

Joint Submission

Talking Fracking - Scottish Government Consultation on Unconventional Oil & Gas

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Fracking Inquiry Submission Report

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Scotland's Future?

The Scottish Government's Strategic Objectives and its Programme for Government envisages a future which is low carbon, non-polluting and sustainable. Local communities are to be empowered, and the wealth created in our country shared fairly.

It is hard to see how Unconventional Oil and Gas (UOG) fits in this future.

Ambitious programmes to reduce carbon emissions have been implemented by the Scottish Government, both on its own and together with Scotland's public and private sectors. Indeed, in 2016, Scotland surpassed its carbon emission reduction targets six years early¹. UOG exploration and production would be a new source of carbon emissions would have to be accounted for and accommodated with cuts to emissions or other additional measures elsewhere on Scotland's balance sheet.

A report attempting to quantify potential greenhouse gas emissions that could be caused by UOG exploration in Scotland was

¹ BBC. [Scotland exceeds emissions targets - six years early](#). News Article, June 2016

commissioned at the behest of this inquiry. The work, which was carried out by the UK Government's Committee for Climate Change, concluded that there were "considerable uncertainties" surrounding both the eventual size of the future industry and the volume of emissions it would generate. They reasoned that if Scotland and its Government wanted to meet its emissions targets, emissions from the UOG industry would have to be offset by reductions in other sectors. Fossil fuel targets would have to be rigorously adhered to, and depending on the UOG industry's eventual size and emissions volume, cuts could be required in other sectors of the Scottish economy.

We would ask where these additional emission reductions would come from. What effect on the wider economy, and society, would this have, especially if the industry is larger or more damaging than anticipated? Who would bear the costs?

The "growing low carbon economy" that the Scottish Governments National Plans, Policies and Strategies is predicated on growth "that can be achieved whilst reducing emissions and which respects the quality of environment, place and life", and that "increases solidarity – reducing inequalities between our regions"². This is not what the UOG industry offers.

² The Scottish Government. [A Plan for Scotland: The Government's Programme for Scotland 2016-17](#). 2016.

Since the oil and gas reserves these processes seek to access lie beneath the most densely populated part of our country, limiting exploration to remote areas is not an option.

The health impact assessment of UOG in Scotland commissioned by the Scottish Government³ concluded that there was sufficient evidence that airborne and waterborne hazards would occur, and that these could pose a threat to workers. Existing epidemiological studies of the health effects of UOG exploration on nearby residents are few and far between, and inadequacies were identified in the regulatory framework intended to protect human health. Even with the best mitigation measures, allowing UOG exploration would be gambling with the health of communities in Central Scotland. Is this really compatible with respecting the quality of the environment, place and life?

The decline of the hydrocarbon-intensive heavy industries of yesteryear has left a legacy of deprivation and inequality in Central Scotland. Deprived areas are clustered around former industrial sites, many of which sit above the hydrocarbon deposits that UOG prospectors want to target. These communities are already exposed to the pollution left behind by these industries, and there is evidence that it is one of the factors contributing to poor health outcomes in

³ Health Protection Scotland. [A Health Impact Assessment of Unconventional Oil and Gas in Scotland](#). Volume 1, Report. Health Protection Scotland, 2016 [Report].

these areas⁴. Adding to this burden of pollution flies in the face of any commitment to social solidarity and reducing regional inequality.

The False Promises of UOG

The argument that makes allowing UOG most attractive is that it will provide large numbers of high quality jobs, jobs that will be sustainable over the long term, jobs that will be available in locales where well-paid work is rare. Yet these promises contradict the reality of UOG exploration, and the experiences of communities the world over that have allowed it, including the local community of Airth.

Sustainability

UOG is only economically viable if prices for these commodities are high. Targeting hydrocarbon deposits which are spread over large areas and cannot migrate very far or fast is expensive. Production per well is relatively low, declining quickly even when aided by fracking. In the USAs shale fields, declines of 50-70% in the first year are not uncommon⁵. To be economical, large numbers of wells and laterals need to be drilled covering a wide area, and there is a constant need for new wells have to be brought online to maintain production⁶.

