

BIEE 2013 SEMINARS ON ENERGY AND CLIMATE POLICY ISSUES

Seminar 4 - *Conflicting Projections and Investment* 9th October 2013

Meeting Report

Venue

NERA Economic Consulting , Weavers House, London.

Chair.

Dr John Rhys, Oxford Institute for Energy Studies (OIES).

Speakers.

Angus Gillespie, Vice President CO₂ Strategy , Royal Dutch Shell plc
Adam Whitmore, Chief Adviser on Energy and Climate Change Policy, Rio Tinto
Chris Beauman, Senior Adviser, EBRD

Angus Gillespie

Aspiration and Reality; Ineffective climate change policies.

“There’s lots of policy, but is any of it really helping the climate issue?”

Angus Gillespie began by reaffirming that the climate issue, at least in relation to the main greenhouse gas of CO₂ was a “stock” problem. One approach to estimating a limit to “tolerable” cumulative CO₂ was therefore to relate it to what was regarded as an “acceptable” temperature increase. However keeping within most of the canvassed limits on the basis of current or “BAU” rates of fossil fuel use, and in the context of proven reserves of coal, oil and gas, would be extremely challenging.

His presentation outlined several different projections/ scenarios, including different temperature assumptions and alternative Shell scenarios, illustrating the gap very clearly. He emphasised the importance of the assumptions in generating projections, both those driven by assumed temperature targets and probabilities, and those incorporating different economic or political futures (the

current Shell Mountains and Oceans scenarios) but not necessarily constrained to a given target. The range of projected emissions was quite wide and the scale of the gaps varied correspondingly. The trillion tonnes limit for CO₂ indicated by the IPCC Fifth Assessment corresponded to a 2° C. target, and sat near the bottom end of the scenarios presented.

A particular feature was the difference in outcome between an assumed world in which climate policies were primarily based on consensual approaches to the problem (Oceans) and one characterised by more autocratic direction (Mountains) which made it easier to deal with a range of vested interests and to push through difficult decisions.

The Shell scenarios showed a huge potential for carbon capture and storage (CCS), which in his view was the front runner as a credible means of making a serious dent in cumulative emissions. The “best” Shell scenario relied on greater early use of gas, combined with the earliest and most rapid possible deployment of CCS.

However climate policy had hitherto been characterised by a lack of clarity which had failed to adequately prioritise technology or policy options, and by a plethora of competing and to some degree self cancelling policies.

He argued that there were several reinforcing benefits that could arise through the application of effective carbon pricing. Not least these included embedding the price of carbon in goods and services generally within the economy, and the possible recycling of revenues to offset against other taxes in reducing the net cost to the final consumer.

However we (EU and member states) had failed to maintain a simple but adequate pricing system. Both the Commission and member states had weakened the impact of the EU ETS through a multiplicity of policies, with energy efficiency directives, “Green” politics, national carbon commitments, and support for particular technologies; collectively these undermined the carbon price. This removed what should have been a clear route forward through a price signal which selected the most cost-effective CO₂ abatement technologies. Inter alia, mandated renewable energy had distorted emissions mitigation economics across the EU, and the recession had further exacerbated the situation. In other words a poor policy framework had undermined the EU ETS market-driven approach.

Poor policy design had, as a corollary, also undermined the prospects for CCS, and the EU had made no progress at all on this technology – providing a poor example to the rest of the world.

We needed a much clearer vision of the policy framework, set against the three key sectors of power, transport and buildings, which was capable of covering

progress through research and development, demonstration and limited pre-commercial deployment, to full deployment. The issue with CCS was not the cost but the lack of real projects to allow the technology to mature.

Adam Whitmore Closing the Emissions Gap

Adam Whitmore based his presentation on seeking out signs for a more optimistic view of the future. The three areas where he thought there were more promising signs were:

- The spread of carbon pricing, illustrated in his list of countries where some form of carbon tax or cap and trade system was in place
- The role of China, and the importance now being attached to climate issues by the Chinese
- The falling cost of some renewables (especially solar and wind)

On carbon pricing, optimism was tempered by the fact that there were clearly problems in many jurisdictions, including the EU, where the cumulative surplus looked likely to rise to over two billion allowances in this decade. Possible solutions or contributions to mitigation of the problem included a price containment reserve, cancellation of allowances, and an auction reserve price. Issues were not confined to the EU but the policy challenge was to continue spreading carbon pricing and, most importantly, to ensure that prices adequately reflected damage costs.

