

Briefing

Fracking the climate

Why UK fracking is not compatible with tackling climate change

Climate change is the biggest threat facing humanity and extreme weather events are already having an impact in the UK and around the world. To avoid the worst impacts of climate change, the world needs to stop burning fossil fuels as fast as possible.

This briefing sets out why UK shale gas cannot help tackle climate change, and would instead make it harder to meet our climate change goals.

Claims that fracking has the major factor in falling carbon emissions in the US are inaccurate. Recent research has found that the economic recession was the main cause, with the use of gas instead of coal playing a comparatively minor role¹.

Fracking for shale gas is incompatible with tackling climate change in the UK because:

- 1. The world has five times more fossil fuels in reserves than we can safely burn and setting up a whole new fossil fuel industry will only add to this problem.**

Experts have calculated that around 80% of existing fossil fuel reserves are 'unburnable carbon' and will have to be left underground. This problem has been acknowledged by Shell², President Obama³ and the Governor of the Bank of England⁴.

Fracking for unconventional oil and gas just adds to the stockpile of fossil fuels that we can't burn, making it more challenging to keep the world below 2 degrees of climate change.

- 2. The conditions laid down by leading academics, including IPCC scientists, for gas to have a role in tackling climate change are not in place. These conditions state that gas must replace coal, and that methane leakage must be low. However:**

- a. In the UK, fracked gas will not replace coal – and instead risks replacing renewable energy.**

According to DECC figures⁵, with current policies, coal use for electricity generation will be 80% phased out by 2020, 90% by 2022 and completely by 2027. The Committee on Climate

For more than 40 years we've seen that the wellbeing of people and planet go hand in hand – and it's been the inspiration for our campaigns. Together with thousands of people like you we've secured safer food and water, defended wildlife and natural habitats, championed the move to clean energy and acted to keep our climate stable. Be a Friend of the Earth – see things differently.

Change has stated that coal has to be completely off the system by the early 2020s in order to meet the UK carbon targets⁶.

However, fracking industry best estimates believe that it will be around the middle of the next decade before the UK produces significant quantities of shale gas⁷.

The cross-party House of Commons Environmental Audit Committee concluded earlier this year “*Any large scale extraction of shale gas in the UK is likely to be at least 10-15 years away, and therefore cannot drive dirtier coal from the energy system because by that time it is likely that unabated coal-fired power generation will have been phased out to meet EU emissions directives*”⁸.

Rather than replacing coal, leading academics have concluded that “*in the UK a danger of promoting the increased use of gas for electricity generation is that there may be a stalling in the necessary shift towards lower-carbon sources of electricity*”⁹.

- b. There is no certainty that methane leakage will be low, and as such, there is no guarantee that shale gas will have lower emissions than coal, LNG or conventional gas**

During the fracking process, some gas escapes into the air, which is known as ‘fugitive methane’. Methane is a much more powerful greenhouse gas than carbon dioxide¹⁰, and high levels of fugitive emissions would reduce or even eliminate the emissions advantage of shale gas over coal, conventional gas and LNG.

There is a great deal of uncertainty about methane leakage. Four of the UK’s leading energy academics have stated that “*the literature on this issue is not yet at a mature enough stage to have any confidence on what a reasonable range for fugitive emissions might be*”¹¹.

Unless and until it is known that that fugitive methane emissions from shale gas are low enough to give it an advantage in climate terms over coal, fracking cannot proceed on the basis that it is cleaner than coal.

In addition, median estimates of lifecycle emissions for electricity produced from shale gas are around 4.5% higher than those for electricity produced from conventional gas¹². DECC’s own research¹³ has shown that the estimated emissions intensity of shale gas could be higher than the current UK gas blend.

3 The Committee on Climate Change are currently reviewing whether fracking could be compatible with tackling climate change in the post-2027 period – which is when fracking might produce significant quantities of gas.

To date, the CCC have only assessed fracking in the context of the UK’s carbon budgets pre-2027. The CCC conditions for this earlier period – that a decarbonisation target in place, and only if methane emissions are “low” – have not been met.

- a. The UK does not have a decarbonisation target
- b. As outlined above, there is no guarantee that methane emissions will be low

4 Fracked gas cannot be an effective ‘bridge’ to low carbon energy

Research¹⁴ by the UK Energy Research Centre (UKERC) has found that, to meet the 2°C climate target, European gas consumption must peak by 2030. This assumes Carbon Capture and Storage is available and fitted. However, CCS is currently an unproven technology, and in the absence of CCS, the research concludes that European gas consumption must peak in 2025¹⁵.

Starting a whole fossil fuel industry simply does not make sense in this context: any gas 'bridge' to genuinely low carbon energy will be very time-limited, and the fracking industry don't expect to be moving to significant production until the mid-2020s at the earliest.

5 Without a binding global climate deal there is no guarantee that shale gas will be used instead of, rather than as well as, other fossil fuels.

Recent US Government data shows that during the recent growth in shale gas and oil production, although CO₂ emissions from the use of fossil fuels in the US fell by 10%, CO₂ emissions from combustion of fossil fuels produced in the US rose by approximately 10%¹⁶.

The same argument also applies to the UK. There would be no constraint on shale gas extracted in the UK adding to net European or global CO₂ emissions.

Lord Deben, chair of the Committee on Climate Change, said in a recent interview that fracking in the UK is *"only acceptable under very strict environmental terms ... The two questions are: first, is this replacement from other gas, or is it an addition, too"*¹⁷.

