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Energy supply, demand and impact

Now it is Britain's turn to think harder, says Brian Lovell, introducing an important and innovative new conference coming your way in the autumn.*

Some strange characters were to be seen in Burlington House in March 2003, when the Society hosted the meeting *Coping with Climate Change*. Geological Society traditionalists would have been appalled to apprehend social scientists, not merely on the premises, but *speaking* from the very platform reserved for proper scientists like what they were. Who had invited these setters of questionnaires? Why were such dreaded phrases as "societal response" echoing where our familiar pseudo-classicisms should prevail?

Well, some of those same SocSci characters will soon be seen again, at a meeting to be convened by the Society and several sister organisations in Burlington House in October 2005. So what is this subject so intractable that scientists cannot cope with it on their own?

The answer is, of course, energy. Is our own community of Earth scientists moving confidently out of a century of successful exploitation of fossil fuels, into a new century of continuing academic enjoyment of the data thus made available? Or has serious doubt has crept in?

I believe both are true. Most predict that fossil fuels must remain a significant part of our energy supply for many years unless we are to experience economic catastrophe. Yet a generation of academics and oil industry staff that helped to open up frontier regions in Alaska, the North Sea and deep water the world over, has returned with trepidation to ancient first-year lecture notes that spell out the essence of Earth's carbon cycle.

Even Exxon Mobil had a change of heart on the causes of climate change, which was first publicly announced at that historic debate between them and BP at *Coping with Climate Change*

(www.geolsoc.org.uk/template.cfm?name=MM495435353485).

Not that all are convinced that there is a problem! The *AAPG Bulletin* still carries defiant articles (Gerhard, 2004, v.88, p.1211-1220) that must bring a deal of comfort to current White House advisers. Yet for many of us the geological evidence, some vital parts of it obtained during oil and gas exploration and production (Svensen and others, 2004, *Nature* v.429, p.542-545), is now at least as convincing as the computer models of the climatologists. The energy question is no longer simply "when will we run out of oil and gas?" It is "should we even be using all the oil and gas -let alone all the coal - that we have left?".

It was the Geological Society's very own Petroleum Group that invited a diverse audience to face such questions at the March 2003 meeting and to consider possible solutions. Society President Sir Mark Moody-Stuart summarised the BP-Exxon Mobil debate and discussion by identifying three main issues:

1. Oil companies should come together to agree that emissions of carbon dioxide should be held at the lower end of the IPCC range of predictions.
2. Governments should set a framework for at least some channeling of markets that will achieve the necessary transition to low-carbon sources of energy.
3. The developing world must be brought along in full partnership.

That may look like a grand conclusion: but it is also only the start. The Geological Society is now working on the next stage, which is all the more difficult because it brings us close to home and to individual responsibilities. Thanks to the North Sea, Britain has had a comfortable and profitable respite from anxieties about security of energy supply. Now the country appears to have entered (once again) territory familiar to those of riper years, where armed forces join geologists and engineers to keep the oil flowing. I suspect that the Geological Society is not quite ready to be addressed by too many folk in uniform, but it is now embarking with other key organisations on a major discussion of how to cope with the new and more complicated scene for the supply of UK energy – and for the demand for that energy.

Consideration of demand involves the social scientists and so many others. Many UK citizens, with the financial resources to make choices, find cars and cheap flights to nearby regions of Europe mighty useful. Will we choose to bear an initial extra cost to live in energy-efficient houses? Or readily accept any incentive to move to locations selected for wind turbines, or for the disposal of carbon dioxide or long-lived high-level radioactive waste? Representative democracy has many virtues, but long-term thinking and planning is not one of them. Some of us would-be Parliamentarians of the class of 1979 can cheerfully attest to that. For a striking current example, observe the discrepancy between the targets set for UK carbon dioxide emissions in the recent Energy White Paper and the near-simultaneous encouragement by the Government of rapid expansion in UK-based aviation.

Energy demand will have its own section in the 2005 meeting and will balance the traditional Geological Society interest in supply of energy from fossil fuels. As soon as the debate moves away from those fossil fuels, to nuclear power and to renewable sources of energy, other organisations come to play centre stage. So the Energy Institute, the Institute of Physics, the Royal Society of Chemistry and the Natural Environment Research Council will in their turn take the lead at the

meeting. In their audience will be the geologists, seeking to play a supporting role in certain vital matters, such as the secure disposal of waste.

This debate and discussion is to be brought to a head with a consideration of the impact. What balance of supply and demand will be acceptable culturally and politically to the citizens of the UK? What types of supply will be acceptable? What particular restrictions on demand can be established, without the civil unrest that has already marked rises in the price of road fuel?

The conclusions of the meeting will be spelled out at a climactic gathering at the Royal Society on the 10 November 2005. Here the great, the good, the influential and the powerful may come to feel both uncomfortable and also a little reassured. Perhaps it will be suggested to them that we already have enough proven technology to achieve our energy needs globally, without trashing the planet by dumping fossil carbon into the atmosphere at a potentially dangerous rate (Pacala and Socolow, 2004, *Science* v.305, p.968-972). The gathering at Carlton House Terrace will certainly be told that business as usual is not an option for the UK, even if we were to ignore concerns about anthropogenic climate change.

There will be those who shrink from having their learned society involved in such matters. No doubt there were numerous geologists and biologists who retreated from the ferment of public debate on evolution in the 19th Century, just as many physicists will have blinked in the face of the military implications of nuclear fission and radar during the 20th. Those who did not in the end draw back, but stepped into the front line, were involved in events that affected the life of every family. Many Fellows of the Society, academics and others, have already had such an influence through their role in the discovery of those once comforting reserves of oil and gas on Britain's doorstep. As several recent Presidents of the Geological Society have told us, the next stage is difficult enough to be even more interesting.

References

1. Gerhard, L. C., 2004, Climate change: conflict of observational science, theory, and politics: *AAPG Bulletin*, volume 88, pages 1211 - 1220
2. Svensen, H. and others, 2004, Release of methane from a volcanic basin as a mechanism for initial Eocene global warming: *Nature*, volume 429, pages 542 - 545
3. Pacala, S. and R. Socolow, 2004, Stabilisation wedges: solving the climate problem for the next 50 years with current technologies: *Science*, volume 305, pages 968 - 972

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