

WORKSHOP ON CARBON ABATEMENT TECHNOLOGIES - DEVELOPMENT & IMPLEMENTATION OF FUTURE UK STRATEGY



UK Advanced Power Generation Technology Forum

**REPORT ON
PANEL
SESSIONS**

**BERR
Conference
Centre,
London, 11-12
February 2009**



**UK ADVANCED POWER GENERATION TECHNOLOGY
FORUM**

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INTRODUCTION

The UK's Carbon Abatement Technologies (CAT) Strategy, issued in 2005 and which looks out to 2015, has as its main objective "to ensure the UK takes a leading role in the development and commercialisation of CATs that can make a significant and affordable reduction in CO₂ emissions from fossil fuel use". Announcement of the UK Carbon Capture and Storage (CCS) Demonstration Competition in 2007 ensured the UK was amongst the leading nations. Early rapid deployment of CCS technologies is now recognised as an important issue in meeting the climate change mitigation targets agreed across Europe and providing a serious option worldwide. As a result, other countries are now moving to meet a 2020 target for commercial deployment of CCS. If the UK is to continue in a leading role in CCS, the CAT strategy has to be revised and extended to ensure that the UK can also meet this 2020 target. In particular, there must now be more focus on full-scale deployment and this must be done with increased urgency.

The UK Advanced Power Generation Technology Forum (APGTF) provides the focus for the Power Generation sector in the UK on the research and development activities on fossil fuel, including biomass and waste, and associated technologies including CO₂ capture and storage. This focussing role is becoming increasingly important with the UK RD&D landscape in energy getting more complex and action becoming more urgent. The APGTF sees itself as a preferred stakeholder body for giving advice and information on CAT and CCS RD&D strategy, its implementation and priorities.

As part of this function the APGTF organised this workshop with the following aims:

- to demonstrate why CATs and in particular CCS are so important and the need for increased urgency
- to hear what the UK is doing, what it should be doing and what are the key issues
- to provide an update on current and future UK RD&D activities
- to discuss the RD&D needs, including skills and competencies, and priorities for the UK for the short medium and longer terms

The first day of this 2-day workshop focussed on the first two aim points and the second day on the third and fourth aim points. Both days consisted of invited presentations, which can be found on the APGTF website (www.apgtf-uk.com), followed by panel sessions in which all the delegates were invited to contribute to the themes of the day. The output from the workshop will be fed into the APGTF's strategy document and thence into the Government and other national and international funding agencies to help ensure success with CATs/CCS for the UK.

This document is a report of the panel sessions and the accompanying discussion sessions.

ATTENDANCE FIGURES

On the first day there were 104 delegates and on the second day there were 107 delegates plus 18 members of the international Inward Mission on Clean Coal. Approximately 10% of the delegates were academics, 15% were linked to Government and funding agencies with the rest coming from industry and commerce.

THE PANEL SESSION on 11 February

The panel on the first day was chaired by Philip Sharman of Alstom Power and the APGTF, and the panel was made up from the main speakers of the day:

| | |
|--------------|-----------------------------------|
| Lord Oxburgh | Chairman, CCSA |
| Martin Deutz | DECC |
| Tim Dixon | IEA Greenhouse Gas R&D Programmes |
| Mike Farley | Doosan Babcock |
| Neil Hirst | International Energy Agency (IEA) |
| Allan Jones | E.ON Engineering |

Peter Whitton of Progressive Energy, who is Chairman of the Government's Advisory Committee on Carbon Abatement Technologies, also joined the panel.

The objectives of this panel session were:

- to demonstrate why CATs and in particular CCS are so important and the need for increased urgency
- to hear what the UK is doing, **what it should be doing and what are the key issues**

and the session was directed to focus on the issues in bold text.

The panel chairman posed three questions which were first directed to the panel for answers. The delegates were then invited to provide answers or comments as appropriate.

Question 1: What is the priority activity for the short term, 0-5 years?

Question 2: What is the priority for the medium term, 5-10 years?

Question 3: How much can be done in the UK and what should be done internationally?

Question 1 – Short term priority

A variety of answers and comments were put forward from the panel and from the floor; the main priorities are listed below.

