
Castle debates - environmental aspects: science, law and policy

Organised by Pamela Castle and Sykes Environmental in conjunction with the Law Society

Notes of first debate held on 15th February – The future of renewable energy and heat

Introduction

Environmental issues are multi-faceted and complex. They can only be understood and addressed if a multi-disciplinary approach is adopted. The Castle Debates have been established to raise the level of discussion on important environmental issues of the day, and, in particular, to draw out the important scientific and related facts which should inform the development of our laws and policies. By bringing together leading scientists, lawyers, policymakers and politicians at the Castle Debates, these matters are subject to debate and scrutiny.

First Castle Debate

The first Castle Debate was held at the Athenaeum Club in London on February 15th 2011. The event was fully booked, with more than 100 attendees. The First Debate addressed the pressing issue of the UK's law and policies relating to renewable energy.

The speakers were: **Matthew Spencer**, Director, Green Alliance; **Munir Hassan**, Partner and Head of Clean Energy at CMS Cameron McKenna; and **Sarah Rhodes**, Head of Land-based Renewables at DECC.

Pamela Castle: Chair's Introduction

Our over-dependence on fossil fuels needs to be addressed to reduce carbon dioxide emissions (which contribute to climate change), and to facilitate energy security. The UK may be unable to achieve self-sufficiency from green energy (see the Facts and Figures table below), but it is important to make the most of our natural, replenishable energy resources for electricity, heat and transport. There are lucrative commercial opportunities which should create many green jobs, albeit skill shortages could hamper growth.

Renewable energy is a broad topic for debate. It will receive further attention in other debates in this series, for example in the next debate on sustainable buildings and in the debate on sustainable transport. Moreover, specific aspects of renewable energy might be revisited in future programmes of Castle Debates.

The Law Society was thanked for helping to organise the debates, and the ENDS Report for sponsoring them. In addition, various organisations had kindly brought the debates to the attention

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of their memberships: Environmental Law Foundation, United Kingdom Environmental Law Association, Aldersgate Group, Planning and Environmental Bar Association and the Gaia Foundation.

Matthew Spencer: The Prospects for UK Renewable Energy

Matthew argued that the potential for rapid growth in UK renewable electricity generation is 'good' because of the UK's unique offshore wind resource, industrial capability and early policy learning.

Matthew explained how the UK's renewable energy policy had developed over the past two decades, highlighting the success of the financial incentives of the 1990 Non Fossil Fuel Obligation and the 2002 Renewables Obligation.

Some of the largest infrastructure projects being implemented in the world are renewable energy ventures located in the UK – or just off our shores. Off shore wind energy turbines measure 220 metres from the base of their foundations to the tip of the blade. When fully capitalised, the 9GW Dogger Bank wind farm will be valued at £30 billion, and will go straight into the FTSE 100.

Our 2010 legal target (10% of our energy to be from renewables) will not be met until 2012-13. There are challenges to overcome if the UK is to reach its target. Matthew described the national target of 15% renewable energy by 2020 as "extremely challenging".

One of the principal challenges is attracting investment. Some £15 billion needs to be spent on energy efficiency each year up to 2020. Our major utilities cannot fund all of this on their own. We will be competing with other projects and other countries for project finance. Matthew highlighted the need to attract investment from sovereign wealth funds, as well as the "critical importance" of the Green Investment Bank to fund newer technologies.

Munir Hassan: Clean Energy Projects

Munir said we all need to get used to the prospect of paying more for our energy. The UK's renewable energy business is no longer operating on a small scale – e.g. in 5 or 6 years, the UK looks set to dominate the offshore wind industry and then to export our know-how around the globe.

These developing market looks set to keep professional advisors, including lawyers, very busy in the years ahead, as renewable energy businesses require assistance with tax, finance and contracts.

In Munir's experience, wind energy is especially attractive – it 'stacks up financially' as well as in terms of its 'carbon cost', and that is so whether the oil price is high or low. He described large scale offshore wind energy as 'the cheapest energy resource we have in the UK'.

