UNIVERSITY OF OXFORD
OXFORD Energy
Expert meeting
June 2014

Who should decide the energy mix?

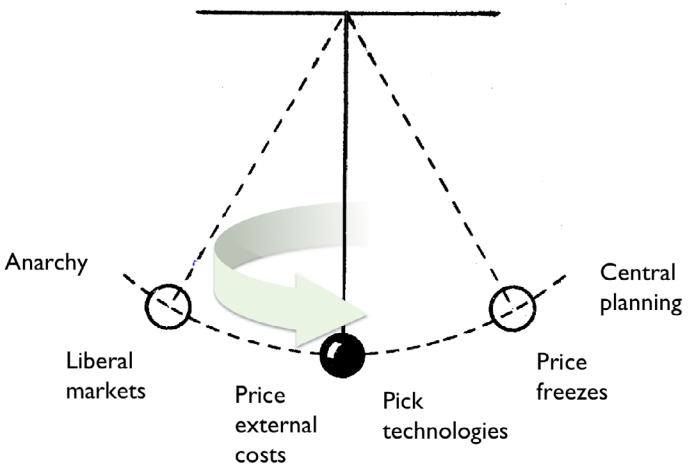
Will the future energy mix be decided by government or markets? Leading representatives from government, regulators, industry and academia debated the future of electricity markets as part of an Oxford Energy event at the House of Lords. An introduction by Professor Cameron Hepburn was followed by an open discussion under the Chatham House Rule.

Introduction

"Who decides the fuel mix in electricity generation?" is a central question in energy policy. Before privatisation the answer was simple: the GB Central Electricity Generating Board (CEGB) was responsible for selecting and procuring capacity and determining the 'merit order' in which power from different sources is dispatched. Nominally, and not always successfully, this was supposed to minimise cost. The past two decades have seen continuous shifts and changes in the locus of decision making. After privatisation markets were expected to be the driving force, initially with some 'light-touch' regulation, but broadly at arms length from government. These early interventions were expected to be removed in due course to allow markets to freely and effectively allocate both capacity and dispatch.

Things have turned out somewhat differently. Although private market actors continue to make power generation investment decisions, low carbon objectives and, more recently, concerns over security of supply have encouraged policy measures to 'correct the market'.

The result is an increasingly complex array of interventions, starting with Renewable Obligation Certificates (ROC) and more recently Feed-In Tariffs (FiT), Contracts for Differences (CfD), capacity mechanisms (CM) and others, each addressing particular alleged market



shortcomings, each surrounded by lobbying struggles to decide which technology qualifies, and each requiring some authority (usually DECC) to decide on the scope and scale of the payments involved.

> *"It seems like a strange reading of history that energy markets are the normality."*

Inadvertently the UK has moved towards a central buyer model, where the secretary of state takes decisions that effectively decide the fuel mix in electricity generation. The majority of new plant on the system will now be decided based on these centrally taken decisions. A lot of money is at stake—tens of billions of pounds—not to mention the future pathway for the UK energy system and its importance for economy, environment and society.

"Who should decide the energy mix in a central buyer model?" was therefore the question discussed at the Oxford's June 2014 expert meeting.

Discussion

The debate exposed fundamental differences in expectation about the direction of policy. Some participants supported the government's stance - that the current level of intervention is merely a temporary deviation and that the 'normality' of markets will be restored through technology neutral auctions as soon as possible. This view was challenged by numerous participants who raised concerns around the efficacy of such an approach for a number of key goals. It was suggested that "it seems like a strange reading of history to view free markets as the norm in electricity generation".

> *"Technologies need to be on the same playing field, but with handicaps. At the moment they are running different races."*

The following points were put forward to question the practicality of technology neutral auctions:

1) **High cost of new technologies**: Current support measures are in part justified by the market failure associated with the common-good characteristics of innovation. Technologies at an early stage of development tend to be higher in cost and lack the supporting infrastructure and institutions of incumbent technologies. The level of R&D support for such technologies must be judged on their long term promise. These difficult choices will not go away any time soon. 'Technology neutrality' will remain challenging when comparing 'old' and 'new' technologies. The current ratio between expenditure on deploying existing technologies and R&D on disruptive technologies is as low as 1:50 or even 1:100. The allocation of this fraction, i.e. who decides which new technologies are supported and how, is very important.

