

Report of Edinburgh Public Engagement Event

Royal Society of Edinburgh

18 April 2018

Note: The following is a distillation of a public engagement event held by the RSE Energy Inquiry Committee. The views expressed at the event are those of the attendees and do not necessarily represent the position of the Royal Society of Edinburgh.

Committee Members Present

Sir Muir Russell

Prof Rebecca Lunn

Prof Gavin Little

Prof Gareth Harrison

Sir Muir welcomed the audience to the engagement event and provided background on why the inquiry was taking place, what it looked to achieve, and what the Committee hoped to gain from holding public engagement events. Sir Muir noted that at this stage in the process the Committee was seeking input and not making recommendations.

Prof Lunn then took the audience through a presentation on the context of the Inquiry, examining how energy is currently used in Scotland, and where this energy is generated. The room was then guided through the 15 questions the Inquiry posed in the consultation document.

The first comments from the audience addressed the need for increased pumped-storage hydroelectricity. There are many advantages to this technology, including that it can utilise the existing grid. Windfarms – one potential alternative – have a tendency to dump large amounts of energy which cannot be used.

It was queried whether any major consideration had been given to such developments, either by industry or government. Very few have been developed to due disincentives from the cost. A project at Loch Maree which pumped water out to sea was given as one example.

A difficulty with pumped-storage hydroelectricity projects is that there is a limited market. A level of policy certainty would be needed before industry would be willing to commit the significant capital investment required. If renewable generation is going to become the primary source of energy in Scotland then affordable storage options are vital.

With the likely increased electrification of transport and heat the required generating capacity will need to increase. There is, however, no strategic planning body to oversee this. Hundreds of billions of pounds will be required, but the Department for Business, Energy, and Industrial Strategy (BEIS) has not published any cost figures. Decisions of this magnitude cannot be left to private enterprise. A Parliamentary Commission should be convened to address the issue.

A member of the audience noted that there are drawbacks to pumped-storage hydroelectricity. It has very high up-front capital costs and is located far away from most consumers.

The debate around generation needs to be viewed within the wider context of the whole energy system. Heat demand is the largest aspect of energy use in Scotland. Large scale storage and the need to replace nuclear and fossil fuel generation must be examined. Continued population growth in the UK will increase the need for energy.

Marine renewables also deserve consideration. Excess energy can be turned into hydrogen and used for the local community. Island communities such as Orkney have embraced this approach with high rates of electric vehicle use. This does, however, require buy-in from both the community and politicians and understanding of the costs and impact. Whether this buy-in is possible outside of smaller communities is uncertain.

The next comments addressed nuclear energy. It is nonsensical that future nuclear generation has been discounted in Scotland. Without nuclear power, meeting peak demand will be increasingly difficult. The wide use of nuclear power in France has resulted in reliable energy and household electricity bills that are cheaper than in the UK. While the UK should not abandon nuclear energy as a means of producing baseload, the development of the Hinkley Point nuclear station is a poor example of how to develop a new generation of plants.

It was noted that the Scottish Government have not entirely dismissed using nuclear power in the future, stating that they will examine new technologies.

Storage is important to counteract the intermittent nature of renewable generation.

There are political and social implications to all of the suggestions made so far. They are good ideas, but all require enormous investment. There are serious questions over how consumers would pay for this. The inquiry should look at affordability to consumers and vulnerability. The question of who pays for such investment is salient. It will invariably be the public in the end, but it could either be through consumer bills or general taxation.

The academic, Dieter Helm has highlighted the costs of electricity as an important issue. The cost of future development will have to be borne by the consumer. The establishment of a national energy authority could ease the price down, but would require significant regulatory reform.

There are numerous groups currently investing in offshore wind, onshore wind and solar technology because it is relatively cheap to do so. Pumped-storage hydroelectricity may have higher up-front costs, but can better utilise the existing infrastructure.

A centralised agency which oversaw infrastructure development and strategy would still work under the same business model as is currently the case, i.e. large power plants and a widespread distribution network. Arguably, it is more likely we will see a move toward a more decentralised system.

The Scottish Government targets that have been set around emissions reduction and decarbonisation are based on specific models. The RSE report should examine alternative scenarios the public would be interested in viewing these.

One such potential scenario is around decarbonising heat by moving from natural gas to hydrogen for space heating. This would require changes to the entire national grid. This would need to be costed if it has not been already.

Bodies such as the Coal and Gas board leave a corporate legacy. There is a need to consider the investment that would be required to develop the necessary infrastructure for new forms of energy. Energy vectors must also be considered. Energy can be moved in different forms with associated costs and benefits. For the current electricity network to function balance is required. The gas network, on the other hand, essentially provides storage through changing pressures.

Work is ongoing on changing the network to accommodate hydrogen, rather than gas. The cost of doing this is a factor, but so too are social considerations. There are areas of Scotland which can be used as a 'living laboratory' in this regard.

In proportion to its consumption of gas, Scotland's gas storage capacity is incredibly limited. Storage in the UK is driven by markets.

The issue of passive housing was broached. These houses use very little energy, however, there is a blockage of building new homes with this technology. Behavioural change among the public and regulatory reform are also an important part of this discussion. The question of how such enormous change can be effectively managed looms large.

There are numerous options for large capital investment. Converting existing housing stock would also require significant funds, and it would need to be ascertained what the outcome of this investment would be.

There was significant debate between the audience over the feasibility and safety of converting to use hydrogen as a fuel. Transition would be very difficult to engineer.

The question of consumer behaviour must also be addressed. In France EDF faces problems of aging nuclear reactors. The German attitude to nuclear power is perplexing. Local knowledge must also be considered. We should not exclusively take ideas from other places.

Hydrogen is safe. It has been used in industry for years and stored successfully in other countries. It has a good safety record. The ability of hydrogen to be used in the existing gas network is being examined.

There will always be people who reject any form of energy development near their homes. As such, getting public support for salt caverns to store hydrogen may be an issue. There are no onshore salt caverns in Scotland at present. This could be beneficial in the long run as it means there is no pre-existing fractious debate on this issue. Using disused offshore gas fields for storage could also be examined.

A national body would result in increased general taxation. There is currently no suggested system superior to the market. Private money is required and only long-term certainty around government policy can ensure this. This also requires cross-party support.

Craig Denham

Inquiry Secretariat