



Unconventional Fossil Fuels: Shale gas & coalbed methane – unsafe, unnecessary, unwanted

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You've probably come across fracking in the news and wondered if the reality is as ugly as the word. Maybe you've heard about the new natural gas boom and wondered what shale gas and coalbed methane mean for our energy needs.

As conventional oil and gas sources run out, and the cost of extraction rises, we are in the middle of a big push to exploit fossil fuels by ever more extreme means. However, not only does climate science demand we that we leave these fossil fuels in the ground, there is a growing body of evidence from the USA and Australia, where these industries are more developed, that there are inherent and unacceptably high environmental and health risks associated with shale gas and coalbed methane extraction.

What is unconventional gas?

Shale gas is a form of gas trapped inside shale rock, while coal-bed methane is trapped inside coal seams. They are known as 'unconventional' because of the novel techniques - like fracking - used to extract the gas.

Hydraulic fracturing, or 'fracking', is a controversial technique often used to exploit unconventional sources of gas, such as shale gas and coal-bed methane. It is an expensive process that is only economically viable when the price of fossil fuels are high. It involves drilling to depths of around 3km and pumping millions of litres of water, and toxic chemicals under high pressure into the borehole to open up fractures and ease the flow of gas for extraction.

Unlike shale gas, coal-bed methane extraction doesn't always involve fracking – at least not in the early years of a development. Instead, coal seams are de-pressurised by pumping out large volumes of water. But as gas flow starts to decline after a few years, wells are often fracked to increase productivity. In Australia the industry estimates that up to 40% of coal-bed methane wells end up being fracked.

Unsafe

In addition to the highly toxic chemicals used in drilling muds and fracking fluids, drilling and fracking processes can mobilise harmful chemicals and radioactive substances naturally occurring in the coal and shale, which can contaminate groundwater and soil, and leak into the atmosphere with

consequences for public health and the climate. 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.

Communities in the USA and Australia living in and around gas fields report symptoms associated with exposure to fracking and drilling chemicals, including respiratory problems, nausea and rashes. A growing body of research points to serious longer-term impacts such as low birth weights and birth defects. Many of the naturally occurring and introduced chemicals are known carcinogens. Researchers in the USA recording the extreme impacts of accidental exposure of farm animals and pets to concentrated fracking fluids warn that the industry is a public health disaster waiting to happen.

There is a serious unanswered question around the disposal of the huge volumes of waste fluids the industries would produce. During its life span, a single shale gas well consumes between 19-30 million litres of water in its lifetime. Multiplied by potentially thousands of wells and that's an awful lot of water. Once contaminated with naturally occurring and introduced chemicals, the 'water' cannot be returned into the hydrological system, but must be treated and disposed of. Disposal methods in the USA and Australia include spreading on roads for dust suppression, holding in evaporation ponds and re-injecting into gas wells. The first two are linked to serious public health risks, and the latter to 1000 years worth of induced earthquakes over 2 years in Oklahoma.

Many of these risks apply to coal-bed methane whether or not fracking takes place. In fact, because coal-bed methane is significantly shallower than shale rock certain risks, such as groundwater contamination, are increased, and fracking simply exacerbates these impacts. Research from the USA demonstrates that air pollution around gas pads is higher during drilling stages than fracking stages.

Even if it was safe to extract this gas (and it is increasingly clear that it isn't), if we want to prevent the worst impacts of climate change it isn't safe to burn it. We already know of 5 times as many fossil fuels as it is safe to burn, so it doesn't make sense to waste time and resources recklessly pursuing even more. Investing in unconventional gas now will lock us into dangerously high greenhouse gas emissions and make it extremely difficult to meet our legally binding carbon reduction targets in 2050.

Unnecessary

Scotland has an abundance of renewable energy resources: 25% of Europe's offshore wind and tidal potential and 10% of its wave potential. Not only is the Scottish Government on track to meet its 100% renewable electricity consumption by 2020 target, but independent research demonstrates that Scotland could meet all our electricity needs from renewable sources and phase out fossil fuel generation by 2030 and have excess to export.

The renewables industry in Scotland is valuable to the economy, providing over 21,000 jobs in 2013, and many thousands more in the pipeline. However, the International Energy Agency and other leading commentators such as Deutsche Bank warn that a dash for unconventional gas could prove a serious distraction from badly needed investment in clean renewable energy and energy efficiency, and see us locked into expensive, carbon-intensive infrastructure for years to come.

Not even the shale gas industry itself claims that fracking will bring down household energy bills in the UK anymore (although some politicians cling to the belief it will!), job figures tend to be overstated, and fail to include the negative impact on local industries such as tourism and agriculture. Even if there were no health and environmental concerns, economists and geologists agree that the UK would not see a repeat of the USA experience as our complex geology and dense population make extraction much more challenging and expensive.

Unwanted

People around the world and here in Scotland faced with the unconventional fossil fuel industry are increasingly aware of its dangers and are resisting its advance. Communities at Airth, Canonbie and Cumbernauld have been fighting coal-bed methane developments, while people the length and breadth of Scotland opposed UK Government plans to license a huge swathe of central and southern Scotland to the fracking industry.

France was the first country in Europe to ban hydraulic fracturing and other countries and states have followed suit with moratoriums and bans. In New South Wales the Government has introduced 2km buffer zones between communities and coalbed methane drilling in response to the widespread 'Lock the Gate' coalition.

Bans and moratoriums are now in place in: Scotland; Wales; Northern Ireland; Ireland; Denmark; Germany; Bulgaria; Czech Republic; the Netherlands; the Spanish regions of Cantabria, La Rioja, Navarra and Catalonia; Canadian states of Quebec, Newfoundland, New Brunswick and Nova Scotia; Vermont, New York, New Jersey in the USA; New South Wales and Victoria in Australia; as well as a huge number of local and regional bans around the world.

Our campaign

In January 2015 four years of campaigning alongside grassroots and communities paid off when the Scottish Government announced a moratorium on shale gas and coalbed methane! A moratorium on underground coal gasification followed in October 2015 (see separate briefing for more on UCG).

Now our job is to turn these moratoriums into a ban. We are convinced that a full and thorough assessment of the public health, climate and environmental impacts of this industry will lead to a full ban. But the industry will be gearing up with the opposite aim in mind. It's very important that the public momentum behind this campaign doesn't stall at this crucial stage, but keeps the pressure up to ensure the most robust assessments and consultation are carried out.

What you can do

- Stay in touch! Sign up for regular email updates about our fracking and unconventional gas campaign
- Write / email / visit your MSPs, MPs, local councillors and community councillors and ask them to work for a ban now
- Ahead of the Holyrood 2016 elections contact your candidates and quiz them at hustings and on the doorstep
- Get together with your neighbours and community to declare yourselves a UFF free zone! The Lock the Gate movement in Australia has had huge wins this way
- Visit our website for more information and regular campaign actions

For more info: www.foe-scotland.org.uk/fracking

Contact: info@foe-scotland.org.uk



Friends of the Earth Scotland's work on unconventional fossil fuels is part of our campaign for a Fossil Free Scotland: A just transition to a 100% renewable, nuclear-free, zero-fossil-fuel Scotland

find out more at: www.fossilfree.scot