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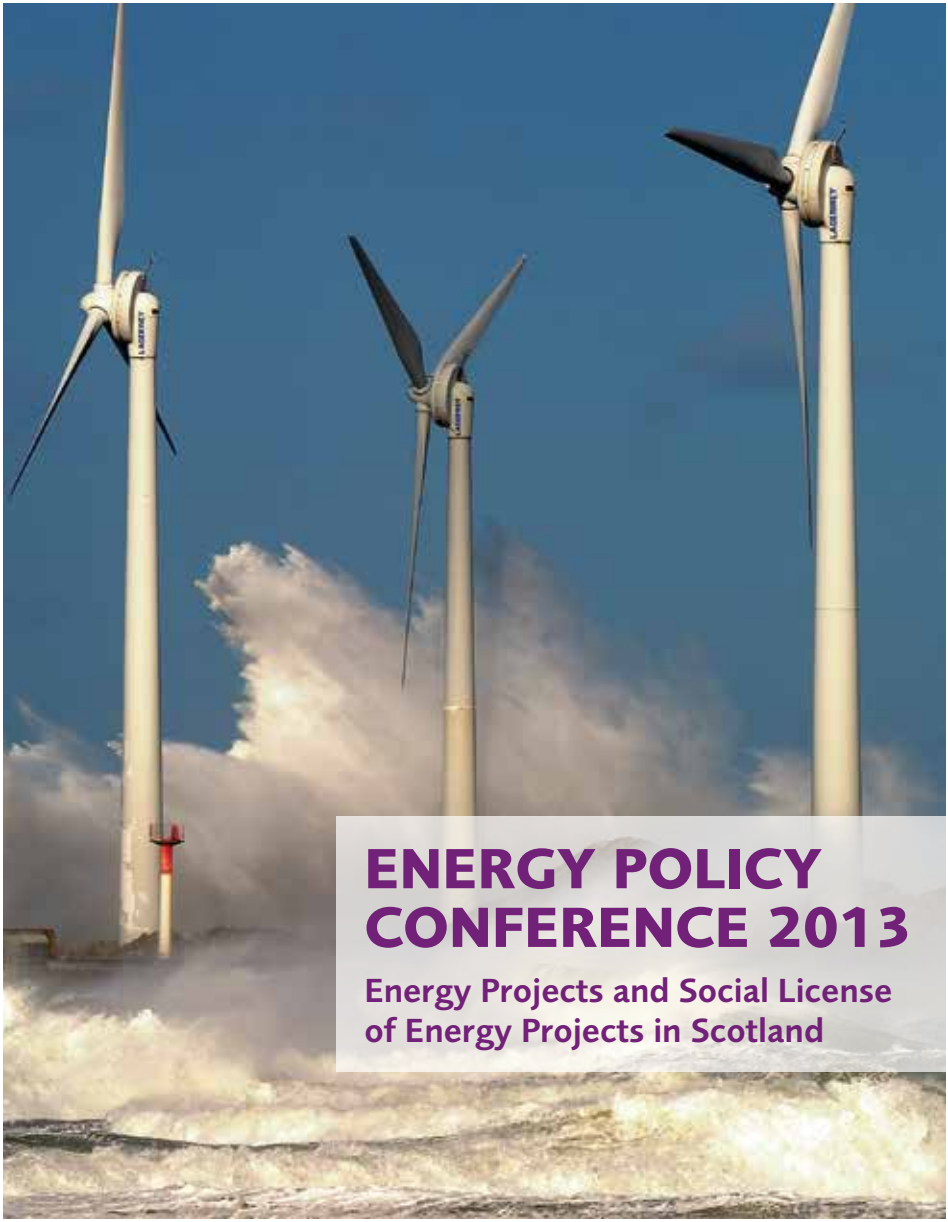

ENERGY POLICY CONFERENCE 2013

Energy Projects and Social License of Energy Projects in Scotland

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Foreword

Attracting investments for renewing infrastructure, developing onshore gas activity or carbon capture and storage are just a few of the policy entries in the United Kingdom's long list of priorities for enhancing the country's energy security. With the expansion of onshore wind farms and the Westminster government's stance in favour of growing a UK unconventional gas industry, this country seems set to grow more onshore energy projects despite the resistance of local communities and a vocal anti-fracking public opinion. Closer to Aberdeen, onshore energy infrastructures and their impact on the local scenery continue to feed much heated debate as to their compliance with local planning policies and the Scottish nation's sustainability objectives.

At Robert Gordon University, part of our teaching and research directly connects with these energy policy issues. In order to contribute to this stream of ideas, and as part of the Law School's 2013 programme of events, the Aberdeen Business School sponsored in November 2013 a two-day conference discussing "Energy Projects and the Social License of Energy Project in Scotland". This booklet brings you seven of our keynote speakers's presentations in a transcript reflecting how these were delivered during the conference. A number of circumstances prevented us from publishing this digest at an earlier date but it truly is a pleasure to be able to release these transcripts now as I am sure you will appreciate the significance of the views expressed and the scholarship and expertise of our keynote speakers from Denmark, England and Scotland. We have not compiled the keynotes in the same order as the one that was followed for their presentations at the conference but they have been slightly reorganised in an attempt to create a greater dynamic between the views and topics discussed. We hope that our readers will find this approach useful to help them better appreciate the conclusions expressed.

We begin this series of transcripts by Mr Mark Lappin's keynote discussing the 2013 real-life profile of the UK's energy supply and demand. Mr Lappin introduced our delegates to the UK's live energy data available on the internet showing the country's power production and requirements. As a geologist with decades of experience of oil and gas industry management, Mr Lappin is an onshore exploration and production engineer with a rare expertise in unconventional gas in

Scotland. The live energy data accessible via the National Grid's website helped Mr Lappin comment on the strategic role of natural gas for the production of UK electricity. In 2013 the UK remained strikingly reliant on fossil fuels for generating its baseload. Coal still produced 20% of all UK electricity. Mark Lappin argued the importance in this context of creating a regulatory environment that promotes UK domestic gas resources while the country transitions its energy system to include a larger share of renewables. Gas being less potent than coal this policy should include a long-term vision for natural gas, especially onshore gas, acceptance of which by local communities lies at the heart of a successful development of unconventional gas. Mr Lappin also indicated that natural gas could be a proper means of reducing carbon emissions while relying on a form of energy that is more flexible than many others. A natural gas strategy requires however that public and private energy stakeholders look at more effective ways of engaging with the public, especially if they want to alleviate resistance around onshore gas prospects. In Mr Lappin's experience, regulatory frameworks should certainly help create more certainty but also provide a solid environment for public engagement.

In the second keynote, Mr Robert Gray, who is Aberdeenshire's Head of Planning and Building Standards, discusses the sources of opposition to onshore energy projects. He indicated that addressing opposition calls for an ability to identify a number of factors that are being perceived as "polluting" by local populations. Mr Gray discussed the challenges raised by the targets defining the Scottish ambition for renewable energy sources (RES). He thus questioned whether in 2013 planning regulators in Scotland did hold the policy instruments that help address the concerns that classically come with onshore projects. In that respect, Mr Gray questioned why the Scottish planning process seems now to be regarded as a "natural platform" for engaging with local communities on community benefits. He pointed that it is not part of the planning authority's role to be involved or sanction the inclusion of community packages in onshore projects. Closing his presentation, Mr Gray also asked why in 2013 Aberdeenshire there was still a visibly low level of community-owned infrastructure, especially for wind energy? As a planning expert Mr Gray concluded that in 2013 one could see a degree of disconnect between the Scottish RES ambition and the capacity of policy instruments to deliver a higher RES capacity, including for community energy.

And when it comes to communities and energy infrastructure, Denmark is one of the few European Member States that have achieved startling results in building an onshore energy infrastructure backed by a broad social licence. To review the contemporary Danish environment, we had the privilege of welcoming Professor Anita Rønne from the University of Copenhagen. Professor Rønne helped the conference form a better sense of long-term policy visions and the efficiency of long-term planning and ambitions. In her first presentation to the conference, Professor Rønne explained how the success of Denmark's onshore RES infrastructure owes to the Danish culture of political consensus over the country's energy policy. Both of Professor Rønne's presentations insisted on the need to think in terms of bespoke policy techniques and contents. The Danish energy strategy was introduced over 40 years ago. It has progressively helped Denmark build a world-class wind energy industry and infrastructure resting on a strong tradition of consultation with local populations. In practice, citizens are actively involved in public hearings and consultations. They are also invited to co-invest in wind farm projects. Consulting with local communities was perhaps initially perceived as burdensome. Yet, public consultations have gradually strengthened the efficiency of the planning process as it is now locally organised by the Danish municipalities. The contents and structure of the consultation process are also the result of a crossbreed between the Danish local and national experience. They have led the government to introduce policy instrument to compensate local communities and a scrapping scheme for replacing older wind farms. Loss of property value schemes also exist. These policies have enhanced the planning process's efficiency by giving due consideration to local priorities as these effectively condition the rise of a social license around proposed development projects.

In her presentation on day two, Professor Rønne's shared her insight on Denmark's policy for onshore shale gas. She discussed some of the regulatory adjustments that could be required for shale gas. Even if Denmark already had a comprehensive onshore exploration and production framework in place, the regulator resolved to impose additional environmental impact assessment (EIA) requirements. Anita Rønne discussed the impact of these new EIA requirements. She pointed out that this process had actually reinforced public participation and added to the Danish municipalities' permitting role. Professor Rønne also touched on several of the Danish lessons learnt around social license on a land which has an extensive experienced in licensing onshore

installations. As regards shale gas it appeared in 2013 that licensing for fracking would reflect the country's consensus-based approach. Decisions on shale gas exploration and production would be set to remain local and reflect a full consideration of populations through the consultations organised by the Danish municipalities.

Dr David Toke, from the University of Aberdeen, took the conference's attention back to the UK's energy framework. He first discussed several aspects of the UK's nuclear policy. When reading energy policy, David Toke's methodology includes taking a holistic approach. He chose to discuss issues of community benefits and energy community as part of his reading of the UK's energy market reform. The views you will find reflected in Dr Toke's transcript were evidently grounded on the UK policy context as it existed prior to November 2013, when the conference took place. Dr Toke therefore questioned why in 2013 Britain, policy instruments appeared to be insufficiently capable of achieving a greater expansion of RES in Britain. The country's RES development appeared to be inconsistent with the UK's energy policy instruments and their in-built technical capacity to deliver more infrastructure. On community benefits, David Toke demonstrated how, based on his own experience with RES, such benefits should go to the people located the closest to the wind farms. He illustrated his point by also referring to Denmark and the Hvide Sande wind farm project that does help demonstrate how an on-shore local success in community-owned RES infrastructure can also deliver some very substantial benefits to local communities. Dr Toke's conclusion on community involvement comforted what we had also heard about Denmark i.e. that the citizens' perception of energy infrastructures and their proposed deployment should significantly inspire the shaping of regulatory frameworks.

Identifying and exploring the citizens' perception of the UK's future energy system happens to be an area of research for scholars in human geography. Dr Karen Parkhill is a UK expert in this field. Recently, she worked extensively on the values that the British public say should be shaping our future energy system. Dr Parkhill's presentation focused on one of her recent research project named "Transforming the UK's Energy System". She presented the core conclusions of this project which was also sponsored by the UK Energy Research Centre. Karen Parkhill's research objectives included identifying the values that members of the public think should inspire the structuring of the UK's future energy

system. Her team included researchers active in multiple academic areas. This breadth of expertise explains the sophistication of the final report and its scientific findings. Dr Parkhill notably explained that "sustainability" and the concepts that help characterize it now appear to be firmly established in the British public's mindset. "Sustainability" also comes with values such as "autonomy" and "power". They both indicate that today's residents of Britain expect to be able to better monitor their energy supply and manage their relationship with energy suppliers. Dr Parkhill also discussed how this value system has implications for community energy and how it should inspire regulators.

Going back to black letter law and the UK oil and gas framework, the next academic speaker who shared his reading of the UK regulatory framework for onshore energy projects was Mr Greg Gordon. Mr Gordon is a senior lecturer in energy law at the University of Aberdeen. By the time of the conference in 2013, the UK government had just made some important announcements designed to encourage shale gas activity in the UK. Mr Gordon commented on some of the challenges raised by the prospect of seeing an onshore unconventional gas industry emerge in the UK. He reviewed some of the 2013 regulatory changes while explaining the offshore and onshore licensing regime. He showed where fracking would bring some specific challenges to regulators, especially for defining an approach towards local communities. Our guest speaker stressed the need to come up with clearer and simpler regulations even though they should also be capable of addressing multiple needs and expectations. Therefore if the regulatory framework for onshore shale gas should help create more certainty for investors it should also enhance, by means of transparency, the public's awareness and understanding of fracking projects. Mr Gordon also discussed whether the profit-sharing innovations the government had introduced in 2013 with other regulatory instruments could induce more community acceptance of unconventional gas in Britain. At the time of his keynote, Mr Gordon insisted that it was certainly too early to provide a final assessment of these recent regulatory initiatives. Yet, and considering community energy, Mr Gordon stressed that communities should not be invited too soon to develop projects around shale gas considering this industry's very fluctuating business environment. Nevertheless, enhancing public trust around fracking could come from an express requirement to provide community packages that do reflect local conditions and concerns. Benefits packages should thus not be limited to a sharing of profits if they want to be regarded

as meeting local communities' expectations. And if UK policy makers wanted to be truly innovative, community benefits could for instance include a firm commitment from the UK government that it will act as a guarantor towards local communities, should there be a need to provide a better coverage or remediation measures against the local risks that could be associated with any proposed shale gas project.

This series of keynotes closes with the transcript of Professor Peter Strachan's contribution. As a professor at Robert Gordon University for over 20 years, Peter Strachan has been researching on RES deployment and the Scottish local governments' policies for developing a low carbon economy. Professor Strachan's research has led him to grow an expertise on social license issues in Scotland. He opened his presentation by stressing the significance of the role played by local governments in RES policies for Scotland. He showed, however, that despite a very significant ambition for RES deployment, there has been very little, if any, coordinated approach in Scotland to encourage community benefits. This reality is not a feature specific to Scotland. It also comes with several of the other classical issues raised by structuring community benefits, such as identifying the "community" at stake or defining the investments or amounts that developers should assign to community benefits. Professor Strachan's research has revealed a lack of collaborative thinking around community benefits. He highlighted how developing a more coordinated approach should actually prove beneficial to achieve more onshore RES across Scotland. One of his final suggestions included identifying areas of action. He discussed the instruments that could help support community benefits, whether required by regulation or local practice. Reflecting on Mr Gray's earlier presentation, Professor Strachan shared the view that the planning process should not be regarded as a framework predestined for assessing community benefits packaging, gauging of their existence or compliance. Local governments should not assume that the planning process provides an off-the-shelf environment for discussing community benefits. Professor Strachan also suggested that a good way to start making progress in Scotland towards a nation-wide approach to community benefits could be to initiate a regulatory review of the best practices observed so far in Scotland, in the Highland Council or, for instance, Argyll and Bute.

During these two days of conference we felt immensely privileged to host this intellectual platform discussing the rarely approached issues of

social license, community benefits and energy projects. Here, I would like to commend again each of our key note speakers for their extraordinary work, their time and thought-provoking contributions. I wish to our readers the same enjoyment and stimulation when reflecting on our speakers' presentations and the many suggestions they brought forward. In the transcripts, we have sought to maintain the original version of our keynote speakers' spoken words. We took this approach as a matter of authenticity, in an effort to reflect the personal tone put into each contribution. Let me finally thank each of our guest speakers for kindly giving us permission to edit and publish these keynotes that you can now find in print.

Rita Marcella
Dean of Faculty
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This conference was held at the Robert Gordon University's Garthdee campus on the 14th and 15th of November 2013. My thanks go to the Aberdeen Business School's Law School for initiating this event. Particular credits go to Professor Ken MacKinnon, Head of the School, William J. Craig, Senior Lecturer, and Nicolas Maulet, Lecturer in Energy Law and Policy. This publication was edited and coordinated by Nicolas Maulet. I also would like to thank here all other RGU staff who got involved in this project.

Mr Mark Lappin

Mark Lappin

Mark Lappin is geologist by background. At our energy policy conference, Mr Lappin shared his views on the UK's energy mix and energy security issues. This initial picture helped draw the real-life backdrop to power supply in the UK. Mark Lappin's experience as project manager of multiple onshore projects in continental Europe and the UK provided some first-hand information on the approach for communicating with local communities and the importance of engaging them around upstream projects. Onshore natural gas projects should now be considered in light of this backdrop and consider community benefits.

Understanding the need for improved community engagement concerning energy projects in the UK is closely linked to an accurate understanding of the energy consumption by UK customers. The constant strain on supplies confirms the interdependence of energy and society. It makes the future of energy exploration and production a challenge that rests on embracing its direct and indirect stakeholders' acceptance of energy projects and therefore questions how to best approach the issue of social licence to operate.

The need to develop onshore upstream activities is connected to a number of developments which have recently shaped the structure of demand and energy production in the UK.

In that respect, the UK's National Grid Status on-line live feeds helps understand the trend and profile of the UK's power supply and demand.[1] At the time of the conference, in November 2013, the National Grid's on-line live feed was showing that the UK's total demand culminated to 44 gigawatts (GW), out of which:

- 15 GW came from coal – typically, coal is the highest single contribution.
- 7.7 GW came from nuclear – nuclear remained a very steady source of energy.

[1] The UK's National Grid Status can be followed by clicking on the following address: <http://www.gridwatch.templar.co.uk/>

- 13.6 GW was supplied by gas – unlike nuclear, the amount of energy supplied from gas varies significantly as gas is flexible and is used to respond to peaks and troughs.
- 4.6 GW came from wind – but ¬wind remains intermittent. The share of this renewable source of energy in the UK has grown enormously in terms of a relative and year-on-year growth.

These numbers reflect the contribution to the National Grid. For renewables such as wind and solar the National Grid's live feed does not include the energy coming from independent wind turbines and private solar generation. These actually account for very little.

Such a breakdown confirms that the UK needs a balanced energy mix so that this country may enjoy the benefits of all the different sources of energy. This mix may not create a perfect answer in terms of carbon footprint, but it addresses the energy policy trilemma, i.e. providing secure, affordable and low carbon energy. Today, no single energy source can address all of those priorities. Offshore natural gas, unconventional gas, wind power, nuclear are no standalone solution. A combination of these energy sources can provide an answer but the challenge for the UK is to identify how to make such a combination work. The UK's diverse energy mix is also needed to provide a sustained and flexible supply of power.

