

Chinese visitors review UK progress on energy generation

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In June the Parliamentary and Scientific Committee were asked by the Chinese Embassy if they could organise a tour for representatives of the Committee of Population, Resources and Environment (CPRE) which is one of the nine special committees of the National Committee of the Chinese People's Political Consultative Conference (CPPCC). The purpose of the tour was to focus on the UK's progress in moving towards energy generation from renewable sources and in reducing greenhouse gases.

Part of the Comino Foundation's work is to help address global warming and the Foundation was asked if I, as Environment Fellow, could organise this tour in the second week of September.

The Chinese Embassy advised that the CPPCC is similar, in some ways, to the House of Lords although its role is purely advisory, not legislative. Each committee, such as the CPRE, has a large number of experienced public figures in the committee's area of responsibility who work together to investigate and research important issues. The committees report their findings, opinions and suggestions to the central committee and the State Council for reference in policy and decision making. Their recommendations are usually adopted.

The CPRE delegation was to be led by the Chairman supported by senior members of the committee. I realised that this was an important opportunity to promote not only the UK's range of activities in renewable energy generation but also developments in clean coal technology, bearing in mind that over 80% of electricity in China is generated from coal.

Initially it was important to provide an overview of UK Government policy on energy generation and the first morning of the visit was spent in



Dr Wang Baoqing, Mr Chen Bangzu, Dr Douglas Naysmith MP, Mr John Slater and Mr Dang Dexin on the Terrace of the House of Commons

visiting the Energy Group of the Department of Business, Enterprise and Regulatory Reform (BER). This session concentrated on the content of the recent Energy White Paper and the principles of energy security and greenhouse gas reduction on which it is based. The delegation were particularly concerned to understand the role of the EU Emissions Trading Scheme (ETS) in stimulating investment in renewable and 'clean' electricity generation. It became clear, however, that, as a delegation, they were not aware of carbon capture and storage (CCS) technology although a near Zero Emissions Coal Project had been established between the UK and China in 2005.

After their visit to DBERR the delegation had lunch at the House of Commons, hosted by the Parliamentary and Scientific Committee, with Dr. Douglas Naysmith MP in the chair.

The UK has access to 40% of the wind resources in Europe and to substantial tide and wave resources. It was

important to demonstrate to the delegation how the UK is harnessing this asset and the delegation visited the British Wind Energy Association to gain an overview of how 20% of electricity generation will be generated from renewable sources by 2020. Through a visit to East Anglia the developing technology of wind turbines for both onshore and offshore wind farms were studied.

China also has access to substantial wind resources and has a well established programme to build wind farms. This programme is rapidly accelerating as is witnessed by Scottish and Southern Energy recently signing a contract to supply 4 x 50MW wind farms in North East China. European companies are working closely with China to develop wind power which is planned to reach 30GW by 2020.

Whilst in East Anglia the delegation also became aware that 60% of the UK's chicken litter is used, in co-firing with other renewable fuels, to produce electricity. The UK is well advanced in this area of renewable energy

generation. Energy Power Resources Ltd, who are based in East Anglia, are the largest biomass electricity generator in the UK with a number of chicken litter plants plus a plant that burns 200,000 tonnes of cereal straw per annum. Whilst China does not have large chicken farms there is extensive use of agricultural biomass in rural areas for cooking and heating. With large residues of agricultural waste the Government has set a further target of 30GW of electricity being generated from biomass sources by 2020.

Whilst in East Anglia the delegation explored the Zicer Building which houses the Zuckerman Institute for Connective Environmental Research at the University of East Anglia. This building, which has many innovative energy saving features, won the Low Energy Building of the Year award. Also at the University of East Anglia the delegation reviewed the CRed carbon reduction programme which is led by the School of Environmental Sciences. Beyond its development in the UK this programme is now expanding abroad and has a well established programme in China, based in Shanghai.

