

University of Sussex

DPhil (PhD) Research Studentship

The role of carbon capture and storage in UK energy transitions

University of Sussex – SPRU (Science & Technology Policy Research)

Main supervisors: Dr Jim Watson, Director, Sussex Energy Group

The future development of the UK electricity system is subject to significant uncertainty. In principle, there are many ways in which emissions from this system could be reduced dramatically to contribute to the official target of an 80% emission cut by 2050. Carbon capture and storage technologies are being developed and demonstrated as part of this mitigation effort. However, many questions remain about the role of these technologies. To what extent will CCS technologies be available to allow the continued use of fossil fuels whilst cutting emissions? Will CCS technologies be available at an acceptable cost, with high levels of technical reliability and public acceptance? Are these technologies a long-term option for decarbonisation, or a bridging technology that buys time while alternative low carbon options are deployed in sufficient numbers? Will extensive investments in CCS in the UK hinder rather than enable longer-term transitions to sustainability?

This DPhil studentship will start in October 2010 and run for three years. It will explore these questions by analysing a range of potential pathways for electricity system development. It will draw on theories of long term technical change to analyse the conditions under which a programme of CCS plants could be deployed within a low carbon UK electricity system. In line with this theoretical approach, this analysis will not only focus on the technological characteristics that could be required of CCS systems, it will also consider how the deployment of CCS could be affected by possible changes in the electricity system's market and institutional framework.

Candidates for this doctoral position will be highly motivated and have an excellent social science degree and, ideally, masters degree in a subject suited to this project, such as in political science, economics or innovation studies, with a particular interest in energy system transitions. They must be comfortable working in an interdisciplinary and policy engaged research environment. Candidates will also be expected to have good knowledge about energy systems and policies in the UK.

The successful candidate will be based in the Sussex Energy Group at SPRU at the University of Sussex. Our vibrant team of researchers and doctoral students has a world-class reputation in the study of sustainability transitions and policies to promote sustainable innovation. The doctoral student will also be a full participant in a new, multi-university consortium project on *Multiscale Systems Modelling for CCS Analysis and Optimisation*, led by Prof. Sevet Durucan at Imperial College London. The student will be supervised by Dr Jim Watson, Director of the Sussex Energy Group and another member of staff at SPRU. Dr Watson is an internationally-respected research leader with a track record of research on policy and economic analysis of energy system transitions, including a specific focus on CCS. In addition to playing a significant role in this project, he is also leading

another project to assess potential progress in CCS technologies for the UK Energy Research Centre with a view to informing public policies in the UK power sector.

Funding is for full-time enrolment for up to three years and available from 1 October, 2010. The studentship will pay the tuition fees and a maintenance allowance, currently **£13,290** per annum, is available to UK applicants. EU students are also eligible to apply. However, for EU applicants, funding-council rules stipulate that only the fees will be paid.

Initial enquiries about the proposal process should be addressed to Janet French: j.french@sussex.ac.uk; 01273 678169

For further information about the project contact Dr Jim Watson w.j.watson@sussex.ac.uk; 01273 873539.

Further information about SPRU can be found at <http://www.sussex.ac.uk/spru/>

Applicants should elaborate how they would research this topic in the research plan section of their proposal. To apply, go to <http://www.sussex.ac.uk/pgapplication> and create an online application for a place on the DPhil in Science & Technology Policy Studies. Please state in the Academic Interests section that you are applying for the "PhD Studentship on The role of carbon capture and storage in UK energy transitions". Include a CV, certificates and transcripts of marks from your degree(s), a research outline and the names of two referees. The research outline should detail why the candidate wishes to participate in this project. It should also provide a description of the research that the student would like to undertake on the topic of carbon capture and storage and UK energy transitions in terms of theories, methods, and focus (NB: this is only indicative at this stage). The closing date for applications is Friday 16th July.