The National Grid's data introduced a moment ago help appreciate the UK's day by day power demand. The typical "week in power" shows that each night the UK's energy demand drops by about 25 to 30%. During the day, energy levels rise again to provide power for business and production. Towards the end of the day, the energy demand rises and fluctuates as some businesses are still running and people go home to switch their lights, cookers, television sets and other appliances. The UK's picture is quite interesting when it comes to coal as this resource is being used to supply the base load. It has the highest carbon footprint but right now coal is the most affordable source of energy. Coal certainly helps cover the seasonal variations and is used at various points across seasons.

It is also important to look at the timing data and see how demand spreads over a year. Here again, the data sourced from the National Grid help understand the power outputs variations over weeks, weekends, or over several years - and at any given day over several years. For instance, the

data makes it possible to understand the energy demand breakdown say, at seven o'clock, every Thursday over several years. This analysis reveals that, depending on the season, coal is the source of energy that is most capable of responding to seasonality and weather variations. Natural gas provides energy for short-term power needs. Nuclear remains steady within a standard seven to eight-gigawatt output. Wind remains marginal as the UK is still in the initial phase of this technology.

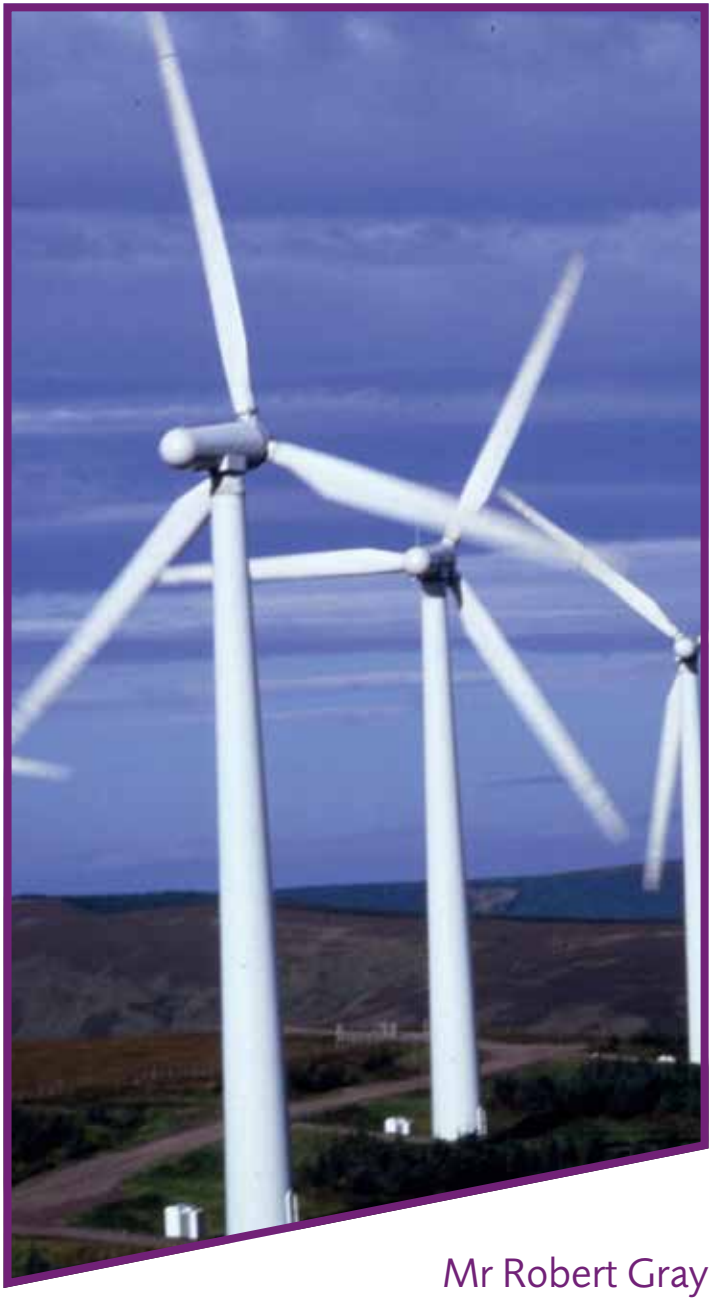
Overtime, if we also consider the UK's breakdown of power sources, we can see the huge drop in coal consumption from the 1950s onwards. Coal dropped while oil and, then, gas consumption increased. Then the beginning of the 1990s was marked by a "dash for gas". Gas and coal switched, essentially replacing each other throughout a period that was marked by a big decline of reserves in the North Sea. In 2011, the UK used 40% of gas and 30% of coal in its energy mix. In 2012, within one year, the data changed to 40% of coal and 30% of gas. This historical one-year switch was partly due to coal becoming cheaper as the USA is still producing a lot of coal. The price of coal went down, and in terms of transportation it is easier to ship coal than to load gas in a LNG tanker. So consumer countries have been burning more coal and caused a switch in their energy mixes. The price of gas is also going down as North America is developing its shale gas.

Yet, for the UK, the challenge to design an affordable energy mix should also help meet the prospect of reducing carbon emissions. Currently, the massive presence of coal in the UK cannot be simply justified by this resource becoming "cheaper". In that respect, developing our onshore natural gas appears to be part of the UK government's strategy for a less carbon-intensive energy mix.[2] The UK must be able to show that it can move forward on shale gas by building its own track record. Today, we can hear concerns which are similar to those voiced about the North Sea a number of years ago: "the supply chain will be a major hurdle"; "the North Sea is not like the Gulf of Mexico" or even Texas, etc. Yet, the UK is certainly well placed to lead in Europe for the development of this resource.

[2] In Europe, there have been attempts to further explore onshore gas since the 1990s. In the USA coal bed methane has been representing about 8% of the country's domestic gas production since the 1980s.

Concerns over shale gas in the UK can be overcome through an effective public engagement. The big difference between the UK and the US is that shale gas was established in America before shale gas became what people believe it to be today. The UK's stakeholders look at the pros and cons of unconventional by comparing these resources' prospects to what is perceived to have happened in North America. However, the UK is not America. The UK territory is not the same as the one in America and this is why there is a real need to build a local track record. This country has also a strict, transparent licensing regime and strong rules and regulations for corporations, environmental and business matters. The UK has also recently progressed on community engagement. One of the keys to a successful community engagement is through the planning process. Engaging early and being actively involved in this dialogue with communities are essential requirements. Strictly following statutory guidelines is not good enough. When promoting local benefits and talking to communities, operators should make sure they do not just focus on monetary benefits to the community. Experience reveals that monetary benefits are as divisive as they can be helpful. The operator's communication also needs to rest on simple messages. One of them is certainly that, the UK needs gas for its energy security.

As of today, none of the elements of the UK's energy mix can provide a reliable, affordable, low carbon energy supply. As discussed, the UK's energy security rests on the proper balancing of its energy sources and fuels. But, how will the country decide where the balance lies? How will the UK decide what its energy mix should look like? Typically markets are not very good at making strategic choices for the long term. So that means that these choices rest on government. This is where decisions on long-term choices get very challenging. Building policies for the UK's energy mix is very difficult as it entails making complex choices. These choices will almost instantly trigger dislikes by a proportion of the population. It makes the exercise of balancing the energy mix very difficult. Yet, a new domestic supply of gas would have an impact on the UK's energy mix, the UK's security of supply and jobs. With the North Sea supply of gas now in decline, and after forty years and some £300 billion of tax revenue, the UK has many challenges to overcome. As far as onshore natural gas is concerned, the UK also owes it to itself to know how much the resource is before this country can decide how to offset this resource against perceived associated risks.



Mr Robert Gray

Mr Robert Gray

Robert Gray is Head of Planning and Building Standards for Aberdeenshire. Mr Gray brought to the conference his professional vision on the Scottish planning policies and the wind turbine developments taking place in Aberdeenshire. His professional insight also led Mr Gray to comment on selected aspects of community benefits by showing how a certain degree of disconnection between policies and instruments can act as a barrier against the development of more locally-owned wind energy projects in Aberdeenshire.

National Targets – Local Policies

It is important to highlight a number of disconnects between targets and policy. Indeed, one historical feature of the Scottish renewable energy policy that should be acknowledged and kept in mind is the disconnect between what Scotland is trying to achieve in terms of renewable energy and the way renewable energy developments are being assessed on the ground. There is also a disconnect between community benefit aspirations and the way these benefits funds have been structured.

History and Background

History, however, should also remind us of Aberdeenshire's local interest for wind power and electricity. It is now established that in 1888 an American, Charles F. Brush, created a turbine turning wind energy into electricity. Charles F. Brush was thus believed to be one of the first persons ever to have done so. Yet, a native of Aberdeenshire called James Blyth, who became professor at the Anderson Institute in Glasgow (a precursor of Strathclyde University) produced a wind turbine in his garden in Aberdeenshire in the summer of 1887, which makes him the first person to have produced electricity from wind. One of his turbines also generated the backup electricity supply for the Infirmary in Montrose and operated for 30 years.

Today, the typical wind farm infrastructure's profile in Aberdeenshire is made up of a single, two or three turbines of approximately 80 to 100-meter high. There are also farms consisting of groups of eight or nine turbines connected to the grid. The challenges put by wind farms to planning authorities includes sanctioning renewable energy projects which conflict with historical and natural environments. These choices make decisions difficult over the way land should be used and the activities that the planning authority will allow or refuse.

Targets

There are a number of targets for renewables. At the time of the conference, the European target was 20% of energy from renewables by 2020. For the UK, the target was 15% of energy from renewables by 2020. The Scottish government's target has been to generate 100% of electricity from renewables by 2020. There is a small difference here as the Scottish target has moved from 100% "energy" to "electricity". Electricity is much more achievable if it is used as a target. The target has also been set to 50% by 2015, and in 2011 Scotland was up to 31%. Scotland as a whole will therefore probably achieve that target by 2015.

There is no target for security of supply. As the world is getting more and more unstable, security of supply should remain the core focus. The deployment of renewable energy sources in Scotland might help achieve a greater level of security of supply. Looking at the 2020 Scottish targets on renewables for electricity (100%) and heat (11%), and also 500 MW of renewables generated through local communities, thus raises the question as to how these targets relate to each and how they could be achieved. In terms of modes of energy consumption, getting near or achieving 100% of electricity from renewable energy sources does not appear to be too much of an impossible target. The challenges lie, more likely, with heat and transportation. Scotland being a cold region, the end consumers consumes a lot of heat.

In Aberdeenshire, the planning authority is looking at the area being "carbon neutral" by 2030. This region represents around 10% of Scotland's area and achieving carbon neutrality is an extremely demanding target. To work towards this neutrality, there is a hierarchy of environmental policies. This hierarchy begins with the Scottish government in the National Planning Framework (NPF) and the Scottish Planning Policy document. These documents set targets and also define how the decision-making process should function in relation to those issues. The Scottish government's plan impacted on the Aberdeen City and Shire Strategic Development Plan, defining how Aberdeen City and the Aberdeenshire Council would be working together while aiming at achieving the objectives together. Each of the two authorities produced a Local Development Plan. These plans identify what can or will happen on the various sites in the area. This document is also supplemented by some guidances and advices which have a lower regulatory status.

Policy

The Scottish Planning Policy on renewables is centred around seven points. They have been designed in order to achieve the Scottish and National renewable targets and could lead to some greater national security of energy supply.

These seven points are used in deciding whether onshore turbines will be approved or not. One of the NPF targets is to make Peterhead, in Aberdeenshire, a hub for receiving and marketing offshore-generated wind electricity. Combined with tide and hydro-electricity, the Scottish offshore wind electricity capacity could ultimately provide an important part of the mix of electricity generation. Peterhead is also targeted to become a pilot site for carbon capture and storage. The NPF from the Scottish government includes reinforcing the grid at Peterhead from 75 kW to 400 kW. On the ground, pylons were initially constructed to accommodate 400 kW and there is little environmental impact.

At the time of the conference, a new policy instrument for wind energy named the "Strategic Landscape Capacity Assessment for Wind Energy" was under consultation and about to be introduced in Aberdeenshire. The approach followed in this new instrument addresses the government's issue in relation to planning authorities relying on instruments which rest on a variety of "criteria" for assessing projects. The government wants to favour instruments which are likely to provide more certainty to the industry. For instance, the new instrument defines areas where the capacity for new turbine infrastructure is likely to be or is already fully reached. It identifies development potential depending on the size of the proposed installation. This approach is expected to provide swifter answers to applicants by defining areas where projects are likely or not likely to obtain permission.

The preparatory studies that helped generate this instrument revealed that Aberdeenshire is already a pretty full area. This picture contrasts with the official message which still favours onshore wind for more deployment of renewables. Onshore wind may be cheaper than offshore wind, but the land and areas technically available for development have become rather limited. Yet, the interest in the region as a wind turbine province has increased and created a surge in planning applications. Investors have lodged more than 1,000 planning applications in the last 3 years for multiple turbines. In total 933 individual wind turbines have

been approved in Aberdeenshire - out of which approximately 300 are constructed. Today there are 114 pending planning applications which equate to 181 individual wind turbines.

Process

The planning authority acts as the gatekeeper in Aberdeenshire. Accordingly, interested investors must lodge a planning application for wind turbine developments with this authority. The process requires the planning authority to consider the existing policies set forth in the national policies discussed above, followed by the guidance and additional material produced locally. Additional material considerations may also need to be taken on board prior to making any decisions.

The process also requires consulting a large number of bodies. It tends to lead observers to state that planning is a very slow process. For a turbine application, the number of consultees can reach 40 to 50 and involve a wide range of inputs.

The planning authority also posts public announcements about planning applications in the local newspapers and notifies neighbours. Interested parties who object against the project are entitled to come forward and express their objections to the authority. Prior to the decision, the planning authorities indicate in a report whether the turbine application should be approved or refused.

The final decision comes from elected area committees. Aberdeenshire comprises six area committees. Each area has its own geography and natural and economic profile. Identical projects may be authorised by one area committee and another area committee may refuse depending on differing local circumstances. Such variations in approval and outcomes may result in a level of uncertainty for the renewable energy industry.

The assessment criteria for planning decisions in Aberdeenshire are available in a document called "Guidelines for Landscape and Visual Impact Assessment."
Due to the variety of existing environments and landscapes, the views expressed on the proposed developments cannot be assessed according to a single uniform pattern. An area like the land around Banff and McDuff illustrates how identifying suitable spots for wind farms developments can be challenging. This area is not very densely populated

and would seem to offer a wide open space for development. Due to this apparent large availability of land, investors and other interested parties have been hoping that this territory would be suitable for installing a large number of wind farms. The land has, however, been intensely farmed for centuries and all the houses built on this land are still occupied and spread fairly evenly across the land surface. Unlike what would appear at first sight, there is no wide, unoccupied and open space available for installing large wind farms or "a-turbine-at-each-and-every-kilometre". Therefore, the planning authority has to assess applications for wind turbines which, despite the size of the land, will almost always affect someone locally.

Similarly, if a body such as the Ministry of Defence opposes to the development because it interferes with radar, the planning authority will issue a refusal.

The opposition to projects may also come from interested parties who object to the proposed wind turbines because they may spoil a view that they "used to enjoy". The Aberdeenshire planning authority will address such concerns by referring to its aforementioned guidelines on visual and landscape impact. Technically, the planning authority assesses the visual impact of wind farms through computer-generated visual assessments. This device helps identify the areas from where the wind-turbines are visible. These vulnerable areas include houses, villages, hill tops used as recreational areas for tourism and hill-walking. In addition, the assessment procedure requires assessing the impact of the noise associated with wind turbines. In practice, investigating the noise impact is a very time-consuming project. It requires measuring the background noise, the noise generated by the turbines under different conditions and the cumulative impact on the built and the non-built environment. These tests help identify if installations reach acceptable levels of noise for people to live with them.

Community Benefits

So, how do the Scottish targets on renewables fit with issues of community benefits?

Well...first and foremost, the planning authority observes a strict policy of non-involvement in community benefits that may be negotiated as part of wind turbine developments. These questions should neither interfere with nor affect the judgement and recommendations issued by

the planning authority. Acting as the gatekeeper, the planning authority is bound to ignore negotiations or dealings around community benefits in order to keep all interested parties on a level playing field. The Aberdeenshire Council has, however, appointed a person whose role is precisely to assist communities to make money out of renewable energy. The role of the Aberdeenshire planning authority and the role of this person are however kept completely separate.

In terms of community-owned wind farms in the area, the Aberdeenshire Council received in November 2013 a Scottish National Renewable Energy League award for wind energy projects providing money for communities and local groups. Aberdeenshire, however, remains behind the high figures reached in some of continental Europe's countries. In Germany approximately 50% of the wind farms are community-owned. In Denmark this figure goes up to 85%. The largest community owned wind farm in Aberdeenshire is called Tullo Wind Farm and has a capacity of 17 MW. This wind farm is located near Stonehaven and owned by Eneco UK, the British arm of an independent Dutch energy company in the form of a cooperative of 53 Dutch municipalities. The Tullo Wind Farm generates an income of £2 million per annum for the Dutch municipalities and only £17,000 go to the local community as benefits. Evidently, this Scottish success was built on a foreign investors' money. So the question arises, why locally-grown projects do not attract more of the local population's interest? Part of this question could be answered by promoting more of the existing community ownership schemes. These include ownership structures such as co-operative models. Cooperatives have been successfully tested in Aberdeenshire in places like Boyndie, an old airfield on the northern coast near Banff. This wind farm required a £10 to £15-million investment. The co-operative is 716 members strong and individual investments ranged from £260 to £20,000. The money generated by the wind turbine is going back to the community. This revenue has helped finance public infrastructure that the council could not finance directly. It also gives control to the local community over the type of infra

The "Fintry Model" is another successful form of community-owned wind farm tested on the Campsie Fells hills between Stirling and Glasgow. Under this model, the local community will own one turbine within the larger group of wind turbines that makes the wind farm. Scotland has also tested the "Udny Community Model", where the local community solely finances and erects one single wind turbine.