The financial services sector is starting to respond to the needs of a new generation of green energy generators and consumers – e.g. with new funding products, insurance products and so forth.

Areas of legal advice on renewables projects include: planning and consenting (crucial), procurement and outsourcing; project finance and refinancing; employment law; environmental law; mergers and acquisitions; wider infrastructure upgrades (ports, roads, rail, energy networks) and financial services.

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Sarah Rhodes: Renewable Heat and Energy – The View from Government

Sarah considered what the UK needs to do to meet its targets – described as “a massive challenge as well as an equally large opportunity”. By 2020 we require a 7-fold increase in the amount of renewable energy that we were generating in 2008. She identified the immediate prerequisites for Government policy as follows:

- First, **securing investor confidence** so that the necessary finance will be available to deploy more capacity and stimulate innovation. Investor confidence requires investors to be confident that the projects in which they invest will generate a profit. This requires policy certainty and revenue support. Electricity market reform is needed for the generation of clean energy. Sarah added that the Government’s plans for the Renewable Heat Incentive (RHI) – the provision of financial support to encourage us to switch from using fossil fuel for heating, to renewable energy, would probably be published in March 2011.
- Secondly, maintaining and developing the **right policies** (such as an effective planning system, and measures to promote development of the supply-chain and the grid).
- Thirdly, ensuring, in particular, the **necessary engagement of the public**. This means that the general public must want the transition to green energy to **happen**. **This requires** information and advocacy.

DECC’s lead scenario to reach 15% renewable energy 2020 entails the biggest roles for technologies roughly in order of descending importance: offshore wind; onshore wind; biomass boilers and bioenergy more widely; microgeneration; air source heat pumps; ground source heat pumps; hydro; wave and tidal; and others.

Questions and Answers:

1. **Pamela Castle** asked a question for clarification: where does the renewable energy target of 15% by 2020 come from, and what are the repercussions for the UK if we miss the targets?

Sarah Rhodes explained that the targets are derived from EU laws (and **Matthew Spencer** referred to the binding targets for the UK to decarbonise in the Climate Change Act 2008). If the UK breaches its EU obligations, legal proceedings may be brought by the European Commission for infraction, leading to legal costs and fines, if a serious effort is not made to comply. We are historically a little behind much of Europe because we have limited amounts of hydro and wood. We are behind with onshore wind.

2. **Sir Crispin Tickell** asked whether DECC takes account of the true cost of using fossil fuels? Are externalities factored into the cost of fossil fuel so that we can truly say that one type of energy source is less expensive than others? (In addition, Sir Crispin invited the

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speakers to say a word about geothermal energy, which he described as having interesting potential).

Sarah Rhodes agreed that all around the world there are plenty of subsidies for fossil fuels. Fossil fuels are the ‘incumbents’ and we have long since paid for most of the infrastructure required to extract and distribute it to customers. It is difficult and expensive to build the infrastructure needed for renewable electricity supplies, new heat and new transport. That said, the cost of fossil fuels is shooting up, and that makes the relative cost of meeting renewable targets easier.

Regarding geothermal energy, Sarah said that deep geothermal is in DECC’s scenario planning (see the diagram above) but it is a very small wedge. That is because the UK does not have many suitable areas where deep geothermal can be generated. We also have the option to connect to some of our northern neighbours (eg in Scandinavia) who have significant supplies of geothermal energy. This is attractive because geothermal is a stable supply of energy and can generate on demand (whereas wind energy, for example, is intermittent).

- Ralph Smith, Senior Transport Campaigner for CPRE**, asked whether the Panel would agree that biomass is crucial for renewable energy supply in rural areas? If so, what are the likely repercussions of the Government’s ambitions for transferring the ownership of public forests to business and communities?