China was hugely important and its actions alone could shift temperature outcomes by a full degree Centigrade [in either direction]. Optimistically China had some additional very strong incentives to reduce emissions, including its own very strong environmental concerns, its lower costs of abatement, its potential leverage on other jurisdictions and correlation with other policy objectives. We should expect much more action in China but not necessarily smooth uniform progress.

On the matter of renewable costs he noted that German feed in tariffs for solar PV had fallen by 75% and were comparable with other low carbon alternatives, at least on a levelised cost basis. However strong policy drivers were needed for all low carbon technologies; carbon prices alone were not enough.

To conclude, the challenge remained huge. There were many hopeful signs but much more was needed. National and subnational policies currently appeared to be more effective than the UNFCCC process, and this applied to carbon pricing. But action was required at all levels from cities right up to global networks. China

was critical, and the falling cost of renewables and the spread of carbon pricing were the most positive trends.

Chris Beauman

Policy Makers versus Investors.

Towards an Economics of Radical Transformation (in Democracies in Peacetime)

Chris Beauman made it his prime objective to promote consideration of new ideas to counter a number of fundamental disconnections in the whole policy exercise. He highlighted a number of problems and issues which did not seem to be amenable to the tools of conventional economic analysis.

He contrasted the macro and micro- economic dimensions of the problem. In 1940 Keynes had addressed the issue of how to pay for the war. The result had been great advances in macro-economics. The paradox was that, as a macro-economic issue, dealing with climate change was a de minimis issue. The problems lay almost entirely with issues of micro-economic or structural adjustments. Outside of wartime these were much more difficult to make and we had not really got to grips with them.

In particular there was a disconnection between policy makers and investors, which manifested itself in a number of paradoxical ways. These included the apparent willingness to “burn the unburnable” and the CCS impasse in industry. Despite what was often said about investor preference for low risk utilities, a number of the companies that should be seen as central to the necessary transformations of the energy sector had actually seen very poor share price performance. In need of support from government policy commitment, or at least consistency, they had been subject to a number of hits. These included the nuclear moratorium in Germany, and the indirect effects of US shale gas and consequent cheap coal entering a Europe where a very low carbon price prevailed. The proposals to freeze prices [in the UK] could further dent investor confidence.

The steel industry had particular problems, as technological possibilities for low carbon seemed very limited. So far carbon prices had been at levels that were actually of quite marginal significance, but the higher levels seen as necessary to induce low carbon investment in the energy sector would pose very serious questions. The ULCOS Florange demonstration project (for CCS) had lost financing and nothing was happening. In many ways the EU steel industry was struggling to survive.

Another aspect of the paradox was the huge sums available for investment but the difficulty in getting it into what should be a priority sector. There was plenty of

cash but it was finding its way into banks and shopping malls. Very large investments were needed but who would bring them forward? Big utilities were required to effect radical transformations, but the low returns available to them would force them to demand low risk. [Chairman's comment. *Implicitly this means the true "cost of capital" is very low, and anticipated to be so for a long time. High capital charges for the sector are therefore induced by inappropriate risk allocation and are another demonstration of policy or regulatory failure.*]

Investors now disliked the sector. They had lost money. The situation required tolerance of price increases for investment, but was it politically feasible? He quoted Sinn's Green Paradox. Higher carbon prices would hit fossil fuel prices but not necessarily volumes. Fossil fuel demand would decline (though only if governments did what they should). So reserves would lose value. [Sinn argues that fossil producers would have strong incentives to produce and realize their asset value before prices decline. *Chairman's note. This reinforces the case for much higher current carbon prices which, possibly, can then be allowed to decline slowly. This counters the Sinn effect and is far more consistent with the time profile of damage/ external cost associated with CO₂ emissions.*]

Microeconomic analysis frequently did not "feel" right. Much of micro-economics was built around an implicit assumption of incremental change, but actually it was radical transformation that we were seeking. Long term capital expenditure had to be viewed as a context of battle between public giants (eg UK and EDF over Hinckley) not as conventional market competition. Conventional market economics had a limited amount to say in this situation. Conventional economics, or at least markets, were also very limited in their asymmetric treatment of different kinds of risk. There was no real basis for comparing measures of financial risk with the very real risks associated with "the feeding and housing of the nine billion (with rising standards of living)". At a global level, energy was not the only resource at risk. There was potential for "the perfect storm". And the Shell scenarios were to some extent "looking into the abyss".

