



**Friends of  
the Earth  
Scotland**

# FRACKING AND UNCONVENTIONAL GAS

## WHAT THE FRACK'S IT ALL ABOUT?

**Spring 2017**

Perhaps you've read about fracking in the news and wondered what all the fuss is about. Maybe you've heard about the shale gas boom in the US and wondered what fracking could mean for our energy needs.

### **THIS BRIEFING EXPLAINS:**

- what fracking and unconventional gas are
- why it's bad news for our health, climate and local environment
- why fracking economics don't add up
- who wants to frack Scotland and where
- growing resistance to fracking around the world
- how to get involved in the fight against fracking!

## **WHAT IS FRACKING, AND WHAT'S UNCONVENTIONAL GAS?**

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

Hydraulic fracturing, or 'fracking', is a controversial technique used to exploit shale gas and oil and sometimes coalbed methane. It is an expensive process that is only economically viable when the price of fossil fuels are high.

Fracking involves drilling multiple wells to depths of up to 3km, vertically and horizontally. Millions of litres of water, sand and toxic chemicals are pumped under high pressure into the ground to open up fractures in the rock and ease the flow of gas for extraction.

Unlike shale gas, coalbed methane (CBM) extraction doesn't always involve fracking – at least not in the early years of a project. Instead, coal seams are depressurised by pumping out large volumes of water to access the methane gas. But as gas flow starts to decline after a few years, wells are often fracked to improve productivity. In Australia the industry estimates that up to 40% of CBM wells could end up being fracked.

Both industries depend upon multiple wells being drilled to access enough gas to make the process economically viable. In Pennsylvania alone, almost 10,000 wells have been drilled, with a further 7,500 planned. High numbers of wells like this increases the likelihood of something going wrong.

## WHY IS FRACKING HAPPENING?

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 that we leave these fossil fuels in the ground, there is growing evidence from the US and Australia that there are inherent and unacceptably high environmental and health risks from shale gas and CBM extraction.

## HEALTH AND ENVIRONMENTAL RISKS

### Harmful chemicals

Chemicals that can be highly toxic to the environment and human health are used in both drilling and fracking fluids.



Different chemicals are used for different fracking operations, making it difficult to predict exactly what kind of chemicals might be used if fracking went ahead in Scotland.

However, products used in the US include numerous cancer-causing chemicals, as well as chemicals linked to respiratory illness, fertility problems and a whole host of other damaging health impacts.

In addition to this, the drilling and fracking processes can mobilise harmful toxins and radioactive substances naturally occurring in the coal and shale. Both naturally occurring and introduced chemicals can pollute groundwater and soil, and leak into the atmosphere with potentially serious consequences for public health and the local environment.

Communities in the US and Australia living in and around gas fields report symptoms associated with exposure to fracking and drilling chemicals, including breathing difficulties, nausea, rashes, eye and throat irritation and stress. A growing body of research points to serious potential impacts such as low birth weights, birth defects, fertility problems, respiratory disease and, in the longer term, cancers. Researchers in the US have warned that the industry is a public health disaster waiting to happen.

### Dirty, dangerous traffic

Each fracking site requires thousands of trips by heavy lorries to transport equipment, toxic fracking fluids and enormous volumes of water and waste on and off site. Locally, this increase in traffic can cause air pollution, damage road infrastructure, increased accidents and make roads less safe for walkers and cyclists.

A Scottish Government study estimated that a shale gas pad could require up to 93,000 heavy goods vehicle movements over its lifetime. US communities have been seriously disrupted by thousands of extra truck journeys, often on previously quiet roads.

### Water use and toxic waste

The unconventional gas industry consumes a huge amount of water and produces a huge amount of toxic waste. During its life span, a single shale gas well uses between 19-30 million litres of water. Multiplied by



potentially thousands of wells, fracking water use can put stress on local water resources and infrastructure.