Mathew Spencer has promoted biomass in the SW of England. There are many homes in the rural parts of the UK which are off the gas grid, and will not be connected to it because it is too expensive. Many of these homes use expensive fuels – heating oil and LPG – whereas biomass (often woodchip) is often a cost-effective alternative for larger rural facilities such as creameries, army barracks, etc. As the DECC chart shows, biomass is expected to make the greatest contribution for renewable heat supply in the UK. It can be used in homes (e.g. wood pellets), although it may be less attractive cost-wise (but as Sir Crispin’s question indicated, the costs of fossil fuels are not real costs, they are artificially low costs which do not include security and other externalities).

Matthew added that he has had very positive experience with the Forestry Commission which has actively invested in wood fuel heating supply chains. He thought that whilst not perfect, the Forest Commission did a good job, and it was best if they continued rather than be privatised.

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4. **Dr. John Henry Looney, MD, Sustainable Direction Limited**, asked a question about the review of the Feed-In Tariff Scheme (FITS) to exclude large-scale solar schemes. Would it not be a better option for DECC to support solar PV on buildings on brownfield sites, and then to require the investors to provide societal benefits through planning gain? He said he is working on two 2-3MW solar farms in Wales which look likely to generate a 15% return on investment. He is working on 2 schemes in the South of England – retrofit of solar on large housing estates – and these generate a return of about 10%. Brownfield solar would provide a cheaper investment with a lower maintenance costs and a better return on investment?

Sarah Rhodes first explained that DECC did comparatively well in the Comprehensive Spending Review. There were no changes to the Renewables Obligation budget (and this is an expensive scheme, costing over £1 billion in 2010), and money was also secured for the Renewable Heat Incentive scheme. However, DECC did have to take a cut in the FIT scheme – a 10% cut which DECC needs to implement from 2014.

In announcing the review of FITS, Sarah said that DECC is keen to take a close look at large scale solar. This is an expensive renewable, and she said that there was a real risk that solar would ‘scoop the budget’ so that there is nothing left to support other small scale renewable electricity. DECC has to consider what is the most appropriate technology for different places. We have to decarbonise our cities and small scale solar is a good way to do it. DECC is open to new ideas and Sarah encouraged attendees to participate in the consultation (details of how to do so are contained on DECC’s website).

John Henry Looney said that the cost of large scale solar is falling and can be lower than offshore wind (e.g. £2M per MW looks achievable before too long). He said that it is 40% more efficient than wind and 25% cheaper. Sarah said that onshore wind is by comparison £1.25M per MW. She added that there is no perfect answer to how the UK achieves its mixture of renewables.

Munir Hassan commented that investors are looking at how Government has behaved with FITS – potential policy shifts could impact pre-agreed projects and timeframes and investments. This would introduce uncertainty and that would be unhelpful for the market.

5. **An attendee from Renewable UK** asked what impact localism would have on on-shore renewable deployment?

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Sarah Rhodes explained that the Localism Bill applies to certain planning projects in England and Wales: planning decisions for major infrastructure projects over 50MW will be brought back to democratically elected ministers in government. A further change is that there will be a role for neighbourhood plans and local plans for smaller scale projects: the local community can consider what it wants to get out of renewables. The consent rate for renewables projects through the local planning system has not been particularly high in the past – success rates for securing planning consents have been roughly 1 in 3; with only 1 in 4 onshore wind applications securing local planning consent last year.

The issue goes back to Sarah's opening point in her presentation about public engagement so local people realise the benefits of renewables, e.g. by involving communities in shaping plans and sharing benefits to give them more reason to want renewables in their area. There is work under way in Government to support this – e.g. in relation to allowing local areas to keep business rates that are generated in their areas. Moreover, the onshore wind industry has agreed and is announcing next week (week commencing February 21st 2011) its own commitment to communities and how it will engage with communities in England, e.g. discussing plans and economic opportunities, working out how developers can share benefits with the local community.

