

RSE - Scotland's Energy Future

Call For Evidence

Response from Shetland Islands Council

Economic Development and Infrastructure Services

29 September 2017

Consultation Questions

Energy Landscape

- 1 What are the most significant challenges to, and influences on, the energy landscape that any future energy strategy needs to take into account?

Replacing large scale generation from large fossil fuel, coal and decommissioned nuclear plant with clean, low carbon, secure sources of energy that are affordable to the consumer.

Eradicate fuel and heat poverty in Scotland

Meeting the 50% increase in energy demand, forecast for 2050, whilst achieving climate change targets.

Re-wiring of the grid to accommodate new sources of energy, with the focus on the most productive renewable energy resources. This may also look at interconnection between resources in neighbouring countries and markets.

The transition to new transport fuels and associated infrastructure.

There often seems to be difficulty in getting energy companies, UK Government and Ofgem to take a joined up approach. To actually get progress on local solutions to issues. There is a often a tendency for smaller local initiatives to be stifled by interests of larger companies and over arching UK legislation that is designed for managing large scale projects and the UK energy market, but feels restrictive when trying to adapt this for smaller scale developments and solving local issues.

There has to be more flexibility to allow innovative solutions to be brought forward, as a lot of these technologies and uses will be in conjunction with the existing market and are difficult to progress, getting access to grid to trial something without full market consultation. On small projects even the process of getting initial studies on grid connection and requests for up front guarantees of costs for connecting small projects are barriers. Resorting to off grid where this may not be the ideal scenario and additional cost.

Another challenge is finding a way of passing on the benefits of local wind generation to consumers, seeing a reduction in fuel or heat poverty to consumers, removing the tie to annual winter price rises on energy from the big energy companies as their profits are seen to increase.

Supply and Demand

2 What will energy demand in Scotland look like in 2030, 2040, and 2050?

Transport appears to be shifting towards electric, it may be that alternative fuels such as hydrogen may start to find a place in the market. This may also include ferry transport. In Norway some ferry routes are utilising large ferries charged from renewables and utilising storage, particularly if remote from a strong point in the grid. Scotland already has some hybrid ferries in operation.

This shift in the energy landscape may give an opportunity for effective use of more local, distributed generation and renewables.

A change in demand profiles may see increased demand at night for charging vehicles/ferries. There could be an opportunity to utilise off peak generation that is perhaps constrained off at times of low demand for this purpose, and even out peaks in generation. Windfarms operating at full production during off peak times, during the night can be utilised for charging vehicles, electrolysis or providing heating load, charging heaters and hot water storage. This could increase the viability of intermittent renewables and possibly reduce price of electricity as part of the energy mix, saving on fossil fuel use.

It may also be the case that households and communities are able to supply more of their own energy and transport fuel, reduced reliance on fluctuating fossil fuel markets and demand on the grid. The use of micro generation, particularly solar PV, storage including the use of the vehicle battery, and micro wind, combined with efficient heat pumps and energy efficiency measures, could make properties more energy independent. A more integrated approach to energy supply. Together this micro generation may remove the requirement for generation equivalent to a large power plant.

3 What are the biggest barriers faced to meeting the demand we will have for energy by 2030, 2040, and 2050?

The lack of grid capacity and connectivity with new sources of low carbon energy.

Reduction in available recoverable oil and gas in UK sectors to replace heating load with alternative energy sources.

The potential for marine renewables is considerable, but investment and drive over the the last 15 years from UK Government has been modest. If a real commitment was applied, as was seen in the development of fossil fuels, nuclear or military technology - marine renewables has the potential to become a leading design and manufacturing sector in Scotland, that could be comparable to the Danish wind sector. This commitment has to also come in providing stable market incentives, as well as grid infrastructure to attract private inward investment.

4 Given the international nature of the energy market, how should acceptable quantities and origins of energy imports, and their associated energy security risks, be assessed?

