Unconventional Gas and Fracking

Parliamentary Briefing ahead of the NPF3 & SPP2 Debate

March 2014

Introduction

There is a growing body of evidence that environmental and health risks associated with onshore unconventional gas extraction, including shale gas and coalbed methane, are inherent and impossible to eliminate.

A key risk is in relation to our climate targets: unconventional gas extraction is energy intensive, fugitive emissions increase its carbon footprint and burning the gas contributes to climate change. There is also alarming emerging evidence about the potential public health impacts for communities living in and near gas fields.

Friends of the Earth Scotland consider that **a ban on unconventional gas extraction is necessary if we are serious about meeting our climate targets and playing our part in keeping global warming below 2ºC**, and that Scottish Planning Policy is the most straightforward way to implement this. However, at the very least we consider that **the proposal in the draft SPP for buffer zones around gas drilling sites must be strengthened to reflect evidence that indicates the worst of the health impacts are felt on communities living within 2km of extraction activities**.

What is unconventional gas?

Shale gas, coalbed methane and tight gas are known collectively as 'unconventional' because of the novel techniques, such as horizontal drilling, de-pressurising and hydraulic fracturing, 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 up to several kilometres deep and pumping gallons of water, proppants, and toxic chemicals under high pressure into the borehole to open up fractures and ease the flow of gas for extraction.

Unlike shale gas, coalbed methane extraction does not 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 coalbed methane wells end up being fracked. **There are serious environmental problems associated with shale gas extraction, and coalbed methane extraction regardless of whether fracking takes place.** In fact, because coalbed methane is significantly shallower than shale rock certain risks, such as groundwater contamination, are increased, and the process of fracking simply adds to and exacerbates these impacts.

What are the risks?

In addition to introducing highly toxic chemicals used in drilling muds and fracking fluids, both processes carry the risk of mobilising naturally occurring BTEX[1] chemicals and radioactive substances, which can migrate into and contaminate groundwater, soil and air. This has potentially devastating consequences for public health and the environment. **Communities in Australia are already suffering from symptoms associated with exposure to these chemicals, and a**

[1] BTEX (benzene, toluene, ethylbenzene and xylenes) are volatile organic compounds which have harmful effects on the nervous system. Benzene is a known carcinogen and affects fertility

growing body of research points to impacts such as low birth weights and birth defects.[2] The authors of a study from Cornell University warn that the gas boom is an uncontrolled health experiment on an enormous scale and make a plea for badly needed research on the likelihood and impact of these chemicals entering the food chain via animal products.[3]

Unburnable Carbon

Even if it was safe to extract this gas, if we want to prevent the worst impacts of climate change it is not safe to burn it. Analysis by the Carbon Tracker Initiative shows that in order to have a reasonable chance of staying below 2ºC warming, 80% of the world's proven fossil fuel reserves must not be burned unabated. **In the context of the continued failure of CCS development, the latest climate science, our overabundance of fossil fuels and renewable resources, it is utterly irresponsible to pursue a new source of yet more fossil fuel.**

The impact of 'fugitive emissions' through leakage, in addition to flaring and venting has led scientists to argue that the climate impact of unconventional gas is greater than that of conventional natural gas, and some to suggest it could be as bad as coal. 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 by 2050.

Abundant, cheap energy?

Extravagant claims have been made of cheap energy coming from unconventional gas production but experts from Lord Stern to Lord Browne have stated that there will be no significant reduction in energy prices. Ex-World Bank economist Stern described the UK's dash for gas as founded on 'baseless economics, while Browne, chairman of drilling firm Cuadrilla Resources has said that shale gas won't have a 'material impact' on gas prices.

What is the threat for Scotland?

The unconventional gas industry is beginning to take root in Scotland ahead of a full lifecycle analysis of the environmental and health impacts, consultation on the public acceptability of going down this route and crucially, any review of the adequacy of the regulatory framework to deal with these novel techniques.

Not only is the most advanced unconventional gas development in the UK here in Scotland – Dart Energy's plans for commercial coalbed methane at Airth – but the British Geological Survey are planning to release a study on Scotland's shale gas potential this summer. The UK Government's persistent wooing of the shale gas industry includes offering tax breaks to onshore unconventional gas operators, which will of course be open to any companies taking up licenses in Scotland. DECC plan to tender for the 14th round of onshore oil and gas licensing in **Autumn 2014, when a vast swathe of central and southern Scotland will be offered for shale gas and coalbed methane exploitation.**

What Friends of the Earth are calling for

The concerns highlighted above have led to bans and moratoria around the world, including a ban on all coalbed methane drilling within 2km of communities and sensitive industries in New South Wales, Australia, a 2-year moratorium in Ireland and an outright ban on hydraulic fracturing in France.