Matthew Spenser described localism as a faith-based, ideological matter for the Coalition Government. He described the form of localism which is being promoted by the Coalition as 'purist' – all about rights, but without the transfer of responsibilities or resources localism will not happen. He thinks that there will not be a surge in local activity (e.g. in respect of renewables), but rather that there will be a stalemate because of what has been lost: structure plans, local development frameworks, and councils have stopped working on local policies because they do not know what will happen next. It is easier to do nothing than to do something. He thinks that resources are needed, and there needs to be a duty to future generations to mitigate climate changes – otherwise we will go backwards. Offshore wind could slow to a snail's pace until we find our way out of this mess.

6. **Mark Fermor, MD, ESI Limited**, explained the Environment Agency had recently indicated that the whole of the UK's renewable heat requirements could be met by ground source energy. He wanted to know whether DECC shared this viewpoint?

Sarah Rhodes said that ground source heat pumps are an excellent technology, particularly suited to new builds. For existing older buildings, energy efficiency comes first before considering heat pumps. DECC do have 'serious ambitions' for ground source heat pumps –

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but Sarah could not see that we will progress from the rate of take up that we have now to a position where heat pumps provide all the renewable heat that we need. It would entail a massive expansion of the supply chain, and we do not need to do this. There are various other technologies eg biomass, and biogas have a part to play – and, increasingly, electricity will have a role to play. We need diversity.

7. **Peter Young, Chairman, Aldersgate Group and Strategy Director of SKM Enviros,** asked: What is the minimum capital needed to make the Green Investment Bank a success, and how much of this should be deployed on renewables? If the only mechanism for correctly pricing fossil fuels was a carbon tax, how high would that tax have to be to make say offshore wind comparable to gas generation? What proportion of onshore wind is already deployed, and what proportion is in planning?

Matthew Spenser said that strange though it may seem that the environmental sector is pushing for another bank at this time, this is not a private bank – it is a public sector bank, a type of bank which is much more prevalent in mainland Europe. The European Investment Bank is the model that is being promoted. A bank that can take risks which the private sector cannot take – to reduce the technology and market risks associated with some renewables by using the expertise it would have as a specialist low carbon green bank.

Ernst & Young estimate that in order to make a difference the bank would need – together with good leverage – capital in the range of £4 billion to £6 billion. The current offer on the table from Government is £1 billion, plus the unspecified proceeds of asset sales (perhaps a further billion). Hence there would be a sizeable gap. If Government does not fill it, the question is whether the Green Investment bank will be able to issue bonds and tap the debt markets and therefore get better leverage? The Green Alliance thinks that this is essential, but the Treasury is not keen.

Renewables will be the first priority of the bank, although supporting the Government's Green deal is also important. This is important because there is a very specific barrier to private finance accessing the offshore wind market: underwriting construction risks for insurance and other de-risking products, and refinancing once assets are up and built (this market is not yet liquid), the bank can assist with these issues.

Sarah Rhodes said that in DECC's lead scenario the UK needs 14GW of on shore wind by 2020. We have almost 4GW at present; with a further 1.5GW under construction, and a further 3GW consented but waiting to overcome issues such as radar interference. Onshore wind is very financeable – there is plenty of money for it because it is a proven technology.

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There is plenty in the planning process – enough for us to meet our 14GW target if it were consented.

8. **Sophie Charveron, Senior Projects Lawyer, KL Gates LLP**, asked what can be done to make renewable energy more investable as banks have limited interest in investing in renewable energy projects?

Matthew Spenser said that the challenge for investment is to attract funds from a range of sources – banks (yes), but also pension funds. Banks are interested in renewables – but not in sufficient quantities. We have investment in the onshore sector already, and will see it with offshore wind in due course.

Munir Hassan confirmed that banks are hugely interested. They want to do deals. The credit crunch has led to some stockpiling of cash, so now is a good time to attract it to the renewable energy sector. Munir added that most of the renewable sector has, broadly speaking, accepted the concept of a carbon tax (a cost on fossil fuel producers). However, it might have unintended consequences. It does not necessarily follow the introduction of such a tax that low carbon energy will be less costly to develop, or easier to finance.