Conclusion

The real energy solutions to climate change are a nationwide, economy-wide energy efficiency programme and a vastly-increased role for renewable power. Friends of the Earth has calculated that the UK can move to generating three-quarters of its electricity from renewables by 2030¹⁸.

An energy system based around energy efficiency and renewables would bring a multiple win for the UK: better for the climate, better for energy security¹⁹, better for energy bills, better for jobs²⁰ and better for the economy.

*"You can be in favour of fixing the climate. Or you can be in favour of exploiting shale gas. But you can't be in favour of both at the same time"*²¹

John Ashton, former Special Representative on Climate Change to the Foreign Secretary 2006 - 2012

¹ Kuishang Feng, Steven J Davis, Laixiang Sun & Klaus Hubacek, 'Drivers of the US CO₂ emissions 1997 – 2013', Nature Communications 6 doi:10.1038/ncomms8714

<http://www.nature.com/ncomms/2015/150721/ncomms8714/full/ncomms8714.html>

² David Hone, Climate Change Advisor for Shell, 'The carbon bubble reality check', <http://blogs.shell.com/climatechange/2013/05/bubble/>

³ Bloomberg 26th June 2014, 'Giving Up Fossil Fuels to Save the Climate – the \$28 Trillion Writedown', <http://www.bloomberg.com/news/articles/2014-06-26/giving-up-fossil-fuels-to-save-the-climate-the-28-trillion-writedown>

⁴ Guardian 13th October 2014, 'Mark Carney: most fossil fuels can't be burned', <http://www.theguardian.com/environment/2014/oct/13/mark-carney-fossil-fuel-reserves-burned-carbon-bubble>

⁵ DECC, 'Updated energy and emissions projections: 2014'

<https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014>

⁶ Committee on Climate Change 23rd April 2009, 'No role for conventional coal beyond 2020s',

<http://www.theccc.org.uk/news-stories/no-role-for-conventional-coal-beyond-2020s-23-april-2009/>

⁷ Pinsent Masons, 'UK shale gas a decade away according to industry',

<http://www.pinsentmasons.com/en/media/press-releases/2014/uk-shale-gas-a-decade-away-according-to-industry/>

⁸ House of Commons Environmental Audit Committee 8th Report of session 2014-2015, 'Environmental risks of fracking', <http://www.publications.parliament.uk/pa/cm201415/cmselect/cmenvaud/856/856.pdf>

⁹ Ekins P, Bradshaw M, Watson J & McGlade C (2015), 'Environmentally friendly shale gas development',

<http://www.ukerc.ac.uk/asset/8EF4541F-648E-46C4-A7805C4E65B90DE7/>

¹⁰ IPCC estimates the global warming potential (GWP) of methane at 86 times that of carbon dioxide over a 20-year timeframe, and 34 times that of carbon dioxide over a 100-year timeframe. See IPCC Working Group 1 AR5 Chapter 8 Table 8.7 https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf

¹¹ Ekins P, Bradshaw M, Watson J & McGlade C op cit

¹² Heath, G. O'Donoghue, P., Arent, D. Bazilian, M. (2014), 'Harmonization of initial estimates of shale gas life cycle greenhouse gas emissions for electric power generation'. PNAS.111, 31, E3167 – E3176.

¹³ MacKay D & Stone T for DECC (2013), 'Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use',

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237330/MacKay_Stone_shale_study_report_09092013.pdf

¹⁴ McGlade C, Bradshaw M, Anandarajah G, Watson J and Ekins P (2014) A Bridge to a Low-Carbon Future? Modelling the Long-Term Global Potential of Natural Gas - Research Report (UKERC:

London). <http://www.ukerc.ac.uk/publications/gas-as-a-bridge.html>

¹⁵ Friends of the Earth supports the use of CCS in a transitional role, retrofitted to gas and coal power stations globally, but it is not a panacea, and should not be seen as a justification for allowing investment in coal and gas:

- It can be used for power stations and large industrial processes, but not domestic heating (a major user of gas) or transport (where most oil is used)
- It still emits carbon: a coal power station with CCS capturing 90% of its emissions would still emit 90 gCO₂/kWh, nearly double what average power sector emissions should be in 2030 according to the Committee on Climate Change
- It is still commercially unproven at scale, and deployment will take many years

¹⁶ House of Commons Environmental Audit Committee 8th Report of session 2014-2015, 'Environmental risks of fracking', evidence from Dr John Broderick, Tyndall Centre for Climate Change Research

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environmental-audit-committee/environmental-risks-of-fracking/written/17324.html>

¹⁷ Carbon Brief 18th February 2015, Interview with Lord Deben part 1.,

<http://www.carbonbrief.org/blog/2015/02/the-carbon-brief-interview-lord-deben-part-one/>

¹⁸ Friends of the Earth, 'A plan for Clean British Energy'

http://www.foe.co.uk/sites/default/files/downloads/plan_cbe_report.pdf

¹⁹ Friends of the Earth, 'No need to step on the gas' <http://www.foe.co.uk/sites/default/files/downloads/no-need-step-gas-76983.pdf>

²⁰ Friends of the Earth, 'Making a better job of it' <https://www.foe.co.uk/sites/default/files/downloads/making-better-job-it-full-report-75291.pdf>

²¹ John Ashton, Briefing for Lancashire County Council,

http://www.e3g.org/docs/Briefing_for_Lancashire_County_Council.pdf