

What is fracking and why is it controversial?

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Drilling companies suggest trillions of cubic feet of shale gas may be recoverable from underneath parts of the UK through a process known as "fracking".

Hydraulic fracturing, or fracking, is a technique designed to recover gas and oil from shale rock. But how does it work and why is it controversial?

What is fracking?

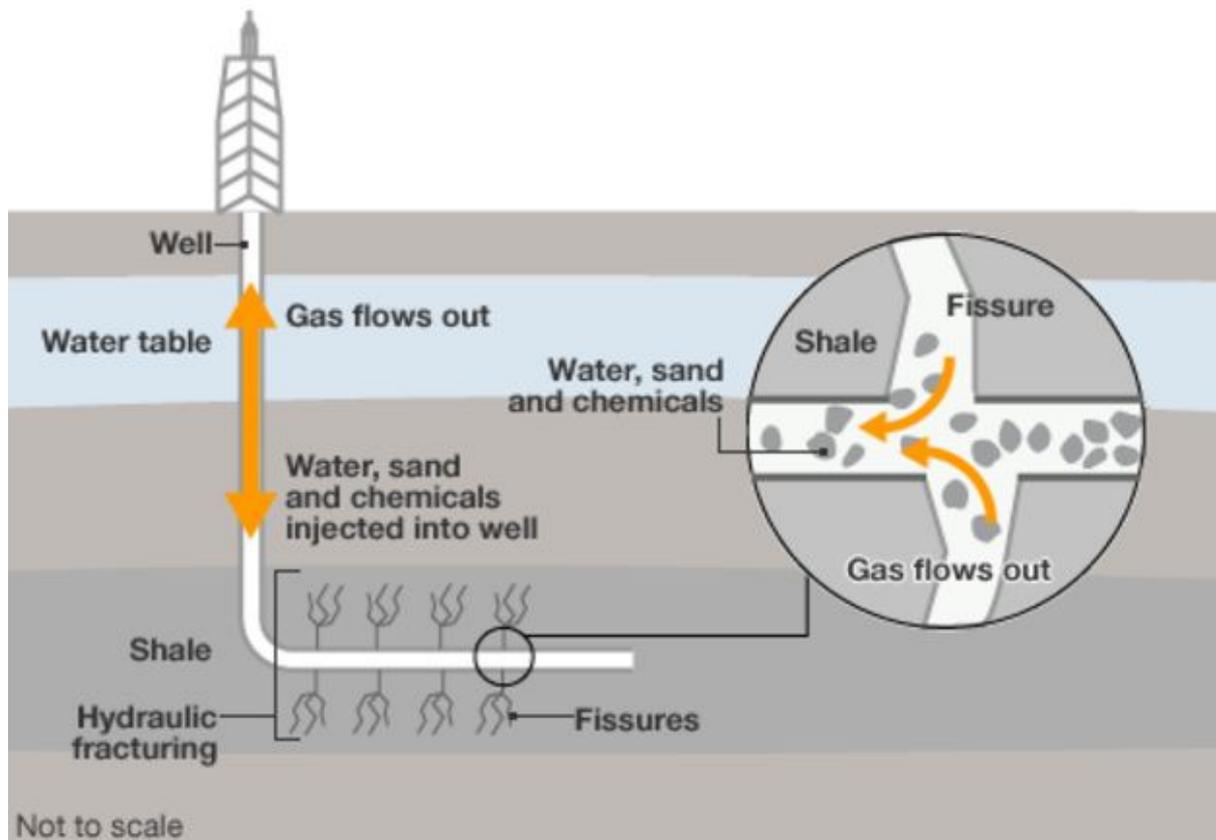
Fracking is the process of drilling down into the earth before a high-pressure water mixture is directed at the rock to release the gas inside.

Water, sand and chemicals are injected into the rock at high pressure which allows the gas to flow out to the head of the well.

The process can be carried out vertically or, more commonly, by drilling horizontally to the rock layer and can create new pathways to release gas or can be used to extend existing channels.