While it is welcome that the new draft Scottish Planning Policy (SPP) has removed any presumption in favour of unconventional gas that could have been read into the previous SPP, we consider that in the context of our climate obligations and because oil and gas licensing is reserved to

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[2] A working paper from Cornell University (Elaine L. Hill) found that the incidence of low birth weight in pregnant mothers living within 2.5 km of a gas well ncreased by 25%: http://dyson.cornell.edu/research/researchpdf/wp/2012/Cornell-Dyson-wp1212.pdf.
A Colorado School of Public Health (McKenzie et al) study of infants born to mothers within 10 mile of gas drilling sites found links between density and proximity to wells, and increased precedence of congenital heart defects and neural tube defects: http://ehp.niehs.nih.gov/wp-content/uploads/122/1/ehp.1306722.pdf.
Researchers from the University of Melbourne have called for a halt on uncoventionalgas development due to health uncertainties: https://www.mja.com.au/journal/2014/200/4/harms-unknown-health-uncertainties-cast-doubt-role-unconventional-gas-australias

[3] Bamberger and Oswald, Impacts of Gas Drilling on Human and Animal Health, 2012, *NEW SOLUTIONS: A Journal of Environmental and Occupational Health Policy* http://baywood.metapress.com/link.asp?id=661442p346j5387t

Westminster **the Scottish Parliament and Government should take decisive action through the use of devolved planning powers to implement an immediate ban on these new sources of fossil fuels through the SPP.**

Buffer zones
We support the inclusion of buffer zones for unconventional gas extraction in SPP, and welcome the Government's commitment that these remain in the final version, but wish to make the following points:

- Buffer zones can help to protect communities from the very worst of the local environmental and health impacts of unconventional gas extraction, but they will do nothing to mitigate against the climate impacts, therefore we still consider a ban is necessary.
- It is critical that SPP specifies how buffer zones will be designated, otherwise communities across central Scotland face a postcode lottery as to whether they will be afforded actual or tokenistic protection.
- An emerging body of research indicates that the worst public health impacts are identifiable within 2km of gas extraction sites, therefore we consider that SPP should require buffer zones of at least 2km from all above and below ground activity between dwellings, ecologically sensitive areas and sensitive industries. We note the SPP proposes a buffer distance of 2.5km for windfarms.
- In New South Wales 2km Coal Seam Gas Exclusion Zones now cover 5.3 million hectares and protect communities and sensitive industries. An extension of this system protects areas which might be developed for housing in future. 95% of dwellings in NSW are now protected from CSG exploration and development.[4,5]
- We note that because the unconventional gas resource in Scotland is located in the most populace part of the country it is likely that such a restriction would make the unconventional gas industry unviable.

Restoration
In light of the current opencast coal mine restoration bond fiasco, SPP and NPF must take a more robust approach to restoration bonds for all extractive industries. It must be made clear that planning authorities must not grant consent for any new development which requires ongoing mitigation or restoration until the finance for that mitigation and restoration is fully in place. Before granting consent, planning authorities must also have in place a system of monitoring and enforcing not only of activity on site but also the value of the bonds so that operations can be ceased immediately at any point if the value of any bonds falls below what would be required to deliver full restoration.

This has been one of the biggest failings of the planning system and local planning authorities in recent years and the final SPP must help ensure a similar situation can not arise in future in the unconventional gas or other industries.

Please note
The Scottish Government's position statement has adopted erroneous language from the independent analysis of responses to the SPP in relation to input on unconventional gas extraction. The statement under Key Issue 9 that "A campaign comprising 364 responses and a petition of 245 signatures opposed the potential extraction of coal bed methane by hydraulic fracturing (fracking)" misrepresents what the petition called for and campaign responses[6] said. Neither mentioned hydraulic fracturing (commonly referred to as fracking) but rather call for 'a ban on the unconventional gas industry' and buffer zones 'between communities and onshore gas drilling sites.'

For more information
See FoES submission to the Scottish Government's Expert Scientific Panel: http://foe-scotland.org.uk/node/1785

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[4] http://www.planning.nsw.gov.au/coal-seam-gas-exclusion-zones
[5] http://www.planning.nsw.gov.au/DesktopModules/MediaCentre/getdocument.aspx?mid=1595
[6] http://www.scotland.gov.uk/Resource/0043/00431251.pdf and http://www.scotland.gov.uk/Resource/0043/00431648.pdf