Part of the answer lay in the development of appropriate institutions, including dedicated investment banks, and regulatory institutions with competence and sustained public support. The Committee on Climate Change should be regarded as a success, and similar bodies to track and monitor national progress could be copied elsewhere. The Green Investment bank was still diminutive, but such banks could in principle be seen as a means of mitigating policy risk. Strong institutions (cf The Bank of England) were needed but the political will to create them was not yet there. China (the 13th Plan) and Germany (Energiewende) should provide important alternative role models – for better or worse. Backcasting (eg from a 2050 target), roadmaps and targets were valuable exercises, but the real questions were in translation into action and flows of

funds. Pricing remained as just one part of an answer that included regulation and innovation. Regulation had been of proven importance in the automobile sector, and innovation policy (including public financial support) was critical.

General Discussion

One participant argued that one would normally assume that conventional market economics approaches would do the job, but this was only true if the policy framework was right, and in the context of cap and trade, or carbon taxes, this meant that policy makers had to be prepared to contemplate prices high enough to achieve radical transformations. These were often seen politically as potentially disruptive because they impacted on consumers, with distributional or fiscal and other implications that were difficult to manage. Governments were then naturally tempted to seek “gain without pain” and this led them into some misconceived policies, which *inter alia* could further undermine the market or price based approaches.

The EU ETS could be regarded as having failed, not because it had not delivered arithmetically on its formal “cap” objective, but because it was not delivering prices adequate to the type or volume of investments widely regarded as essential to the longer term CO₂ objective. With hindsight a carbon tax approach might have been much the more appropriate method. Alternatively, both the tax and “cap and trade” approaches needed mechanisms for much more flexible adjustment in order to be effective.

Part of the debate was essentially between those who argued that, as a matter of record, one should admit that the ETS *had* reduced emissions, ostensibly its primary objective, and those who felt that this really missed the point that it was not proving to be effective in promoting the investment and transformational change that was demonstrably essential to make a meaningful impact on climate related objectives. It was this latter that required high and stable carbon prices, and those were clearly missing.

Moreover the issues were not confined to investment. A low carbon price inhibited gas for coal substitution in power generation – a comparatively easy measure, highly cost effective in terms of reduced environmental or CO₂ impact, and not requiring major or long lead time investment.

One comment was to the effect that blaming the low carbon price entirely on the plethora of additional national and EU initiatives was only a part of the story. It had been set at too loose a level in the first place, and no mechanisms were in place to adjust, for the effects of recession, for example.

However there appeared to be a general acceptance of the argument put forward by Angus Gillespie, that measures intended to supplement the ETS could undermine it and had indeed done so, at least to some degree. Supplementary comments or anecdotes also drew attention to:

- An episode in which, allegedly, Dutch companies had voluntarily agreed among themselves to measures to reduce coal burn, only to see this agreement countermanded by the national competition authority, who rejected the emissions reduction argument on the grounds that an apparently anti-competitive agreement could not be justified within the ETS context.
- The comparatively high carbon footprints of two countries with supposedly Green credentials, the Netherlands and Germany.
- The existence of evidence that the ETS had had at least some positive effect on innovation

Implicit in this issue was the whole question of how to compare levelised costs with the “system relevant” incremental costs and revenues that were appropriate to a meaningful choice between generation technologies. [*The current institutional framework makes it almost impossible to establish this.*]

It was claimed that there had been failure to achieve meaningful levels of carbon prices that reflected even the most modest estimates of the social/ environmental externality of climate change. Basic economic principles suggested this was the clearest possible indication of a failure [*although perhaps better described as a policy failure than as a market failure or a failure of markets*]. Given the cumulative nature of CO₂ [*a point that is well established but now even more explicitly stated in the recent IPCC report*] current emissions are significantly more damaging than those that occur in ten years time.

