



MEETING REPORT

EU-INDIA WORKING GROUP ON CLEAN COAL TECHNOLOGIES 20 JUNE 2008, BRUSSELS

The EU-India Working Group on Clean Coal Technologies (CCT) met in Brussels, Belgium on 20 June 2008. A copy of the agenda for the meeting is attached. Participants included representatives of the European Commission (EC), the Indian Ministry for Power (MoP) and the Indian Ministry for Coal (MoC) and representatives of European and Indian industry. A copy of the list of names of participants and their affiliations is attached. The meeting was Co-chaired by the EC (Dr D.M. Taylor) and the MoP (Dr V.S. Verma).

Following his welcoming remarks, the EC Co-chairman made a presentation on the EU's energy policy, with emphasis on those elements of the recent Energy and Climate Change Package that were related to coal and CCT. These were, in particular, the revision of the EU Emission Trading Scheme (ETS), the Directive on geological storage of carbon dioxide and the Communication on encouraging commercial-scale demonstration of *CCS (copy of presentation attached in annex 1)*. It was pointed out that while EU energy policy presently put considerable emphasis on future reduction of carbon emission through the use of CCS on fossil fuel plants, a vital first step towards achieving this would be efficiency improvements in fossil-fuelled power generation – in particular through improved technology and higher efficiency of coal-fired power plants.

In his opening remarks, the Indian Co-chair commented on the opportunities for closer EU-India co-operation in the power sector, giving as an example the possibilities for EU industry to co-operate in joint ventures with NTPC in building new technology power plants in India. The representative of Damodar Valley Corporation (DVC), a leading Power Utility of India, also expressed that his Organisation too have the desire in setting up Joint Ventures in this regard to enable both sides to reap the benefit from such co-operation. He then went on to describe the energy situation in India with particular reference to the role of thermal power in India's generation capacity (64% of the 144,565 MW installed – with over 76 GW of coal-, nearly 15 GW of gas- and just over 1 GW of oil-fired capacity). He went on to report that peak demand in 2022 was expected to be around 300,000 MW and indicated a strong interest in EU industry setting up manufacturing and/or construction capability in India to support the new build. A strong manufacturing base was needed in India for the new technologies. At the moment, there are 63,000 MW of new plant under construction. Contracts had already been awarded for construction of three of the planned "Ultra-Mega Power Projects". Some of these are based on imported coal. There was a desire to move from super critical to ultra super critical (USC) technology for new plants.

He noted that coal, the cheapest source of energy in India, suffered from having a high ash content. India would be interested in co-operating with the EU in developing the technology for improving the burning characteristics of these coals in IGCC plants. Other areas of possible co-operation included pulverised coal and fluidised bed combustion, low NOx burners and Oxy-fuel combustion. The representative of DVC also emphasised giving priority to the common objective that aims at reducing cost, especially in those countries where socio-economic conditions are of utmost importance. There was considerable interest in sending experienced India power plant engineers to visit EU power plants (such as the Belchatow plant in Poland – visit during previous days). There was interest in keeping abreast of activities aimed at reducing the cost of CCS – which at present was prohibitively expensive.

India at present tended to be taken advantage of by monopolistic suppliers of renewable technologies. If renewables are to increase, the technology would need to be supplied at an affordable price. There was also interest in obtaining support – including technical support - for the development of geothermal energy in India. *(A copy of the full presentation is attached in annex 2; a presentation on NTPC activities in clean coal technologies is attached in annex 3).*

In response to a question following the presentation, Sh. V.S.Verma reported that Indo-German Energy Cooperation Programme (IGEN) set up for improving efficiency in the Indian Power Sector is facing some funding problems with regard to installation of combustion optimization equipment at 2 plants initially. However, this problem is likely to be resolved soon. Bilateral training programmes are running as planned.

Sh. Verma stated that India is facing acute shortage of power & making available power at affordable rates is of utmost importance to the country. CSS technologies are extremely expensive and technology is not yet proven. There are concerns about safety also. Measures like introduction of super critical technology, coal beneficiation & use of bio-fuel are being initiated in the country.

There were then a number of presentations by the EU industry representatives. These are very briefly summarised below. Copies of the presentations are available on the EC web site at the following link http://ec.europa.eu/dgs/energy_transport/international/bilateral/india/energy/3_eu_india_working_group_energy_en.htm.

The representative of RWE noted that his company was responsible for 7% of the electricity generated in the EU, with hard coal and lignite together responsible for 60% of the electricity generated by the company (*see annex 4*). Work had been undertaken to study the benefits of drying the lignite prior to combustion and the pilot plant (250 MW) had resulted in a 1% improvement on the overall efficiency. This efficiency improvement would be 4% when applied to the full plant. His company was involved in the competition for CCS in the UK and would be ready to hold a dialogue with India on these and other activities (including the use of CDM related to supercritical technology). The India side were welcome to visit RWE's new test facilities.

The representative of Schlumberger explained how it is possible to make sure that there is no – or very little – leakage from underground CO₂ storage sites. A key issue was the correct characterisation of the true aerial extent of the storage site (a subject not yet adequately covered in EU legislation).