Security of supply is crucial, and aim to be as self sufficient in energy as possible from a Scottish and UK perspective. Prioritise indigenous resources, this has the additional spin off of a circular economy, retaining jobs and employment in Scotland and reducing imports. Bearing in mind a mix of energy will be required to meet the demand and maintain affordable energy supply for consumers.

There may be merit, certainly when it comes to increasing the availability of intermittent renewable generation, of spreading the mix across a broader geographical area, to capture energy from weather systems as they cross the country. To broaden this concept out, interconnection to friendly neighbouring countries that can provide complimentary clean resources to UK wind, wave and tide. Norway and Iceland are noted to have the potential for balancing Scottish wind power with hydro and geothermal in large power station scale interconnectors. Also there are benefits of interconnectors to move hydro and renewables between regions on a EU scale, able to transferring wind power to the European market and conserve water resource when wind power or marine renewables are abundant.

The UK system of transmission use of system charging does not encourage development of indigenous clean energy in areas of best resource, such as the Scottish Islands, or north of Scotland. It seems acceptable to import gas through pipelines crossing the North Sea, from other countries and even imports from less secure regions outside of the EU, then generate power close to the SE of England without penalty. Surely there should be incentive for the development of indigenous, secure, clean resources in the UK, where the best renewable resources in Europe exist. The whole creation of CFDs to try and overcome these types of artificial barriers, has been dragging on in a back and forth dialogue and endless consultations between Government, Ofgem and Industry. In order to achieve these 2050 targets a more effective approach needs to be put in place. Although there appears to be some progress with the CFD mechanism. The whole concept of penalising the development of the UKs best renewable resources does not seem very progressive.

The Energy Mix

5 What overall role should be played by various elements of the energy landscape, for example:

- Different sources of renewable energy;
- Offshore oil and gas;
- Unconventional oil and gas;
- Nuclear power;
- Energy storage;
- Others

In the first instance renewables as an intermittent technology should be looked on as a fuel saver, reducing the need for fossil fuels. As geographical coverage is improved, wind will increase its availability as well as more high energy sites are brought online. The used of wind in the heating mix may be a good correlation, as it is wind chill that is often what increases the demand for heat. Renewables are relatively low capital cost to build and can be built in a short time, compared to other large power station type project such as Nuclear. There is also potential for developing UK supply chain for renewables. Beyond the fuel saving, how it is used in the energy mix could be crucial, removing the need to constrain off generation and best utilise this clean resource in fuel, heat and diversify from just electricity supply.

UK Oil and Gas is still an important resource, we would like to see it landed and processed in the UK instead of direct shipping to Europe, keeping jobs in the UK. Use in the transition over to cleaner energy sources.

Nuclear is no question capable of generating vast quantities of power but it is costly, has a long lead in time and decommissioning cost. The technology, such as that seen at Hinkley Point is reliant on foreign design and continued support. This does not come without security issues. There is also the issue of radioactive waste that in the short term can seem secure. It does not seem to be an issue that gets openly discussed when recommending this solution as a clean low carbon solution. Fuel has to be imported and has impacts from mining in other countries.

Unconventional Oil and Gas, as in fracking is not seen as a low carbon solution. Biogas, biofuel for local demand and when generated in a sustainable way can be a good fit in the energy mix, but to use it to meet significant national fuel or heat supply could lead to increased use of fertiliser, shift from land use for agriculture and a mono culture of crop. So it has a place in the mix but the thought of importing biofuels that is not from sustainable sources, causing deforestation in other countries for fuel crops and high use of fertiliser does not seem in line with carbon reduction.

Energy storage is certainly going to play a larger part in future energy mix, this can better utilise intermittent energy sources, increasing their availability. At a micro level in homes and businesses it could be beneficial in becoming more self sufficient in energy use as long as solutions are kept relatively simple and user friendly. This could help reduce requirement of some large scale generation with more distributed generation. The use of heat storage could benefit grid management and help in reducing heat poverty, if this benefit could actually be passed onto the consumer and is not a one way benefit to the supply company.

Climate Change and Renewable Energy

6 What action needs to be taken to ensure that Scotland fulfils its climate change obligations while also meeting demand; and what are the main obstacles to achieving this?

