

## **BIEE 2013 SEMINARS ON ENERGY AND CLIMATE POLICY ISSUES**

### **Seminar 3- *Finding the Best Policy Instruments* 18<sup>th</sup> June 2013**

## **Meeting Report**

### **Venue**

NERA Economic Consulting , Weavers House, London

### **Chair**

Michael Parker, CBE, University of Sussex

### **Speakers**

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

Ms Rocio Concha, Department of Energy and Climate Change (DECC).

Malcolm Keay, Oxford Institute for Energy Studies (OIES).

Adam Whitmore, Rio Tinto.

Graham Shuttleworth, NERA Economic Consulting.

### **Policy Instruments From Why to How**

#### **John Rhys**

John Rhys attempted to explain the rationale for energy policy (as opposed to simply relying on markets), before moving on to some general observations about the application of policy, and raising some particular questions for discussion.

Privatisation and liberalisation of energy markets in the 1990s had been intended to “take energy out of the arena of public policy”, and to focus on competition policy as the main instrument. The process had been broadly successful in an era of cheap gas and surplus capacity; even so residual concerns had remained, eg over investment incentives (paying for capacity), post 2000, in the power sector. And the liberalisation enterprise was seriously incomplete at the EU level, and in major member states, even 20 years on.

Climate issues presented new policy imperatives. Energy policy and climate issues were now inseparably linked. Moreover issues of how to “manage” markets remained at the core of energy policy everywhere. Examples included electricity market reform (EMR), the EU internal market, and the debate over US gas exports.

Most economists believed intuitively that CO<sub>2</sub> priced to reflect emissions objectives, either via taxes or cap and trade, would under sufficiently strong conditions, deliver the desired outcomes. But governments were reluctant to accept the collateral damage, inter alia of large increases in consumer prices, windfall profits to existing and intra-marginal producers, and, especially in the absence of effective international carbon markets, effects on “competitiveness” of particular industries and carbon leakage. Discrimination along the “supply curve of measures to reduce CO<sub>2</sub>” provides, at least in theory, a degree of “gain without pain”.

So energy policy and energy policy instruments would be with us for the foreseeable future. These included targets, market interventions, incentives, finance, regulations, taxes, import/export quotas, information campaigns etc. He suggested that one useful way of categorising policies and instruments was according to where they focused in relation to three categories - of focus on markets, regulation or innovation. If we looked at the three largest sectors for emissions, power would be dominated by market questions, and to a lesser degree by innovation (CCS, renewable etc ), and transport more by innovation (electric vehicles), with a more even balance of all three in the case of heating. Overall, all were significant, with perhaps the greatest weight resting on policies directed at markets and innovation.

One could frame a number of questions of a general nature, some of which would be picked up in later contributions to the seminar, and/or in later seminars. These included:

- The balance of and interaction between market and interventionist/regulatory approaches.
- Supply-side (centralised) versus demand-side (decentralised) initiatives.
- Financing arrangements and the cost of capital, and particularly the role of government. (comparison with some of the problems of PFI could be instructive)

- CO<sub>2</sub> valuation and discount rates for evaluation of public sector policies in general. The importance of consistency and the validity of cost benefit analysis.
- “Nudge theory”. Was this the ultimate conceit in second guessing the market and consumer behaviour? Or perhaps it had a role? An interesting question for the audience was what sort of nudge policies would provoke an upsurge in vegetarianism, one of the largest lifestyle contributions to lower emissions.
- The problem for purely **national** policies. These often needed to be set in a wider context of the EU or the WTO. Questions included the fashionable idea of border tax adjustments.

He then offered a number of personal opinions in relation to the policy issues.

