

## The All Party Parliamentary Engineering And Information Technology Group

### ‘Will we be able to pay the price for our energy strategy?’

Report of the debate held on 9 November 2010 in Committee Room 12, House of Commons and the subsequent dinner meeting in the Cholmondeley Room, House of Lords

#### Chairman

Professor the Lord Broers

#### Speakers:

Sir Alan Rudge-Chairman of the ERA Federation

Professor David Mackay-Chief Scientific Officer, Department of Energy and Climate Change

Adrian Bull-Director of Media and Stakeholder Relations for Europe, Westinghouse UK

Lord Lawson

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This was our second ‘debate’, fully sold out and with a large waiting list. The audience numbering over 60 and included members from both Houses, many young engineers and prospective engineers including a large contingent coming through the Royal Academy of Engineering; and representatives from sponsors.

**Lord Broers** opening the event said that the solutions to produce renewable and clean energy were available but these solutions were more expensive than traditional sources.

Cost estimates were robust but were not being talked about-an inconvenient truth. The aim of the debate was to expose the cost issues. He asked Professor David Mackay, author of ‘sustainable energy without the hot air’, to set the scene.

**Professor David Mackay** outlined the GW delivery by power stations and the GW usage in the UK. He drew attention to the security and sustainable and climate change risks of fossil fuels and described some of the risk mitigation measures available:

- Demand reduction
- Lower carbon supply/ Carbon Capture and Storage ( CCS)
- Nuclear
- Wind

- Biomass and Waste
- The costs of demand reduction were uncertain
- Nuclear-cost uncertainty and how to deal with waste
- CCS-uncertainty because it had never been done at the scale required: 10m tones p.a.
- Wind was more expensive than nuclear and CCS
- Biomass-at present it uses as much energy as it saves

Therefore the solution is to 'hedge' the uncertainty by pushing all 5 of the above energy options.

### **Adrian Bull**

Nuclear was not *the* answer but was an important part of the answer. The first 'new' nuclear power station was not due to come on stream until 2018 and that assumed an immediate start on work. Nuclear supplied about one sixth of UK energy at present, and the aim was to produce about 30 per cent of energy needs (16GW) from new stations not yet under contract. Delivery/budget record for the industry was not good in the past.

Each existing UK nuclear power station was (unbelievably) built to a different design. France had standardised design and thus achieved huge scale cost advantages. Government appears keen to remove obstacles to build plus removing waste storage risks.

A Westinghouse designed nuclear power station is being built in China and so the experience gained from that should mean that the UK version of the power station will work well. Mr Bull emphasised that Westinghouse would wish to use UK supply chains. Sites are being acquired now and significant experience is being gained.

### **Sir Alan Rudge**

Sir Alan pointed out that the level of manufacturing in the UK had consistently worsened up to 2007 creating a huge deficit in the manufacturing balance of payments. However, manufacturing still accounts for 50% of UK exports, and a 10% increase in manufacturing exports coupled with a 10% reduction in manufactured imports could almost eliminate the balance of trade deficit. The 2008 Climate Change Act had provided for a reduction in carbon and climate change gases.

In addition, EU carbon restriction requirements had imposed additional regulation (interestingly nuclear power is not classified by the EU as a non-carbon resource) which would mean that the total increased cost of energy emerging from all this regulation would be a disaster for industry. Added to that, the closing down of existing power stations will mean losing one third of energy production over the next few years. Wind power is costly and behind schedule, to say nothing of its variable output. Wave power is not practical at the present time and solar power is too expensive.

The Royal Academy of Engineering say that the targets can be met, but the challenge is massive and must be done now and it will in any case be extremely expensive. However,

In his view it was impossible to achieve the carbon reduction targets in practice without incredibly costly increases in energy cost. The UK contributes only 2% of world carbon emissions. The UK economy is very small and fragile and therefore it was under no obligation to rush into this. Security is the great challenge and current policy is far too expensive.