9. **Sir Anthony Cleaver, Chairman, Caithness and North Sutherland Regeneration Partnership**, noted that there has been very little mention throughout of the potential for tidal power. The Pentland Firth has the 6th most powerful tidal race in the world. He asked why there was so little consideration of tidal energy in DECC's plans, as the technology challenges are akin to offshore wind, but the energy resource is far more predictable?

Munir Hassan said that there are some sizeable tidal projects – e.g. Alderney has potential to generate 2GW. These projects do rely on a high level of support, financial and otherwise. There is certainly a high level of support in Scotland for tidal energy.

Sarah Rhodes predicted a great future for UK tidal energy. Commercial production is already under way at Strangford Lough in County Down, Northern Ireland. Realistically, there is a long way to go. It is on the edge of readiness for commercial deployment and is hard to finance. There is limited expectation for it from DECC up to 2020, but huge ambition after that. It is an area where the UK can lead the world. Wave energy is a little further back than tidal. The UK has lots of resource and it is an industry invented in the UK.

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Sarah added that it will take a large amount of money to develop our tidal resources. DECC has already invested a lot of money into tidal including £22M in 2009/10, and the Carbon Trust has been very supportive.

- 10. Emma Chumas, Solicitor, Macfarlanes,** asked how the Government can recognise the long-term nature of renewable energy investments, whilst ensuring that future (and more efficient and better) technologies are rewarded with investment?

Sarah Rhodes said that in relation to electricity we have a Renewables Obligation that gives different levels of awards to different technologies. More innovative technologies are incentivised with a higher rate of return. Hence, tidal and offshore wind get double the incentive that onshore wind gets, and many times the multiple that applies for sewage gas and landfill gas. The 2020 target is realistically going to be met by existing technologies. The Renewables Obligation works by giving a predicted level of subsidy from the moment that energy is first being generated. Giving investor confidence is very important.

Matthew Spenser agreed that there is a trade-off between flexibility (access to new technology and new learning) and certainty for investors. The perception is that we do not have enough flexibility, and it needs to be improved. The two things that government needs to get right is to attract more players to the market – especially smaller energy supply businesses (because they tend to be more innovative than larger businesses); and government must promote technology and research and development. Government has, in the past, split the resources that are available for innovation and hence has had a confused approach to it. Resources should be pooled across different countries – we will need this scale of ambition if we are to bring new options to the fore.

Chair's Summary

The UK is subject to tight legal targets, and we have some way to go to meet them. For investors to have confidence they need political certainty, but there are some open issues, such as the role of the Green Investment bank and the amount of capital it will receive from Government. Most importantly, for there to be greater uptake, we need public support and engagement –and this has not really happened so far. This was one of the reasons for setting up the Castle Debates, to elucidate the issues relating to renewable energy.

Pamela Castle, Chair, Castle Debates

Stephen Sykes, Sykes Environmental LLP

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Some Facts and Figures about Renewable Energy

DECC's Chief Scientific Advisor (Professor David Mackay) has written that the "maximum Britain would ever get from renewables" is **18 kilowatt hours per day per person** (*Sustainable Energy Without The Hot Air*, p 109).

People in the UK use 120 kilowatt hours per day per person of energy. (This is equal to leaving 120 standard light bulbs on all day).

The UK's is ranked as **one of the most attractive countries in the world to invest in renewable energy** (Ernst & Young Renewable Energy Country Attractiveness Index).

£75 billion will need to be spent over the next 9 years if the UK is to meet its 2020 target of generating 15% of our energy from renewable sources.

Sykes Environmental

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Sykes is an environmental investment and strategy business. A former Vice Chair of the United Kingdom Environmental Law Association, Stephen was the Legal Director of Certa (UK) Limited, and Chair of Argyll Environmental. He specialises in environmental start-up companies, as well as environmental corporate and product development. An environmental entrepreneur and solicitor (non practising), he has a Masters Degree in environmental law as well as extensive experience in the environmental business sector.

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