

BIEE 2013 SEMINARS ON ENERGY POLICY AND CLIMATE CHANGE ISSUES

Seminar 1 - *Science and the Validity of an Economic Case for Action on Emissions*

19 February 2013

Meeting Report

Venue

The Grantham Institute, Imperial College, London. The meeting was hosted jointly by BIEE, the Grantham Institute, and Imperial College Centre for Energy Policy and Technology.

Chair

Dr John Rhys, Oxford Institute for Energy Studies.

Speakers

Professor Sir Brian Hoskins, Imperial College.

Professor Samuel Fankhauser, London School of Economics.

Discussants

Professor Gordon Mackerron, University of Sussex.

Christopher Beauman, European Bank for Reconstruction and Development.

Dr David Robinson, Brattle Group and Oxford Institute for Energy Studies.

Chairman's Summary and Assessment

A major objective of this first seminar in the series was to ascertain whether and how far the nature of discussion and analysis had moved on since the Stern Review, both in terms of the science assessment and in terms of the economics framework for an overall assessment of policy towards climate issues. Thanks to our excellent speakers/ discussants and informed and engaged participants, this was largely achieved.

The science continues to be incremental in terms of adding evidence and understanding, and it is not clear why we should necessarily expect this process to change in any fundamental way. Arguably the tendency has been to observe unusual episodes and trends (consistent with changes in climate but not per se providing proof of it) rather earlier than might have been expected. There are known imperfections and anomalies in our understanding of the processes involved, in our understanding of the history (ability to reconstruct the past), and there are limitations to what will ever be predictable from climate modelling, but none of these factors challenge the underlying science.

The main inferences about the nature and scale of potential risks remain essentially unchanged. The science is quite unequivocal in setting out the position, best summarised as the presumption that continued increase in atmospheric concentrations of CO₂ is a dangerous and possibly catastrophic experiment with the planet.

No contradictions to this view, at least within the context of serious informed discussion, seem to be available. The absence of any genuinely contrarian view, with serious support within any of the scientific communities, and despite the obvious incentives to develop such research were it credible, seems particularly telling. The FT made a very similar observation in its 2009 survey of the state of climate science. In terms of technical policy options, it can be claimed that there are some interesting and plausible geo-engineering options. There is however at present little confidence that these are other than high cost, high risk fall back positions that carry their own very major problems in terms of environmental uncertainties and global governance. Although we might not wish to dismiss geo-engineering options in a decision theory context, the policy focus should remain on mitigation in the first instance.

Economics has progressed from its earlier focus on cost benefit analysis (CBA). The inadequacies of a CBA approach are widely recognised, as is the need, instead, to set analysis within a context of “rational risk management” but with an ethical dimension. There seems to be a clear need though to put a more substantial framework in place to develop some of these ideas further.

What has also progressed is “business as usual” (BAU). We are closer to critical “points of no return” than we were, but no-one has so far addressed what consequences and policy implications might flow from that. In this context the basis for defining a target has never been precise in trying to set a “temperature limit”, with the 2°C “target” essentially a shorthand for the more complex objective underpinning the UK statutory targets for 2050. No-one suggested the UK was taking a more relaxed view of targets or climate objectives, but there remains a fundamental underlying anxiety that BAU is not consistent with an acceptable or sustainable global outcome, and that we are not recognising the extent to which the gap between climate aspirations and emission realities is growing.

We should attempt to reflect these broad issues, and particularly any disconnections between the science and actual policy, in planning for our forthcoming seminars in this series. The aim should be to provide an economic framework within a real world of economic stresses at the domestic level and geopolitical tensions internationally. The meeting confirmed concerns expressed at the outset of the seminar programme in respect of several underlying themes for the programme, notably on: the cumulative nature of CO₂ emissions in particular, the corresponding irreversibility of policies, and the global/ collective character and politically and institutionally intractable nature of the problems.

The seminar also brought to the fore a number of issues which will form an important part of the forthcoming seminar programme as we move on to some of the more specific and practical questions.

