Shale Gas and Climate Change

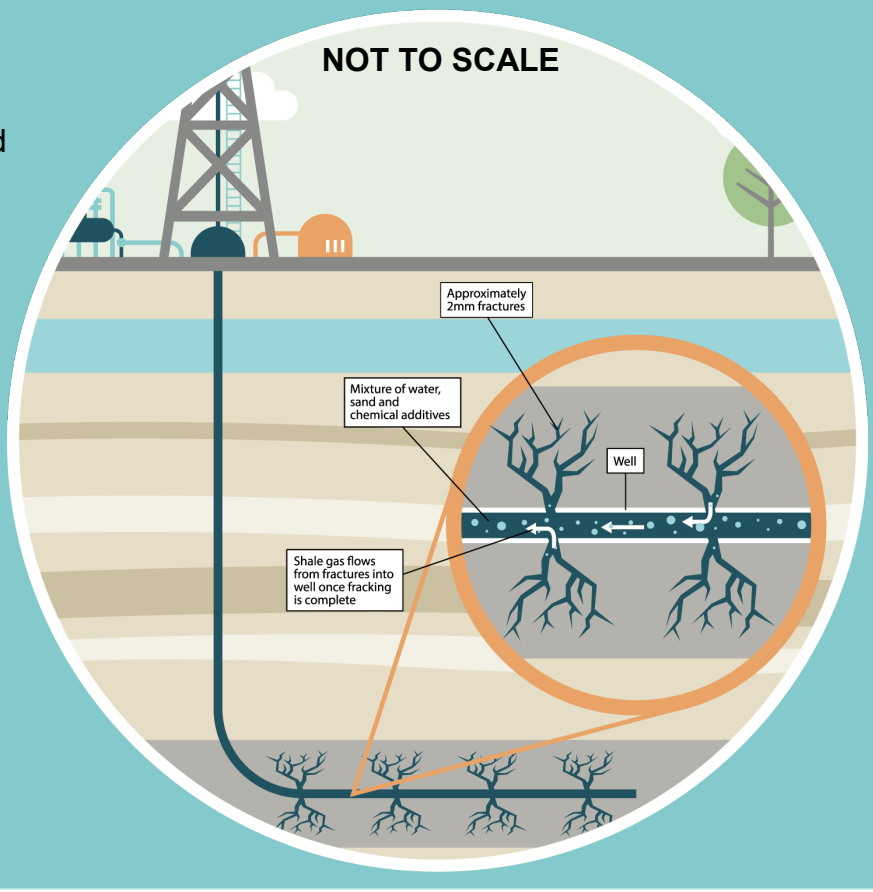
What is shale gas and what is it used for?

Shale gas is predominantly methane - the natural gas we use to generate electricity, heat our homes and cook our food.

It is found in rocks, called shale, which fluid and gas cannot flow from naturally. This means specific techniques are required to get the gas out of the rock.

Hydraulic Fracturing (sometimes known as fracking) is a method of extracting shale gas and oil. It works by pumping water, tightly regulated chemicals down a well to make small hairline cracks in rocks underground. The cracks are propped open by sand contained in the fluid so that shale gas can flow out of the shale into the well. The technique has been used in gas and oil extraction for decades.

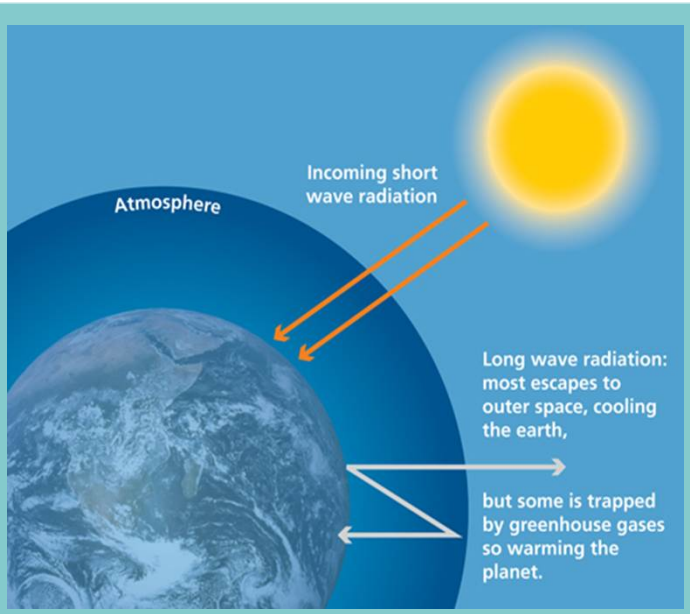
Natural gas currently supplies just over a third of the UK's energy demand, with majority of the rest coming from coal, oil, nuclear and renewables.