This comment was reinforced by the observation that feedback, from the physics of emissions and climate into the economics, was largely lacking. If real action was not forthcoming soon, it would be too late. The scenarios presented suggested that the 2° C. limit was all but unachievable. There was a real problem here that to some extent vindicated the frequently derided Club of Rome approach.

An important question was whether this experience would discredit the use of markets to achieve policy objectives, especially under democratic regimes. China, which was prima facie far less dependent on democratic consensus, less inhibited in its use of non-market methods, and more able to push through unpopular measures, might well be significantly more successful. [*This observation played to the Shell “mountains/oceans” classification.*]

On a positive note it was clear that a number of companies were taking climate issues very seriously in their strategic planning. The strategic issues arose in a number of ways, for example in relation to energy intensive products, and the outlook for key markets such as China, as well in the more obvious questions such as anticipation of future carbon prices. However others felt that corporate greed [to which one might add the vested interests of producing states] ignored the public good and remained a significant part of the problem. Vested interests had played a significant role for example in supporting denial of climate science and neutering positive policies [such as the ETS] through lobbying for excessive allowances.

It was observed that the general approach of Stern, and of the late Dennis Anderson [presented to a BIEE seminar two or three years ago], had emphasized three planks of policy – markets/ prices, regulation and innovation. This still seemed right, although the issue was how to manage and combine them effectively.

There was a brief exchange of views over relative costs and cost trends for the competing technologies in generation, in which some interesting points and contrasts were established. It was asserted that projected reductions in onshore wind costs, in Denmark, had not been delivered. The implication was that this was already a mature technology. Solar costs had come down but at least some of this should be attributed to outsourcing.

We needed a better explanation of why nuclear costs had apparently risen so much (after an apparently successful French programme in the 1980s). Regulatory and FOAK costs were an important element. So were commodity costs although these would also impact significantly on all the competing generation technologies, and indeed on new fossil generation plant. It was alleged that EdF had benefited from provision of state capital at excessively low cost. [*But given current real interest rates are at a historic low, this argument seems less relevant to current comparisons.*]

An important implication of the dissatisfaction with the market approach was the need to consider whether there were viable alternatives. This is a much wider question but two distinct positions could be detected in the discussion. The first was to note that governments were obliged to work within markets. There were real risks that they would push inefficient investments, and indeed this had been shown to be a significant part of the problem. Would any state institutions prove to be economically more rational? This was a key area of public policy and the alternative view was that some public institutions (like the Bank of England), screened from political pressures, and staffed by competent people, demonstrably could do sensible things. But lapses into pure politics could be catastrophic.

Chairman's Comments on the Proceedings

This seminar, as anticipated in the outline for the 2013 series, was one that went to the heart of the theme for the year – climate policy in crisis. A large number of substantial points came out from the presentations and the discussion, some of them serving to reinforce messages and emphasise issues arising in the earlier seminars. In my view we can draw the following lessons from the excellent presentations and discussion.

1. The scenarios presented showed very clearly the scale of the gap between aspirations to mitigate emissions, and the reality (also highlighted by recent IEA and IPCC reports). Ceilings on cumulative emissions imply very tight carbon budgets. Attempts to limit cumulative emissions to levels consistent with the hope of limiting global average temperature change to 2° C. are, in global terms, becoming very close to unachievable. This does not mean that mitigation policies can be abandoned. It does mean either that we now face potentially much tighter carbon budgets, and so more expensive and economically damaging measures in mitigation than might have been required with effective earlier action, or that we face higher risks of negative outcomes across a wide range of food and environmental issues.
2. The afternoon reinforced the impression of major policy failure within the EU (defined as the EU itself together with its member states) on climate issues. Some of these criticisms were raised in the discussion of international and global issues in seminar 2. There is room for debate on how to apportion blame between numerous contributory factors, but a key element is the failure to make the emissions trading cap sufficiently responsive to changing circumstances (eg recession) or to properly manage its interaction with additional regulatory measures and targeted subsidies. With hindsight a carbon tax might have been a much more effective and flexible instrument.
3. There is a real risk that dissatisfaction with this experience will discredit future proposals for the necessary and sensible use of market mechanisms. This is unfortunate since their essential role in promoting efficient and effective solutions, especially in an international and trading context, ought to be obvious. The issue is one of policy design. The EU

