



**Friends of
the Earth
Scotland**

Unconventional Gas & Fracking Myth Buster

Why shale gas and coalbed methane are not all they're cracked up to be

October 2014

Shale gas and coalbed methane (CBM) are not the answer to Scotland's or the UK's energy challenges. Fracking and drilling for unconventional gas has been linked to water contamination, air pollution, earth tremors, health problems and climate change – and crucially, aren't likely to bring down energy prices, nor create sustainable jobs.

This briefing counters the key myths around shale gas and its supposed benefits for energy bills and jobs – and sets out why the real solution for energy security and a sustainable economy is renewable power and energy efficiency.

Myth: Shale gas & CBM will cut household energy bills

In the USA, shale gas *has* helped cut gas prices, however it doesn't follow that it could do the same here. For some years now economists and key commentators have been warning that for a variety of reasons, the UK, and indeed Europe, won't see a repeat of the USA experience in this respect.

Leading economist Lord Stern has described the claim that shale gas will cut energy bills as “baseless economics”, and even Lord Brown – chair of fracking firm Cuadrilla – has admitted that it won't have a “material impact” on household bills. Deutsche Bank lists a number of factors, including population density, uncertainties about recoverable resource, higher extraction costs and differences in mineral-rights that mean anyone expecting to see a USA-style shale gas revolution in Europe will be disappointed.

Unlike the USA, the UK is part of a well-connected regional gas market that means any gas produced here will be sold to the highest bidder. Dart Energy's deal to provide SSE with gas from its Airth coalbed methane proposal is fixed to market rates.

Myth: What about the energy crisis? Aren't shale gas & CBM needed for energy security and to 'keep the lights on'?

Shale gas and CBM are sold as improving UK energy security. Concerns are often expressed about a looming energy gap, and the risks of 'the lights going out' in a few years' time. Shale gas and CBM would not help this. Even if the industry was able to press ahead as fast as it wanted, there would not be any significant UK production until the next decade (and of course, there is a big IF it is proven to be viable). Cuadrilla have said they will have to drill 40 test wells over the next 5 years just to work out whether it is worth their while extracting shale gas.

While headline figures of the British Geological Survey estimates of the shale gas potential in Scotland look big, they are 20 times smaller than the resource in the North of England and it is very unclear how much of it will be technically and economically feasible to extract. The BGS report emphasises the complex geology of Scotland (relative to, for example, the shale plays found in the USA) and the lack of Scottish data. The

recovery rate could be as low as 1%, supplying only a couple of years' worth of Scotland's gas needs from the whole Central Belt.

The Scottish Government's Electricity Generation Policy Statement sets out the Government's commitment to delivering 100% of Scotland's electricity consumption from renewable energy sources by 2020 and of largely decarbonising the electricity sector by 2030. In 2013 nearly 50% of Scotland's electricity came from renewables, and we already know of enough renewable energy schemes in the planning that will deliver the 100% target.

Any proposal for unconventional gas could still be producing in the late 2040s. The main uses of natural gas are in electricity generation and for heating. In both areas Scottish Government policy is moving away from the use of all fossil fuels, leaving little or no market for unconventional gas in the future.

Myth: Robust regulation means fracking and drilling for shale & CBM can be safety here

Experience from the USA and Australia suggests strongly that, despite industry claims, there is real evidence of problems from drilling and fracking for unconventional gas. Potential high-risk concerns include groundwater contamination, surface water contamination, high water use, air pollution and public health impacts.

The industry and its supporters claim that regulation will be tougher in the UK, and this will deal with these problems. But the United Nations Environment Program has concluded that unconventional gas extraction "may result in unavoidable environmental impacts even if [gas] is extracted properly".

Conservative estimates put well failure on newly drilled wells – which can result in leakage of methane and toxins into air and water – at between 5-9%, and at upwards of 50% during their lifespan. The Pennsylvania State Department of Environmental Protection recently released information on 243 cases between 2008-2014 of private drinking water supply contamination, caused by unconventional gas operations.

Experience to date in the UK is a catalogue of problems. Test-fracking by Cuadrilla in Lancashire in 2011 triggered earthquakes; Cuadrilla has breached planning conditions and tried to avoid Environmental Impact Assessments. The Scottish Public Services Ombudsman is currently investigating a complaint about the way 19 planning permissions for coalbed methane extraction at Canonbie were dealt with.