The Scottish government provides loan schemes for landowners and community wind projects. The "CARES" loan schemes provide £10,000 per installed megawatt. The loan money can also be used for pre-planning costs of development. These schemes should hopefully invite communities in the North East of Scotland to be more resilient to consider bigger projects for wind energy development. They should also help community realise that by investing in wind farms they will reap the benefit as they will be consuming a green and cheap form of energy.

Conclusion

The North East of Scotland is evidently one of the windiest places in the UK and Europe. It has built a significant expertise from earlier wind farm development projects. More progress could be achieved by creating better connections between targets, policies, assessment methods, and community benefits. There is also a growing need to better connect the various models of wind farm projects to help local communities invest in them and see the resident population in Aberdeenshire reap more benefits.

Professor Anita Rønne

Professor Anita Rønne

First presentation delivered on day one of the conference

1. Background to Denmark's energy policy

The oil crisis of the 1970s can still help explain the contemporary Danish energy policy. At the time, Denmark was up to 99% dependent on hydrocarbons imports. This situation had a severe impact on Danish society. Politicians realised that a lot had to be done to change the country's external dependence. A first initiative was to start exploration and production of hydrocarbons under Danish sovereignty in the North Sea. Luckily, Denmark was quite successful. By 1997, the country became self-sufficient not only in oil but also in energy. In 2005, the production of indigenous resources in Denmark was 58% higher than the country's energy consumption. Today, Denmark is the only European country out of 28 member states to be self-sufficient. This situation will, however, not last. Production seems to have peaked. In that respect, Denmark is facing the same challenge as the UK. According to the national forecasts, production of oil and gas should meet the Danish energy consumption needs into the 2020s. Denmark is therefore at a time of crucial decisions, including on shale gas.

2. Energy planning and energy policies in Denmark

Planning and designing policies on energy have been two top priorities in Denmark since the 1970s. The first energy plan dates back to 1976. Since then the country has carried out several series of energy plans. Their top priorities not only focused on the exploration and production of hydrocarbons but also the development of the wind turbine industry. Denmark built a national gas grid infrastructure in operation as of 1984. It also implemented a comprehensive heat planning system to make sure that the country could make use of its natural gas.

There were a number of important developments throughout the 70s and the 80s, including the creation of an institutional framework for regulation of the energy sector. From the mid- 1990s the times were marked by the liberalisation of the energy sector and throughout the course of the following 15 years, by considerations relating to climate change which was high on the political agenda. In 2011 Denmark adopted its latest governmental energy plan. It got supplemented in August 2013 by a special climate policy plan which introduced 80 new initiatives and policy

instruments.[3] Denmark's target is to reach 35% of renewable energy in its gross energy consumption by 2020. The country also wishes to be 100% fossil fuel-free by 2050. These targets are less stringent than the one set for Scotland. They remain, however, very ambitious considering that Denmark does not have any hydroenergy at all. Denmark is connected to the electricity systems of Sweden, Norway and Germany, but Denmark also does not either maintain any nuclear plant.

3. The energy transition

An ambitious energy transition process is taking place across the European Union and Denmark is also carrying out its transition. In terms of political process, the Danish tradition is to rely on consensus. It means that the government prepares a policy plan and then starts negotiations with the various parties sitting in the Danish Parliament. The results of this process provide a very stable policy framework for the future. Technically, the political agreements become enforceable by being transcribed into the law.

It provides a clear, long-term vision which now focuses on a low-carbon future. It also prevents energy developments, investments and priorities from being impacted by politics and changes in government. Elections take place in Denmark at least every four years.

The latest political agreement of March 2012 contains statements in favour of the Danish "passion for wind." It spelt out policies in support of offshore, nearshore and onshore wind energy. It also introduced a cap on high electricity prices in order to avoid overcompensation of wind energy projects.

Danish policy-makers are continuously willing to invest in more research and develop new technologies. In the future, heat should be increasingly sourced from renewables. New laws will also prohibit new buildings from relying on heat coming from sources other than renewables.

[3]The IPCCC's findings published in its latest assessment reports confirms that it is now even clearer that human activity has been the central reason for the recent global warming. Such a confirmation must be seriously taken into consideration for the future course of energy policies.

Denmark is therefore moving along with a firm plan that sets mandatory rules and standards. This approach is not the one of a strictly free-market economy but shows characteristics typically associated with planned and directed development.

In this environment, wind energy will retain its historical and central role. Next to it, solar energy has proven to be very popular. The success reached by solar generators actually led the government to remove subsidies introduced in the past to support investments in this form of renewable energy. Biogas is also scheduled to be a growing source of energy.

Denmark was one of the early pioneers of wind energy. It was Denmark's chance to be one of the early starters of wind energy as there was not much competition at the time on this market. The country found it possible to turn this industry segment into a viable business. Denmark started to export large volumes of wind turbines. Today, there is much more competition on this market. If the market share of Denmark has decreased, it still holds 15 % of the world market.

The massive deployment of wind energy in Denmark is also the reflection of a successful "bottom-up approach." This achievement is the result of an early involvement of people and communities, and this approach has also been applied to some of the recent wind initiatives.

In offshore wind, Denmark can boast 20 years of industrial experience. A proper planning policy has proven to be very important in this success. This efficiency transpired in the 2007 strategic report which identified the best locations for wind turbines in the future. Some areas are protected land, or identified as zones where the fishing industry strongly rejects erections of wind farms. Offshore wind turbines still attract more projects. The most recent ones (Horns Rev 1 and Horns Rev 2) involve two long-distance offshore wind farms developments , 15 and 34 km away from the shores.

This new wind energy, however, raises a technical challenge. It requires integrating the power to the grid which will be generated by this new capacity. Denmark already goes through cycles of over and under-production. The forecast for improvement in that respect is not very good. There is therefore a lot of research in order to identify how to make

the grid more efficient and have an impact on consumption. Building a smart grid industry is the next business development target for Denmark. This new expertise will not only serve Denmark's needs to integrate all the energy from renewables but also give it a competitive advantage.

4. Challenges associated with wind turbines developments

The first challenge is to be able to grow the country's wind turbine capacity.

Local resistance against wind turbines exists and comes from property owners and municipalities. Some of the best sites are already equipped with old generation turbines. These are not always very efficient and sometimes not suitably located within the landscape. So in order to make the removal of such turbines possible, Denmark has introduced a scrapping scheme. It enables removing old turbines and replacing them with more efficient, latest generation, turbines. Developers also receive some additional compensation for removing old turbines.

The government has also invested in a test site on land for mega turbines. Despite protests, the site is now operating and the industry is renting this facility from the government. Turbines up to 250 metres high will undergo testing there. The cost associated with onshore testing is, of course, much lower than when carrying out test operations offshore.

5. Specific approval process for onshore and offshore wind turbines: "siting", planning and incentives

For siting, government approval procedures are distinct depending on whether the development will take place offshore or onshore. Offshore wind turbines receive approval from the Danish ministry of energy and climate who conducts all planning screening and grant the necessary permits. Strictly speaking, there is no existing planning framework for offshore developments. In practice, the ministry opens specific areas for tender, based on a number of site studies. At the time of the conference, the ministry had selected seven main, "first priority" areas and eleven "second priority" areas. In 2013, the ministry also retained six sites for nearshore development and the construction of wind turbines.

Onshore, the most important authorities are the municipalities. These authorities have jurisdiction over the local planning. The Danish Act on the Promotion of Renewable Energy has introduced a licensing

framework. Three forms of licences exist: one for carrying out preliminary investigations; one for establishing the windfarm; and one to generate wind power.

When a project is likely to have an environmental impact, applicants must carry out a specific environmental impact assessment. So far, all windfarm projects developed in Denmark had to carry out an environmental impact assessment. Licensing may be the result of two different procedures. One is a government-led tender process. The other is an open door procedure. At the heart of the tender process lies the question of the price at which the bidder is ready to produce electricity. In this process, the Danish Energy Agency acts as a one-stop shop. Investors are solely required to approach this agency which in turn liaises with all other interested government departments.

Nearshore energy projects also represent the new generation of onshore wind turbine projects in Denmark. Just like for onshore projects, nearshore developers are required to open 20% of the projected investment to municipalities and neighbouring citizens. In order to promote public acceptance of wind energy, Danish policymakers have introduced sophisticated policy instruments. These include specific planning laws whereby the government defines the national framework but the municipalities design the local planning rules which include specific conditions applying to wind farms. The planning process requires a high level of involvement and consultation with local communities. These may look time-consuming but they are actually vital to projects in order to secure their local acceptance. The regulatory instruments include a widespread use of: environmental impact assessment; citizens' participation and dialogue; disclosure and information obligations.

Denmark has also introduced specific legal requirements, rules and standards for wind farms. These define the minimum distance between installations and private dwellings[4]; maximum height of wind turbine[5];

[4]The minimum distance between a wind turbine and private dwelling cannot be less than four times the total height of the wind turbine.
[5]The Danish regulator seeks to limit the visual impact of wind farms as developments should have as little impact on the landscape as possible. On a single site, new developments will be considered along the same constraints as those imposed on pre-existing wind farms. In addition to restrictions on protected listed sites, wind turbines must also be erected in groups and at designated areas.

and maximum noise emissions[6]. In addition, it also sets the guidelines for legal requirements including economic incentives for Danish citizens to invest in wind farm projects. Citizens residing close to proposed wind farms have an option to purchase wind turbine shares. They can also avail an option to get compensation for the loss of value to their property.

Developing new incentives and policy instruments is also an on-going process in Denmark. In addition to the 20% share ownership obligation[7] and the property compensation scheme mentioned above, there is a "green scheme" to financially reward municipalities that take positive planning steps in favour of wind farms. A state guarantee for bank loans is also available through a fund in order to finance preliminary investments in future wind farm projects.

6. Assessment

Assessing the foregoing instruments, whether they are "positive" or "negative", is a difficult exercise. Developers are not always very keen on 20% of investment volatility to private citizens. Yet, experience shows that local communities tend to be more engaged towards proposed developments. Having local communities holding stakes is also part of the early history of wind farms development in Denmark. At the very beginning, local communities were the leading investors in first-generation wind farms. So there is a long tradition in Denmark for community-funded or shared windfarm developments.

As for the compensation scheme, it reflects a pragmatic reality. It is difficult to argue that the close proximity of wind turbines to private dwellings does not have an impact on the value of those properties. So the question arises as to which party should bear this loss: should it be the property owner or the wind turbine developer? The Danish compensation

[6]Noise emissions are limited to 42-44 dB in the open land. Further noise restrictions apply for densely populated areas.
[7]A 20% purchase option must be offered to all citizens living within less than 4.5 km of any proposed windfarm development. This 20% share usually sells out rapidly. In the event a portion of the share remains outstanding, developers are required to offer them to citizens of municipalities located beyond the minimum 4.5 km radius.

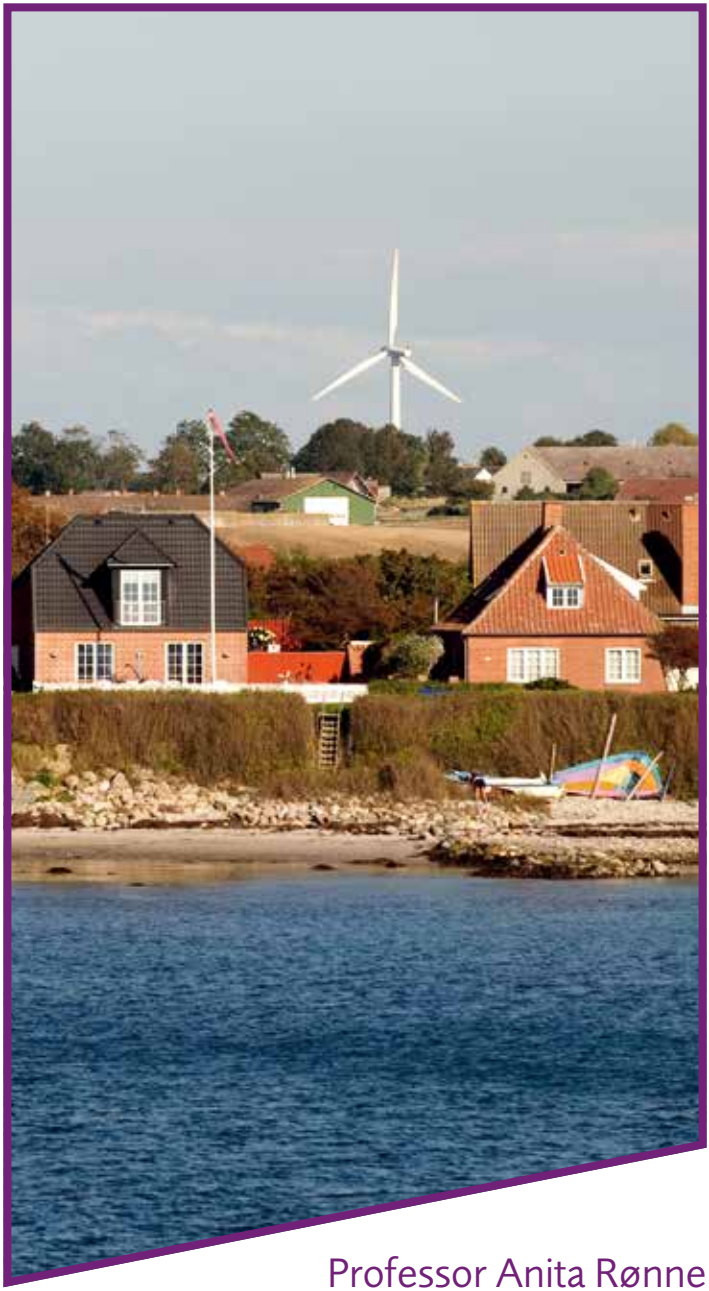
scheme chose to put such a burden on the developer[8]. As a result, developers must organise public meetings to inform project neighbours of their compensation scheme's terms and the 20% ownership scheme. To that effect, they must follow a process prescribed by law which requires publishing approved information material and making a number of public announcements.

This compensation scheme may be regarded as controversial because it focuses on the public's attention on the nuisance associated with turbines and the wind industry - as opposed to focusing on benefits of this energy. The scheme also brings a certain level of economic uncertainty due to the confidentiality applying to property valuations and the impact of wind turbine projects. Several valuation decisions have been brought for review by the Danish courts and those jurisdictions have not necessarily followed the opinion of the valuators. On the positive side of things the scheme acts as an incentive for developers to propose projects which create a minimal impact on their environment. It presumably also helps mitigate the local resistance sometimes shown by citizens or municipalities.

So what has the Danish wind energy development helped learn?

Experience has shown that a strong political will and consensus are absolutely vital for successful deployment of wind energy. There is a need to combine efficient planning, proper siting and public support policies. In addition, public information, awareness and financial incentives are equally important instruments.

[8]Where the property owner has contributed to the loss of value, the amount of compensation finally payable may be reduced. Such losses are assessed by a specific valuation authority. The procedure requires on-site visits to identify whether the neighbouring properties will actually suffer a loss, based on a number of identified criteria.



Professor Anita Rønne

Professor Anita Rønne

Second presentation delivered on day two of the conference

In her second contribution to the conference, Professor Rønne discussed the Danish approach and licensing policy towards unconventional gas.

1. Denmark and unconventional gas

Prior to focusing on the Danish position and its plans for shale gas exploration and production, it is important to look at it in a broader context, i.e., why is Denmark looking at licensing of shale gas and how shale gas is perceived in a more European context?

There is no doubt that the American experience with shale gas exploration has triggered an increasing interest for this resource in Europe. The huge volumes needed in the USA for energy consumption has led to America's energy dependence. It is now widely reported that the United States have actually moved from being a major energy importing country to being capable of meeting its own energy needs. Consequently, the price of gas has fallen.

This situation has raised a good deal of interest for shale gas in Europe, and Denmark is no exception. On this side of the Atlantic, witnessing this dramatic change in the US energy scenario, poses the question as to whether it could be replicated in a country like Denmark. It was highlighted during the contribution delivered on day one of the conference, that Denmark is self-sufficient in oil and gas and energy supplies. The country is also already aware that its oil and gas production has peaked. Estimations for the country's full coverage of domestic consumption from oil is 2020 - and for gas 2022. It is beyond doubt that it would be in the interest of Denmark if it could level out this time and forecast how the country could maintain its independence by covering its full demand in oil and gas for a longer time.

Looking now at the situation on the supply side in the wider European context, the energy picture is not in general as positive as I have just discussed. Europe is increasingly dependent on energy imports and its present dependence is in excess of 55%. Forecasts show that this dependence is on the rise especially with imports from regions that are politically unstable. There is therefore an issue of energy security. The

fluctuation of oil prices is a major issue and most experts forecast that oil prices may further rise. At the very least they are fluctuating. This gives a strong reason to support new exploration opportunities such as shale gas. When it comes to exploring shale gas, the European Union is at a relatively early stage and contrasts with the progress made in the United States. In fact, Europe does not know the amount of resources that it could explore and whether the figures reported by American sources and the media are true. At the time of the conference, there had not been much drilling yet in Europe and definitely not in Denmark.

It is also interesting to look at the situation of coal production and consumption in the United States. Figures show that both the production and consumption are going down. It is good news for the United States, as this trend has implications on CO2 emissions. Emissions have fallen so much that the United States could ratify the Kyoto protocol and fulfil the reduction targets specified in this protocol. What are the implications of this reduction in coal consumption by the USA on a global level? The USA is no longer relying on as much on coal as they used to in the past. As a result, coal export volumes are increasing. The global level of CO2 emissions is therefore not actually going down and countries like Germany are increasingly importing coal.

For these reasons and also the aforementioned political reasons, there is a genuine interest for shale gas and its technology. This resource could diversify Europe's energy supply. For countries that are relying heavily on natural gas from Russia, such as Poland, Romania, Lithuania, shale gas would also reduce their dependency on Russian gas supplies.

Having said that, there is a rising general public and government concern around the environmental risks, climate change and health risks associated with the extraction of unconventional gas. Recent developments show that it is sometimes difficult to distinguish between facts and fiction. For instance, we can hear that emissions from shale gas-based power generation are 40% lower than those from coal. This estimate is not universally supported as some experts say that the environmental footprint is much larger when compared against conventional gas activities. The risk associated with water contamination also needs to be addressed.