ETS mechanisms may have operated smoothly and delivered on their ostensible (and arguably too loose) target of short to mid-term CO₂ reductions. But, especially when combined with a plethora of other interventions at EU and national level, they have not delivered on the “true” objective of producing carbon prices that would underwrite the investments needed for transformative change in the energy sector. In other words, “markets” have worked, at least in limited technical terms, but they have been designed to deal with the wrong objective.

4. The parallels drawn with wartime economics indicated once again that climate and emissions policy emphatically does **not** currently, nor in the foreseeable future, present a major macro-economic problem. Dealing with climate change is really very cheap on a macro level. The investment and other expenditures involved are relatively trivial. As percentages of GDP (estimated by Stern at c. 1% of GDP) they are substantially smaller in their effect on national economies than the impact of (say) the oil price movements of the last decade (some of which were for the UK equivalent to c. 3% of GDP) which most Western economies handled without major disturbances. Similar comparisons could be drawn with the expenditure shifts, as between private and public, associated with changes of government. The problems seem to arise primarily through micro-economic issues, the many distributional and perceived competitiveness impacts, the effects on particular interest groups, and the difficulties in managing those, even if the scale appears small. But the real issues we should be debating, and the potential risks and costs to the future, are an order of magnitude larger than is implied in conventional economic debates which are largely about income and wealth generation “at the margin”.
5. Capital availability, likewise, should not, in principle, be a real constraint on mitigation. Capital has never been so plentiful or so cheap. Limitation on its deployment in the energy sector, for the forms of low carbon generation, or excessive costs of capital for what are in the main “utility” and infrastructure activities, can therefore only be attributed to a poor allocation or appreciation of risk, of which the prime cause is poor or absent policy frameworks, policy uncertainty and lack of policy commitment. CCS was a good example.

6. There were some interesting observations on areas of policy conflict, for example between measures that were desirable in terms of emissions reduction but in conflict with the norms of competition policy. Comparable questions were raised in the second seminar on possible conflicts with the WTO and trade policy. This raises the question of policy priorities, and whether climate policy objectives should enjoy some degree of primacy, or at least a higher priority.
7. The lack of momentum in climate-related energy policy generally continues to reflect an inadequate appreciation of the cumulative and (largely) irreversible nature of CO₂ emissions, and the very long time lags between cause and effect. The fact that policies have produced close to zero current carbon prices, when the economic externality (or social damage) of current emissions is significantly greater than that of future emissions, only serves to emphasise this failure.
8. If we needed reminding of the importance of China, this was again convincingly demonstrated. An interesting question was the extent to which China's government possessed a greater ability to deal with vested interests and pursue policies on a longer time scale.
9. This was also a timely reminder of the potential significance of CCS technology, often forgotten in the focus on nuclear and renewables.
10. An important topic that we touched on, but did not really attempt to answer in depth, was the comparative cost of alternative low carbon sources. A key issue here is the need to move debate beyond the comparison of levelised costs to the actual least cost choices of real power systems. An unanswered question is how these can be measured and compared when we have distorted markets (as amply demonstrated in presentations and discussion), but there is no other party with a clear responsibility for making comparisons and putting together a least cost and feasible generation mix.
11. Perhaps the most fundamental questions were related to the dichotomy between market instruments and government intervention and policies.

The potential for market distortions and poor policy was very clear. But it was also clear, not least from the CCS discussion, that carbon prices alone were not enough to drive through transforming technologies; frameworks and plans are necessary too. More generally there were also areas (autos) where simple regulatory measures can be and have been very effective. The Stern/Anderson division of measures between prices/markets/ taxes, regulation, and innovation still seems a sound one. But a clearer appreciation is required of what governments and markets can and cannot achieve.