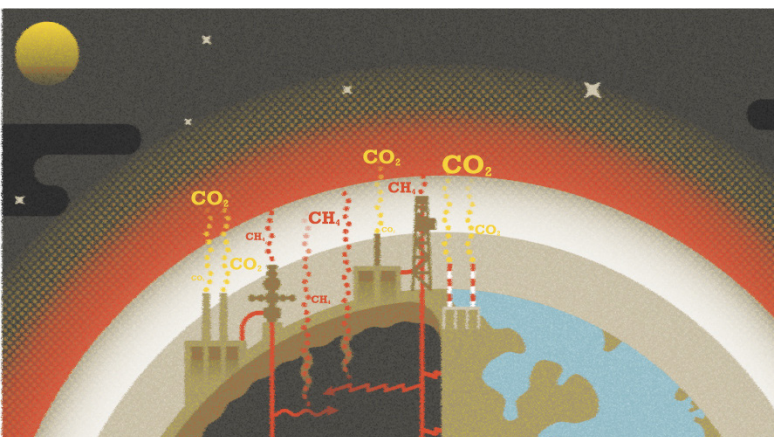
Vast volumes of contaminated fracking 'wastewater' must be treated and safely disposed of. It's not clear whether the industry in Scotland could effectively deal with the waste. There are concerns about whether there are adequate facilities in the UK to properly treat and dispose of waste from the fracking industry. INEOS, the only company with fracking licenses in Scotland, has indicated that its solution could be to dump treated wastewater into the sea.

## Coalbed methane

We talk a lot about evidence related to shale gas extraction in this briefing. That's because most of the research about unconventional oil and gas focuses on the shale industry. Many of these risks apply to CBM whether or not fracking takes place. CBM drilling causes air pollution and the water that is pumped out of coal seams contains drilling chemicals as well as naturally occurring toxins. In fact, because CBM is significantly shallower than shale rock certain risks, such as groundwater contamination are potentially increased, and fracking simply exacerbates these.

## CLIMATE CHANGE

Fracking means opening up new sources of climate-damaging fossil fuels at a time when we need to rapidly move towards renewable energy.



Burning fossil fuels is the key driver of the climate crisis. Millions of people around the world are already suffering from the impacts of global warming. Temperature increases of more than 1.5°C will result in catastrophic impacts, including an increase in extreme weather events, rising sea levels, increased famine, the destruction of livelihoods and even entire countries, significant habitat loss and species extinction, and subsequently, increased political instability and conflict.

We already have well over 5 times more fossil fuels reserves than we can burn if we want our planet to remain habitable, so it doesn't make sense to waste time and resources recklessly pursuing even

more. Investing in fracked 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.

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. Scotland has an



abundance of renewable energy resources: 25% of Europe's offshore wind and tidal potential and 10% of its wave potential, and we can make great savings through simple energy efficiency measures.

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 its electricity needs from renewable sources, phase out fossil fuel generation by 2030 and have excess to export.

## FRACKING ECONOMICS

Many economists and geologists agree that the UK would not see a repeat of the US shale boom as our complex geology and dense population make extraction much more challenging and expensive. In fact, it is unclear if the industry is commercially viable at all in Scotland.