### **Lord Lawson**

Lord Lawson said that he largely agreed with Sir Alan Rudge. He said that wind power is 'a very stupid' form of energy generation. Non-carbon energy requires nuclear as the best bet, argued historically for energy security reasons, but now he thought security was not a problem. In his view, the idea of creating "green jobs" was economic illiteracy. All petroleum companies say at any given time that there is "only 40 year supply left" and this was being said to him 30 years ago! Coal is abundant and gas from shale is also abundant so in his view there is more energy security now than ever before.

The greenhouse gas debate does not tell us anything about the speed and nature of climate change, and in any case, in order to do anything remotely effective a global agreement was needed. Copenhagen was a fiasco because China, India and Brazil wish to develop as suits them best. China is building a new modern coal station each week. He lamented the "Peter Pan" principle, namely, "dreams come true if you want them to". The idea of the green investment bank and was illusory because the amount of money (about 1trillion pounds) needed to meet our climate obligations was way beyond the capacity of any one bank. Accordingly the idea should be dropped.

### ***Debate***

In the ensuing debate the following issues were discussed and points made:  
uranium: judged by regular OECD studies, we know that there is about 60 years supply. It is simply one element in the production of energy and a small element at that.

National targets - should they be revisited. Prof Mackay thought not but made the point that a massive improvement could be made introduction of consumption by insulating houses and the production of electrical vehicles.

Tidal energy makes a lot of sense. 25% of today's electricity requirements could be done through tidal energy - the cost is the same as forwarding and.

Global warming - is it true? Much debate on this issue throughout the evening between those who feel that there is a consensus among scientists that man-made global warming is occurring at an alarming rate and those who feel that the case is completely unproven; and that security is the biggest problem not least because when the world comes out of recession it will use energy at a huge rate and therefore the cost will increase sharply. We should concentrate therefore on a range of things which we know about as solutions now rather than continue talking and speculating. Politics has grabbed the issue too early in the day.

Targets: again, considerable debate between those who felt that the 2050 carbon reduction plan was achievable and those who felt that the costs were

unrealistically high and that we should concentrate on energy security and developing technologies which we knew about.

New technologies:

- uranium from seawater
- nuclear waste being made safe by combination of fusion and fission
- very long range electricity supplies technology (China)

Hearts and minds campaigns in relation to nuclear and tidal energy: much discussions through the evening on this point, the feeling being that "numbers" would change hearts and minds, in other words, the arithmetic of the issues facing the country was so compelling that most people would recognise (and are apparently judging by recent IPSOS/ Mori opinion polls already recognising) that nuclear was the any realistic option. Local people around nuclear power stations wanted the replacements to be cited in exactly the same place since they have become used to them and they provided employment and security. Use of warm water around nuclear power stations was unfortunately at the moment too expensive to be realistic. There is a website called '2050 Pathway' which is being developed, giving many of the numbers.

India/China: it needed to be realised that both these countries wanted cheap energy which would inevitably involve fossil fuels so that the poor peoples of their countries can gain energy and a reasonable price. Cost is the crucial issue. Blue sky technology: the members of the panel were asked what they would like to have developed over the next few years in an ideal world:

- highly efficient and low cost storage technology which would enable
- large-scale carbon capture at zero cost; in the recent spending review the
- government had allocated £1 billion towards a large-scale investigation of
- CC S;
- seasonal heat storage of electrical energy (bury it ?)
- aim to keep the lights on over the next few years by building gas and
- nuclear power stations

The role of engineers: it was felt that not enough government policy was developed after listening to engineers and yet one MP commented that during the passage of the 2008 Act no engineers had written to give their advice. Parliamentarians need evidence. Others felt that engineers could respond to the challenge provided they were given the policy and the facts on which to base their challenge.

The role of government: opinions differed between, for example, Lord Lawson who felt that 'government should get out of the way' completely, and those who felt that the government had to give a lead in terms of policy around which industry could build its investment plans. It was pointed out that free market forces had allowed much of UK energy reduction to move outside the UK. Also, doubts about whether UK Industry prepared to take a 50 year view.

Uncertainty: A lot of it about, but uncertainty demands more action not less in order to limit the level of uncertainty.

Lord Broers closed the evening by thanking our sponsors and also the speakers and also the young engineers.