The issue of rewiring Scotland and tapping into its renewable resources across the country needs to be tackled, this also needs to be looked at in conjunction with the UK Government. Cleaner transport fuels and roll out of associated infrastructure. Education of consumers and upgrading of housing stock to reduce energy demand as well as introduce better use of heat sources, waste heat from thermal plant and processes.

7 What are the factors and risks which may impact upon the Scottish Government meeting the targets it has proposed on sustainable and renewable energy?

In the improvement of housing, buildings, transport, and more efficient use of energy, requires buy in from consumers. There may be issues of a lack of money to invest or incentive. Too roll out any initiatives relating to installing new technology, or even some of the well established solar hot water, heat pump and micro renewables systems. There needs to be a serious up skilling and raising of awareness in the building trade. This is no longer treated as something new and untested but off the shelf technology.

If Grid improvements don't come about, business cases don't stack up for the large scale energy projects expected are risks. The Government has to deliver certainty on their environmental policy and incentive schemes, this requires a long term commitment and financial strategy.

The need for relatively fast returns on spend to save investment in the public sector may also inhibit investment, in an environment where public funding is tight and other services are competing for limited funds. This is also applicable in the private sector or householder. If a solar panel for example with a significant capital cost is going to be a 10 year payback this may not be priority in a household budget.

Environmental Impact

8 What are the environmental impacts of individual elements of a future energy mix, to what extent can these be mitigated, and how can any remaining waste products be dealt with?

The impacts of projects are often quite specific to site and location and the rigorous Environmental Impact Assessment and planning system should pick this up and address these issues. In the case of planning approval, the mitigation of environmental impact can be built into conditions of approval. This should also include decommissioning phase of a project.

On products such as battery technology and components there has to be an understanding of what can be recovered in recycling and a means of dealing with waste issues.

The Nuclear sector has its own regulation and its waste issue requires very long term duty of care.

Ethics, Social Issues and Impact on Communities

9 What account should be taken of the environmental and social impacts on those living elsewhere in the world, of the international energy supply chains on which we may choose to rely?

It is easy to take an out of sight out of mind attitude. I am sure if the same scale of oil and gas development located in the North Sea were to be located onshore in Scotland, folk would have a different view on fossil fuels.

The issue of climate change is a global issue, there is the risk in importing components and raw material from other countries where there is less rigorous environmental controls on development you could create remote issues such as the stripping of forests, damage from mining of raw materials and connected social impacts. Traceability of products and materials should be assessed and considered. Investment of funds can be considered ethically as well as for their full environmental impact.

10 What actions can be taken, and by whom, to ensure that energy is accessible to all at an affordable cost for those on low incomes; and that any changes in energy provisions and associated tariffs are understandable and acceptable?

There is a lot that could be done to simplify the tariffs people have to deal with, so they can easily understand their energy bills. There perhaps needs to be a return to a more utility based approach to serving the population than a customer buying a commodity approach, serving the shareholder.

There is an opportunity with micro generation and more efficient use of power to reduce the reliance on the main large electricity suppliers. This will not be popular with these powerful corporations, who will be keen to keep control and monopoly on all aspects of energy supply. We are however interested in reducing carbon and removing fuel and heat poverty.

11 What are the particular advantages enjoyed, and challenges faced, regarding energy; and what lessons can be learned on a national scale from community energy schemes undertaken by:

- a) Rural and remote communities
- b) Urban Communities

It can be a struggle for communities to resource the development of energy projects. It can be a long haul from planning, financing, construction to finally getting an operational project. Benefits include: local control, direct benefit of locally generated power, independent of energy supply companies and fluctuating energy prices. Investment in the local economy and employment, profits can be reinvested in the community – circular economy.

It is possible that to take this a stage further and local energy supply companies could be set up to pass on lower tariffs to communities, local authorities, health boards, direct benefit of hosting a renewable generation project and again benefit from the circular economy and reinvestment in the community. This is something that may be a way of being able to directly tackle fuel and heat poverty in society. Making a rural area a more attractive place to locate a business or settle.