SEPA, the environmental regulator in Scotland, has acknowledged that the regulatory position is not yet certain: "this is a novel process, and one on which SEPA is still working to develop its regulatory position." And the Scottish Government is setting up a group to try to plug the holes in the current regulatory framework.

What's clear is that while tougher regulation can make gas drilling and fracking safer, key risks are inherent to the industry, meaning it can't be made safe and, of course, burning any gas produced is always going to contribute to climate change.

Myth: Chemicals used in fracking and drilling can be found under your sink

It is true that some of the chemicals used in unconventional gas drilling and fracking can be found in other forms that are relatively harmless. However, analysis of 350 chemicals known to be used in drilling and fracking shows a quarter could cause cancer and up to half could affect the nervous and immune systems. Industry reporting showed that cancer-causing chemicals such as formaldehyde and naphthalene were used in a third of all US fracking operations in 2011 and 2012.

A key concern is the volume of dangerous chemicals that would have to be transported to sites and stored for use. Once used only about 40% of chemicals are recovered. Little is known about what happens to these chemicals when they are pumped under high pressure underground.

In addition, the drilling and fracking processes can mobilise toxic chemicals and radioactive materials naturally occurring in the shale rock or coalbed which come to the surface in waste water.

Myth: Shale gas & CBM will help tackle climate change

Shale gas and coalbed methane are often touted as a 'bridging fuel' to ease the transition from dirtier fossil fuels like coal to renewables. This is because gas produces less climate change causing gases at the point it is burnt. However shale gas and coalbed methane extraction are energy intensive processes, and the problem of 'fugitive emissions' of methane – a much more potent climate gas than carbon dioxide – has led scientists to conclude that the benefits of shale gas over coal in climate terms have been overstated.

World leaders have agreed that in order to avert catastrophic impacts of climate change, global temperatures must not rise by more than 2°C – many think even that is too high. Even the conservative International Energy Agency has warned that exploiting the world's reserves of unconventional gas could lead to a global temperature rise of 3.5°C. According to energy expert Professor Paul Stevens of Chatham House "if the [shale gas] revolution fails to deliver a lot of cheap gas, by the time this is realized it could well be too late to revert to a solution to climate change based upon renewables." His comments have been echoed by the head of the UN Environment Program.

In a recent Parliamentary Answer the First Minister stressed Scotland's over-abundance of fossil fuels, saying "We are a country that produces seven times the hydrocarbons that we consume. We should therefore proceed cautiously on the undoubted opportunities that there are for shale gas in Scotland." This same logic applies to coal-bed methane.

Myth: Shale gas & CBM will create jobs and boost the economy

Any new industry will create jobs – but not as many as the industry likes to report. Experience in the USA shows that the job creation claims of the drilling companies are often overstated. Most industry jobs are itinerant and short term.

Grand claims of economic benefit also fail to consider the negative impacts on key existing economic sectors such as agriculture and tourism that can suffer as a result of the industry.

It is self-evident that going for shale gas could impact on investment in renewable energy. In England the UK Government's enthusiasm for both shale gas and nuclear power have resulted in low renewables targets, lack of political support for renewables and no decarbonisation target for the electricity sector. On the other hand the Scottish Government has given strong signals to the industry and market that renewables is the priority, and that sector continues to grow in Scotland.

Myth: Shale gas & CBM are popular, its just a noisy minority opposing them

The polls consistently show that unconventional gas is not popular with the public – it's the UK Government that are enamoured with the industry. According to an ICM poll, wind farms are six times more popular with the British public than shale gas wells. When asked to choose between having a wind turbine or a shale gas well within two miles of their home, 67% chose wind compared to just 11% for gas. And 85% of people want to see more energy produced from renewable sources and two-thirds said they wanted renewables to be providing more of their electricity in 10 years, compared to 2% for gas.

A YouGov polling in August 2013 showed that people would rather the Government invests money in renewables than in fracking – 78% think the Government is right to spend money encouraging solar and tidal power compared to just 40% who back spending on shale gas.

When the UK Government consulted on removing peoples' rights to be notified about drilling and fracking for shale gas underneath their homes, over 99% of respondents – including the Scottish Government – opposed the plans, yet the UK Government is proceeding with these changes through the draft Infrastructure Bill.