1. Many of the biggest choices remained primarily supply side questions – especially in power generation. Demand side policies were essential, but many of these might, under foreseeable technologies, reinforce the importance of central grids.
2. Regulatory (and government) commitment was critical to securing investment . Governments or their agents would inevitably be sucked into technology choices.
3. The appropriate discount rates for policy should be low, and with a global glut of capital, the cost and availability of finance should not be an issue. But getting financing arrangements right was a critical policy instrument.
4. Energy efficiency **without** corresponding price increases (to reflect cost/ value) would deliver only limited results. (the well-known Jevons paradox)
5. Market linkages (internationally) would matter a great deal in promoting innovation (a point made forcibly in an earlier seminar).
6. It would become increasingly hard in the longer term to divorce energy/emissions issues from other “political” questions such as inequality and lifestyle ( and shipping, aviation, agriculture ... etc).

Finally the biggest policy dangers were, to mix metaphors, elephant traps and red herrings. The traps were “large holes that are hard to get out of, and which should have been spotted in the first place”. The first piece of advice was never to underestimate the effect of incentives, especially financial ones. A second issue was the seemingly unbounded irrationality of much of the public and political debate on energy and climate issues. This was by no means unique to energy, but there were prime examples in relation to many of the major energy policy issues.

Herrings generally stemmed from irrelevant ideology or bad economics. He chose the competitiveness issue as one example. The massive decline of British manufacturing in the 1980s had been proudly proclaimed by some as the necessary and desirable consequence of the UK discovery of North Sea oil and gas. This had been a nonsense, but so too was the excessive emphasis on energy in relation to EU competitiveness, sometimes used as an excuse to postpone EU ETS reform. If domestic oil and gas production had excused the UK’s loss of competitiveness in the 1980s, then shale gas and oil could not now be argued to lead to a necessary tilt towards US competitiveness. The real explanations, in each case, lay elsewhere.

Similarly it was quite wrong to suppose that recession and the public finances were, rationally, a barrier to essential action on climate issues. Overall they could be construed as revenue neutral in principle, but would also, depending on circumstances and the choice of instruments, contribute either to revenue raising or to fiscal stimulus.

### **Policy Instruments: A Government Perspective** **Rocio Concha**

Rocio Concha began by describing the processes of policy formulation in government, and the policy cycle which progressed from understanding the situation and objectives, through to the development and appraisal of options, preparation for delivery and finally operation, evaluation and adaptation. The process was quite a complex one, involving a substantial number of inputs. These included legal and administrative considerations as well as political preferences and other general objectives such as reductions in “red tape”. The process included impact assessment for consultations & policy statements, interdepartmental scrutiny. consultation documents, and defining the evidence requirements to support policy decisions & agree analysis.

Value for money was a key factor in policy making and cost benefit analysis (CBA) provided an economic rationale. CBA is used during option appraisal as a means of ensuring that public funds are spent on activities that provide the

greatest benefits to society, and that they are spent in the most efficient way. HM Treasury's Green Book and DECC's Supplementary Guidance on the valuation of energy use and GHG emissions formed the main reference tools when conducting CBA, and in looking at economic activity, changes in energy consumption and emissions, rebound effects and carbon and air quality considerations.

But not everything could be fully monetised within CBA. Important additional factors included macroeconomic impacts, and security of supply issues, but there were a number of others. In addition uncertainty was particularly problematic. It was particularly difficult to pick options under extreme uncertainty, and so ensuring flexibility in the design of some policies was also an important consideration.

DECC also considers the wider impact of policies. For example, although energy prices and bills impacts do not contribute directly to a policy NPV, these impacts are nevertheless important and form part of overall policy appraisal and decision-making.

