

Welcome to the Sussex Energy Group Newsletter

As we emerge from a particularly cold winter and continue to digest the disappointing outcome of the Copenhagen conference, the energy policy agenda continues to shift. As in many recent winters, energy security concerns have been prominent. The UK gas system was put under strain by a combination of technical failures in Norway and particularly cold temperatures. [A new SEG report](#) (see page 2) contributed to the debate on what the policy response should be – and advocated greater incentives for UK gas storage.

In addition to these immediate concerns, there is a continuing debate about the availability of fossil fuel resources – particularly conventional oil. Despite the global economic crisis, and recessions in many leading economies, the global oil price has remained at historically high levels. Steve Sorrell of SEG produced a widely acclaimed [report for the UK Energy Research Centre](#) (see page 2) which reviewed the evidence for a peak in conventional oil resources, including views from both the optimistic and pessimistic camps.

Alongside this increasing contribution to energy security debates, SEG has continued to contribute to the literature on [energy system transitions](#) (see page 2). This literature is an important complement to the quantitative, target-driven analysis of low carbon pathways that underpinned so much of the political discussion at Copenhagen. It reminds us that it is not only important to understand what combinations of technologies, behaviours and policies are needed to deliver emissions reduction targets – but how these interact with institutions, and need to take into account the divergent interests within society.

We are undergoing our own transition over the coming months, due to the end of our core funding from the ESRC. We have had significant success in raising funding for our future research agenda, with several new projects due to start soon. These will build on our strengths in the analysis of transitions to low carbon energy systems, and in low carbon development. I am leading a project for the UK Energy Research Centre on the appraisal of carbon capture and storage technologies from an innovation perspective. I am also co-leading with David Ockwell the next phase of our work with DECC on low carbon technology transfer (this time with Chinese partners). Adrian Smith is will be working with Rob Raven at Eindhoven Technical University on the analysis of politics of protection for CCS, offshore wind, and solar PV, and how this influences the development of these low carbon niches in the UK and Netherlands.

Finally, we've had some further staff changes in the past two months. Alex Mallett has left the team to have her second child, but will continue to engage with us on low carbon innovation and development issues. Ivan Scrase took up a new appointment with the RSPB. We have also welcomed two new members of the team. Thomas Reilly is working jointly with the Economics Department at Sussex on a Tyndall Centre funded project on the interaction of climate change and trade policies. Rob Byrne is working on low carbon innovation and developing countries, jointly with the STEPS Centre (SPRU's research centre with the Institute of Development Studies).

Dr. Jim Watson - Director, Sussex Energy Group

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SEG in the media

Jim Watson's views on the Copenhagen climate summit – particularly the Chinese government's position were covered by interviews on BBC News 24, and a quote in the Guardian on 7th December 2009:

<http://www.guardian.co.uk/environment/2009/dec/06/china-carbon-emissions-copenhagen-climate>

Steve Sorrell quoted in the Guardian on 9th November 2009 as part of its coverage of the peak oil debate – including UKERC's study (see story in this issue): <http://www.guardian.co.uk/environment/2009/nov/09/peak-oil-international-energy-agency>

Jim Watson contributed to a BBC World Service *Analysis* programme on 8th October 2009 on the prospects for a global revival of nuclear power.

UK Gas Security: Threats and Mitigation Strategies

On 26th January, a new report on UK gas security by Jim Watson was launched at a meeting of the Parliamentary Renewable and Sustainable Energy Group (PRASEG) at the House of Commons. There were responses from David Kidney MP (Parliamentary Under Secretary of State, Department of Energy and Climate Change); Charles Hendry MP (Shadow Minister for Energy); Martin Horwood MP (Liberal Democrat Spokesperson for Environment); Doug Parr (Executive Director, Greenpeace); and Chris Train, Network Operations Director, National Grid.

The report analyses current and future gas security for the UK, and puts forward strategies for mitigating security threats. Gas is likely to be an important part of the UK's energy mix for many years to come - irrespective of the speed at which low carbon energy sources are deployed. Mitigation strategies are therefore essential. Priorities should include measures to promote energy efficiency and reduce demand; ensuring that there is enough diversity within the UK's gas supplies (within sources, international supply routes and domestic infrastructure); and incentives to significantly increase the amount of strategic gas storage that is available in the UK.

The report can be downloaded here:

http://www.sussex.ac.uk/sussexenergygroup/documents/gas_security.pdf

UK Energy Research Centre Report on Peak Oil

Steve Sorrell, Deputy Director of SEG, was the lead author of a major new study on Global Oil Depletion, published by the UK Energy Research Centre in October 2009. The study represents the most comprehensive study conducted to date on the depletion of conventional oil resources. The report was critical of the methods and assumptions used by many analysts when estimating the size of recoverable resources and when forecasting future production. But contrary to the position of the International Energy Agency (IEA) and the UK government, it concluded that conventional oil production is likely to peak before 2030, with a significant risk of a peak before 2020.