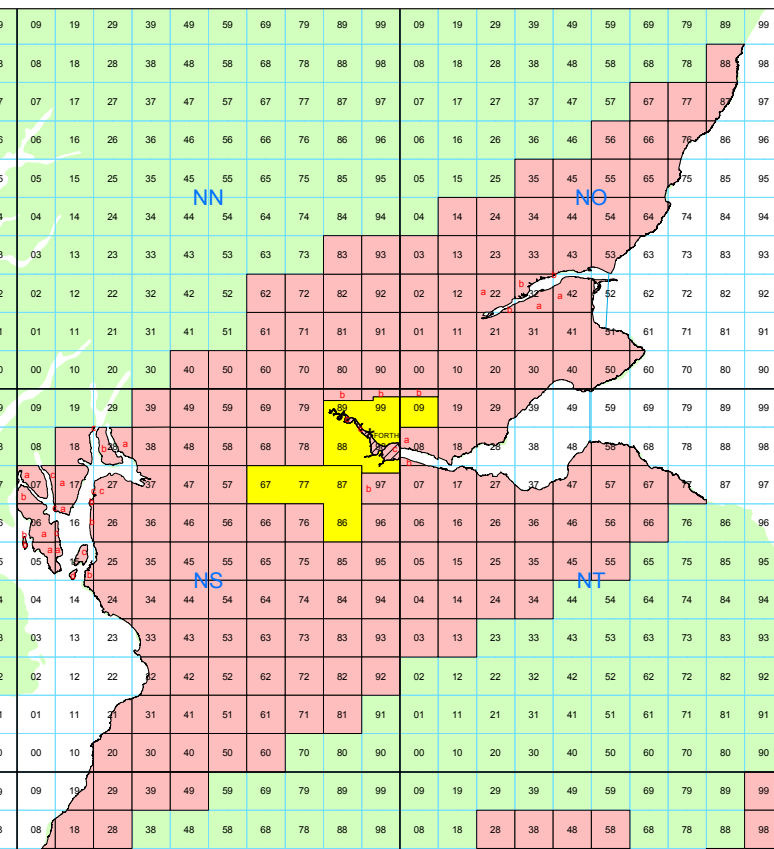
Scottish Government commissioned research warns that even if the industry were to get underway commercially, it would not bring down energy bills, would be unlikely to create plentiful skilled local jobs and would only be expected to contribute on average 0.1% GDP.

In contrast, the renewables industry in Scotland is very valuable to the economy, providing over 21,000 jobs in 2013. However, the International Energy Agency and 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 lock us into expensive, carbon-intensive infrastructure for years to come.

# WHO WANTS TO FRACK SCOTLAND

The fight against unconventional gas in Scotland began when Australian company Dart Energy applied for planning permission to develop the UK's most advanced CBM project at Airth, near Falkirk. The project attracted huge local opposition, triggering a public inquiry in 2014.

Before a decision could be made, the Scottish Government announced a moratorium on both shale gas and CBM in 2015, so the project is currently on hold. CBM projects in Canonbie, Dumfries & Galloway, and Deerdykes, North Lanarkshire were also underway before the moratorium was put in place.



**Areas currently under license in yellow, and areas likely to be offered for license in the future in pink. No new licenses have been granted in Scotland since the moratorium on unconventional oil and gas started in 2015. Source: DECC**

In summer 2014, multinational chemicals company INEOS acquired its first stakes in onshore oil and gas licenses in the central belt of Scotland, and announced its ambition to become the biggest fracking company in the UK. INEOS now owns or has a majority stake in all onshore oil and gas licenses in the central belt of Scotland, covering an area of over 700km<sup>2</sup>. INEOS also has 38 licenses in England, and is currently shipping ethane from fracked US shale gas to its Grangemouth petrochemical plant.

# THE GLOBAL FIGHT AGAINST FRACKING

People around the world and here in Scotland are increasingly aware of the dangers of fracking and are resisting its advance.

Around the world, people power has won bans, moratoriums and restrictions in: Scotland; Wales; Northern Ireland; Republic of Ireland; Denmark; Germany; Bulgaria; Czech Republic; the Netherlands; the Spanish regions of Cantabria, La Rioja, Navarra and Catalonia; the Flemish region of Belgium; Canadian states of Quebec, New Brunswick, Nova Scotia, Newfoundland and Labrador; Vermont, New York, New Jersey and Maryland in the USA; New South Wales and Victoria in Australia; as well local and regional bans around the world.

## THE FIGHT AGAINST FRACKING IN SCOTLAND

In January 2015, following massive public opposition to plans for shale gas and coalbed methane extraction, the Scottish Government put a moratorium on fracking. A moratorium is probably best understood as a temporary ban or halt.

Now, the Government is holding a public consultation and wants to know what people in Scotland think about fracking.

Based on the responses to the consultation – and specially commissioned research on fracking impacts – the Scottish Government will make a decision before the end of 2017 about whether the industry should go ahead, or if it should be banned for good.

We are positive about winning a ban on fracking, but this will only happen if huge numbers of people tell the Scottish Government that it is the right thing to do!

Take action to ban fracking at:

## WWW.STOPFRACKING.SCOT

**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**