- Pilot scale trials with a commitment to increase the number of UK full scale CCS demonstrations from one to three or four
- Action to ensure that the current planned demonstration is up and running by 2014
- Engagement with the public on CCS
- Acceleration of the consenting process and the need to initiate the regulatory process early so that we can 'learn by doing'
- The need to obtain a solid, global agreement in Copenhagen in 2009 for post-2012 regulations, which needs to include developing countries
- Government and industry need to agree a regulatory and fiscal framework for the next 10 years
- Targets need to be set and a market framework defined, based around an environment which encourages investment
- Planning for the transport infrastructure must start now

Question 2 – Medium term priority

The main priorities are given below.

- Data from the demonstration projects must be disseminated globally
- Appropriate commercial mechanisms must be developed eg for liabilities
- There must be policy signals for further CCS demonstrations
- Operational issues, engineering and commercial, must be understood for CCS plant
- Full scale demonstrations will be needed in developing countries, particularly China and India
- Other large point sources of CO₂ should be considered for CCS
- Initially CCS owners will want to baseload the plant but security of supply will want plant flexibility
- The UK needs a resurgence of engineering capability; this could be done on the back of CCS.
- Infrastructure must be developed – there were differing views on whether private industry will grow it on its own with the right incentives or whether there will need to be a national plan and national ownership.
- As well as incentives for first of a kind CCS, longer term incentives will need to be in place

Question 3 – How much can be done in the UK?

A variety of differing views were put forward covering:

- The UK should do it all to maximise the benefit to the UK (adopting the French attitude)
- The UK cannot do it all but it should continue to play a leadership role
- There must be international collaboration and partnerships together with favourable conditions to encourage foreign investment

THE PANEL SESSION on 12 February

The panel on the second day was also chaired by Philip Sharman and was made up from APGTF members:

| | |
|-----------------|----------------------|
| Robin Irons | E.ON Engineering |
| Greg Kelsall | Alstom Power |
| John Oakey | Cranfield University |
| Gerry Riley | RWE Npower |
| Martin Sedgwick | Scottish Power |

The objectives of this panel session were:

- to provide an update on current and future UK RD&D activities
- to discuss the **RD&D needs, including skills and competencies, and priorities for the UK for the short medium and longer terms**

and the session was directed to focus on the issues in bold text, particularly in the context of the draft APGTF strategy document.

The chairman asked the panel for their top priorities and then the delegates were invited to contribute. The following is a summary of the priorities.

- Public acceptability – there was strong support for this and general agreement that it was urgent and crucial
- Competencies and skills – to be taught at undergraduate level and concepts to be introduced in schools, plus the UK needs ‘something on the ground’, CCS-wise, as soon as possible
- Delivery of the full CCS chain at full scale as soon as possible and no later than 2014 – if this does not happen, energy companies may put money elsewhere or nuclear will fill the gap
- Novel or advanced technologies are needed to drive the cost down – there is also a need for new researchers with cross-cutting skills as many of the new technologies cut across core sciences
- Process integration is of critical importance as, although many of the key technologies that form part of any CCS system are partially/fully validated, integration has not been validated
- To achieve the required developments, it is essential that Government, business and academia work together

Other issues and questions that were raised include

- UK must collaborate and undertake knowledge sharing but we must not give the technology away eg licence technologies with ownership kept by UK plc
- UK must engage with developing countries. For countries with limited potential for geological storage, other options must be considered, such as capture through mineralisation
- Consideration should be given to creating a national CO₂ transport infrastructure
- The question was asked if full-scale CCS can be delivered by 2014. Consensus view was that technologically, the answer is ‘yes’, however other issues such as consenting/regulatory could prevent 2014 delivery if they are not handled properly.

CHAIRMAN’S CLOSING REMARKS

The Chairman thanked the speakers, panellists and delegates for making it a successful workshop and he thanked the Department of Energy and Climate Change for hosting the event. UKTI were thanked for organising the reception after the workshop and he said how pleased we were to see the members of the Clean Coal Inward Mission. Finally, the Chairman said that he hoped there would be significant progress on the main issues raised for CCS to report at next year’s workshop.