What is climate change and what is the UK Government doing to tackle it?

Climate change is the long-term shift in weather patterns and average temperatures caused by the release of greenhouse gases into the atmosphere. The higher the amounts of greenhouse gases in the atmosphere, the warmer the Earth becomes.

In 2008, the Government (through the UK's Climate Change Act) set a target to reduce national greenhouse gas emissions by at least 80% from 1990 levels by 2050. Meeting this target, while ensuring secure and affordable energy for the UK, is a priority for the Government.



Department for
Business, Energy
& Industrial Strategy

Developing shale gas while meeting the UK's carbon emissions goals

The Government received advice[1] from the Committee on Climate Change (CCC) that shale gas production could be compatible with the UK's carbon-reducing targets if the following criteria are met.

1. Emissions from the development, production and closure of wells must be strictly limited
2. Gas consumption must remain in line with carbon budgets requirements
3. Shale gas production emissions must be accommodated within carbon budgets

The Government published our response on how these tests would be met here:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/535208/CCC_Response_new_template_FINAL.pdf

What about methane emissions from shale gas wells?

During the fracturing process, there is a small risk that methane gas may be emitted, which might offset the effects of lower carbon dioxide emissions. Methane is a greenhouse gas which has higher Global Warming Potential (GWP) than carbon dioxide, so careful regulation of these releases is vital.

Operators are obliged to monitor potential leakages of methane and other emissions before, during and after shale gas operations. All shale wells in England will require "reduced emissions completions" in the production stage to significantly reduce methane emissions[1].

Operators can also control gas emissions through using "reduced emissions completions" (REC). This equipment collects the initial flow of water, sand and gas; and separates them so the gas can be removed safely.[2]

Why use shale gas when we have renewable energy sources?

The Government is dedicated to reducing emissions and moving to low-carbon energy, and in the first quarter of 2018 renewable sources (i.e. wind, solar, biomass and hydroelectricity) provided a third of the UK's electricity[3]. However, the UK needs to use a mixture of energy sources to ensure that there is always enough energy to meet demand.

Gas is used across different parts of our energy mix. It provides almost a third of our electricity[4] and 85% of households in England have central heating, most commonly using a gas fired boiler[5] and 20.2% of our gas is also used in industry, for power and heat and as feedstock for a wide range of chemical products[6].

Gas is a flexible and reliable energy source, meaning it's relatively simple to increase generation to cover short-term peaks in demand. Gas also has the lowest carbon emissions of all the fossil fuel and is therefore likely to continue to be an important part of our energy mix.

Where can I find out more?

For more information about shale gas and hydraulic fracturing, please visit:

https://www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-fracking

[1] (CCC Report) **https://www.theccc.org.uk/wp-content/uploads/2016/07/CCC-Compatibility-of-onshore-petroleum-with-meeting-UK-carbon-budgets.pdf**
[2] (Reduced Emissions Completions for Hydraulically Fractured Natural Gas Wells) **https://www.epa.gov/sites/production/files/2016-06/documents/reduced_emissions_completions.pdf**
[3] (UK Energy Statistics, 2018) **https://www.gov.uk/government/news/uk-energy-statistics-statistical-press-release-june-2018**
[4] Digest of UK Energy Statistics (BEIS, 2018)
[5] English Housing Survey 2016-17 (DCLG)
[6] Digest of UK Energy Statistics (BEIS, 2018)