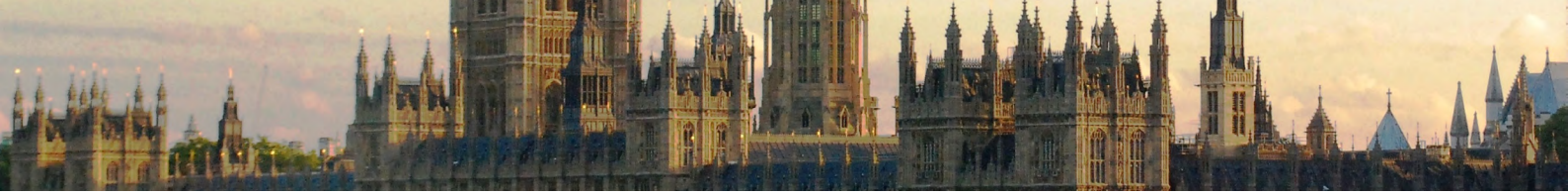
2) **Low marginal prices**: "We seem to be moving towards a set of technologies where the short run marginal costs will be very low". Energy markets may become highly volatile. "It is difficult to see that as being acceptable or able to stimulate investment without some kind of capacity mechanism."

3) **Time-displacement requirements**: A danger with a technology neutral approach is that it neglects systemic issues and tends to favour investment in "the next cheapest kWh". It was suggested that a technology agnostic approach is in danger of delivering the first 30% of the energy system at a low cost, while making the last 30% more expensive and difficult to achieve.

4) **Demand side measures**: It was noted that the demand side is mentioned little if at all in the debate, despite being "the lowest cost solution". Creating a 'level playing field' between demand side measures and generation technologies has proved difficult. It was stated that they do not feature in the CfDs and are largely absent as an option in the Electricity Market Reform (EMR), although that was contested by one participant.

5) **Diversity of objectives**: Energy policy is not decided by a single department and different objectives apply: "BIS in particular, has policy aims around supply chains, for example. That is about choosing technologies". Furthermore, technologies deliver very different characteristics. "1 MW solar is very different from 1 MW of biomass" and CfDs would thus have to be designed differently. Proponents of 'technology neutral auctions' conceded that such differences needed to be accounted for.

Storage: The meeting heard that storage technologies could become highly disruptive. "As they develop and become more cost competitive, the market framework will need to be adjusted to allow them in". For investors in



Combined Cycle Gas Turbines (CCGT) the prospect of storage is a potential long term business risk, which it was suggested necessitates capacity payments to ensure that CCGTs are built today. "There is a risk that we end up building too many, because we don't see [storage] coming". Centrally decided market design and R&D support frameworks thus have a crucial bearing on fundamental technology choices.

Interconnectors: The role of interconnectors, their integration across national markets and the impact on national electricity prices was addressed by numerous participants.

> *"We are now subsiding everything, except for storage, interconnectors, and energy efficiency—the three things we said were potentially the most important, disruptive and useful options."*

The idea of the pan-European market has attracted surprisingly little public attention. In March new trading rules were introduced without much fanfare, but with dramatic effects on the energy flows across interconnectors. 'Perverse flows' from high-cost to low-cost regions, which were not uncommon before, were suddenly prevented, giving one of the participants a degree of comfort that rational markets and more interconnection will be positive for Britain.

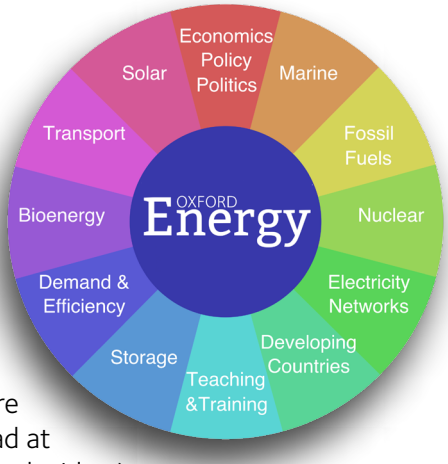
However, the political challenges were also highlighted. Wholesale prices, between which interconnectors provide arbitrage, do not reflect all of the system costs. Subsidies and levies, paid for by tax payers, may thus flow abroad to a market without that particular subsidy. Similarly, the public in regions with low energy prices, such as Norway, may question why their electricity prices rise, while energy flows abroad. This could pose a risk to the interconnector trading model.

Public buy-in: The meeting heard that while Germany has higher electricity prices, the political buy-in is much greater with approval ratings of over 50%, whereas two-thirds of the UK public want to see the energy system renationalised. However, resentment in Germany should not be underestimated and the approval ratings may come at a high cost of Photovoltaic (PV) subsidies for large numbers of wealthy owners of PV, at the expense of poorer households who can't afford PV.

Who should decide?

Returning to the central question of 'who decides', the meeting heard differing views. One position was that "surely parliament and government are going to decide. The prospect that these large amounts of public money are not to be decided upon by elected representatives is just not going to happen". Another view expressed at the meeting was that the Secretary of State should have as little power as possible. While the concept of technology neutral auctions was questioned, several participants agreed that different technologies "need to be on the same playing field, but with handicaps. At the moment they are running different races".

How to square the realisation of a need for intervention in energy markets with a desire to leave markets to take some of these important decisions will no doubt remain one of the important debates for years to come.



Professor Cameron Hepburn's introductory slides are available for download at energy.ox.ac.uk/who_decides/