The term fracking refers to how the rock is fractured apart by the high pressure mixture.

Shale gas extraction



Is fracking taking place in the UK?

No. Drilling for shale gas is only at an exploratory phase in the UK.

However, reserves of shale gas have been identified across large swathes of the UK, particularly in northern England.

More than 100 licences have been awarded by the government to firms in the UK, allowing them to pursue a range of oil and gas exploration activities in certain areas.

But before firms can begin fracking they must also receive planning permission from the relevant local council.

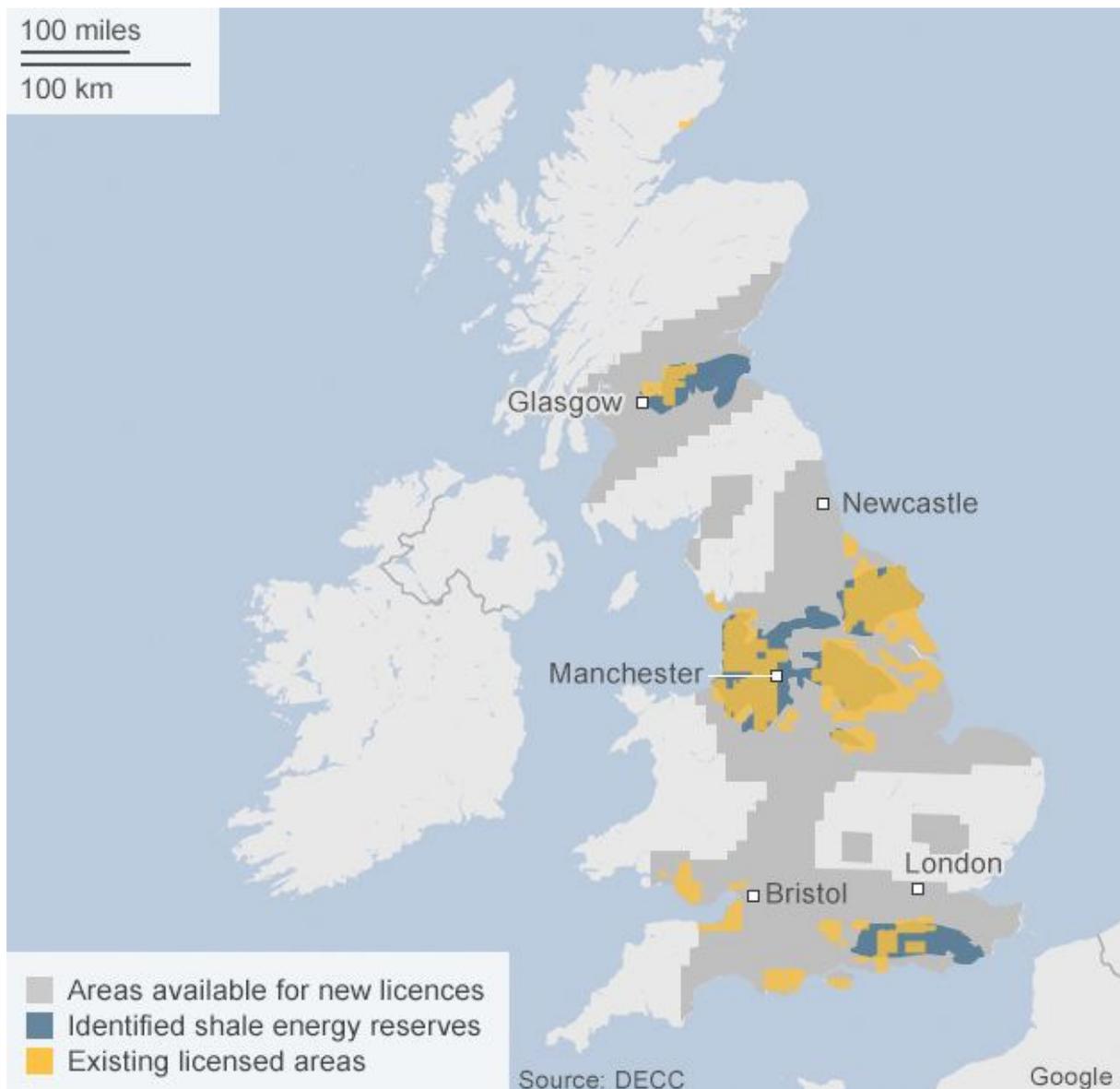
The government has said it would make a final decision on whether to allow drilling at two sites in Lancashire, after the application was rejected by Lancashire County Council in June. An appeal will be heard next year.