The UKERC study received widespread attention in the UK and international media, including BBC television and radio (BBC Radio 4 Today Programme and World Service), Reuters, the Guardian, Telegraph, Sunday Telegraph, Mirror, Scotsman and Times newspapers, and articles in Science, The Ecologist and New Scientist. The results of the study have since been presented at a number of conferences and meetings, including those organised by the Energy Institute, the All-Party Parliamentary Group on Peak Oil and the Department of Energy and Climate Change. Follow-up activities include two papers submitted to academic journals and a book proposal. The study reflects growing interest and concern about the future of global oil supplies, including ongoing controversy about the scenarios contained in the IEA World Energy Outlook and can be found here:

<http://www.ukerc.ac.uk/support/tiki-index.php?page=Global+Oil+Depletion>

For further information contact Steve Sorrell on s.r.sorrell@sussex.ac.uk

SEG Research on Transitions Continues to Make an Impact

Research into sustainability transitions by the Sussex Energy Group continues to attract interest, and goes from strength to strength. Andy Stirling, Professorial Fellow in SEG, was recently at the Stockholm Resilience Centre, whilst Adrian Smith, Senior Fellow in SEG, was invited to discuss the politics of sustainability transitions at the University of Tokyo. An article on the governance of sustainable socio-technical transitions which they wrote with Frans Berkhout in 2005 has become the mostly cited article to be published by Research Policy in the last 5 years, the leading journal in innovation studies. Adrian recently finished guest editing a special section for Research Policy on this topic, covering recent analytical developments and future research agendas, and which should be available in April. This complements a special issue of Policy Sciences, also guest edited by Adrian and colleagues Jan-Peter Voss (Technical University Berlin) and John Grin (University of Amsterdam) last December, which reflected upon the experiences in the Netherlands and other countries in trying to implement coherent policy packages for transition governance.

For further information contact Adrian Smith on a.g.smith@sussex.ac.uk or Andy Stirling on a.c.stirling@sussex.ac.uk

DPhil Spotlight: Florian Kern passes his viva!

Florian Kern, SEG Research Fellow, submitted a thesis is entitled “The politics of governing ‘system innovations’ towards sustainable electricity systems” and was examined by SEG Director Jim Watson and Susan Owens from the University of Cambridge. Florian’s work builds on the socio-technical transitions literature and in particular its policy recommendations in the form of transition management. The thesis uses policy as well as institutional theories to shed light on the politics of such processes.

The starting point for the thesis is that electricity production and consumption are at the heart of modern life and are therefore of great interest to public policy. Threats such as security of supply, volatility of fuel and electricity prices, and especially environmental concerns like climate change, are putting increasing pressure on current electricity systems. One key response by governments has been support for innovation. It is widely acknowledged that electricity systems will have to change fundamentally in order to deliver on political goals. This will require deep cuts in greenhouse gas emissions. Incremental change along established technological trajectories is unlikely to be sufficient. Instead ‘system innovations’ have been suggested as a solution by scholars and policy makers. What are the politics of such an endeavour?

To answer this question this thesis looks at two distinct policy initiatives to promote more sustainable electricity systems: the ‘Energy Transition’ project in the Netherlands and the ‘Carbon Trust’ in the UK. While the aim of the two policy initiatives is similar, they try to tackle the challenge in very different ways. The analysis is based on semi-structured interviews as well as a review of documents and secondary literature and follows a process tracing method. By utilising a framework based on ‘discursive institutionalism’ the thesis aims to shed light on the importance of both discourses and institutional contexts in shaping policy initiatives to promote ‘system innovations’.

The thesis demonstrates the mechanisms by which particular framings of the problem, expressed through new storylines, come to legitimate particular government policies. It emerges that existing institutions not only shape which storylines are politically acceptable but also constitute tangible features of the organisational and technical environment which those initiatives must change. In conclusion, the thesis argues that the politics of governing system innovations can usefully be conceptualised and explained by struggles about meaning. These are shaped in turn through discursive interactions between actors as well as existing institutions. By highlighting the interplay between discourses, interests and institutions, the results provide an input to scholarly debate and policy making alike, in ways that offer to help inform the rethinking of strategies for fostering socio-technical ‘system innovations’. In particular, the thesis offers recommendations for cross-country policy learning and experience sharing.

The most important message for policy makers emerging out of this thesis is the need to recognise that attempts to steer ‘system innovations’ towards sustainable electricity systems are political, not just economic or technological, challenges. ‘System innovations’ are political processes which have to overcome both technological and economic as well as institutional lock-in and path dependency. Too often, especially in the framing of the problem in the UK, but also in the academic debates about transition management, steering towards sustainability is seen as unproblematic. The recommendation to policy makers is to admit that these processes are political and to make the underlying political choices more transparent.

For further information contact Florian Kern on f.kern@sussex.ac.uk

Geoengineering the climate: science, governance and uncertainty

Professor Gordon MacKerron, Associate Director of SEG was a member of the Royal Society's geoengineering study group, which published the findings of a major survey in a report: *Geoengineering the climate: science, governance and uncertainty* in September 2009. Commenting on the report's launch, Professor MacKerron said that: "Progress in cutting greenhouse gas emissions has, in the UK and internationally, been disappointing. Unless we can much improve on this record globally, we will have to consider seriously some radical alternatives such as geoengineering. However, at present we know far too little about their potential for unintended but major ecological damage. The right response is to conduct research into the most promising technologies, but to be fully aware of the potential harmful side effects and to put in place decision-making processes to ensure that we do not get locked into damaging technologies."

