ENERGY FUTURES

The supply potential of shale needs to be proven and to do that we must fracture some wells.

and the Royal Academy of Engineering have reviewed the scientific and engineering evidence on hydraulic fracturing. They concluded that the health, safety and environmental risks can be managed effectively in the UK by the use of operational best practices enforced by strong regulation. They reported that fracture propagation is an unlikely cause of contamination and that the seismic risks are low. They also noted that robust monitoring of well integrity is vital.

In terms of environmental impact and effects on the local community, shale developments are spread over a wide area with minimal impact on the surface. They are generally the size of a football field and are silent in operation. The drilling and fracturing stage creates a building site, but takes only about six months. Once that is completed, we have a site that will produce gas for 20 years.

Scotland does have shale gas resources. Whether they are commercially viable is still open to question, but the potential is there. If they can be developed, there could be a significant boost to jobs, GDP and energy security. The potential of shale needs to be proven and in order to do that we need to drill and fracture some wells. Although supply chains are currently expensive, if the shale industry develops the supply chains will become more viable.

I support the Scottish Government’s moratorium on hydraulic fracturing as an opportunity to engage the public in a dialogue about shale gas extraction, although I am not certain that the extension of the moratorium to 2017 is necessary. It is vitally important that the period of the moratorium is used to engage in a steady programme of dialogue. The emotional reaction that people have about hydraulic fracturing has to be addressed with a rational analysis of the risks. Public acceptance will only be gained through a wider understanding of the need for shale gas and its potential value to communities, backed up with objective, scientific evidence about the level of risk it presents.

Balancing our energy portfolio

Rebecca Lunn

Over the coming years Scotland will lose over half of its current capacity to generate electricity. Currently Scotland’s electricity is supplied by gas (10%), nuclear energy (35%), coal (20%) and renewables (35%). By 2016 coal will have been shut down, and by 2023 both of Scotland’s nuclear power stations will be decommissioned. That will mean that Scotland will be a significant net importer of power from the rest of the UK. This power will be generated by gas-fired and new-build nuclear power stations.

Electricity is only 21% of Scotland’s energy consumption. 55% goes on heating, and that is met almost entirely by gas. Lowering coal consumption to meet carbon targets (by closing coal-fired stations in Scotland and the rest of the UK) will increase gas consumption still further. A ‘greener’ low-carbon future looks more gas-dependent.

In the Royal Society of Edinburgh’s report Options for Scotland’s Gas Future1, we looked at four options: reducing demand, increasing offshore gas production, increasing onshore gas production and increasing imports. We considered factors such as safety, energy security, health and well-being, the environment, climate change, as

Whether they are commercially viable is still open to question, but the potential is there. If they can be developed, there could be a significant boost to jobs, GDP and energy security. The potential of shale needs to be proven and in order to do that we need to drill and fracture some wells. Although supply chains are currently expensive, if the shale industry develops the supply chains will become more viable.

I support the Scottish Government’s moratorium on hydraulic fracturing as an opportunity to engage the public in a dialogue about shale gas extraction, although I am not certain that the extension of the moratorium to 2017 is necessary. It is vitally important that the period of the moratorium is used to engage in a steady programme of dialogue. The emotional reaction that people have about hydraulic fracturing has to be addressed with a rational analysis of the risks. Public acceptance will only be gained through a wider understanding of the need for shale gas and its potential value to communities, backed up with objective, scientific evidence about the level of risk it presents.
well as economic factors affecting not only the industry but also the consumer.

Reducing demand
In Scotland over an eight-year period, demand for heat has been reduced from 60,000 gigawatt hours (GWh) to 48,000GWh. This has been achieved through improvements in insulation and by using heat pumps. The major barrier is the cost to Government as it is principally achieved through grants. Reducing demand for heat is a capital investment priority for the Scottish Government.

Increasing offshore gas production
Existing oil and gas fields in the North Sea are mature and, as the remaining volumes of gas diminish, are increasingly uncompetitive. Increasing offshore gas production requires exploration to discover new gas fields and may involve production from less conventional sources, such as deep water reservoirs, tight gas and high pressure/high temperature reservoirs. Exploration activity in the North Sea has diminished to almost nothing over the last two decades and encouraging a resurgence is likely to require Scottish Government investment.

Importing energy
Importing energy is relatively cheap and is the most cost-effective option for the consumer. Yet gas production and transportation still has environmental and social impacts. Importing our energy results in those impacts being outside Scotland’s regulatory control. It also raises issues of social justice, since environmental and health impacts often fall on the local population and the local workforce, who may not be receiving the benefits of energy production and consumption.

A significant issue with increasing energy imports is Scotland’s energy security. In 2014, 53% of our gas was imported, some from regions that are politically unstable, such as Qatar, Russia and North Africa. Disruption to energy production in these regions could lead to UK energy shortages and, hence, to social unrest.

Increasing onshore gas production
There are three forms of unconventional onshore gas that Scotland could develop: shale gas, coalbed methane and underground coal gasification. There are significant resources of coalbed methane.

There is media hysteria about unconventional gas and the public is confused about hydraulic fracturing. For example, there is talk of hydraulic fracturing for coalbed methane, which is incorrect; hydraulic fracturing is not required for coal-bed methane production. There have been significant problems with pollution in the USA, but these are due to poor regulation. For example, groundwater contamination is not caused by hydraulic fracturing or by extracting methane, but because the water that is produced with the gas could pollute ground water.

In the USA, product has been stored in open surface ponds, which can leak and pollute drinking water aquifers. This is a simple problem to solve, but the process has been very poorly managed. In
The question is not simply ‘Should we produce shale gas?’ because the answer from the public and politicians is likely to be ‘No’.

In our report we recommended participatory decision-making. Citizens’ panels could be used to educate people and help shape policy. We need to change the public attitude of ‘not in my back-yard’ and help people understand that if they say no to domestic production they are, by default, saying yes to something else if their energy needs are to be met. At the moment I do not think there is an adequate understanding of that.

Social justice also comes into this debate. The UK imports over half of its gas energy – in other words, we do not shoulder the environmental impact of the energy we consume. Instead, that impact is borne by people a great distance away. If we produce our own, we can ensure the industry is well regulated and reduce any impacts to an absolute minimum. It is critical that we raise the level of debate and discussion on energy. If we do not, we are likely to end up in crisis. In 2013, the UK was one day away from not meeting its gas demand. Crisis-led policy making leads to poor decisions and poor regulation.

Fracturing shale to release gas is an example of this. The word ‘fracking’ is quite emotive, and good policy leadership is critical. Having a general moratorium on fracking is fine in terms of politics but may not result in the right kinds of policies. Blanket bans on fracking also cover the use of unconventional recovery techniques offshore, but these are needed to support growth and production in an industry already facing significant pressures. Policies need to take into account scientific logic and market forces, as well as political influences.