Estimates of volumes of Danish shale gas present in the country indicates that reserves could be ranging between two to three times the Danish production of natural gas for the period running from 1972 to 2011. Yet, one must look at these estimates with a lot of caution as, and at the time of the conference, there had been no drilling for shale gas in Denmark so far. Moreover, there had neither been any official estimate of existing reserves nor any confirmation that such a study would be carried out in the near future. Other public groups are raising their voices concerning the impact of shale gas on the development of renewable energy sources. Supporting shale gas could divert financial resources which would otherwise have gone towards development of renewable energy.

These are some of the issues which need to be flagged up when assessing the future prospects of exploration and production of shale gas resources.

It is also relevant to explore a number of national positions on shale gas and to look at recent developments in selected jurisdictions in the European Union.

Some countries have already passed laws banning fracking in their territory. France and Bulgaria have passed legislation against fracking, whereas the UK and Denmark take a less radical stance. Denmark has not banned fracking yet but, and just like in Britain, the country has to cope with issues of public concern and protests against shale gas activities.

The French ban on fracking has been investigated in a ruling of the French constitutional court *(Conseil constitutionnel)* issued in October 2013. This decision gave rise to some interesting developments. Prior to this decision, the French parliament had voted a law in July 2011 prohibiting using hydraulic fracturing technology for gas on the French territory. Moreover, France cancelled two exploration licences held by an American company, *Schuepbach*, as well as the licenses held by Total. This decision was taken after several heavy protests ran by environmental groups. In court, the licensee held that there was no study available confirming that there is any particular risk when conducting fracking. The licensee also stated that the ban was unfair because the law was focusing on fracking for shale gas and ignored fracking for geothermal activities which had been taking place for a longer period. The court responded that the lawmakers were following "legitimate goals in the general interest of the protection of the environment". The judges also stated that there was

a difference between fracking for geothermal purposes and fracking for shale gas resources. In addition, the court rejected the argument whereby the granting of licensing interests followed by the revocation of the same, was an act of expropriation. The Constitutional Court specified that the revocation did not go against French law on property rights. As a result, the licensee should not receive any compensation following the revocation of the licences. The court finally stated that the law was in compliance with the French constitution and that its terms were not being violated. As of the date of the conference, there were no similar decisions issued by courts located in Denmark or in the United Kingdom.

Another significant issue is the impact of fracking on water resources. No public debate fails to stress the importance of protecting groundwater and drinking water against risks of contamination. The public became very concerned after seeing pictures in an American documentary "Gasland", even though some people say now that the ignited water tap shown in the documentary might have little to do with the nearby exploration and production of shale gas.

2. Shale gas exploration and production in Denmark

So far, Denmark has granted two licenses. These permits were granted in 2010. The government has however been facing a big policy dilemma. On the one hand, policymakers want Denmark to enter into a phase of energy transition by moving away from fossil fuels and introducing renewable energy sources which should cover energy supply needs. By 2050, Denmark should receive 100% of its energy supply from renewable energy sources. On the other hand, the Danish Energy Minister has indicated that "if shale gas can be developed in a commercial way and in an uncomplicated manner, with no harm to the environment", then the minister would be in favour of its production if such a gas can assist in achieving the country's programmed green energy status. As can be understood, Denmark is not saying "no" to shale gas. It is not, however, saying "yes" to it unconditionally. Yet, the current government's stance remains closer to a "yes" to shale gas rather than to a more radical "no" to this hydrocarbon. This position is premised both on the requirement to develop shale gas in an environmentally-friendly way and with due consideration for the potential economic impact of shale gas. As politicians are saying - it would be unsound for Denmark to say "no" to shale gas if it can be developed in an environmentally-safe manner.

There is a growing interest for shale gas in Denmark by developers. Following the two licences issued in 2010, the ministry has received more applications for licences. The state secretary has resolved to put those applications on hold until the results of the first exploratory will become known. This first well will not undergo any hydraulic fracturing. The drilling will seek to establish whether there is any shale gas resource in the subsoil. Drilling operations for this well were scheduled to start in the autumn 2013. This phase of the project has, however, been postponed for another year.

3. Are new regulations for shale gas required?

Denmark has introduced a number of changes to its regulatory framework. The amendments essentially aimed at identifying whether an environmental impact assessment should be introduced at certain phases or not.

It should be noted that fracking operations have already taken place in Denmark. This technology exists for offshore oil and gas development. It has also been tested onshore for geothermal purposes. Regardless of whether this technology should be supported or not, there is therefore a history of fracking on the Danish territory.

The geology of the Danish territory has been significantly well mapped due to earlier onshore drillings. There is a significant amount of geological data available for the 3,000- square mile region of Jutland. On Sjaelland, where Copenhagen is situated, the geological mapping data is significantly less. The northern part of Jutland has therefore been selected for shale gas exploratory drilling. The results of exploration tests would then help predict whether commercial shale gas can also be found in north Sjaelland.

Under the Danish Subsoil Act, prior to any licensing for hydrocarbon, the Parliamentary committee on energy must be informed. In relation to the two exploration licences for onshore shale gas granted in 2010, the fact that the two licences were granted for shale gas exploration did not turn them into "special cases"; they were just referred to as being "for hydrocarbon". Under Danish law, and at the time of the conference, there was no distinction between onshore licences for conventional or unconventional drilling. It is however likely that the framework will be amended accordingly in the future. In 2010, the progress on shale gas

had been rather uneventful. There was no particular concern or scrutiny over shale gas exploration in Denmark. Gradually, however, the political parties (and mainly in the opposition) have started to question the State Secretary for Energy and Climate. They wished to understand the actual impact of shale gas activities and the environmental risks. They also wished to clarify the division of responsibility between the local Danish municipalities and the government. Indeed in Denmark, the government takes responsibility for offshore exploration and production licensing and drilling operations. Onshore, the municipalities have control and bear the responsibility for handling the environmental permits sucah as required. In Denmark there are 98 municipalities. In average, these communities cover slightly less than 500 km and their populations range between 20,000 to 100,000 inhabitants.

The French company Total holds two exploration licences granted under the Danish Subsoil Act. However, the current licensee for shale gas holds only 80% of the licensing rights as Danish law requires that the government retains a 20% stake in any hydrocarbon licences. This 20% stake is held through the Danish North Sea Fund, or "Nordsøfonden". Legally, the two licenses granted so far are "combined exploration and production licences". The licensee enjoys an initial six-year period to conduct exploration activities. In the event of a commercial finding of hydrocarbon, the license can be extended and the licensee will enjoy a further thirty-year period for production. Also, each of these terms can be individually extended. Offshore licences are subject to an "open invitation" procedure. Licenses are granted as a result of a bidding procedure targeting all interested applicants. The licence application must come with a work programme. As part of the approval process, the work programme might need to be amended. It should subsequently come with an evaluation program that will also be subject to approval.

In relation to the current exploration licence for shale gas in Denmark, the first two years of the work programme consist of testing and analysis of the geological and physical data which is already available. The drilling will take place in the second phase, where the licence holder is authorised to carry out drilling in just one well. Due to the inherent safety requirements around this drilling, the cost of this test well has been assessed to 3.5 million Danish crowns. This amount is much higher than the one associated with standard drilling operations.

In case of any discovery, the next step is to authorise further drillings and proceed with hydrofracking. In theory, the exploration period should come to term in 2016. Production will be subject to the granting of an extension. This additional authorisation will be limited to part of the licence where gas reserves have been identified. Other licenced areas will have to be surrendered.

Obtaining a licence is subject to a number of approvals from the ministry. Each and every drilling must receive a pre-approval on the technology and drilling process the operator will use. If exploration leads to a possible production then the licence holder must submit a special development plan to the Danish Energy Agency. The model licence for onshore oil and gas activities makes no exception as to the licensee's obligation to collect all approvals and authorisations needed from the Danish environmental agencies. Securing an onshore licence does not guarantee that the necessary environmental permits will therefore be granted. For instance the licensee will need to secure permits for the extraction of water as part of the exploration phase. For the fracking phase they will need to obtain additional water permits as well as permits for water discharges.[9]

Shale gas operators, like any other oil and gas operators in Denmark, bear a strict liability regime in relation to any damage caused by them or by their activities. Licensees must also provide a bank or parent company guarantee, together with an insurance policy.

In relation to offshore operations, a special safety regime exists in Denmark. Onshore, the general safety rules enforceable for any activity will apply- i.e. the Planning Act, the Environmental Protection Act, the Water Supply Act and the Working Environment Act.

Altogether, this regulation makes onshore operations a complex environment. It appears to be actually more complex than offshore operations. As indicated earlier, municipalities will handle the planning side of the project. This implies that the planning process will have a very significant involvement of public and stakeholder participation.

[9]The public debate around fracking in Denmark tends to favour that seawater be used for fracking as opposed to injecting of the ground water coming from drinking water resources. In order to monitor and avoid pollution, water quality tests must also be conducted before, during and after drilling operations.

The process governing the environmental impact assessment (EIA) requires that all neighbours, authorities and all other relevant parties should be heard as part of the planning process. In July 2012, this regime was amended in order to cover shale gas activities. In its annexes, the Danish EIA regulation distinguishes between two types of projects. Fracking must always be subject to an EIA according to Annex 1 of the regulation. Deep drilling without fracking is subject to Annex 2 guidelines and a decision as to submitting this operation to an EIA will be subject to the results of this initial screening. The duty to initiate the screening process with municipalities lies with the licensee.

4. Enhanced public participation during the planning process for the very first Danish shale gas projects

As just indicated, an EIA requires that any interested public be invited to take part to the process. Several rounds of auditions must take place with members of the public and government authorities. As part of the very first shale gas projects carried out by Total in Denmark, the municipalities have used the powers that allow them to request additional public meetings and conferences with interested governmental authorities. These meetings are aimed at obtaining more information on the proposed shale gas exploration and their associated risks.

In order to guarantee full transparency, the municipalities associated with Total's project publically disclosed all the material received from the project's applicant. The municipalities also wrote to the Danish Minister requesting him to reconsider whether shale gas projects should take place or not. The reason behind this letter probably lied in the fact that the municipalities did not feel particularly apt to decide as to whether they should authorise this project. However, the ministry chose not to interfere. In January 2013, an additional public meeting took place together with the three main Danish authorities: the Danish Nature Agency, the Environment Agency and the Energy Agency. Interestingly, none of these agencies had any specific comments in relation to preventing the drilling of an exploratory well for shale gas. This position provided a higher degree of comfort to the municipalities for them to authorise drilling for exploration. The municipalities' technical committees advised their councils to authorise the proposed exploration - also acknowledging that the result of the screening were satisfactory and that no specific environmental impact assessment was required. The councils heard their technical committees but still chose to request a full

environmental impact assessment. As a consequence, the exploration project was postponed by 12 months. Legally, Total was entitled to appeal against this decision but chose not to do so. As of the end of 2013, Total was already conducting its environmental impact assessment. The results obtained from this EIA will also be useful to Total in support of its future project's applications and paperwork.

5. Conclusion

Denmark can boast of having one of the strictest environmental frameworks. If this country authorises exploration and production activities for onshore shale gas, it will send a very important message to other interested observers. The Danish decision-making process is gradual and there is no hurry or overnight rush to take resolutions on shale gas exploration. This is the result of a cautious, step-by-step, decision-making process. At the time of the conference, the position of the Danish Ministry was to issue no additional exploration licenses until the results of the first authorised well bring satisfactory certainty on the existence of underground shale gas resources. Also, the prospect of seeing a shale gas industry emerge in Denmark will be subject to public participation and a clear political will.

Dr David Toke

Dr David Toke

The transcript published below reflects the presentation delivered by Dr Toke at RGU in Aberdeen in November 2013. Had David Toke delivered this contribution at the time of printing in 2015 his comments would have been different based on how policies have changed. Since 2013, the UK government has introduced various policies such as the government's community energy programme or the 'auction' system of allocating contracts. The government has also proposed to review incentives for onshore wind and solar.

As an academic who spent part of his early career with the Renewables industry, Dr Toke occupies a privileged position. His experience and background allow him to look at the bigger picture of investment and policy aspects for the structuring of energy projects. Getting a sense of the "bigger picture" also helps him anticipate what should be coming ahead and see through future developments. At the conference, David Toke first proposed to discuss the profile of policies emerging to support renewables in the next few years. In doing so, Dr Toke chose to explore some of the options open for Scotland. He also touched on the meaning of community renewables and community benefits. David Toke's conclusions are based on his personal research around policies for the deployment of renewable energy sources (RES) across the United Kingdom, and beyond. His research approach includes analysing large volumes of statistics, official data and figures. This approach also implies looking at the planning and financial side of renewable energy projects. Dr Toke's holistic approach has proven to be particularly relevant in relation to his observation of technologies such as wind power.

Financing RES projects

Starting off with the financial environment, it transpires that the up and coming financial environment has dictated the progress of the electricity market reform. Locally, the financial environment has had implications on debates about Scotland's energy future, and how this country can best negotiate conditions in encouraging community ownership and community benefits. In relation to the two latter items, their close analysis invites to better understand how these instruments could be overlapping and to what extent. They require exploring some of the options which have proven to be good ideas in practice. They also invite to appreciate how these issues have been approached elsewhere - as well as what

could be the best possible scenarios for Scotland, and how this country could move forward with them.

In order to appreciate the current financial support to RES, it seems important to seek to assess the meaning of the Renewables Obligation.[10] This scheme allows the selling of renewable obligations certificates in the market. This approach can create quite a good environment for developing community renewables as it means that investors can generate a good return if the bulk of their investment is an equity one. This conclusion appears to verify when there is just a need for the investors to borrow little or no money from the bank and that the target is to get as big a shareholder return as possible. If the investors are ethical investors willing to fund community renewables project, and there is a capacity to minimise the amount of money borrowed from the banks, then the Renewables Obligation can be quite a useful instrument for developing community-owned schemes. At the moment, there are not that many community owned schemes in the United Kingdom. There are a few very well-known schemes, such as the Westmill Wind Farm in Oxfordshire. The equity portion in this community scheme is approximately 40 to 45% and investors managed to borrow 50 or 55% from the Cooperative Bank. The Renewables Obligation provided a good incentive to structure this financing. The Westmill scheme was able to secure a contract from one of the electricity suppliers which enabled them to cover the bank loan - and the return to shareholders was covered by selling their renewables obligation certificates (ROC) on the ROC open market. Financing structure around ROCs proves therefore to work reasonably well. The view that it is the Renewables Obligation that prevents community owned renewables from getting ahead in this country is therefore not sustainable. The basic problem is that there are not enough people trying to take advantage of this scheme. There are probably a number of sociological explanations for this resistance, but discussing them here would prove to be beyond the scope of this conference.

This first conclusion invites to understand the impact of the electricity market reform on community renewables.

[10]This scheme appears to be open for financing community renewables projects.

Electricity market reform

Unfortunately, it would appear that the electricity market reform is going to be bad for community renewables. As it stands, this reform is not going to make community schemes impossible but its approach is not going to make such projects as good as they could potential be. Unless government in Westminster or Edinburgh introduces some new measures, this electricity market reform will reduce the potential and ease with which community renewables have been made possible so far with the help of the Renewables Obligation. To understand why it is going to get worse, we need to start with the feed-in tariff which is available in this country. The UK has a feed-in tariff, just as Germany has, but the UK's feed in tariff is not structured similarly to the one in Germany. In fact, the UK's system is in various aspects the opposite of the one in Germany where the utilities, big, major electricity companies will have a monopoly over the power purchase agreements. The contracts are different. The whole point of the German feed-in tariff was to give independent generators and community schemes the ability to get power purchase agreements without having to go cap in hand to the utilities companies. Under the British system, the independent generators, be they large or small, are going to have to go cap in hand to the oligopolies. In practice, this means that even big independent generators and people like Fred Olsen[11] may not be getting £95 per megawatt-hour from 2018 based on fifteen-year contracts, as is advertised by the Treasury, but instead maybe £80 per megawatt-hour.

The government has said it will introduce some measures to make sure other people get contracts. The meaning of this statement remains currently very vague. It assumed that it could mean the big electricity companies are going to get a considerable amount of unearned income from these power purchase agreements under various excuses - like that they have to pay for balancing costs and other similar costs. Calculations performed to asses such costs have revealed that they represent no more than £2 or £3 per megawatt-hour. Therefore, when the government says wind power is getting £95 per megawatt-hour from 2018, this is incorrect. The utilities are getting that amount and based on the foregoing, what goes to renewables schemes is a different matter.

[11]Fred Olsen is an onshore wind farm projects developer in Scotland.

Such an inconsistency certainly testifies of a degree of policy propaganda surrounding Britain's electricity system which also is increasingly moving towards justifying nuclear deal such as Hinkley C, Sizewell C and a few more to come. This inconsistency also creates a big discount for independent contractors, which includes the community renewables, who are much less able to negotiate with the big companies and people like Fred Olsen who are big independent generators.

Until quite recently it would have appeared quite unreasonable to support the idea of an independent Scottish electricity system. Under these circumstances, it now appears to be quite a good idea because of the decisions taken under the current electricity market reform. Following the EMR and the nuclear deal, the picture has somewhat changed. Previously it was argued that because the costs for funding renewable energy were socialised throughout the whole of the UK, it would therefore be very difficult for Scotland to fund renewable electricity. Certainly, the offshore renewables part of it would require considerable increases in electricity prices which are politically unacceptable.

The announcement for funding new nuclear power contained in the EMR statement has changed things dramatically. Now all British electricity consumers are going to pay for significant extra charges in their electricity bills from 2013 onwards. Bills are likely to rise from 3% to 9% depending on whether the UK invests in two, four or six reactors. Hinkley will see another set of reactors that the government says it is quite confident of getting.