1. Implicit in any sustainable resolution of the problem is some form of global carbon budget, however informally that might be expressed. What that might mean needs to be explored both in terms of international negotiations, largely focused on who pays, and in relation to policies being pursued by major players such as the EU, US and larger developing countries.
2. “Competitiveness” is widely perceived as a domestic political issue (in terms of energy costs and prices), but the quest for technical leadership on climate matters is also a major consideration in many countries. We have not so far considered any of the closely related trade issues in the climate policy context.
3. Policy instruments. Managing the costs of policies on emissions reduction, and the relative efficacy of market and regulatory solutions, or supply side versus demand side measures, will continue to be of critical importance.
4. Investment. The insistence by infrastructure investors on certainty and policy commitment has been a theme of BIEE seminars in previous years. Continuing “business as usual” also poses risks of either “lock-in” to the wrong technologies, or stranded assets.

Notes on Proceedings

(The main speaker presentations and additional notes from some commentators are available. Discussion took place under the Chatham House rule).

Brian Hoskins gave an excellent summary of the essentials of climate science, outlining a historical context (measured in geological time), important factors in the physics and chemistry of climate, strengths and limitations of climate modelling, including the inevitable degree of uncertainty surrounding specific projections, and noting the scale of recent additions to the CO₂ stock in the atmosphere. He then moved on to discuss some of the implications, in terms of prognostications for possible future states of the global climate, and possible policy responses grouped under the three broad categories of mitigation, geo-engineering, and adaptation.

Particular points of note included the persistent nature of CO₂, the unequivocal evidence of increased concentrations from Mauna Loa data and its anthropogenic nature, the current statistical evidence for an actual temperature trend and actual sea level rises and the difficulty of separating from natural variability, the warning that warming was not homogenous but could be highly differentiated, both between land/sea and between regions, the potential significance of disruptions to major climate systems (not just “warming”) and the incidence of “extreme” hot and cold events well outside a normal distribution range. By continuing to emit greenhouse gases to the atmosphere we were performing a very dangerous experiment with planet Earth. Conventional modelling approaches made little or no effort to take into account threshold effects (“tipping points”) so much of the resulting analysis could be interpreted as what might happen “if we are lucky”.

On geo-engineering options he outlined a few of the recognised possibilities. The main drawbacks were potential cost, possibly even greater problems in getting global agreement, and the potential irreversibility of commitment to geo-engineering solutions.

Sam Fankhauser progressed to discussion of economic considerations and the policy case for action, beginning with highlighting the different types of risk. Conventional cost benefit analysis (CBA) had not proved to be a particularly useful approach to policy evaluation, for a wide variety of reasons, including the intrinsic inadequacy of even the most sophisticated integrated assessment models in coping with complex and largely unpredictable developments. But it had been successful in exposing the sensitivity of policy questions to a range of specifics, such as the discount rate, the sensitivity to climate alteration, and the weight attaching to considerations of equity or fairness. An approach that avoided some of the demerits of CBA was to think of the issue far more in terms of an insurance principle, for which there was demonstrable evidence of willingness to pay. “The economic case for climate action is about rational risk management, although ethics matter.” Climate policy was not per se a major issue for public finance, since it could be revenue positive or neutral. Moreover, given that it was a structural issue, “the current economic situation is no reason to delay the low-carbon transition”.

Recession however had effectively undermined the price signals intended by the EU ETS, thus offsetting some of the reductions brought about by reduced economic activity. Any long term negative impact on growth of the climate agenda was likely to be small, arguably insignificant, but there were nevertheless immediate political pressures and the Climate Change Act was being put to the test. The speaker emphasized quite strongly the importance of looking outside the UK/EU bubble to the leadership on climate issues in, for example, China and other developing countries. Changes were taking place globally in the political dynamics of attitudes on climate matters, with many countries anticipating the necessity for transformation

(to low carbon economies) and focusing on making/ keeping their industries competitive within that future.

The 2050 target, as far the UK was concerned, was not linked rigidly to 2° C as an upper limit. It was calculated on the basis of the global emissions restraint consistent with a broadly 50:50 probability of a predicted 2° C, but still consistent with minimal risk of a “catastrophic” 4° C . The UK target was for UK emissions considered consistent with that global ambition. (“contract and converge”). In discussion and subsequent comments, a range of issues and questions surfaced, some serving to emphasise points made by the main speakers.