Urban areas can benefit from district heating, better use of waste heat from facilities and thermal plant. Again there has to be a mechanism for passing on these benefits to communities in affordable tariffs. This type of district heating from an energy mix may be beneficial in replacing or reducing reliance on fossil fuels for heating and managing the load on the grid. Matching generation and demand with new intermittent energy sources will become more prevalent in the energy mix and large scale offshore wind could use off peak wind for this purpose.

Regulation and Governance

12 To ensure that energy is successfully sourced for, and delivered to, the people living in Scotland, how can different levels of government best cooperate:

- a) With one another;
- b) Internationally;
- c) With existing energy generators, network operators and retailers?

Address the issue of generation in Scotland being penalised for its geographic location from the south east of England in use of system charging. The picture of generation has changed from when this mechanism was established. Areas of best UK resource should be able to compete on a level playing field. Look at this as a benefit to the UK consumer and UK economy, it is not a Scotland versus Westminster issue.

The relationship with the regulator, grid operators, generators and government policy makers could be more dynamic and they could work better together. We have had years of experience of trying to tackle issues and each blaming the other for not being able to answer or solve an issue. This can hinder progress on strategic projects and probably stifles development of thousands of innovative projects across the UK. It is a very frustrating sector to have dealings with, where solutions are often evident or need investigating and it is very difficult to get action and implement solutions. This goes from relatively small local level initiatives to inter regional issues.

Informed Debate

13 How can we best encourage objective, evidence-informed debate around energy while also acknowledging the differing perspectives and priorities held by businesses, civil society and government?

We have managed over the years to be able to engage with high level representatives from Government, Ofgem, Energy Companies. This has allowed the issues to be discussed and progress to a stage, then it always seems to throw up another hurdle, rather than a solution. There is often little continuity between changes in personnel and new offices of government, and the same issues are brought forward over again, further briefings and consultations.

Certainly the effort in coming out to regions and hearing the views from local authorities, communities, businesses and developers is valued and much appreciated.

Skills

14 How can Scotland ensure that it retains, and develops, the necessary workforce of skilled professionals needed to meet its energy needs?

It is important from an installers, builders perspective to make sure all FE colleges can provide necessary training and courses across the country and stay up to date with technology and new energy systems. Opportunity for trades to update skills, local contractors not experienced in newer technology will tend not to promote or take on the install of systems other than what they know.

These courses and training opportunities have to be properly funded and often FE colleges may have to up skill trainers. It is important to encourage innovation and support staff. Sometimes it is the case people tend to stay away from areas of work and technology they are not familiar with and it will be important to go out and actively set a programme to encourage the roll out of this kind of training to pass on the skills.

In some of the early installation grant schemes, the uptake was slow as very few contractors had the necessary accreditation to allow them to install devices for consumers.

Meeting the Challenge

15 What issues arise regarding innovation for Scotland's energy future; how might this interact with an industrial strategy for Scotland?

There is a lot of new technology to be developed and rolled out in the redesign of how energy is consumed in Scotland, to achieve a low carbon economy. How this is managed and developed and to maximise the benefit to Scotland should be key to Scotland's industrial strategy. The potential in developing a marine renewables sector and supply chain is one such opportunity that should be pushed and aim to maintain a lead in research.

For the development of new energy systems there is a real opportunity for many small engineering businesses and manufacturing across Scotland. Export potential from product and supply chain development. Retaining skills from the oil and gas sector and encouraging diversification to meet the needs of the broader energy sector will allow Scotland to be a noted market leader. Similar sized countries have achieved in wind or offshore oil and gas.

A number of energy innovation zones could provide the flexibility in experimenting with new technology and systems: allowing easy implementation of pilot schemes of projects, with a grid

operator that is permitted and encouraged to be more dynamic and innovative. Whether in trialling smart metering, innovative tariffs and interaction with energy use, load control, energy storage, wind to heat or transport could be established. These would aim to accelerate development and more effective roll out of technologies and solutions run scenarios. The Scottish Islands could provide good scope for such development.