The policy landscape is one of a diversity of instruments. These include:

- market-based instruments that price carbon emissions and tax energy; the EU ETS and the Carbon Price Floor, the Climate Change Levy and Climate Change Agreements, and the CRC (carbon reduction commitment) Energy Efficiency Scheme
- energy efficiency regulations that impose minimum standards on transport, buildings and products.
- obligations on energy supply companies that aim to improve efficiency: smart meters, and the Energy Company Obligation
- market based and financed energy efficiency: the Green Deal (together with the Energy Company Obligation)
- supports to accelerate deployment of low carbon energy technologies: the renewables obligation, feed-in-tariffs and CCS commercialisation
- information and “nudges”: smart meters, and the CRC Energy Efficiency Scheme

She described three case studies, which illustrated a number of the issues faced in policy design and the way that DECC managed them:

- Case 1. Feed in tariffs for solar. Global Solar PV costs fell more than expected and actual deployment was higher than anticipated in projections undertaken when the scheme was launched. This resulted in returns available to new PV generators higher than originally envisaged. This was not sustainable as it would have risked PV generators being overcompensated and would not provide value for money to consumers, who ultimately pay for FITs through their energy bills. “Due process” required launching consultation on reducing tariffs. This process lasted more than six months, in which time take-up rose further and costs continued to decrease.

The lessons learned from this experience have been applied in reviewing this scheme and elsewhere. These included greater use of consumer research to gauge market potential and the use of degression mechanisms (cost control), adjusted depending on the actual levels of deployment, as well as improvements in on-going monitoring of policies (e.g. deployment and costs).

- Case 2. Non-domestic emissions. The sector is very heterogeneous in terms of energy intensity, size of organisation, source of emissions (buildings/processes) and commercial factors (e.g. profit margins, growth rates, market concentration). This results in different barriers to emissions abatement, requiring different policy levers, leading to a complex policy landscape. Government has acknowledged that improvements can be made in order to ensure delivery of policy objectives with minimal complexity and overlap. In particular, the Government has introduced a number of simplifications to the CRC Energy Efficiency Scheme (CRC) which targets emissions from large public and private sector organisations, and announced a review of the scheme in 2016.
- Case 3. The EU ETS remained a cornerstone of European climate policy and will help deliver UK low carbon goals. But there is a need for reform to strengthen the EU ETS.

The UK wants a **reform** of the EU ETS; this requires getting EU-wide agreement. As a first step the UK supports European Commission proposals on back-loading (temporary withdrawal of allowances). But the European Parliament failed to support back-loading in April; EUA prices fell to around €2.6/tCO<sub>2</sub>e. “Backloading” itself was a short-term, stop-gap solution. The UK has called for a focus on more substantive reforms in

parallel and for the Commission to bring forward legislative proposals by the end of 2013.

One comment from the audience was to the effect that unified benefits reform might be seen as a parallel or exemplar for the process of simplifying complex policy initiatives.

## **The Importance of the Demand Side Malcolm Keay**

The essential message was a very simple one. Demand matters, and there was clear need to integrate demand questions into overall policy on decarbonisation. The first task was to show why an integrated approach was so important for decarbonisation. The task was huge, and although a broadly similar scale of switching had been achieved comparatively quickly with the move of the economy from coal to gas, this had been largely market driven [and upstream] rather than government driven, and had not required major changes in the role of the demand side. The Government low carbon strategy covered:

- Energy efficiency – the “immediate priority” (UK Carbon Plan)
- Decarbonising electricity via EMR etc “over the next decade” (UK Carbon Plan)
- Electrification of other sectors (heating, transport etc) “during the 2020s” (UK Carbon Plan) , and
- ETS (“cornerstone” of EU strategy (EU Environment Ministers 2012) ; notably this was hardly mentioned in UK Carbon Plan .

It could be noted immediately that, conceptually this appeared to suggest the wrong starting point, which should be carbon not energy.

Applications such as heat pumps and battery charging would change the nature of system in fundamental ways. This was amply demonstrated by the slides, implying the need for an integrated strategy, which “needed to be thought through”.

Moreover EMR needed in practical terms to be far more than just slotting in one form of investment for another. The electricity industry was “turning upside down”.