The representative of Alstom reported on efficiency improvements achieved through retrofit of existing plants and power plant optimisation (including a number of case studies). He also briefly reported on the development of carbon abatement technologies, in particular carbon capture technologies, and "capture ready" plants (*see annex 5*).

The representative of Doosan Babcock reported on the development of oxy-fuel combustion including the OxyCoal-UK project, the pilot plant installation and preliminary results (*see annex 6*). DB's 90 MW burner test facility was now being converted for oxy-fuel firing. This would be the first in world full-scale test of oxy-fuel firing. The project would be completed by December 2009.

The representative of the Directorate-General for Research (J. Schuppers) gave preliminary information about a workshop on CCS/CCT, planned to be held in Delhi in November 2008. (It has since been agreed that this two-day meeting, followed by a technical visit, will take place during the week of 24 November 2008).

The representative of the Mining Department (University of Nottingham) indicated a strong interest in co-operating on CCT with Indian universities. Dr Verma indicated that he would invite the relevant Indian institutes of technology (including the Central Power Research Institute and the Bhopal Institute) to the November workshop. It was agreed that it would be very useful to establish a forum of research institutes covering CCT and CCS.

It was agreed that the Co-chairs should meet in Delhi in the second half of 2008, most likely in the margins of the EU-India Energy Panel (8 September 2008), to review progress and to decide on the timing, location and agenda for the next meeting of the Working Group¹.

The meeting had been preceded by a most interesting and informative technical visit (on 18 June 2008) for all the Indian participants to the Belchatów lignite mine and power plant in Poland, which was hosted by the Polish Power Group. This is reported separately.

¹ One possibility might be to hold the next meeting of the Working Group in Delhi back-to-back with the Workshop being organised by DG Research (i.e. during the week of 24 November 2008).



AGENDA
EU-INDIA WORKING GROUP ON CLEAN COAL TECHNOLOGIES

20 JUNE 2008, BRUSSELS

Welcome by EC Co-Chair

Response by Indian Co-Chair

Introduction of participants (each participant invited to give brief, 2 to 3 minute, introduction of organisation they represent)

Recent policy developments in the area of clean coal technologies

- 1 EU
2. India

Situation on supply and demand for coal-based electricity generation

1. EU
2. India – Power Sector in India – Presentation by Ministry of Power

Studies

- Status of study co-sponsored by EU and India (EC Report)

Specific topics

Use of lignite for power generation in the EU (Status and recent developments, in particular concerning increasing efficiencies)

Focus on Renovation and Modernisation of coal-fired power plants – experience in EU and India. Views of equipment suppliers and utilities.

- Renovation and Modernization of coal based thermal power plant with Road map – Presentation by NTPC

Possible areas for enhanced co-operation on the above specific topics

Next meetings of the Working Group

Any other business

Summary by Co-Chairs

Close of meeting



LIST OF PARTICIPANTS

EU-INDIA WORKING GROUP ON CLEAN COAL TECHNOLOGIES 20 JUNE 2008, BRUSSELS

EU:

Mr Derek TAYLOR	Co-Chairman, Adviser, Directorate-General Energy and Transport (TREN), European Commission
Ms Marion WILDE	Coal and Oil Unit, Directorate-General Energy and Transport (TREN), European Commission
Ms Olga SIHMANE	International Energy Relations Unit, Directorate-General Energy and Transport (TREN), European Commission
Ms Marie-Rose HANNON	Directorate-General Energy and Transport (TREN), European Commission
Mr Jeroen SCHUPPERS	Energy conversion and distribution systems unit, Research Directorate-General (RTD), European Commission
Mr Mikael SAMI	India Unit, External Relations Directorate-General (RELEX), European Commission
Dr Trevor DRAGE	EPSRC Advanced Research Fellow, School of Chemical and Environmental Engineering, University of Nottingham
Ms Nadege HOPMAN	Project Manager SCS, Schlumberger
Dr Iftikhar KHAN	Cost & Economic Modeller, Research and Development, RWE Npower plc
Mr Nick OTTER	Director, Technology & External Affairs, Power Alstom
Mr Pavan PRAKASH	Account Manager, Schlumberger
Mr Claude ROULET	Executive Advisor SWS & SCS, Schlumberger

Mr Philip SHARMAN	Deputy Director, Technology & External Affairs, Power Alstom
Mr Andrew TIMMS	Doosan Babcock Energy
Mr Gabor TOTH	Advisor, Energy Policy & Generation, EURELECTRIC

India:

Mr V.S. VERMA	Co-Chairman, Member (Planning) Central Electricity Authority (CEA), Government of India
Mr D.N. PRASAD	Director (technical), Ministry of Coal, Government of India
Mr D.K. DUBEY	AGM (Engineering-WR), NTPC
Mr A.K. DAS	Deputy Chief Engineer, DVC
Mr M.K. LOKESH	Deputy Chief of Mission, Embassy of India