THE FOUNDATION FOR SCIENCE AND TECHNOLOGY

DINNER/DISCUSSION SUMMARY

Changing behaviour – can a cultural shift be achieved in how people use energy?

Held at The Royal Society on 24th November, 2010

The Foundation is grateful for the support for this meeting from
BP, the Comino Foundation, Shell and the Technology Strategy Board.

Chair: **The Rt Hon the Lord Jenkin of Roding FRSE**
President, The Foundation for Science and Technology

Speakers: **Professor David MacKay FRS**
Chief Scientific Adviser, Department of Energy and Climate Change (DECC)
Stuart Groves
Principal, Booz & Company
Pilgrim Beart
Founder and Director, AlertMe

PROFESSOR MACKAY wanted there to be a "constructive conversation" with the public about the means by which we could activate the step change needed to achieve the 2050 sustainable energy targets. For this purpose he had constructed a web based 2050 Calculator Tool[1] which users could experiment where and how energy use could be reduced, or produced from all supply sources. He illustrated a central pathway, but stressed that there were alternatives to the breakdown shown - so that, for example, if one did not like nuclear, or thought using electric cars unrealistic, one could reallocate items to achieve the target in different ways. All proposals would have, in the minds of some, objectionable features; what was important was, if one objected to one item, not to propose an alternative which was unrealistic. The scale of each of the illustrated elements, on either the supply or demand side, was achievable, as experience in other countries showed. But whatever the choices, reducing domestic demand was a crucial element. We could do this - better insulation and more efficient appliances, use of heat pumps, but, above all, close attention to meter readings and understanding how and why energy use increased or reduced. This required attitudes and life style habits to change - items which should feature in any conversation. On supply, all sources were illustrated and all would be needed - including fossil fuel with Carbon Capture and Storage(CCS) – and perhaps importing solar energy from overseas solar arrays.

MR GROVES agreed a step change was required. He outlined the results of a survey which showed that people thought the achievement of the 2020 carbon reduction and renewables targets were at risk; that domestic demand reduction was crucial and that more needed to be done to realize it. There were substantial barriers to reducing domestic demand - primarily, lack of financial incentive and public awareness of how energy is consumed and where costs lie. Government policy should focus on increasing awareness of use and stimulating changes - higher standards - in building design, transport use and appliance efficiency. Behaviour will change if information is available about why change is needed, and how to accomplish it, there is sufficient financial incentive and capital, and a good fit with community and cultural values. Costs of energy use must be transparent; people should know, not the cost of energy in the abstract, but the cost of running an appliance. Peer group pressure and community action could be very effective. Business use needed also to be considered - SME's needed help to get loans from banks to install efficient equipment. On the supply side, there was need for massive investment in the infrastructure; clear policy guidance on planning for major infrastructure; a higher carbon price; and stronger deployment of non-carbon sources. Key questions were getting the right priorities for action and ensuring that government and private initiatives were sufficient to achieve the targets.

MR BEART pointed out that nearly 50% of consumption came from domestic and transport demand. To reduce such demand people needed to be motivated. A key driver - as Mr Groves had said - was information and transparency on the costs of using energy. At present, the situation was like shopping in a supermarket, with no prices on the items on any shelf. If people could see the cost of the use of any item they would be motivated to use it less or find an alternative. Money is not the only motivator, but we know that 90% of people are worried about energy bills, which consume 9% of household income. Cost needed to be connected to use - the standard tariff with a standing charge gave the wrong signals. If people had information which enabled them to understand that, for example, a particular unit of energy use cost 50p, they would feel empowered to make their own choices, instead of feeling helpless to achieve any savings. Motivation was also strongly connected to peer and community pressure both through competition and collaboration. Change required legislative action, by regulation from government, business incentive, so that it became profitable for utilities to supply less energy (instead of, as now, the reverse) and public consensus. The last should be the driver. When people accept the need for change, business will find ways of delivering it, and government then needs to regulate to spur on the laggards. A new model of engagement would be house by house expert advice, demand response by householders, move by industry to proving services, not products, and developing personal carbon targets. It is possible to reduce demand with public support, and without inconvenience - but we must move quickly.