The second set of questions concerned what a demand-side strategy would look like in principle and how would energy efficiency fit in. A demand-side strategy **should** involve

- Reducing demand for high carbon fuels
- Switching demand from high carbon energy to low carbon energy
- Creating a more active demand-side for demand response

In reducing demand the policy discussion often conflated energy efficiency and energy and carbon reduction. *“Energy efficiency is the most cost effective way to reduce emissions [and] improve energy security ..... [It] can be seen as Europe’s biggest energy resource”* (Commission – Energy 2020). While *“Reducing demand for energy is the cheapest way of cutting emissions and will also benefit consumers and our economy”* (UK Carbon Plan). These assumptions confused separate matters and could result in poor policy. We could consider how policies for energy efficiency did fit in. Problematic aspects were that

- They might or might not reduce demand.
- They were not targeted at high carbon sources.
- They did little or nothing to encourage switching to low carbon sources.
- They did little or nothing to encourage an active demand-side

Essentially energy efficiency was about energy – but the problem was carbon. This led on to challenges on the demand side. There were a number of significant policy interactions, including the following:

- Decarbonisation of electricity reduces (cost-effectiveness of) carbon savings from energy efficiency – ECO, Green Deal etc
- Lower demand/decarbonisation lowers ETS prices
- Some forms of energy efficiency discourage fuel-switching (eg CHP; efficient vehicles)

On fuel switching it was important to appreciate the scale of the changes needed. Heating was the biggest single household load (c 150 GW compared to total all sector maximum demand at peak of about 60 GW for electricity). Heat pumps (the favoured option) were likely to require peaking support, high insulation levels and time-shifting ability. Transport was very high on power demand but less so on energy. For EVs (the favoured option) charging could be slow but would need to be time-shiftable.

In both areas, we had little real knowledge or understanding of what consumers would accept, what incentives they would need, or how the electricity system would cope.

Demand side potential was beset by problems of assessment. Prices offered inadequate signals. There were few markets, and these were small in size; current demand side short term operating reserve was only around 1 GW and was mainly associated with on-site back-up. There was significant demand side bidding in other systems (eg PJM) but this was based mainly around supply companies. The future structure and shiftability of different types of demand was in consequence very uncertain.

Other issues concerned retail and wholesale prices. More active demand-side participation implies the need for more sophisticated pricing and metering, and also more consumer engagement. But present policy is to simplify tariffs and reduce need for consumer engagement.

Also many “ancillary” costs are “socialised” by being averaged and spread over all kWh generated and sold. But these, rather than fuel input costs, will be the main cost component in a future system. Similarly it is not clear what will happen to EMR costs, but again averaging is likely to blur price signals.

The key messages of this presentation were that:

- Demand has received too little attention in relation to climate change policy
- Energy efficiency has been over-emphasised and treated too simplistically
- Nonetheless, in future, the demand side will take on a much greater potential role as energy markets decarbonise
- Governments will need to develop a coherent and integrated strategy to harness this potential effectively.

## **Border Carbon Adjustments**

### **Adam Whitmore**

The question could be framed in terms of the circumstances under which border carbon adjustment taxes (BCAs) protected competitiveness better than freely allocated allowances. These could be identified if free allowances were inappropriate or ineffective, when there was a significant role for prices as a signal for substitution by consumers towards less emissions intensive products,

or when there was a potential revenue for governments (although this would not be enough on its own).

GATT rules require environmental protection as the objective of BCAs (Article 20 exemption).

BCAs were most likely to apply only to energy intensive commodities, and were not appropriate for most trade (services and manufactured goods). Generally administrative complexity outweighed the benefits and made little difference to relative prices for most goods and services. Emissions intensity of world GDP is around \$2000/tonne of CO<sub>2</sub> from energy and industry. Even for manufactured goods it might not make a large difference. For example the cost of a £15,000 car might change by £15 due to a 10% reduction in emissions by one manufacturer relative to another.

Emphasis on energy intensive trade exposed (EITE) industry mirrored current provision for emissions, and BCAs have been implemented mainly for electricity imports. Issues over the incorporation of aviation in the EU ETS were an indication of the potential problems.