Applications have also been submitted in Yorkshire and Nottinghamshire.

Downing Street has said shale gas planning applications in England are to be fast-tracked to crack down on councils that delay decisions.

However, Labour has called for a moratorium on fracking "until we can be sure it is safe".

Governments in Scotland, Wales and Northern Ireland have all said they will oppose fracking - until further research is completed into its environmental impact.



Has test drilling been completed?

In 2011, energy company Cuadrilla suspended test fracking operations near Blackpool, in Lancashire, after two earthquakes of 1.5 and 2.2 magnitude hit the area

A subsequent study found it was "highly probable" that shale gas test drilling triggered the tremors.

A government-appointed panel said there could be more tremors as a result of fracking, but they will be too small to do structural damage above ground.

It recommended greater monitoring and that operators should observe a "traffic light" regime, with tremors of magnitude 0.5 or above triggering a "red light" and an immediate halt.

What are the advantages of fracking?



(Image copyright REUTERS)

Fracking has driven down gas prices in the US

Fracking allows drilling firms to access difficult-to-reach resources of oil and gas.

In the US it has significantly boosted domestic oil production and driven down gas prices. It is estimated to have offered gas security to the US and Canada for about 100 years, and has presented an opportunity to generate electricity at half the CO₂ emissions of coal.

The industry suggests fracking of shale gas could contribute significantly to the UK's future energy needs.

The Task Force on Shale Gas, an industry-funded body, has said the UK needs to start fracking to establish the possible economic impact of shale gas - saying it could create thousands of jobs.

Why is it controversial?



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The extensive use of fracking in the US, where it has revolutionised the energy industry, has prompted environmental concerns.

Fracking uses huge amounts of water, which must be transported to the fracking site, at significant environmental cost.

Environmentalists say potentially carcinogenic chemicals used may escape and contaminate groundwater around the fracking site. The industry suggests pollution incidents are the results of bad practice, rather than an inherently risky technique.

There are also worries that the fracking process can cause small earth tremors.

Campaigners say that fracking is simply distracting energy firms and governments from investing in renewable sources of energy, and encouraging continued reliance on fossil fuels.

"Shale gas is not the solution to the UK's energy challenges," said Friends of the Earth energy campaigner Tony Bosworth. "We need a 21st century energy revolution based on efficiency and renewables, not more fossil fuels that will add to climate change."

Following the Paris climate change deal, Friends of the Earth chief executive Craig Bennett said Mr Cameron must "end Britain's scandalous support for fossil fuels, including fracking".

What does the government say?



An anti-fracking protester writes messages on a wall in Lancashire (Image copyright REUTERS)

The government believes shale gas has the potential to provide the UK with greater energy security, growth and jobs.

Prime Minister David Cameron has repeatedly spoken of his support for fracking, saying it could support tens of thousands of UK jobs and reduce bills.

"I want us to get on board this change that is doing so much good and bringing so much benefit to North America. I want us to benefit from it here as well," he has previously said.

What about National Parks?

In January, MPs overwhelmingly rejected an outright ban on fracking, but ministers did pledge an "outright ban" on fracking in national parks.

However, in December MPs voted to allow fracking at 1,200m below national parks, Areas of Outstanding National Beauty, the Norfolk and Suffolk Broads and World Heritage Sites.

Critics, including Labour and Greenpeace, accused the government of a U-turn.