⁴ Morrison, S., Fordyce, F.M., and Scott, E.M. (2014) [An initial assessment of spatial relationships between respiratory cases, soil metal content, air quality and deprivation indicators in Glasgow, Scotland, UK: relevance to the environmental justice agenda](http://eprints.gla.ac.uk/105133/). Environmental Geochemistry and Health, 36(2), pp. 319-332 <http://eprints.gla.ac.uk/105133/>

⁵ US Energy Information Administration. [Petroleum and Other Liquids: Drilling Productivity Report](#). 2017. Last Accessed 28.04.2017

⁶ International Energy Agency. [World Energy Outlook: Special Report on Unconventional Gas: Golden Rules for a Golden Age of Gas](#). 2012.

The geology of UOG deposits and the rock surrounding them is critical to the economic viability of their extraction. A deposit that contains commercially viable volumes of hydrocarbons could be rendered unextractable if the properties of the rock above it prevent wells being drilled or kept open, for example. In practice, operators fund exploration activity to identify “sweet spots” where the overlying and underlying geology are favourable for development⁷. Compared with other areas where UOG has been developed, the geology of Central Scotland is complex, and the work needed to estimate the full potential of its UOG reserves has not been undertaken.

To inform its public consultation, the Scottish Government commissioned a report on the potential economic impact of UOG⁸ from KPMG, a large professional services firm which has an oil and gas network specialising in providing audit, tax and advisory services to all sectors of the oil and gas industry.

They estimated that the exploration activity needed to identify what reserves are available in Central Scotland and assess their potential productivity would cost around £240 million.

Wholesale hydrocarbon prices are volatile and hard to predict. According to KPMG’s assessment, the costs of extracting UOG would

⁷ Glaser, K. S., Miller C. K. Johnson, G. M., Toelle, B., Kleinberg, R. L., Miller, P., Pennington, W. D. [Seeking the Sweet Spot](#). Oilfield Review, 2014. Vol 25 (4) 16-29.

⁸ KPMG. [Economic Impact Assessment and Scenario Development of Unconventional Oil and Gas in Scotland](#). KPMG, 2016

be around 45p per therm under their low or central production scenarios. They thought this cost could be reduced to 35p per therm under a high production scenario, but this could only happen if the gas reserves and geology present were found to be ideal, well productivity and investment high, and the planning process short. As it stands, the planning process would take 3-5 years, allowing time for community engagement and environmental monitoring. KPMG's high production scenario estimates are dependent on it being reduced to 2 years.

The UOG industry estimated they would, at its peak, represent at most only 0.3% of Scottish GDP. This would fall to 0.1% under a low production scenario⁹.

KPMG observed that, "a low gas price environment for an extended period of time would mean that development of the UOG resources would be unattractive"¹⁰. Future Scottish, European and global energy price trends are very uncertain. Over the last 10 years, wholesale gas prices have spent significant periods of time below the 45p and the 35p per therm thresholds, as shown in the graph below. The average of the Department for Business, Energy and Industrial Strategy's projected gas prices in their low price scenario for 2016-2040 is only

⁹ Pg 4. KPMG. [Economic Impact Assessment and Scenario Development of Unconventional Oil and Gas in Scotland](#). Report. KPMG, 2016

¹⁰ Page 2, KPMG. [Economic Impact Assessment and Scenario Development of Unconventional Oil and Gas in Scotland](#). Report. KPMG, 2016

43p per therm¹¹, illustrating just how financially risky and potentially unprofitable UOG exploitation in Scotland would be.

¹¹ Page 13, Department of Business, Energy and Economic Strategy. [BEIS 2016 fossil fuel price assumptions](#). BEIS, 2016.

Comparison of Wholesale Price of Natural Gas in the UK since 2007 with Estimated UOG Production Costs in Scotland



Highcharts.com

For chart source see footnote¹²

¹² Chart adapted from ERC Equipoise Natural Gas Spot Price Chart <http://www.ercequipoise.com/graph/uk-natural-gas-nbp-spot-price/> Last Accessed 26/04/2017

Jobs

The reality is, that since oil and gas prices fluctuate unpredictably, jobs created in the industry appear and disappear as the industry follows price-related cycles of booms and depressions. This undermines the sustainability of the jobs it creates, and has serious social, economic and environmental consequences for communities that are economically dependent on the extraction of these resources.

Famously, the “Boomtowns” of the American Mid-West saw jobs and money pour in during the oil drilling boom-bust cycle of the 1970s and 1980s, but were left high and dry when the industry withdrew. Local incomes were ultimately left lower than they were in areas where oil was never found¹³. These experiences are being repeated today in Pennsylvania¹⁴, North Dakota¹⁵, Texas¹⁶, and other territories where UOG has been allowed to proliferate.