Administrative complexity was unavoidable. The reasons included the need to track third party certification of emissions and price paid (net of shielding), the trade off between the accuracy of the price signal and the cost of tracking, the need under GATT need to allow for individual producers' parameters, issues over place of origin and trans-shipment, and rules to prevent "resource shuffling". There were also political challenges. These included the numerous bilateral agreements, the different coverage of sectors and gases and the corresponding need to deal with these on a case by case. Sub-national schemes were also problematic in current international trade frameworks.

There were also major concerns over incentives. BCAs did not necessarily put incentives where the control lay. They had the potential to distort trade through "resource shuffling" which rules could not always prevent, especially for internationally traded goods. They could be by-passed with semi-finished goods, and there were differences in regulatory structures.

As carbon pricing spread to ever more jurisdictions, the original case for BCAs in an "Annex 1" context had fallen away. Moreover the significance of embedded carbon, outside a few heavy industries, was less than many supposed.

The general conclusions were that:

- the scope for BCAs was limited in practice
- the administrative complexity and political challenges were substantial

- there were risks of distorting and perverse incentives
- but BCAs might be useful for electricity imports and (perhaps) some other cases

## **Market Failures and Failures of Intervention** **Graham Shuttleworth**

Graham Shuttleworth concentrated on some of the unforeseen consequences of policy making. He took, and provided an alternative development of, the theme in the introductory presentation – the progression from liberalised markets (intended to take energy out of politics), through policies which had the unintended result that they progressively drew governments back in to decisions. He took the view that the British government, in setting up regulatory frameworks for the energy sector in the 1990s, had made a major mistake, at least in part as a result of trying to “keep the lawyers out”, by failing to set up the kinds of “due process” that would facilitate better decision taking, or at least would **not** facilitate bad decisions.

He explored a number of particular policy issues where this had led to a misguided approach, with unforeseen and adverse consequences.

*Energy efficiency measures impose transaction costs inefficiently.* Many of the policies aimed at introducing energy efficiency in consumption were premised on the assumption that consumer behaviour was irrational, eg in their failure to instal apparently cost saving insulation measures. This ignored the fact that consumers faced real transaction costs in adopting such measures, and there was a substantial risk that policy measures would simply impose those transaction costs, but in a rather inefficient and expensive way.

*Simplifying tariffs makes competition more difficult and raises prices.* This had been an implicit or explicit objective in much of consumer price regulation, but it was not clear that it provided real benefits to consumers. It certainly removed one of the most important sources of differentiation and innovation in retail competition, one of the supposed objectives of market liberalisation. [This aligned very closely with MK’s observations that the future of the demand side required more complex tariffs, **not** simplified ones.]

*Promoting renewable energy depresses prices for electricity and CO2.* This comment was set in the context of the EU ETS, but clearly also operates on electricity prices at national level. Artificial depression of prices was prima facie contrary to the objectives of reducing emissions.

*Depressing prices for electricity and CO2 requires further govt intervention.* This in turn led back in circular fashion to the starting point, where government

ministers were again responsible for bad decisions. This completed the circle from central decision making to markets plus monopoly regulation, and back again.

This story was set very firmly in the context of policies in relation to the EU ETS. The essence of the argument was that the EU had been through a lengthy process in devising the market mechanisms and structures of the ETS, so that it seemed somewhat perverse to undermine these with an individual national policy that second guessed the investment decisions that the EU policy was designed to promote. Graham added that, of course, the EU ETS was only partial in its coverage, and was confined to a “traded” sector that included electricity but excluded most domestic heating (gas).

Graham argued that if the UK wanted reductions in this sector beyond what would have been implied by the EU ETS process, and/or higher carbon prices, then the simplest and most efficient mechanism would have been to buy additional allowances in the market. He also suggested that, from a political perspective, a part of the policy problem lay in the nature of the relationship between the UK and the EU. Also it was hard to fault the actual mechanics of the ETS.