In the scenario of an independent Scottish electricity system either under (i) independence or (ii) a revised form of devolution, consumers in Scotland will be able to avoid the extra cost associated with these new investments in nuclear infrastructures. If the same amount of money was spent on renewable energy sources with a revised and more efficient plan than the one that is currently considered, the transition towards renewables could be achieved at a cheaper price. Also, the UK government says that it is giving equivalent "incentives" or "subsidies", however one wants to call them, to nuclear or renewables. The UK government is giving a considerably better deal to nuclear than to technologies like onshore wind and related technologies. An independent Scottish system could do cheaper wind power than the headline figure

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of "£95-per-megawatt-hour-for fifteen-year-contracts" currently available under the EMR. There are three reasons that can be put forward for this claim. Firstly, the possibility to introduce longer term contracts. Indeed, we can see that the term of contracts for premium renewables obligation prices has been reduced from 20 to 15 years. The rationale behind this decision is unclear. This reduction coincides with the increase in headline price just above the £92.5 per megawatt-hour for Hinkley C. If the government maintained twenty year contract for onshore wind, the headline figure for investment would then be lower than £95. In terms of EU law, investment in nuclear power plant like Hinckley also require state-aid approval with the commission through a special application, in which investments in renewables are not required. Thirdly, a major support for nuclear investment is actually loan guarantees. Without such guarantees nuclear power plants are unfundable. The government provides a loan guarantee of 65% of the capital cost of Hinkley C. If the government gave loan guarantees to renewables, this policy would benefit to such projects. These investments do not require a high amount of guarantee as they can provide a high degree of certainty about their costs and other variables. Wind energy projects do not have such a lead time where they have to shell out money without getting any return. Also, investments in renewable forms of energy sources do not vitally require guarantees similar to those backing nuclear investments. But if State guarantees are offered, they would certainly reduce the cost of private investment. This approach exists in other countries, such as Germany where investors can obtain support equivalent to loan guarantees through various means. This support reduces the costs of wind power quite considerably and when these two criteria are factored into a spreadsheet, the price for wind power comes down considerably from £95 per megawatt-hour. With a 65% loan guarantee and a twenty year contract, it is possible to fund a good wind power system for £80 per megawatt-hour. With a proper feed-in tariff system like in Germany (and not just playing in favour of utilities that seek to skim off a lot of cash to compensate for their lost income from power plants) any independent producers can generate power at a cheaper price, and given a slightly equivalent windiness, community renewables will do it a lot more cheaply as well. Therefore, a self-standing Scottish program organised in the right way can deliver renewables much more cheaply and at am affordable price, when taking into account it would not have to pay for nuclear power.

However, this programme would not be funding offshore wind and tidal energy systems. Tidal energy generation is not going to happen without loan guarantees as they are very new technology, innovative and unexplored for the banks to fund them. In the current state of affairs, nuclear is getting loan guarantees whereas tidal stream and wave power are not getting it. This is certainly incorrect and should be rectified.

On offshore wind, Fergus Ewing[12] was correct to send a strong letter to the government about the Electricity Market Reform's (EMR) impact. He was right to point out that offshore renewables are just not going to happen under the EMR. This conclusion makes the exercise of comparing the cost of an independent Scottish energy system versus the one of the British energy system under the EMR highly theoretical. Indeed, there is no point in trying to factor the costs of an independent Scottish electricity system if the EMR is not going to fund offshore renewables. This conclusion makes comparing the costs of the two systems impossible. Having said that, if the question is asked "could you run an independent Scottish electricity system with a renewables program to meet the 100% renewables target by the early 2020s at the same cost, or less, to consumer than that is funded by the British system as a whole (or remaining British system)?", then the answer must be positive. Onshore wind plus a few other cheaper renewables would make this target achievable. Planning may be an obstacle to meet this target, but it does not appear implausible to get fairly close to the "100%" renewable target. This ambitious, yet achievable, target should now receive more attention as renewables can give rise to a lot of new projects. These projects would include more community renewables project which are not being done, cannot be done now or are languishing under the whip of a nuclear-warranted electricity market reform that is being put in place by Westminster.

Social license

Turning to social license and community benefits, the British government's policy is moving towards community benefits at £5,000 per megawatt. Local communities will have a big influence on how the community benefits' will be dispersed. My recent studies around wind farm and planning issues through both quantitative and qualitative

[12]At the time of the conference, Mr Fergus Ewing MSP was the Scottish Minister for Energy, Enterprise & Tourism.

analysis have confirmed that the people who are most likely to object to wind farms, and campaign against them, are the people who live the closest to the proposed developments. Consequently, offering community benefits through grants and other similar benefit to local schools may be interesting but care must be taken to ensure that the community benefits money should go to the people who are the closest to the wind farm projects and the money they generate. This is a straightforward idea and no renewable energy company seems too keen to be actively taking this up.

Some people are also suggesting that wind farm developers should pay for a part of the local community's electricity bills. The closer to the wind farm, the larger the share of their individual electricity bills amount should be paid to the local residents. This suggestion certainly sounds like a simple idea, but if community benefits are to be introduced, the payment of electricity bills of local communities is one the most direct and most effective ways of achieving these. That is not to say that providing schemes to help local schools, or build local by-passes are not very good ideas. But when looking at minimising planning opposition and considering the electricity bill funding option, it is certainly a benefit that ought to be tried a lot more than it has been done so far. Other ideas for community benefits could be put forward, but these are the options that would seem desirable to see being very strongly promoted. It would also be interesting to see more experimentation of other forms of community benefits in order to better understand how well these other options could work and what could be best way of organising them.

Community-owned schemes

Community benefits and community ownership are two distinct concepts. However, it is possible to combine the two approaches. There is an interesting community-owned energy project in Denmark, in Hvide Sande which is a fishing port. The harbour's tourist board, named the "Holmsland Klit Tourist Association Foundation", has set up a wind farm project which is owned by the local fishing community. The 9-megawatt wind farm delivers community benefits. The revenue helps towards the port's redevelopment. Hvide Sande has established a trust fund providing equity and called onto the local banks' assistance to give it good terms. This project was received with very few objections as compared to other proposed developments in the area which was hit by many local objections. Community-owned schemes are no panacea for getting rid

of planning objections. There is also growing evidence that community owned wind farms tend to reduce the opposition.

So, could combined community benefits and community ownership schemes happen more in Scotland? The answer appears to be positive. The biggest barrier is the dearth of facility for lending money at low interest rates to provide a large portion of the capital investment needed. Most local banks in Scotland will not take collateral from local assets, farmers or otherwise, and give reasonably good interest rates on bank loans. Going back to the discussion over State guarantees available for nuclear projects, there should be a similar sort of government-backed loan facility for community renewables and renewables projects in general for Scotland.

Also making reference to the comments made above in relation to the impact of an independent Scotland, or a revised version of devolution, on the cost of the Scottish energy system, it would appear that Scotland could fund more and cheaper renewable projects after such a constitutional change. This country's policy priorities could lead to Scotland offering more possibilities for community renewables. With a distinct energy system, Scottish citizens could fund renewables programs much more cheaply than what is being done now. The required internal rate of return could go down by about 2%.

The recipe for success around renewable energy sources' developments requires a bit of theory and making a number of rational choices. Looking at efforts to get community renewables going in Scotland, research shows that it is required that more people must try to do it with a financial commitment while believing in that it will be a success in the longer term. This is a rational choice theory, and a political science theory. If there is a financial commitment in a project then there is more chance that the investors will make more efforts to get their money back and/or get a return. Individual investments can vary, for example each person can contribute £1,000. So fifty people will raise £50,000 - which is enough to carry out the initial work. Personal involvements also matter a great deal for the success of community projects. To somebody with a local job, getting involved with the local community project can mean helping bring this project into existence. By doing so, this person is also likely to extend his or her local employment by making the project success, preferably beyond the project's completion date.

Dr Karen Parkhill

Dr Karen Parkhill

Dr Parkhill's approach to energy issue differs from the ones of other speakers at the conference as Dr Parkhill focuses on the scientific understanding of citizens and public's attitude towards energy project. Her presentation was based on a scientific report launched over the summer 2013 as part of a project called "Transforming the UK's Energy System". It is the result of two-and-a-half years of interdisciplinary project which started when Dr Parkhill was active at Cardiff University and includes investigators at Cardiff University and the University of Nottingham.[13] Dr Parkhill's presentation to the conference included a summary of her research project and a discussion on community energy.

Background

When considering energy systems' changes, understanding the "public perspective" is very important for a number of reasons.[14] The public is deeply concerned at how energy systems are configured as they are: energy producers (the number of which is increasing); energy consumers with a voting power (and who can have influence on types of government); active proponents and protesters (who tend to focus on the local sides of things). All are deeply implicated in our energy systems in different ways.

Looking towards 2050, there is a need in the UK to explore and define a vision for the energy system. There are different scenarios available designed for various types of people and organisations like notably the Department of Energy and Climate Change (DECC), the WWF or the UK Energy Research Centre.[15] One common weakness that these scenarios

[13]This project involved Dr Parkhill, as a geographer, but also psychology, architecture and engineering academics within the School of Psychology at Cardiff University. Dr Parkhill also wished to extend her gratitude to Christina Demski and Catherine Butler.

[14] When looking at "energy systems", Dr Parkhill does not approach this concept from a simple supply and demand perspective. She also looks at the regulatory framework; the public (includes consumers and producers) and; the energy system (through its broad diversity and as it is being considered in anticipation of the climate change targets set for 2050).

[15]The UK Energy Research Centre funded the research supporting Dr Parkhill's presentation to the conference.

have is that they tend to make very simplified assumptions about public perspective. These are very basic assumptions due to a lack of empirical evidence. There is a real gap of understanding as to what the public thinks about changes in energy systems. There has been a lot of public work done on single issues such as the public perception of wind energy, nuclear power or selected aspects of the demand side of energy. Very little work has, however, been produced focusing on interrelated sets of transitions in energy systems.

The project was organised around three interconnected work packages. The work package number one looked at what experts thought of the different scenarios that the research team presented and what they thought should be used for 2050 through carefully targeted expert interviews. The research team also looked at scenarios that were already developed and they looked with their engineering colleagues as to how to target the information that the team would need for the various phases of this work. The second phase was the qualitative work in which workshops were organised in six different places across UK: Cardiff, Edinburgh, London, plus areas with locally-relevant energy issues such as Cumbria (due to Sellafield), Merthyr Tydfil in Wales (due to its coal mining history) and settlements close to the Whitelee wind farm (at the time, the largest onshore wind energy development in Europe). Quite importantly, the team did not have the public just discuss current scenarios. Instead it invited them to use the "DECC My 2050" online tool to create their own scenario and define what kind of transition they would have to live through.[16] The quantitative phase of the project involved a nationally representative survey which looked at attitudes towards energy system change. The survey contained multiple parts and also included the "My 2050" tool. The public were invited to design its own energy transition scenario by manipulating the options available on the online tool. Instead of always checking whether each scenario created by respondents would lead to a 20% carbon reduction (a target of the tool), the research team was more interested in giving the public an opportunity to think about the whole energy system. The findings of the qualitative and quantitative phases were transcribed in two extensive written reports.

[16]The deck "My 2050" scenario can be seen on slide No. 6 of Dr Parkhill's PowerPoint presentation.

The purpose of the presentation at the conference was to look more specifically at the values reflected in these reports. The reason for looking at values is that they underlie people's preferences. Building an understanding of public values potentially provides a more durable sense of public attitudes towards changes to the UK's energy system.

Public Vision

The research found that the public vision for the energy system of the future is one that contributes to meet the broader target of a sustainable future. On the supply side, this involves a strong commitment to renewable forms of energy production and a corresponding shift away from fossil fuels. On the demand side, it relates to the development of technology and infrastructures, such as public transports, demand management techniques, electric vehicles' charging points that will help support the likely changing lifestyle and achieve a reduction in energy demand. On the surface, this vision looks like it has to do with different technologies. The research team, however, did not conclude that it was the case. It found that this vision actually has to do with public values.

The research found that there is a strong preference for renewable energy. This form of energy is regarded as renewable, clean, fair and just. Nevertheless if, say, a solar farm established in North Africa would be found to be contaminating its local environment and if it was found to be causing a lot of local contestation by local people the research team believes that the British public would no longer support renewable solar energy. The public would see it as contravening the values that they associate with this technology. The public might still see it as renewable but no longer as fair and just.

So, and to the research team, the public support is not about the technology. The findings showed that it is actually about the values that people associate with the energy system. But, what public wants is an energy system that does not contravene those values. More ideally they want one that represents those values. So it matters to understand what values can mean and what they are, and also look at pragmatic aspects.

Values

The literature on "values" covers a vast array of different disciplines. It makes it quite difficult to understand what people mean by "values". At the basic level, the research team suggests that "values" are the guiding

principles that people draw upon. However, the team does not suggest that any one person will hold all these values. There is a social value system. The team suggests that values are cultural resources that people can draw upon when they are developing their preferences. In other words, the public is not expected to hold all the values which have been identified in the research. Rather, members of the public are expected to draw upon those values when making their decisions about their preferences for the content of the future energy system.

Identified Values

The study has helped identify the following values:

- reducing the use of finite resources
- reducing the overall level of energy use
- avoiding waste and being efficient
- capturing opportunities
- environmental protection
- availability, naturalness and nature
- availability and affordability, reliability, safety
- social justice, fairness, honesty and transparency
- long-term trajectories, interconnected, improvement in quality
- autonomy and freedom of choice and control.

This list of values will now be selectively discussed.

Beginning with the public value "efficient and not wasteful" it can be inferred that one important component of the energy system should be to avoid waste. Waste is regarded as inherently bad and at the moment there is a perception that the energy system is quite wasteful. People perceive that an awful lot of our energy is being lost and this is a source of concern in the context of finite resources. The energy system should avoid producing waste products. Here, "waste" could be nuclear or carbon wastes as these forms of wastes can lead to pollution. Hence a proper waste management must be in place. The structure of the energy system cannot ignore these forms of wastes and they must be managed in the future. Apart from managing waste effectively, the energy system should be more efficient in terms of technical capacity and energy services.

The energy system for 2050 and beyond should also seek to capture different opportunities. The public hear about the green economy, the jobs and other potential benefits attached to it. The energy system should reflect these benefits.

The energy system should also use and produce energy in an environmentally conscious way. It should not harm the environment but, in turn, protect wildlife, nature and ecosystems. It must also avoid pollution and contamination.

We also need to think about the relationship between nature and society. At the moment there is a perception that we regard nature as a resource that is bound to be depleted. However, we should be looking at creating a more synergistic relationship with nature. Hence the modern energy system should also be more secure and stable, which means that the system should ensure access to energy services, along with its availability and affordability. The system should be reliable and safe in production for delivery of energy services.

Turning now to "energy security" the role of the energy system must be assessed at the national level to identify whether it is reliable or prone to shocks. Unsurprisingly, the public does not want a system which would be prone to shocks. Moreover, the public does not necessarily think that importing energy is a bad thing, as long as these imports are handled in a sympathetic manner and in line with the other values that are represented. A "safe energy system" does not just mean having safe nuclear power stations and their safety for the people living close to them. The public wants an energy system that is safe for the people who work for the energy system both domestically and internationally. Hence, the public recognises that the energy system is part of a global system.

The values of "autonomy" and "power" reflect the need for the energy system to be mindful of the importance of autonomy and freedom both at national and personal level. In terms of personal "freedom of choice" and "control", this set of values is not about having a number of developments imposed upon the public by the supply-side. It is also referring to energy demand management, practices and interventions. While the study reported some support for automated energy demand management, it transpired that people do not like the idea of outside agents interfering with their activities. Automation with a certain degree of manual control is therefore preferred over total automation.

Also, the energy system of 2050 should be sophisticated enough for people to live healthy lives. The system must be "fair" and "inclusive" where actors are "honest" and "transparent". Such a system echoes with the literature on social justice where there should be a fairer distribution of costs and benefits. "Costs" and "benefits" here are not terms merely referring to finance and economy. These terms include criteria such as social, environmental and financial impacts of the different developments leading to the energy system for 2050. These values also connect with the intra and inter-generational justice. They are not just about the UK or the current generations. It is not just about thinking about how biomass or energy crops might be produced. These values are also about the consequences of these choices for future generations.

Behind the values of "honesty" and "transparency", there is a suggestion that these features are not currently being represented in our energy system. There is a perception that certain stakeholders or actors can manipulate our energy system for their own benefit.

The points made in this keynote show that publics are not just concerned about the "end vision" they are also interested in the process by which the energy system changes. So, processes and changes in the energy system with a long-term trajectory should be interconnected. It should show changes and improvements in associated technical advances and quality of life. This might mean that the UK needs to think not just about 2050 but beyond 2050. The public involved in the workshops questioned why the study was focusing on 2050, as the actual questions go far beyond this date. The public also questioned how it is possible to achieve these long-term trajectories given that the government works often in 5 year cycles. In that respect, the presentation by Professor Rønne and her description of the Danish cross-party agreement, showed how efficient it is to make sure that the political will or political ideas about the UK's energy system go beyond the current government in power. The public also recognises the fact that the energy system is interconnected and that multiple actors are involved. Energy is also relevant to transport policy, health policy and a plethora of policy areas. People would like to see the government acknowledging this reality and the diversity of actors around energy issues. At the moment, the public think that it is not so much the case and that energy issues are being dealt in silos.

Looking back on the above-identified public values, the picture looks altogether quite ideal. It could be argued that this perception is not very realistic. Our participants recognised this and gave due consideration to pragmatic views. The research conducted also indicated that having an energy system that considers those values is actually quite critical. If the UK wants to achieve its energy system transformation or transition by disregarding this value system, then there is likely to be greater risks of contestation. Hence engaging with those values appears quite critical.

In terms of pragmatism, the values set out in the research offer a vision on how "the world should be". However, people are not ignorant of the fact that the world might be different from what they would hope for. Also, the public creates its views on the world through its own experiences and within its context. All of these views interact to help shape what they think the energy system should look like. This does not suggest that government should not strive to go in the direction of that ideal energy system incorporating those values. Nevertheless, the public is realistic that it might not be entirely possible.

They also acknowledge that there might be some contradictions in their pragmatic way of thinking.

For instance, the public is quite keen to move away from fossil fuels but at the same time, the public's experience of different energy systems taught them that fossil fuels could be a quite good thing. Even if fossil fuel is dirty and non-renewable, gas in central heating system is seen as highly controllable and responsive. So the energy system should be able to emulate these different characteristics to make it attractive. Public recognises that it is quite difficult to achieve this combination and that the socio-geographical context will effect the energy system. For example, the latter dimension matters for decision-making purposes. This includes not just local issues for wind and nuclear power but also the living context which needs to be taken into account when implementing and designing demand strategies. Urban settings come first to the mind when thinking about energy system change. With that particular type of settings, it is not necessarily feasible to request to shift energy demand to night slots for populations living in quite densely populated areas. The public therefore expects constraints to be taken into account when trying to assess what the UK will be able to implement in relation to changes in its energy system.