The study, chaired by Professor John Shepherd FRS, recommended that:

- Parties to the UNFCCC should make increased efforts towards mitigating and adapting to climate change and in particular to agreeing to global emissions reductions of at least 50% on 1990 levels by 2050 and more thereafter;
- Geoengineering methods should only be considered as part of a wider package of options for addressing climate change. Carbon dioxide removal methods should be regarded as preferable to solar radiation management methods.
- Relevant UK government departments, in association with the UK Research Councils, should together fund a 10 year geoengineering research programme at a level of the order of £10M per annum.
- The Royal Society, in collaboration with international science partners, should develop a code of practice for geoengineering research and provide recommendations to the international scientific community for a voluntary research governance framework.

The report is available here:

<http://royalsociety.org/geoengineeringclimate/>

Workshop for the Next Generation of Science and Technology Policy Leaders

SEG Research Fellow Florian Kern has been selected as a fully funded participant in the 'Workshop for the Next Generation of Science and Technology Policy Leaders' in the Technological Systems and Infrastructures track. The workshop is organised by the Consortium for Science, Policy and Outcomes (CSPO) at Arizona State University in Tempe, Arizona in May 2010. CSPO is co-directed by Daniel Sarewitz and David H. Guston.

The workshop aims to build a small community of particularly promising early career individuals who can participate effectively in science and technology policy (STP) activities, broadly construed, taking advantage of the current national attention given to STP issues and dilemmas. The workshop constitutes the heart of a larger Conference on the Rightful Place of Science that CSPO is organising (<http://www.cspo.org/conference2010/>). The conference and workshop will convene Sunday 16 May 2010 and adjourn mid-day on Wednesday 19 May 2010. Next Generation participants will share special events at the Conference with internationally prominent keynote speakers and "exemplars" of science and policy practice.

For further information contact Florian Kern on f.kern@sussex.ac.uk

Some Recent Publications

- Watson, J. and Scott, A. (2009) 'New Nuclear Power in the UK: A Strategy for Energy Security?' *Energy Policy*, 37(12) 5094-5104.
- Kern, F. (2009): 'The Carbon Trust: A model for fostering low carbon innovation in the Transition Countries?', *Economic and Environmental Studies*, 7 (1), 34-47.
- Kern, F. and M. Howlett (2009): 'Implementing Transition Management as Policy Reforms: A Case Study of a Policy Initiative in the Dutch Energy Sector', *Policy Sciences*, 42(4): 391-408.
- Sorrell, S. (2009) 'A review of the rebound effect in energy efficiency programmes', in D. Reeve, D.N. Dewees and B.W. Karney (eds) *Current Affairs: Perspectives on Electricity Policy for Ontario*, University of Toronto Press, Toronto
- Sorrell, S. (2009), 'Improving energy efficiency: hidden costs and unintended consequences', in D. Helm and C. Hepburn (eds), *The Economics and Politics of Climate Change*, Oxford University Press
- Sorrell, S. (2009), 'The rebound effect: definition and estimation', in L. Hunt and J. Evans (eds) *International Handbook of the Economics of Energy*, Edward Elgar, Cheltenham

SEG staff and key research areas

- Jim Watson** - Director of SEG, Senior Fellow
Energy policies, energy and development, energy security
- Steve Sorrell** – Deputy Director of SEG, Senior Fellow
Emissions trading, energy efficiency, climate policy
- Rob Byrne** – Research Fellow
Low-carbon development, renewable energy technologies, socio-technical transitions
- Frank Geels** – Professorial Fellow
Transitions to sustainability, socio-technical systems, innovation studies
- Florian Kern** - Research Fellow
Governance of system innovation, energy innovation policy
- Markku Lehtonen** - Research Fellow
Knowledge in policy making, biofuels, governance
- Mari Martiskainen** - Research Fellow
Consumer behaviour, energy demand in households, energy efficiency
- Francis McGowan** - Senior Lecturer in Politics
European energy policy, party politics of energy choices, policy evaluation and the energy sector
- Gordon Mackerron** - Director of SPRU, Professorial Fellow
Security of supply, energy policy, nuclear power
- David Ockwell** – Lecturer in Geography
Low carbon technology transfer, discourse analysis, inter-disciplinary research
- Mike Parker** - Honorary Fellow
Climate change policy, urgency, time critical pathways
- Thomas Reilly** – Research Fellow
Climate and trade, border carbon adjustments
- Adrian Smith** - Senior Fellow
Governance, technology, politics
- Lee Stapleton** - Research Fellow
Energy efficiency, quantitative techniques, renewable energy
- Andy Stirling** - Professorial Fellow
Appraisal, diversity, resilience
- Danielle King** – Project Co-ordinator

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