This raised the question, in discussion, of whether **any** policy action could be sensibly justified at a national level, and a number of points were raised, including the possible disadvantages, nationally, of failing to prepare for a low carbon future, and a reiteration of the overwhelming importance of addressing climate issues and the difficulties inherent in doing so.

### **John Rhys assessment of key points to be taken from the afternoon**

Given the wide ranging nature of the topic, the seminar succeeded in covering a lot of ground. The main points to be taken from it, and the associated questions, are, in my view, the following :

- A comprehensive description of the complexity of the policy making process in government reminded us again of the intrinsic difficulties in creating and maintaining policies that would deliver on energy policy and climate objectives, and the many issues arising from multiple, sometimes conflicting objectives and a variety of practical and other constraints.
- The issue of cost benefit analysis came up again. Substantial doubt has previously been cast on the validity and adequacy of CBA in the context of general justifications for (global) policy action on climate, but the discussion brought us back to its perhaps necessary inclusion in national policy making, even though it may be only one of several inputs which

- may be given similar or greater weight in making choices between policy options. Since one of the original virtues of CBA was that it purported to provide a common metric, this might be thought to negate some of its utility. A comprehensive description of the complexity of the policy making process in government suggested that we do need a clearer view of the utility of CBA, and its strengths and limitations.
- Compelling arguments were put forward for the importance of adequate treatment of demand side issues, and this was nowhere more evident than in the context of the electric sector and applications for heating and transport. While this is not new, and has long been implicit in CCC pathways, for example, we need to emphasise even more strongly:
  - The sheer extent to which the power sector will be “turned upside down” by widespread switching to low carbon technologies, demolishing many of the assumptions and structures on which current markets and institutions are founded. This will affect every aspect of the sector, including redefinition of wholesale markets, acceptance of more complex tariffs, and very probably revised approaches to the structure of the industry and its forms of regulation.
  - As a corollary to this, a number of the transformations that need to be accomplished in the medium and longer term require an integrated approach if sensible future systems are to be allowed to evolve. This is clear, but raises the major issues of **who** will tackle this, and **how** they will approach it.
- An important further conclusion that arose from the emphasis on demand side questions was the need for clarity on approaches to energy efficiency, both in terms of objectives and expectations. Conflation and confusion of energy efficiency and low carbon objectives leads to the risk of poor policy making and perverse outcomes, particularly if combined with an unwillingness to recognise the price implications. The Jeavons paradox and the rebound effect are alive and well!
- The merits of border tax adjustments or border carbon adjustments (BTAs/BCAs) was, in one sense, an issue brought forward from the earlier seminar covering the questions around negotiations towards global agreements. AW’s presentation was a sober assessment of the

limitations of this approach, all the more telling because of its focus on practical and administrative questions, including the scope for perverse incentives as a result of attempts to avoid the tax. The political dynamic had also changed as the former distinctions between developed and other nations were increasingly irrelevant. The general conclusion to be drawn was that BCAs were perhaps of limited applicability, and then only to a few heavy industries. More widely there had been a tendency to overstate the significance of “embedded carbon”.

These are all substantial points, but some of the most difficult and contentious issues were those raised in the final session. Examination of some of these is already implicit in our plans for the fifth seminar which will concentrate on the questions associated with unilateral action.

The session raised quite explicitly the specific problem of the unintended consequences of a unilateral UK policy within the context of the EU ETS “bubble”, and called into question the wisdom of policies which undermined an EU wide policy which had been established by “due process”. This focuses attention on several matters, including EU policy itself (addressed but not wholly resolved at the second seminar), as well as the relationship between the EU and the UK, and the national policies pursued in other EU countries. More widely it raises the question of how to justify **any** national policies in a global context of (currently) limited response to the climate change issue. These questions are not new and the whole problem of collective action was identified in planning for this series of seminars. But this session gave it a very particular focus.

I intend to begin addressing some of these last questions, at least in the EU context, in the BIEE blog for these seminars and would encourage others to join in the discussion.