The term "context" also relates to the wider social and political criteria. Not unlike what is stated above in relation to political will, it includes the messages which have been communicated to the public in terms of rhetoric and body language of government. Often the public feels that government is saying one thing but doing another. Such a situation develops mistrust and people think that leaders are not living up to their expectations. "Context" also relates to national and international events. Being responsive to events like Fukushima is important.

So, pragmatism teaches us that in relation to the values discussed above, there is a need to consider how the world operates, how the public view shapes, and the context in which the UK finds itself. As a result, it is entirely possible that some of the least preferred options, because of this pragmatic view, would still be relatively acceptable to the public, as long as it allows for these long-term visions and that the proposed changes cannot be achieved in a different way. For example, research on carbon capture and storage (CCS) identified that there was a lack of preference for this technology. This is not just to do with the waste aspect of it (which we have seen connects with certain clusters of values) but also has to do with CCS being a sign of continuation in the consumption of certain finite resources. Nevertheless, the public recognises the fact that CCS may be the only way to attenuate the issues associated with carbon dioxide for some sectors; the public therefore seems to find CCS appropriate for industry.

Beyond the above pragmatic aspects, the public also recognises that bringing about change and ensuring trajectories towards an energy system commensurate with the values which have been identified could be quite challenging. This leads to the question asking "which actors should be responsible for getting the UK towards this energy vision?"

The public's views on "responsibilities" are that they should not be allocated to just one group of actors. They would rather allocate responsibilities to each and every one of the groups discussed earlier. It appears reasonable to state that ultimately the government has the most responsibility, partly because it can be held accountable. The public expects the government to work in the public's interest, whereas the industry is regarded as profit-motivated. Therefore, energy companies are expected to take a limited responsibility for the energy transition. This conclusion is important when remembering that a lot of energy policies

are being rolled out and associated with energy companies. The latter are seen as being quite important for financing the transition and pumping some of their profits back into the transition's development, rather than just banking their profits. Energy companies are nevertheless impacted by trust issues as they are regarded as being opaque in their operations.

Governments are seen as accountable for developing the system but they seem to be driven by short-term motives. Governments want to drive change but due to the nature of the political system, they are experiencing difficulties in delivering energy changes. Trust has been eroded between citizens, governments and industry. The positive notes lies in that if trust can be rebuilt - and because citizens and public recognise the fact that they also have a role to play in the energy system transition and having a energy efficient future - the public actually believes in that reciprocal relationship where if they see industry and government play their parts, they will actually be willing to come on board and play their own part. At the moment, the citizens' case tends to indicate that they feel they are being left on their own. They are being told to do one thing, when other actors are actually doing another thing, hence people are unsure as to what to do.

A number of conclusions can be made here.

1. The British public wants and expects change. The public recognises that the country as a whole is going through the transition. It is through an enthusiastic partnership that they can witness the change.

2. What they want is an energy system that is responsive to the values discussed above. Durable public acceptability may only be achieved if it is rooted in the value system as identified by this study.

3. The public will not be accepting a form of change that does not show a sign of commitment to longer-term trajectories commensurate with those values. The public wants proof and evidence of a long-term, coherent, trajectory even if the latter has to go beyond 2050. The public wants to understand in-depth what the country is aiming for and how. The longer term energy system change's trajectory should be aligned with public values and if done so they can form the basis of a social contract for change.

This research did not look at the ways in which energy system could be configured. The study focused on a centralised energy system. This made people think about the energy system as a whole. However, this created a gap in the study as interviewees were not asked to comment on off-grid and super-grid options. The study also did not look in great detail on issues of ownership of the energy infrastructure. The study primarily looked into nationalised and privately-owned energy systems. There is a lot more work that needs to be done about the cost and affordability of energy systems' transitions.

What does this value system mean for community energy?
Given some of our research's weaknesses as just mentioned above, can this value system apply to other pathways that may, at first sight, look irrelevant?

We actually do not think that it is the case.

When this study was released, one of the criticisms expressed in the press was that we did not ask people for their views on fracking. However, if it is looked from the perspective of values and the concept of "shifting a way from finite resources", and shale gas being a finite resource, it is acceptable to find that the public do not want to have a system that rests on limited resources. Fracking could therefore be reasonably found to contravene those values.

Our value system also suggests that community energy should be supported and it is often seen that community energy is "a good thing". But the values also suggest that there is a need to critically reflect on the role of community energy. Developing community energy can be done in ways which are not in line with the values associated with it. Nevertheless, it can be seen how they connect with finite and reducing resources, which are vital to community renewables energy. In theory, community energy should be developed in a "socially just" way: reflecting honesty, transparency - and it should also connect with autonomy, freedom of choice and control.

Another claim made about community energy says that there is actually a limited role for it in our future energy system. If one takes a very narrow definition of "community energy" then this claim would appear true. However, when considering the wide varieties of ways in which

community energy can be created - for instance, local infrastructure group could manage infrastructure in their local area; local groups could be active in fighting against fuel poverty - the value system indicates that there could be a bigger role for community energy in our energy system.

In community energy, the notion that "we can do more together than individually" is very important. It connects with the values of social justice, honesty and transparency, autonomy, freedom of choice and control. Our work has evidenced that individual people can be a bit hesitant to choose innovative technology. They are worried that they will be stigmatised or labelled as "not normal." Community energy initiatives could help with this. So, accepting energy innovations, whatever they may be, could certainly be done in variety of ways so long as those innovations are based on the values discussed.

There is therefore a bigger role for community energy than what is currently conceived. Community energy should also be approached beyond renewables. The values also suggest that there should be a long term support for community energy, and there is a need for commitment about community energy.

The values are therefore useful for guiding policymakers. They are there to help policymakers critically reflect upon what can be done when they have to consider different scenarios for community energy.

Mr Greg Gordon

Mr Greg Gordon

Mr Greg Gordon is a senior lecturer in the Aberdeen University Centre for Energy Law, with a particular interest in oil and gas law and policy. At the conference, Greg Gordon discussed the UK framework for onshore licensing by also connecting it to issues of community interests.

It is a great pleasure to speak at this conference and I would like to thank the organisers for their kind invitation for me to come and do so. I have been asked to speak on community interests in onshore oil and gas developments. In addressing this topic, I think it is important to locate the discussion in a somewhat broader context. A lot of the conference's contributions have relied on renewables as a backdrop. The views expressed often seek to identify how much of the current policies on community benefits match - or will match - with the developments which are happening with onshore oil and gas - or are going to be happening in the future.

That is a very valid perspective. But interestingly there are analogies, lessons, warnings and also disconnects to be seen when we look at offshore oil and gas. One aspect that has not been extensively referred to so far at this event is the offshore licensing regime. The UK is more familiar with the offshore regime as – while of course there have been some onshore activities, stretching back for many years – the overwhelming majority of oil and gas operations in the UK are carried out offshore. So, this contribution will include some views on the offshore framework as it is interesting to look at the licensing regime, the main players and to identify to what extent it is similar or dissimilar to the onshore context. Here, unconventionals and fracking will be given some attention broadly as quite a lot of that study has already been covered. America shall serve as an example even though America may appear to be a misleading example when compared to the UK. But it will be important to look at least at the concept of "living with shale" as this reality helps understand the impact that this industry potentially has on the environment and people's day to day lives. "How we regulate" flows, or should flow, directly from the reality of this impact.

This presentation will also include some discussion of the law. In relation to community interests, it is probably best described as a practice that is

beginning to emerge through ministerial statements and statements from the industry. These approaches will be compared with the position that has traditionally existed offshore.

When looking at licensing, it is important to look in high level at the key features of the offshore regime and its players. Thinking back to Professor Anita Rønne's earlier contribution to this conference, it can be said as a preliminary comment that there is quite a lot of similarity between the licensing regime in Denmark and the UK.

In the UK continental shelf (UKCS), the Department of Energy and Climate Change (DECC) acts as the central government's organisation to the upstream oil and gas industry. A very interesting interim report from Sir Ian Wood was released right before this conference.[17] Among other things, it notably proposed to identify whether DECC fulfils its role properly and efficiently, or whether its tasks are becoming too much of a challenge, and if it now needs to take radically a different approach. We will have to see what the final report says and the extent to which it receives political backing.[18] This system rests on a state's claim of sovereignty over oil and gas resources in the UKCS - and not one of "ownership". DECC administers the law and practices with the help of various other environmental authorities. Where there is competition between prospective licensees for a piece of acreage, DECC decides on where it will go.[19] The Health and Safety Executive (HSE) is also one of the important department that is consulted by DECC. In addition, there is some degree of consultation with interested sea users. For example, the fishing industry is consulted on issues like legacy liability and the areas to be utilised. Equally, the Ministry of Defence is consulted and is very influential.

[17]The Interim Report of the Wood review was published on 11 November 2013 and can be accessed at http://www.woodreview.co.uk/documents/UKCS_Maximising_Recovery_Review_Interim_Report_11.11.13_LOCKED.PDF.
[18]The Final Report was published on 24 February 2014 and can be accessed at http://www.woodreview.co.uk/documents/UKCS%20Maximising%20Recovery%20Review%20FINAL%2072pp%20locked.pdf. It did receive political backing; it was immediately accepted by government and industry. At time of writing, the process of implementing Wood has begun: see e.g. the Infrastructure Act 2015 ss 41-42.
[19]The fundamental of the system will survive the Wood reforms, but will in the future be exercised not by DECC but by a new, arms-length, industry funded regulator, the Oil and Gas Authority (OGA).

One important aspect for the purposes of looking offshore is that, unlike onshore, there is no private property system in the UKCS. There are private property rights within the territorial sea, but not for the continental shelf beyond. Of course, offshore operations pose technical challenges. But from the perspective of the legal environment, the relative absence of vested property rights greatly simplifies matters.

Another important aspect is that the majority of the offshore activity takes place "beyond the horizon". Rigs and the installations are all a long way away from the shore. Some pipelines or parts of infrastructure come closer to the shore and bring in oil and gas to the land but the overwhelming majority of the installations or the activities that are taking place in the North Sea or West of Shetland are well away from sight. There are some exceptions, but this picture is true for the overwhelming majority of the installations and infrastructure. I think that this distance may have contributed to the attitude that the public has to its primary energy supplies in this country. We have become accustomed to the idea that energy will just be there, with no visible adverse impact upon the environment or how we live our lives. Like an over-indulged child, we have become "spoiled". And the remoteness of offshore infrastructure raises an interesting question: if one wants to talk about community interest in this context, which community are we talking about? Are we talking about a community which is close to where the pipeline joins the land? Or are we talking about a community that is close to a refinery or an oil terminal? A community that sends workers offshore? Or in this context, is there no meaningful community at all (beyond those employed to work on the offshore installation producing the oil) simply because no one else lives there?

The last of these possibilities is the way this issue has generally been looked at in the offshore context.

Shetland has been successful in obtaining a direct share of oil and gas revenue through a levy on oil that is landed at Sullom Voe. The Shetland Charitable Trust has been the driver for that purpose and has accumulated a substantial fund. This trust now funds a variety of social and cultural activities and is also seeking to fund renewables projects. But other than with the Shetland's initiative, there has been no recognition of the derivation principle. While places like Dundee, Aberdeen, and Peterhead have considerably benefitted from being involved in the oil and gas industry, these benefits have been indirect by providing employment and

business. Aberdeen's civil infrastructures like the roads and the industrial estates have also developed in order to accommodate this flourishing industry. In the past, there were suggestions from the Grampian Regional Council that it should secure some [oil] money to get this development done. The message from central government was however that Aberdeen would benefit from business rates when the businesses were up and running, but it would get no direct share of oil revenue. Of course, there was a time-lag between the point when the infrastructure needed to the build and the point when the anticipated increase in council income, through business rates, could come. In the end, some loans were put in place in order to allow the construction of this infrastructure. These were subsequently paid back. So there was no direct support from the offshore industry and this suggests that "community interest" is not a particularly relevant concept in the offshore context.

Turning onshore, what we see is quite similar to the Danish example. Onshore oil and gas development is a much more complex picture. A state claim of ownership - not just sovereign rights - is made in relation to onshore oil and gas in strata. The claim does not extend to the overlying land. The overlying land continues to be owned by whoever is the legal owner. The Department of Energy and Climate Change also acts as the licensing authority onshore. The license is still important in an onshore context, but it is not as pivotal as it is offshore. There are a lot of other consents and interests that make the complex environment of onshore licensing. The Health and Safety Executive and Environmental Agency also play a role in this process. Licences are needed for groundwater abstraction; air quality has to be monitored. Also, part of onshore gas production is the association of the areas where there is coal. Hence, it is necessary to sort out the working relation between the Coal Authority and the Department of Energy and Climate Change (DECC). Issues arise, such as: what is going to be the order of development; do we get the gas first, then the coal; which body has the ability to licence such specific item? The Coal Authority can feed into this onshore process but it does not act as the licensing authority in relation to oil and gas.

There also has to be compliance with mining laws with respect to things like onshore borehole sinking. The mining requirements are not especially difficult or onerous to comply with and they will not necessarily obstruct oil and gas development, but in administrative terms it is another set of hurdles to cross.

Onshore activities are certainly affected by private property rights. This is the biggest difference compared to offshore development. If a developer wants to get access to a land to develop oil and gas related activity then, it will not be enough to hold a petroleum license. The developer must secure some sort of commercial deal with the overlying land owner so that they can get a physical access for their installation.

Planning law is a very powerful and important tool, too. An interesting, yet atypical, example can be found in the Orkney Local Plan which led to the blocking of uranium development in Orkney in the early 1980s. The British Geological Survey found a rich and commercially viable seam of uranium near to Stromness in Orkney. There was considerable enthusiasm on the part of government for that resource to be developed, and also considerable enthusiasm on the part of at least one major mining company. The project caused a lot of local discontent and national protests. Consequently, the local plan was redrafted to accommodate prohibition on uranium mining. As a result, an inquiry was necessary before the development could take place. In the end the development did not proceed, in part because of this and in part because of a drop in the price of uranium. So, local opposition and action plan came together to help stall that particular development. Yet planning is more subtle than the binary "stop/go" question of whether a development is permitted or prohibited. As Mr Robert Gray discussed in his presentation to this conference, planning can also involve micromanagement of a particular project. It helps provide a much more granular consideration of the particular effects of a particular project for a community. Therefore, local planning turns out to be an effective and powerful tool.

Currently, there is some small scale conventional onshore production in the UKCS. A lot of the oil produced from the onshore area is produced at Wytch Farm in Dorset. Other smaller developments exist like in the North of Scotland. There are some interesting developments where people with onshore licences are drilling onshore whereas the assets and oil and gas that they are reaching are actually some distance offshore, and they are conducting their activities through directional drilling.

The overall onshore licensing regime for conventionals is also used in relation to unconventionals. It is supplemented by some additional and specific guidance which we will discuss later, but the essential legal framework is the same. Very much like in Denmark, British policy makers

have not yet come up with a particularly detailed framework for shale gas and unconventional fuel opportunities.

Why might we need such a framework? Perhaps I should say a few words about what is shale gas. What is the fundamental difference between shale and conventional gas? A conventional reservoir is characterised by porous, permeable rock. So the rock is essentially a structure made of big spaces between the particles. Within those spaces accumulate hydrocarbons or other elements like water. Further migration is prevented by a cap rock which forms a trap and therefore gas is accumulated within that particle space. Shale gas reservoirs have a much lower permeability and porosity, so they are made of more tightly packed rocks. The low porosity means that the recovery is lower by volume than conventional reservoirs and it means that hydrocarbons will not flow as naturally from these sorts of formations. Ultimately, these conditions mean that operators have to work harder to get the gas out. So, one thing that needs to be remembered is that this resource requires more intensive operations than does production from conventional reservoirs.

What can we learn from the American experience on shale gas exploration? The Prime Minister would say, a lot. In The Telegraph newspaper's issue of the 11th August 2013, David Cameron expressed his very pro-fracking views. He said: "just look at the United State, they have tens of thousands of fracking well coming up each year and their gas prices are three and a half times lower than in the UK. It doesn't matter if we are in the north of the country, the south of the country, we are all in this vision together". His views imply that the prime minister is in favour of fracking and that the public can expect to see a US-style drop in prices if we press on with it.[20] This is, I think, a very Conservative approach to making a case for fracking and shale gas: meeting concerns about safety

[20]A leading commentator, Professor Jim Watson, however later published an article in the Daily Telegraph saying "David Cameron was wrong to raise the public's hopes that fracking could lead to a significant fall in energy bills." Later Government pronouncements on the topic – although still positive about unconventionals – were rather more circumspect in stating the economic case that the Prime Minister had been. See e.g. HM Treasury, "Harnessing the potential of the UK's natural resources: a fiscal regime for shale gas", December 2013, available at <https://www.gov.uk/government/consultations/harnessing-the-potential-of-the-uks-natural-resources-a-fiscal-regime-for-shale-gas/harnessing-the-potential-of-the-uks-natural-resources-a-fiscal-regime-for-shale-gas>.

and environmental concerns by promising economic benefits. But is this realistic? How comparable is the US experience to what we might experience in the UK?

One important area to consider is geology. The geological factors of the USA are different from those in the UK and Europe and it cannot be assumed that things that can be done in the USA can also be done in UK or Europe.

Geological factors mean that the depth of the gas is likely to be different for the UK and USA. The deeper the gas, the better it is for the environment because it will be further away from aquifers and the less chance there would seem to be of contamination. Hence, digging deep is not a bad thing. But the economic impact works the other way: the deeper the resource, the more difficult it is to get it as basins are smaller, reservoirs are less rich and the contents high in clay.

The human geographical factor is also an important factor here. If we compare the USA and UK, the UK is more densely populated than the USA. This gives the USA large amounts of open space for developments of drilling pads. This is not the picture (drilling pads) that the UK wants to see at regular intervals of the landscape but these establishments will end up being close to the communities. Due to the population's density, shale gas establishments in the UK will I think inevitably face even greater opposition and scrutiny than those in the US.

There is also difference between the UK and the USA in terms of industrial activities. As we have already discussed, the UK has a relatively small onshore drilling industry when compared against the USA, which has for a long time had a large-scale onshore oil and gas industry. The USA can easily re-deploy the large inventory of drilling rigs that are already present. In the UK, no such inventory exists. The supply chain will have to be created from scratch, as it was with wind. It is by no means impossible but it raises issues of cost and timing. For this reason alone, there is no prospect of a large-scale unconventionals industry springing up overnight and causing a collapse in consumer prices.

