create a network of projects that the Commission will facilitate to ensure proper communication. The Commission will also offer to engage in additional activities on the projects' behalf, e.g. raising public awareness and addressing third countries.

Mr. Davies commented that the question remains how much money can actually be delivered and then introduced **Mr. Ian Temperton from Climate Change Capital (CCC)**.

Mr. Temperton noted that industry and policy decisions are made in the presence of substantial uncertainty about the cost of CCS. Climate Change Capital has estimated the cost of CCS to be between €25-67 per tonne of CO_2 stored. Mr. Temperton stated that the cost of CCS is not high compared to the cost of other low-carbon technologies. However, the problem is that if the alternative investment case is low-emission, e.g. natural gas, then the carbon price needed to incentivise CCS is very high through the EU ETS mechanism. Mr. Temperton concluded that the EU ETS as it exists today will probably not incentivise industry to do CCS and that funding support is necessary. However, there is no evidence that there will be enough money in Member State budgets to support CCS. Mr. Temperton emphasised that much of the investment decision and risk should reside in the private sector because it is only the private sector that will efficiently and effectively make multibillion investment decisions. He said that the role of policy is to provide sufficient financial incentive, but not to attempt to construct or design projects. Taking all this into account, CCC's conclusion is that the way to stimulate CCS is to provide companies who employ CCS with payment in EUAs through a reserve set aside within the Phase III cap and segmented equally across the three CCS technologies and China/India. The goal is to reward investors through the carbon price for taking a substantial risk. Mr. Temperton finished his presentation by reiterating that the EU ETS, and the emissions-related risk it creates for market players, should be the instrument for the stimulating investment in CCS.

Q&A

Mr. Temperton's presentation was followed by a Q&A session.

- A participant suggested that the use of EUAs may interfere with the market. Mr. Temperton said that EUAs don't affect carbon pricing as long as the cap remains unchanged.
- Ms. Doyle asked Mr. Panek to comment on Mr. Temperton's proposal. Mr. Panek said that the belief is that CCS will be able to function without support by 2020 as the price of carbon rises, but that the Commission does not want to waste the time until then. He said that the Commission has looked into how demonstration projects can be funded, and Mr. Temperton's is an alternative idea that is not in the current Commission proposal. Mr. Panek stated that the Commission would have to consider the pros and cons, and make decisions based on all information available.
- A participant from the Green Party asked Mr. Panek whether there are demonstration plans for China and India. Mr. Panek talked about a strong Chinese interest in CCS and mentioned that China has its own demonstration program, called GreenGen, which follows roughly the same timeline as the EU plans. He added that the EU is engaged with China in a joint exercise on the basis of a memorandum of understanding between the two sides.
- A second question from the Green Party was about funding for CCS after 2013 when the current budgetary limitations will not be in place. Mr. Panek stated that the next financial perspectives are a funding option and that the case for CCS will be made. However, he said, it is crucial to go ahead with demonstrations and find solutions before then.

- A participant asked Mr. Temperton whether other low-carbon technologies should also receive EUAs. Mr. Temperton said that CCS should be a special case in energy policy. Mr. Panek disagreed by noting that the Commission understands that only a portfolio of technologies can provide a solution to climate change. CCS is one of those technologies, but it's important to ensure that no technology gets ahead at the expense of the others because the cost is high for everyone already. A comment from the audience was that a reason to favour CCS is that CCS depends entirely on the EU ETS because there is not other business case for it.
- A comment from the audience was that there is a need for centralised CCS incentives that should be orchestrated by the EU.

3. Closing remarks

Mr. Davies began remarked on IEA findings that despite improvements in energy efficiency and development of renewables, the world will still witness a 70 percent increase in coal burned over the next 20 years. He expressed his hopefulness that excellent framework legislation on CCS will be agreed between the various institutions by the end of the year. In closing the workshop, Mr. Davies concluded that it important that the EU try to answer the questions about CCS that were debated at the workshop and address some of the dilemmas and issues posed.