30-50% of UK electricity is generated from coal fired power stations. Many of these are due for replacement. As in China, coal in the UK is an abundant and cheap source of power but the level of greenhouse gases emitted from this form of power generation is unacceptable. To preserve a balanced fuel mix, and consequently security of electricity supply, the UK Government is concerned to ensure that new investment in 'clean' coal fired power plants becomes a reality. This means that the carbon price established under ETS for the period 2008-2012 has to be such as to attract new investment.

This investment may, initially, be in upgrading existing coal fired plants to a more efficient, or 'super critical' state with the potential to move to full CCS at a later date. Alternatively investment may be in new types of plant which capture the carbon dioxide for storage underground. CCS technology, although apparently not known to the delegation, is now well established. A UK CCS demonstration plant is now being planned for 2012 with some 15

similar plants being targeted by the EU by 2015.

Given that, currently, over 80% of electricity in China is generated from coal and that this will continue for many years to come I considered it appropriate to devote some of the time on the tour to developments in coal fired electricity generation. This was done in two ways.

Firstly Richard Budge, the Chief Executive of Powerfuel, explained in detail the technology behind the Integrated Gasification Combined Cycle (IGCC) process. Powerfuel are at an advanced stage in their plans to build a 900MW IGCC power plant for operation by 2012. In explaining the technology and the commercial criteria involved he stressed the importance to their investment of an effective price for carbon through the ETS.

Secondly I made arrangements for the delegation to visit Ferrybridge Power Station which was originally built in 1960. It is now owned by Scottish and Southern Energy. The visit to this power station, although familiar to the delegates, was able to illustrate several important points.

Firstly, the plant is co-firing up to 10% biomass. At present this is mainly the waste from olive oil production. This is significantly reducing greenhouse gas emissions and other plant investment is reducing other damaging emissions. Secondly, plans are well advanced to upgrade the plant to 'super critical' status with a further 15% reduction in emissions. However, establishing the right price for carbon though the ETS is critical to this investment. Thirdly, if investment conditions are favourable the plant could move to CCS at a later stage when the CO₂ pipeline grid is in place.

The Ferrybridge visit demonstrated to the delegation that it is possible to upgrade existing old coal fired power stations, which is one of the possible solutions to combat greenhouse gas emissions from the ever increasing number of coal fired stations in China. It is important to note that towards the end of the visit to Ferrybridge the Chairman of the delegation said that he could see that carbon capture and storage had an important future role.

As one member of the delegation said, "We know that our economic expansion has been damaging but we are very concerned to reduce greenhouse gas emissions and reduce global warming." To me this visit demonstrated that China is moving swiftly ahead with various forms of renewable energy solutions but has yet to understand how to address the greenhouse gas problem of its coal fired power stations. There are plans to close many small coal fired power plants and I believe there is a genuine desire to solve the emissions problem.

The UK is well advanced in developing clean coal technology and there must be an opportunity to further advance the relationships that already exist in the energy field to help China find an acceptable solution. If this occurs the Chinese political framework is such that change could occur swiftly.

If the CPRE report to the State Council recommends swift action to explore the potential for CCS in China I believe this will be the major outcome of their visit to the UK.

Members of the CPPCC delegation:

Mr CHEN Bangzu: Standing Committee Member, National Committee of the CPPCC; Chairman, CPRE; Former Executive Vice-Minister of State Economic and Trade Commission

Mr MA Fu: Member, CPRE; CPPCC National Committee; Former Deputy Director General of State Forestry Administration

Mr DANG Dexin: Director General, Office of the CPRE; CPPCC National Committee

Mr HE Guangsen: Deputy Director, Division of International Co-operation, Chinese Academy of Forestry

Mr CAO Boyu: Deputy Division Director, State-owned Asset Supervision and Administration Commission of the State Council

Miss WANG Yanan: Senior Staff Member, Office of the CPRE; CPPCC National Committee.