Legal considerations would militate against that, too. As we have already seen, here in the UK, the full right of property of oil and gas found underground is vested in the Crown. In the USA, there is no general State

claim made to property in oil and gas in situ. If developers are dealing with State-owned lands then the State owns the oil and gas found there; but if the land is privately owned, it is the owner of the land who owns the oil and gas. So the company wishing to develop the asset contracts with the owner to secure access to it. One of the factors that led to the reduction in prices in the USA is due to the nature of the legal arrangements that is entered between the companies seeking to get access to shale gas and the various land owners who own the resource land. Land owners entered into option agreements with operators where they had to start producing as soon as possible to generate revenue within a reasonable timeframe. The various onshore companies acquired interests in the land but subject to fairly strict obligations. One of the obligations was to produce the resource swiftly. Operators could not just acquire acreages and sit on them. That contributed to a massive glut of supply hitting the market at the same time. As a consequence, these arrangements caused the market price to drop. This development also explains that LNG facilities that were supposed to be for import have been reconverted so that they become operational for exports. The plan is to take the excess of gas out of the USA. This scenario also had an impact on coal where it is now being exported out of the USA and to places like Germany who tend to position themselves as champions of "moving towards low carbon." The foregoing considerations show how the local regime of ownership can make a big difference on the industry's future shape and development. Also, gas markets are not identical and do not behave in the same way in Europe and the USA.

If we now look at the prospect of "living with shale", what is the impact of shale gas exploration and production? Addressing this question leads to consider some items which relate specifically to shale gas while other items are not specific and instead relate to living with any oil and gas development reasonably close to residents.

Fracking is one of the specific features of shale gas development. What does it entail? Well as we know it involves deliberately fracturing strata underground. As Professor Rønne has already indicated fracking entails a significant utilisation of water. This consumption of water has a broad range of knock-on effects. For instance, in the United States, a lot of complaints and concerns about fracking have been voiced. Specifically, one aspect that certainly poses a major problem in parts of the USA is the transportation of water. In parts of rural Pennsylvania where fracking

operations were undertaken, communities found distressing the fact that the road usage changed so significantly. Fracking comes with a constant stream of heavy haulage transporting equipment to the site. The communities did not anticipate this kind of new road usage, where vast quantities of water and equipment would be transported. They did not anticipate that this heavy road usage was to continue over prolonged periods of time. Transportation of water will not necessarily be required at all sites. This depends on the extent water can be locally abstracted. But when water is having to be road-hauled it makes an enormous difference to the number of vehicle movements. This is not necessarily one of the big-ticket issues we would first think about when we considered the disadvantages of shale development. But experience suggests that for some communities, at least, it can be a very major issue.

Also, the well structure must prevent the escape of underground gas and liquids and any ingress into aquifers. The idea of using high pressure water and additives and breaking open rocks underground with the help of fracking fluids based on undisclosed composition is a matter of concern for many people. A series of different kinds of additives get into the water to make the process as efficient as possible. These mixtures have a certain intellectual property dimension and operators are rather wary of saying precisely what their fracking fluids contain. They view this as a proprietorial formula which they do not wish to make public. Apart from these concerns the fracking process also has issue about noise, light pollution, vibrations associated with drilling. The overall safety of the fracking installation is also a matter of concern. A gas production phase can go on for a very long time, stretching on for decades, albeit the highest levels of production are usually seen in the initial period.

The big risk that has certainly caught the public imagination in the UK, so far, has been seismic risk. The idea that these operations are going to cause earthquakes is something that has been a source for concern. The reason for seismic risk having caught the UK public's imagination due to a relatively small, magnitude three, earthquake that was triggered by fracking operations in Lancashire. Seismic risk is a type of risk that inhabitants are simply not used to in this country. We are fortunate enough to live in a very stable geological area. "I might get caught in an earthquake today" is not a thought that enters into one's mind in the UK. As a result, our reaction to what was, in reality, a very minor seismic event has been rather disproportionate. There has been a significant response

to the mini-earthquake in Lancashire by the government in setting out, in guidance, how it is going to regulate these activities and prevent seismic risk potentially associated with fracking.

Unconventional exploration and production also need to think about well decommissioning. Here there is a more long term concern than in relation to other sources of energy like onshore wind. In case of windmills, if the project comes to the end of its natural life, then the installation just requires to be taken away. Obviously, there is a physical exercise involved in the removal of these installations and once removed it is gone forever. But for the decommissioning of a well, people express more concern. They want to understand what will be the impact over a long term and make sure that beyond periods of twenty or thirty years there will be no risk of methane percolating up the rocks and through aquifers.

With the above background in mind which highlights a number of issues, what is therefore the UK's approach to unconventionals? For a start, this country began to move on unconventionals through a cautious approach that resulted in a moratorium. There was a short term moratorium after the unpredicted seismic activity during the Lancashire fracking in 2011. This moratorium is now over and in December 2012, the DECC confirmed in a written statement to parliament that they were willing to see fracking resume.[21] As mentioned above, the policy-maker's approach is to first look at the general law, i.e. the existing law on onshore oil and gas development, to govern fracking activities. This general framework should be supplemented by a relatively small number of other specific requirements. Probably as a direct result of the Lancashire experience, such specific requirements generally revolve around seismic risks.

Going back to the specific items of regulation which have been bolted on top of the general law, these include a prior review of seismic data to identify hazards and assess risks. For instance, in relation to a particular site, an assessment needs to be done for existing fractures, and underlying geological features that would give the regulator cause for concern. If so, the regulator will consider them and the operator will have to submit a fracking plan to the DECC for approval. In order to draw

[21]Since this presentation, the Scottish Government has separately imposed a moratorium on fracking, pending a public consultation exercise.

this fracking plan, the operator shall have to take into account all the information it found through the prior review it conducted. The DECC will monitor seismic data on an on-going basis. There will be a traffic light system that will allow the DECC to halt operations if seismic activity goes beyond a certain threshold. In practice this threshold is effectively very low.[22]

In the documents that have come out following the written ministerial statement on shale gas, there is an explicit recognition of public trust deficit. If the UK wants to move to shale, there is an explicit recognition of the need for UK to take the public on board for this project. This engagement cannot be imposed on the public from above. There has been some recognition by politicians of the need to build trust around shale gas by listening to the public and their concerns. This approach connects with Dr Parkhill's conclusions as discussed in her presentation around the shaping of our future energy systems and the values of the public would like to see reflected in them. Building trust rests notably on the on-going initiatives such as the Strategic Environmental Assessment (SEA) recently conducted in anticipation of future onshore developments in the UK. This SEA had been already going on at the time the seismic problems with the Lancashire fracking took place. The Health Protection Agency is also involved to monitor effects on health risks and air quality in particularly.

The industry's perspective on these issues was put forward by Lord Browne, the former chief executive of BP who is now the chairman of Cuadrilla Resources Holdings Ltd. Lord Browne says that there is a complexity "that we are all used to, but that should be simplified. This is about streamlining with certainty but making sure it is as simple as possible, and doing it speedily. Right now there is neither speed nor certainty. We need to speed things up."

This statement transcribes a perfectly legitimate industry perspective. Any industry wants regulatory certainty. They do not wish to see processes being unnecessarily Byzantine. If they are convinced that what they are doing is perfectly lawful and good - and their operations are going to make a contribution to UK's energy security and to the government's

[22]For further details, see https://www.gov.uk/government/speeches/written-ministerial-statement-by-edward-davey-exploration-for-shale-gas.

coffers - then that is perfectly logical. This statement, however, is slightly antagonistic when considered by a public that is – to put it mildly - rather sceptical about all of this. It sounds like an industry that is trying to rush things through. Yet it is not irrational. It is not "wrong", but it is a message that may create some problems from the perspective of public perception, even if it is one that government endorses. The Secretary of State for Energy & Climate Change has indicated that "we're going to try to streamline; we're going to try to get a more transparent regulatory process." As of today, is there any sign of that streamlining exercise happening? Recently, the United Kingdom's government announced the introduction of quite an advantageous tax regime which is more generous in relation to unconventional gas than to other conventional onshore developments.[23] There are also some proposed changes to English planning law which were issued in September 2013. These relate specifically to the provision of notices to overlying landowners. When fracking takes place, cracks in the rocks can travel for quite a long distance. So if there is an obligation to notify everybody whose land might lie above those fissures, can such identification be practically feasible? Secondly, operators may have to individually notify a long list of individuals for no great purpose. So that is the sort of change that probably does serve a legitimate purpose – but also the sort of change that a sceptical public will view with suspicion as politicians "speeding the plough" for industry.[24]

Turning to community interest more specifically, it is important to consider the existing situation with conventional hydrocarbon resources. The person who happens to own the land in a conventional onshore oil and gas development, the overlying landowner, will typically enter into a commercial agreement to permit access to an operator or a driller. Yet, there is no broader community interest recognised in conventional development and certainly no legal obligation in that respect.

[23]This quotation is taken from an interview with the Guardian newspaper, published on 12 March 2013: see http://www.theguardian.com/environment/2013/mar/12/lord-browne-uk-shale-gas.

[24]Since this presentation was given, further streamlining has taken place. We have seen the creation of the Office of Unconventional Gas and Oil (OUGO), an administrative department of DECC, and the controversial introduction, in England and Wales, of a statutory right to use land in the deep sub-surface for energy exploitation purposes, without the need to secure the permission of the overlying owner: see the Infrastructure Act 2015, s.43.

In relation to unconventionals, the situation is now slightly different. Here again, the overlying land owner can seek to get some sort of reward for use of his land. It is understandable that he or she would seek to capitalise some value by leasing the land; but of itself, that enriches one "lucky" landowner and gives rise to no broader community benefit, despite the fact the effects of development may ramify more broadly. On the 27th of June 2013, the industry pledged to engage effectively with communities and offer what one could call "a bounty". This offer was made by the industry[25] but announced by the UK government: the government announced it alongside a document which gave some sort of indication of future potential for unconventional developments in the UK.[26] So the government is pushing this initiative forward and tacitly suggesting that this is a good thing. This approach suggests the interrelationship between the community, the industry and government. Whether the community will accept the role of government as "honest broker" is a moot point.[27]

The undertaking from the industry suggests that it must engage openly and honestly with communities. The government also indicates that evidence of such engagement and its extent shall be published. This approach is rather similar to the one discussed on the first day of this conference in relation to renewables: the idea is that openness is part of the answer; not rigid rules; not heavy intervention by the government. An industry speaking to communities in an open atmosphere is what is needed to move this project forward. The government's statement was slightly ambiguous on what precisely the bounty is going to be. It first indicated that there was going to be at least £100,000 paid for each hydraulically fracked well. Later on, this amount was payable for each hydraulically fracked well site. In practice, the two things are very

[25]The Charter can be downloaded from http://www.ukoog.org.uk/community/charter.
[26]DECC Press Release, Estimates of shale gas resource in North of England published, alongside a package of community benefits, available at https://www.gov.uk/government/news/estimates-of-shale-gas-resource-in-north-of-england-published-alongside-a-package-of-community-benefits.
[27]One of the lessons of the Brent Spar incident is that the public may be deeply suspicious when the Government and Industry come together to "push" a certain outcome. For an account of Brent Spar, see J Paterson, Decommissioning of Offshore Oil and Gas Installations, in G Gordon, J Paterson and E Usenmez, Oil and Gas Law: Current Practice and Emerging Trends, Dundee University Press, 2nd Ed, 2011, paras 10.17-10.34.

different. There may be many wells within one well site. So, supposing that the payment is done according to the second interpretation then there will be £100,000 payable per site, not per well. To add to it, at least 1% revenue from all production sites should go to local communities: 2/3 to the area most immediately effected and 1/3 "at the county level". This is a very important development as it is the first time that communities are being given the opportunity to gain some share in oil and gas wealth in direct way - and beyond what the Shetlands were able to secure from the industry as a result of their geographical location and the strength of their bargaining position. It introduces a new approach in oil and gas exploration and production in the UK. And it is for unconventionals only.

This new policy does raise questions identical to the ones discussed by this conference around community ownership and community interest. First of all, what is the community? That fundamental definitional problem arises with this new benefits regime. There is also an issue of legal enforceability. The Charter is a public declaration of intent. In and of itself, it would seem to be of no legal effect whatsoever, at least in England and Wales.[28] However, these benefits could be used to form the basis of a binding agreement between a particular operator and a host community in a particular development. Or indeed, if the state wants to throw its weight behind this and make it legally enforceable, there is nothing to stop the government from writing such benefits requirement into either the model licence terms or writing them into individual licence terms. The licence is a regulatory instrument in contractual form. Third party rights can be enforced in both Scots law and the law of England and Wales,[29] so the British government could create enforceable third-party rights under the framework of the licence, if it decided so to do.

Conversely, at this stage there is no indication of a drive to encourage community ownership. Instead, the framework will provide a sort of diverted revenue stream as opposed to community ownership in the project. It is interesting to contrast this with the approach that the

[28]Unilateral promises are not enforceable under the law of England and Wales. They are enforceable under certain conditions in Scots law; however it may be doubted if the commitments are expressed with sufficient clarity to be legally enforceable.

[29] In Scots law, under the common law doctrine of jus quaesitum tertio; in the law of England and Wales, as a result of the Contracts (Rights of Third Parties) Act 1999.

conference has been exploring in relation to renewables. In the case of renewables the community ownership is seen as preferable to a diverted revenue stream. What about onshore oil and gas developments? We should be careful not to blithely assume that the same approach will be best in that context. The risk profile of the two types of development is different. Investments are potentially risky and involve experimental developments, at least now, in the early days of the development of the industry.[30] It would not seem advisable that community invest heavily in the first wave of unconventional developments as they might go seriously wrong and communities would have to face the consequences of speculative investments. The risk profile in these sorts of development is quite different from the risk profile in well-proven wind technology with a relatively stable regulatory environment where investors also know how likely their generators will benefit from some wind at a particular stage.

There are also a host of other factors that would influence investments in onshore developments. Such factors are not unique to the oil and gas industry. They notably include how much noise are local communities willing to tolerate? How much traffic movement are they willing to tolerate at the time the equipment will be constructed, developed and maintained? Also, how much damage are they willing to tolerate to the visual amenity? These are just some of the issues that may arise and there may be more to come. People worry about environmental impacts like water contamination, air quality, the idea of some sort of long term problem or liability rearing up perhaps years after production has stopped. A bounty does not necessarily make these fears go away. It is not a simple trade off of the loss of a known amount of e.g. visual amenity for a certain amount of money. We are dealing in less determinate outcomes. Maybe these things will go wrong; maybe not. If they do, the consequences may be acute. A non-binding pledge that all operators carry insurance may not be enough. It begs questions: what kind of

[30]Quite apart from the specific risks associated with shale oil and gas development, the industry is of course – like the conventional oil and gas industry – exposed to the risk of price crash. In November 2013, oil price stood at around $106 per barrel. Now, as the proofs of this chapter are being prepared for press, it stands at $66. The price of gas has followed suit.

insurance? Is it adequate? Who is taking oversight of this?[31] What can I do if the pledge is breached? These fear factors can work against investment. Perhaps one way to deal with this situation, especially if the government really wants the UK to support onshore unconventional oil and gas, would be to incentivise investment by stating that the government will take just some or all of potential liabilities away from investors. The government could pledge to pay generous compensation if things go wrong with onshore developments. I have to say it shows no interest in so doing at the moment, but it is a point that I think local communities can quite legitimately make. "Why should we take the risk? If you think this is such a good idea, in the national interest, then under-write it. Put your money where your mouth is."

So, it is difficult to assess at this stage if the current package of community benefits supported by the government is going to be enough to enhance the expansion of an onshore unconventional gas industry. Apart from the framework discussed in this presentation, there is also potential for more individual negotiation. The pledge talks of benefits being "at least" as discussed above. A well-advised community might in certain circumstances be able to drive a harder bargain. Considering the communities' interests and thinking in terms of their peoples' fears, adding some incentives may very well be needed if the country is going to push this resource on. Perhaps more could be done in the way of government intervention – not just pushing the industry offer, but saying, we understand your fears, and we will guarantee that you will have concrete help if things go wrong.

[31]The Scottish Coal debacle demonstrates that significant sophistication and expertise is required of any regulator given the task of assessing the usefulness of a financial product procured by the industry for the benefit of third parties. See e.g. East Ayrshire Council, Opencast Mining in East Ayrshire – Steps to Recovery, September 2013, available at http://docs.east-ayrshire.gov.uk/crpadmmin/2012%20agendas/council/19%20september%202013/Open%20Cast%20Mining%20Report.pdf

Professor Peter Strachan

Professor Peter Strachan

Professor Peter Strachan has been teaching and researching at Aberdeen Business School for the past twenty one years. Professor Strachan's first ten academic years primarily focused on oil and gas. Since 2003, he has been working on renewables and energy policy. Professor Strachan has published an extensive range of papers in planning journals and journals such as Regional Studies discussing the UK's experience with wind power deployments. Based on this expertise, Professor Strachan's presentation focused on aspects of community benefits and their provision as part of wind farm developments in Scotland. His presentation also discussed the findings that he worked out of a recent survey of local governments' role and actions to deliver a low carbon energy future.

The interest of discussing the role of local governments at a conference such as this one stems from three key reasons. The first is that local government has got a fundamental role to play in the transition to a low carbon economy. The role of local government in sustainable development and energy cannot be overstated. Secondly, planners such as Robert Grey, who also addressed this conference, have really been at the forefront of wind power deployment in the United Kingdom. So the wind power planning process, and how to engage with the general public, appears to be a big area of study that has, by all accounts, largely been neglected. Thirdly, local governments are also very important in terms of local history, heritage, environmental protection, landscape management, all of which predate in Scotland the Industrial Revolution by hundreds of years.

This presentation will show how local governments are performing a key role in terms of achieving this country's transition to a low carbon economy. It will be broken down primarily into three key areas. Firstly, what it will set the scene for its subject matter and findings. It will provide background information about its author and how I came to work in this particular area. This presentation will also outline some of the controversies attached to community benefits provisions in the United Kingdom. Professor Rønne, in her contribution delivered on day one, introduced the conference to the very creative and innovative approaches that Denmark has taken to this whole issue of community participation, community ownership and community benefits. Unfortunately, the United

Kingdom is standing many years behind the Danish energy system. Secondly, this presentation will seek to explain the principle aim of a recent survey we recently conducted and which supports our findings. I will also say just a few words about our methodology.