Particular points in the presentations generating a response or deserving highlight were:

- Recognition of the significance of the cumulative nature of CO₂ and the importance of stock effects. Stock effects were of also of fundamental importance in energy consumption.
- The very long time lags implicit in most climate effects.
- Awareness of the importance of the differential effects, and their potential political significance in terms of differential climate impacts.
- The need to set discussion within an international context, over and beyond the particular discussions affecting UK and EU policies.
- The “rebound effect” with energy efficiency improvement.

A comment sent in after the meeting suggested that, given the extent to which the global carbon budget had already been expended, some of the CCC conclusions were too optimistic, notably in terms of the early peaking of India/ China emissions, and the scale of reductions required in UK emissions. (reference Tyndall Centre papers).

CBA or an insurance analogy. A number of people felt that particular insurance analogies, such as life insurance, were imperfect, although there seemed to be general agreement that CBA was inadequate. The role and adequacy of conventional economic methods in general was questioned. One comment was that there was no way that a CBA could grasp the full enormity of some of the plausible consequences (of unrestrained emissions). Another question was whether the willingness to pay was correctly stated, given the proportion of life insurance that was essentially pension provision. One proposed analogy was with the price a person might pay to avoid a game of Russian roulette, where preferences were definitely non-actuarial in nature (ie paying very highly to avoid even relatively small

catastrophic risks) . Overall CBA struggled with issues of equity, ethics, and valuation under conditions of risk and uncertainty. Setting the questions within some kind of broader decision theory framework clearly seemed the way forward, even if the insurance analogy was an imperfect one.

Geo-engineering and adaptation. One contributor argued quite strongly that mitigation was ethically superior to adaptation, quite apart from issues of economic compensation, and highlighted the difficulties in governance associated with geo-engineering solutions. The introduction of ethics into the economic debate was also welcomed more widely as a necessary inclusion.

International and Political Aspects. The seminar clearly felt the importance attaching to better appreciation of what was happening in other jurisdictions, and the question of whether the EU/UK could still claim “leadership” on climate issues. For a number of countries significant attention would be paid to developing industries that could compete in the new low carbon technologies. Discussant David Robinson’s comments to the meeting, which focus on a US post-election perspective, will be available on the BIEE site and/or as an OIES Comment, as well as the main presentations.

Some felt that climate scepticism continued to be on the back foot, presumably reflecting the continuing drip feed of evidence confirming the scale of the issues, and the absence of any coherent story, other than conspiracy theory, from the sceptics in relation to the science. However the sense that the intellectual argument had been won (in this particular audience) did not mean that there was widespread public recognition of the scale of the threat, or support for unpopular measures. Some comments reflected concern over the general mistrust of political leaders, as well as the difficulty in keeping climate issues as a prime agenda item. However there had at times been indications of significant cross party consensus. There was further discussion on how difficult the politics of policy towards climate might be. The politics of carbon pricing and of policy-induced energy price rises was not only difficult internationally. It was difficult at the domestic level, the prime constituency of democratic politicians for whom keeping power prices “affordable” is a key objective. There would be tough decisions and choices over who would pay for any initiatives, and through what mechanisms.

Globally we had to recognise that we were dealing with a wide range of democracies and autocracies who might also have widely divergent interests (eg Mediterranean excessively hot summers versus preferable climate for Poland and Russia). The leading potential victims of inaction were more remote, eg the Spanish of tomorrow or more intensely, the grandchildren of today’s Bangladeshis or Egyptians.

Realism and Finance. All this has already made it very hard for governments to institute the policy certainty required to provide the incentives to initiate and finance

the capital-intensive low carbon energy system that is required. This highlighted the frequent mismatch between economic theory and the realities of finance. Investors were looking for certainty and growth. Policies to attract private capital needed to recognise this.

All these factors created something close to a policy impasse – the most compelling motivation for this series of seminars.

JMWR
1 March 2013