Speakers, in the following discussion, generally accepted the presenters' view that reducing domestic demand was a crucial element in any realistic scenarios for meeting the 2020 and 2050 goals. Professor MacKay's hope for a constructive conversation might be optimistic, but surely it should be possible to get the populace to understand that they must change behaviour. But there were divergent views on the impact of regulation, the financial imperative, and evolving

[1] DECC Calculator Tool, http://2050-calculator-tool.decc.gov.uk

public consensus. Examples such as smoking reduction and new systems of waste disposal now had wide public acceptance, but some thought that these initiatives worked because of regulation being signalled in advance and public opinion following regulation, not preceding it. There were dangers in making too general assumptions about public behaviour and willingness to change - any cost savings might simply be used to improve comfort. While the emphasis on transparent costing and individual meter reading was valuable, it did not take account of social justice, such as the great difficulty many people had in understanding simple arithmetic, and the poor or elderly who could not afford enough energy input to keep themselves warm and healthy. There were partial answers to these concerns - colour coded devices which showed - in red, orange or green - how much energy was being used; more stress being put on insulating a house so fuel bills were smaller. The winter warming allowance for pensioners was wrong - spend the money on insulating the house. Price certainly had a major role to play (in spite of the number of Chelsea tractors seen in SW1, the high price of petrol in the UK, compared to the US, had led to us having a much higher percentage of high miles per gallon cars than in the US) but it must be combined with respect for voters' demand for fairness.

Carbon reduction was a global issue, not just one for the UK. Speakers pointed out that a number of countries were retreating from green programmes, worried that they might impose too high costs on taxpayers or individuals, or because it was feared that their industries would become less competitive - note President Obama's retreat on this issue. Would the same happen here? Would not there be a strong impetus to go for the cheapest options in supply, whatever the damage to the environment? This was an issue raised in the past by the Royal Commission on the Environment, who had been concerned that because all sources of energy had environmental objections, it was important not to be negative, but to create a consensus where environmental and energy projects were considered together. The issue was really one of risk avoidance. Did people accept that there was a significant risk that, if nothing was done, the world faced catastrophic change? If so, how to minimize it? Did they accept that fossil fuel prices might soar - in spite of current low prices? Did businesses understand that, without innovation and meeting environmental concerns, they might find themselves in decline? It was only if these risks were understood that Professor MacKay's "constructive conversation" could yield effective results.

Speakers also raised a number of issues about the practicality and cost of measures. Substantial investment needed to be made to create adequate storage of energy, internationally, nationally and domestically. If nuclear was the cheapest option for non-carbon fuels, why had it not been taken as the sole source for new energy? Why had gas been downplayed? Electricity production fuelled by gas was much more economic than renewables, and gas could be subject to CCS. But the emphasis on what could be done on supply was at present based on practical and engineering possibilities. Public opinion had been for so long worried about nuclear, that we needed to show that there were engineering possibilities for supply outside it, although cost might form the basis for future decision. There was indeed, a problem about whether there was sufficient engineering resource available for the construction of the necessary global infrastructure, but, for the present, engineering solutions were available. If the politicians provided the vision, engineers would follow to implement it. A concern was whether sufficient thought had been given to possible breakdown of the electricity system from, for example, solar induced electromagnetic pulses. This was a grave risk; it was an item on DECC's risk register, and the Government had included two paragraphs on the National Security Statement about it.

Other suggestions for reducing demand were voltage optimisation, using Joules per day as a measure of usage, rather than kWhrs per day. But Joules were not in common parlance, few would understand MegaJoules, and communication in the best understood terms was important. If communities joined together to seek a common tariff from utilities they might be able to secure better prices, and if also creating their own energy sources - solar panels - with a feed in tariff, they would be empowered to work together for reducing use. Speakers also suggested that energy use should not be looked at unilaterally; it should be looked at in terms of overall resource use - such as reducing water usage, and joining it with public campaigns, such as healthier living. Resource limits, the effects of climate change, financial stringency, will all require significant changes in behaviour; we should consider them holistically.

Sir Geoffrey Chipperfield KCB

AlertMe
www.alertme.com

Booz & Company
www.booz.com

BP
www.bp.com

The Carbon Trust
www.carbontrust.co.uk

Comino Foundation
www.cominofoundation.org.uk

Energy Saving Trust
www.energysavingtrust.org.uk

Energy Technologies Institute
www.energytechnologies.co.uk

Sustainable Energy - Without the Hot Air, David MacKay FRS
www.withouthotair.com

Department for Energy and Climate Change (DECC)
www.decc.gov.uk

Research Councils UK
www.rcuk.ac.uk

The Royal Academy of Engineering
www.raeng.org.uk

The Royal Society
www.royalsociety.org

Shell
www.shell.co.uk

The Technology Strategy Board
www.innovateuk.org

The Foundation for Science and Technology
www.foundation.org.uk
A Company Limited by Guarantee
Registered in England No: 1327814
Registered Charity No: 274727