Thirdly, this presentation will highlight five key findings arising from the study we carried out. These may prove to be particularly relevant to planning departments and economic development experts in Scotland.

The research underlying this presentation is the result of a distinct strand of work with a number of different pieces that have been undertaken during the past ten years or so. This research was funded through three economic and social research councils' grants. In the past I have also done studies for the Welsh Assembly Government and I have published a couple of books in the area. I have also published a large number of papers on issues related to wind power and wind power deployment.[32] In addition to this particular piece of research, I started a new project in December 2013 with a company called Sea Energy. The purpose of this study structured around a knowledge transfer partnership, is to focus on the deployment of offshore wind farms by primarily looking at offshore maintenance and the supply chain to support offshore developments.

After a close examination of available research material, I came to the conclusion that very little is published on local government and its perspectives on wind power. David Toke, who also addressed the conference, published some interesting research on the planning process in England and how planning applications are being dealt with at that point. It appeared, therefore, interesting to survey all of the local

[32]Professor Strachan's book "Wind Power and Wind Power Politics, International Perspectives" was published by Routledge in 2010. It provides an international perspective on community benefits provision across the world. It features cases studies of countries such as Denmark, the Netherlands, Spain, the United States and includes, for example, a review of the Minnesota model that operates in the United States. This publication provides one of the most definitive accounts of community ownership issues around the world. Professor Strachan also published another book with Palgrave Macmillan in 2012 which seeks to share the experience of wind power deployment around the world and apply its findings to some other emerging technologies such as marine renewables. This recent publication proposes to draw out some of the lessons learnt from wind power and sees how they could apply to other forms of renewable energy technologies.

authorities in Scotland in an attempt to try to determine what are "best practices" when it comes to publishing formal policy statements on community benefits provisions. After undertaking the survey, the next part of the research implied interviewing key planning officials as well as people working in economic development in an attempt to build a picture of best practices or, perhaps, the lack of such practices in Scotland.

The result of this research brought about some shocking findings. Typically, apart from a handful of very good examples of community benefits practices, most local authorities in Scotland do not have any formal policy guidance at all when it comes to community benefits provisions. This picture transpires despite ten years of significant expansion of wind power and other renewable energy technologies in the United Kingdom. At the time of the conference, the majority of councils within Scotland did not have any form of policy guidance at all, or at least none that they could share with the wider public.

During the past ten to twelve years, the United Kingdom has seen significant expansion in terms of installed wind power capacity. Prior to 2002, there was virtually no wind power capacity in the United Kingdom. Much of the wind power capacity is now located in the devolved administrations of Scotland, Wales and Northern Ireland. In terms of contribution to the UK's renewable energy targets, the devolved administrations are playing an important and significant role. After 2002, we saw a rapid development of these energy sources. Such a progression coincided with the development of the UK's "renewables obligation" which started to provide some rather generous level of financial support for the deployment of renewable energy generators. This policy instrument caused a big rush of the major players in the UK market. The "Big Six", the major energy players in the UK, were very quick to build wind farms such as Whitelee or Clyde. Clyde and Whitelee are two of the largest onshore wind farms in Europe with a capacity ranging from 300 to 400 megawatts. The Scottish government has also introduced a target of 100% electricity generation through renewables by 2020 which is one of the most ambitious targets anywhere in the world. Quite interestingly, a number of people who came to speak at the Aberdeen Business School in recent years have suggested that target is just unachievable. I have a different view and support that this target is very achievable. If Scotland sees the rates of deployment that it has seen to date continue, then that target will be achievable. Also, when the Scottish government does talk

about this target, it also talks about "equivalent". Such an approach will help achieve the target in terms of electricity generation. Scotland also exports 25 to 30% of its electricity. But the key for Scotland to reach that target will be to achieve a significant level of offshore development.

Over the years, the successive Scottish governments have been supporting wind power and renewable energy. Since devolution, pretty much all political parties' manifestos have contributed to an increasing cross-party support for the rapid expansion of renewable energy in the UK. Part of the rationale behind this support is that the wind industry can be a driver for more economic development in Scotland. Economic development has provided a key rationale for the expansion of renewable energy sources (RES) in Scotland. Looking at some of the data on renewable energy capacity available for Northern Ireland, Wales, and England, it is also easy to notice an upward trend in terms of RES deployment across England and other devolved administrations. This information conveys a key practical message: what does it mean for planners? What does it mean in terms of buildings, fields or other forms of sites? In 2013, the UK's renewables energy database indicated that there was more than 480 wind power projects operating in the United Kingdom. There are more than 4,000 wind turbines erected across the UK. There is little less than 7,000 megawatts of installed wind power capacity in the United Kingdom today. These numbers are really becoming quite significant when considering that they are only reflecting onshore wind farm developments. For the UK, achieving its "2020 target" will fundamentally depend on offshore deployment. This is going to be a key element. Yet, it is also one of the disappointing chapters of the recent electricity market reform, as this reform has created a hiatus. There are question marks over investment decisions as this policy has slowed down development and knocked down business confidence.

Investors and companies such as Centrica need to make decisions not only for five years' time but also for ten years' time and fifteen years' time. Investors in energy companies are looking for certainty in the market. They are looking for long term commitments on the new "Contracts for Difference" which will replace the "Renewables Obligation". So clear and stable targets with long-term objectives are essential for the development of energy sources and for developing an enabling environment for the industry, so that it can operate and deliver on these targets.

On the first day of the conference, Professor Rønne drew a thorough picture of ownership issues in Denmark where significant cooperative ownership schemes pretty much dominate the landscape of wind farm property in Denmark. Denmark remains one of the shining examples of renewable energy deployment in Europe.

In the United Kingdom, a different picture is now emerging in terms of ownership issues. There has been a preference for large wind farm developments in Scotland which are corporately-owned by the main utility companies which operate within the United Kingdom. All wind power is not owned by the major utilities in the United Kingdom. Several very successful examples of cooperatives exist, such as the Boyndie wind farm located fifty five miles from Aberdeen, in Banffshire. However, in terms of deployment rate and when compared against the likes of Denmark and also Germany, there has only been a rapid development of wind farms during the past ten years as a result of the main policy support scheme, i.e. the "Renewables Obligation". The literature tells us that much of the Danish model's success is due to its capacity to engage. A high level of community acceptance exists as a result of the individual and cooperative ownership arrangements that operate in Denmark as well as in Germany. In itself, this statement could be regarded as an oversimplification of the picture. It would be wrong to state that ownership issues, individual and corporate ownership options do not play a significant role. These mechanisms certainly do. There is, however, a need to create engagement for public acceptance. There is also a whole host of other factors that energy policymakers need to pull to ensure that there is a strong domestic and international market for investment. One of the key factors, which is also reflected in the conclusions of the book I published in 2012 with Palgrave Macmillan, is that the existence of a long term political support is absolutely fundamental. It is vital and necessary.[33]

As part of this environment, the introduction of a strong and stable financial support scheme - such as a feed-in tariff that has been operating in other European countries - seems to be much more desirable than market-based instruments such as the CfD[34] that the UK is about to introduce as part of its electricity market reform.

[33]Professor Strachan's first book discusses the issue of community ownership. His second book focuses on some of the key market dynamics that must exist in order to achieve a successful renewable energy program.
[34]Contracts for Difference.

The countries that have demonstrated the highest capacity to research and develop around these projects are Denmark and the Netherlands. Both countries started at the same time with ambitious business objectives when it came to renewable energy. The Danish experience started with small prototypes which helped demonstrate the relevance of this research and development. The Dutch took the opposite view in the 1970s and 1980s and sought to build three 5 megawatt wind turbines. They could not, however, secure the technology and could not get it done at that point.

If ownership and community arrangements are important, then other market conditions are also important in order to ensure that successful wind power and other renewable energy projects may be conducted.

Today in the UK, several examples of good practice exist when it comes to community ownership or major energy projects were communities have a stake in the project.[35]

From the gist of the conversation shared on the first day of this conference, it appears that the public in the UK has less enthusiastic local communities. They are not quite embracing the energy transition that is taking place at the moment.[36] For instance, individual ownership is significant in terms of solar panels and other recent initiatives but the numbers remain fairly small.[37] Some of the studies we have conducted in the past suggest that there has been a deficit of trust among public, local communities, some developers, local and national government. In Scotland, local government comes under lot of criticism in terms of its role in determining wind power applications. That criticism may sometimes be qualified as pretty much unfair. Local government has been given a policy and remit. It is then asked to implement these. It also appears that there has also been some sort of deficit in trust between developers, local communities, local government and national government.

The panacea for many developers has been to offer a community benefits packages or, as we tend to argue, a "compensation package", for communities having a wind farm or a group of wind turbines in

[35]See, for instance, the projects piloted by the Energy 4 All group of cooperatives.
[36]Some of the reasons lie in the type of ownership arrangements which have developed around Scotland and the United Kingdom.
[37]The example of Boyndie given above is an exception to the rule.

their locality. The research that we have conducted shows that some of the utilities' community benefit packages demonstrate an attempt to try to foster more positive relationships with local communities. In addition to that, community benefits packages help in the process of securing planning decisions. So there are a number of reasons as to why community benefits packages are being offered.

Interestingly, much of our research showed that the way we are formulating community benefits packages in the United Kingdom leads more to a placebo effect than the one of a panacea. In fact, many concerns have arisen as a result of community benefits packages. For example, they add an extra layer of complexity and bureaucracy in determining where a wind farm should or should not be built. In that respect, however, planners would tend to consider that community benefits are not a material consideration in the overall planning process. Equally, the concept of "community" is quite complex. Even the government literature available in Aberdeenshire, indicates that "community" can refer to communities of locality or communities of interest. Many wind farms also span across a number of different local authority or local government units.

These situations have often resulted in not just one "community benefits fund" being created but several have been set up. Up until recently the level of financial benefits and the monetary value attached to community benefit packages had considerably varied. Looking a couple of years back, the average benefit award was around £1,700 per megawatt. Scottish Renewables, through various work led by Scottish and Southern Energy (SSE), were pretty much at the forefront of being the champions of a £5,000 per megawatt of installed capacity. Surprisingly, Renewables UK in the protocol they published about eighteen months ago was recommending a lowest common denominator amount of £1,000 per megawatt. By the same time, the average was exceeded and packages were more in the range of £1,700 to £2,000 per megawatt. These discrepancies leave a lot of room for discussion as to what the appropriate level of compensation might be when it comes to community benefit packages.

Going back to our piece of research, our focus was to look at formal policy guidance and documents produced by local authorities across Scotland in terms of understanding the advice they have been giving

to individuals and communities with respect to community benefits provision. We tried to determine what was effectively the best practice in Scotland in this area, and what the common picture was. The method that was used to underpin this work was an email survey of all Scottish local authorities that comprise local government within Scotland. Quite interestingly, we struggled in the first instance to actually determine to whom that email should be sent. Should it be sent to the head planner? Should it be addressed to economic development? This practical question was not easy to solve. Eventually we agreed that we would send it to the chief executive officer. In terms of response, the chief executive officers of each of the councils tended to delegate that task to their planners or economic development persons. Our sample targeted the entire available population. Half of that population that did respond treated our request as a freedom of information request. They not only provided formal policy documents but also other supplementary information such as minutes from council meetings and suchlike. This aspect of the response was in itself quite fascinating. We then followed up with a sample of representatives from selected Scottish local authorities, primarily those who had produced formal policy guidance documents, and then we spoke to them in a bit more depth in order to judge their rationale as to: why had they done that?; at what level should the various community benefits reach?; how were they defining the issue of community?; etc.

We tried to explore all of those supplementary issues through a more thematic analysis of some interview transcripts. It confirmed that the issue of "community" in itself is a contested concept. Much of the supporting academic literature, and most local authorities in Scotland, really define the concept of community as a community of locality, i.e. those living nearest to a wind farm. But this definition comes with some of the complications discussed above. Community benefits provision in Scotland and the rest of the UK pretty much embrace a common approach in terms of: agreed payment index; inflation index; bonus paid in terms of wind farms output; additional one-off payment at the start or during the construction phase. This is also the approach adopted by SSE. This typical approach developed by the industry has led to define: what community benefits packages might fund; how the funds might be spent on – should it be spent on local facilities, sport equipment, social activities, educational activities or similar options? Some local authorities in Scotland have taken a more radical approach in terms of their definition of community and they have said "by community we mean everybody within the local

authority area. Community benefits provisions should be split amongst the entire local authority and should be used to support social housing projects and similar issues". This is certainly just another way to think about the issue of community, yet it pretty much fundamentally reflects that "community" means those people living nearest to wind farm. This is also how many developers understand that issue.

As introduced above, community benefits funds has varied between £2,000 to £5,000 per megawatt during the past eight years. We undertook work for the Welsh Assembly Government in 2008, and published a report with some colleagues at Cardiff University around these data which happen to reflect the ballpark figures identified for 2,000 to 5,000-megawatt installations.

The established practice in Scotland is now to look at £5,000 per megawatt. It has already been mentioned in this presentation that Renewables UK, through their industry protocol, have been recommending £1,000 per megawatt per annum for community benefits allocation. Yet, the Scottish Renewables Forum has suggested that benefits should rather reach the higher figure of £5,000 per megawatt, a recommendation which is also reflected in their protocol with the industry's key players.

Some stakeholders and communities have viewed these community benefits payments as bribes in order to secure planning decisions. They can also be understood as a compensation package. These issues have been discussed in a chapter of one of my books, "Learning from Wind Power", in which the reader can find a wider discussion of community benefits provision across the UK. This work's final conclusions is that community benefits provision, just as it happened in Denmark, might require a more formal and more legal position within the site's decision process. At the moment community benefits must be regarded as an issue that is pretty separate from the overall planning process. As a result, they should not and cannot be treated as a consideration when dealing with a planning application.

Another research finding that arose from the work we conducted showed perhaps shockingly that most local authorities in Scotland do not have in place a formal policy on community benefits provision. It is hardly understandable that given ten years of rapid wind power deployment in

Scotland, there is still a majority of Scottish local councils being reactive to this whole debate. At the time of the conference, the scarce information available showed that Scottish councils were yet to get to grip with this debate. They do not have in place a formal policy for community benefits provision in terms of who holds power when it comes to community benefits provision and what sort of package might be available. These have been a secondary elements. It is the developers who have developed their own internal guidance; and it is the developers who hold power during the negotiation process. They have the financial clout, they have the legal expertise and they are dealing with an uncoordinated group of people. From my perspective and just based upon this particular finding, I think Scottish local government needs to get their acts together and need to be producing some standard formal guidance for operations across Scotland. A key player, in that process should, be the national Scottish government in order to provide the necessary steer in that particular direction. At the time of the conference, there was more than just a lack of consistent policy guidance and advice. There was just no policy and no guidance available. In terms of the rate of deployment and expansion during the past ten years, it has almost been as though the local government has been reactive and is now only about to catch up. There are however some really good examples of best practices. For instance, the Highlands Council have a very proactive approach to community benefits provisions. In many respects the Highlands Council has upset the developers on numerous occasions by its various statements and documents on community benefits provisions. They are also some interesting examples of joint venture and joint equity which have been promoted by some Scottish local authorities or councils. The picture is not all doom and there are examples of good practices. Yet, it does appear that Scottish councils need to be sitting together to bring about some more collaborative thinking in this specific area.

How can this dearth of policy initiatives on community benefits be explained? Some of the reasons for this reactive position lie in the fact that many local authorities lack resources. In some parts of Scotland, local councils are sometimes asked to deal with seven new wind power applications per day. Wind power applications are controversial as there is never an earlier application that can be used to install some new wind turbine or wind farm. Many local authorities have lacked the resource and time to put in place effective guidance. Again, this is where we feel that the national government needs to provide a more effective

steering when it comes to community benefits provision. This absence of national guidance has led to this inconsistent and fragmented approach to community benefits provision by local government. Councils have expressed concern about the overall planning process being corrupted when integrating community benefits packages into the overall planning decision. What remain material considerations are the environmental impact, the visual impact and a range of other factors. Community benefits provisions are not part of this overall picture. This is a major concern voiced by planners when it comes to understanding where does this issue of community benefits provision actually stand. "Let's not corrupt the planning process" is a line often heard or determined. But as we have seen from the presentations on Denmark municipalities, local governments there are taking a key and active role in the enforcement of community benefits. We would like to argue here that Scotland could be more like Denmark when it comes to community benefits provisions. Scotland could certainly learn much from the interesting concepts and the approaches developed in Denmark and that were discussed as part of this conference.

Once more the real concern that arises as a result of our research is that there seems to be no joined up thinking in terms of local government. There seems to be a real lack of what I call "inter-governmental cooperation" and discussion when it comes to this issue. Why have local authorities and councils in Scotland not got together and determined what their policy should be on this issue? Some of the reasons highlighted in this contribution can explain why it might be difficult to do so. Yet, it certainly also has to do with a real lack of inter-governmental collaboration at the local level when it comes to this issue. So, where should community benefits provision lie when it comes to local authorities? Should it be dealt with by the planners? Due to the current framework of the law, the answer is probably not. It is therefore suggested that the law should be changed when it comes to community benefits provision. It might cause a degree of short term complexity in doing so, but it would be possible to change the basis on which legitimate planning conditions are based. Planners should integrate it, very much like what we have seen has been done in Denmark, Germany and some other countries. Changing the law would clarify where the responsibility lies in terms of who should be giving considerations for community benefits. Should this issue be discussed with the planners or, should it have to be discussed with economic development? From the various responses that we received in

the study, it is about 50-50. The planners responded positively in 50% of the cases, and so did economic development in terms of the other 50%.

Our closing statement will include that the Scottish government, at national and local levels, have been slow to respond to debates on community benefits provisions. We have indicated that the power is held by the developers at the moment. Currently, Scottish local authorities lack the robust frameworks required for managing community benefits provision, with the exception of some examples of very good practice. These examples of good practice should certainly not be discontinued as the Highlands Council, Argyll and Bute and some of the others, have been very proactive on this issue. Yet, our final recommendation is that there is an urgent need for some sort of national formal guidance on community benefits provisions. We would recommend seeing the planning law being changed to incorporate community benefits provision into the planning process. Until this or similar steps are taken, there will be a lack of trust when it comes to the interactions between corporate developers, local communities, local government - and between local government and the publics which they serve.


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