Even if the UOG industry did not displace other local industrial sectors such as manufacturing, as conventional oil production did in the American Mid-West, the unpredictability of the industry poses a threat to the economic security of the communities it seeks to enter. The skillsets needed to enter non-menial roles in the oil and gas industry are highly specialised. People taking the time and money to

¹³ Jacobsen, G. D. and Parker, D. P. (2016), [The Economic Aftermath of Resource Booms: Evidence from Boomtowns in the American West](#). *Econ J*, 126: 1092–1128.

¹⁴ Frazier, R. [When A Fracking Boom Goes Bust](#). Inside Energy, March 28, 2016

¹⁵ Scheyder, E. [In North Dakota's oil patch, a humbling comedown](#). Reuters News Agency, Special Report, May 18, 2016

¹⁶ Murphy, Trey Daniel-Aaron, 2016. ["It All Depends on the Price of Oil!": Eagle Ford Shale Economic Development Outcomes in a Boom-Bust Milieu](#). Master's thesis, Texas A & M University

obtain the requisite qualifications risk finding themselves out of work with few options in other sectors, especially if they left education early. Locals who invest in businesses specialised towards servicing the industry risk being left similarly bereft.

Satisfactory answers about the number of jobs that would be created, their permanence or their location have not been forthcoming from the energy companies wishing to develop UOG in Scotland.

INEOS told a community meeting in Cumbernauld that 6400 jobs could be created in the Scottish economy, only to immediately admit they got this figure by taking 10% of the total that the Institute of Directors had estimated could be created by UOG in the UK as a whole.

In contrast, the KPMG report commissioned by the Scottish Government gives an estimate of between 470 and 3100 jobs, with an estimate of 1400 jobs in their central scenario. However, this would only be at the industry's peak¹⁷. It did not indicate how many of these jobs are temporary, whether they'd be available to the local community or what this figure might fall to once the peak passed.

For a glimpse of the future offered to communities in Scotland by UOG, we would urge the Scottish Government to consider the evidence gathered during the Public Local Inquiry into a planning

¹⁷ Pg 8. KPMG. [Economic Impact Assessment and Scenario Development of Unconventional Oil and Gas in Scotland](#). Report. KPMG, 2016

application made by Dart Energy, a company that wanted to drill for coal bed methane near Airth, Falkirk.

A peak of 12 jobs would have been created for 3-4 months during its drilling phase. As well as being temporary, these jobs would require highly specialist skillsets and equipment. The likelihood is that they would be tendered out to specialist contractors who already have the appropriate experience and drilling equipment, and who already follow this work from gasfield to gasfield around the world. Dart energy admitted in their website (now defunct), that after drilling, the operation would switch to an unmanned production phase requiring the support of a small number of low-skilled positions such as security and transport personnel¹⁸.

Looking forwards as the industry matures, the future for its workforce looks bleak. High production costs and uncertain prices mean companies are under enormous pressure to find savings any way they can, including reducing their labour overheads. Improvements in project management, such as better demand planning within projects to utilise labour more efficiently¹⁹ and the automation of processes like monitoring and plant operation²⁰ are being used successfully to reduce the need for personnel.

¹⁸ Falkirk Against Unconventional Gas. [Community Mandate](#). 2013. Last Accessed 27.04.2017

¹⁹ PriceWaterhouseCoopers, [New Conventions for Unconventional Oil and Gas: Optimizing the play to improve returns](#). PwC, 2013

²⁰ Hottell, J. [Reducing Costs and Maximizing Production Through SCADA and Automated Technologies](#). Shale Gas International, 2016. Last accessed 27.04.2017

The rates skilled personnel are paid are another area where energy companies hope to make savings. The companies who tender for UOG drilling contracts have invested heavily in machinery and personnel to provide a service specific to the UOG industry for which no other market exists, so exploration companies are taking full advantage of the current slowdown in UOG exploration to squeeze them as hard as they can²¹.

The Uncounted Costs of UOG

In its consideration of the potential of UOG development, we urge the Scottish Government to consider the regulatory, environmental, social and economic costs that were excluded from the Economic Impact Assessment. Although KPMG has excluded them since they are hard to financially quantify, they are the very costs that society is supposed to bear on the UOG industry's behalf. At the very best, KPMG estimates that UOG could contribute 0.3% to Scotland's GDP. At what cost to the public purse? At what cost to our existing industries? And at what social cost?

The Health Impact Assessment of UOG exploration commissioned from Health Protection Scotland by the Scottish Government concluded that there is a high potential for it to adversely impact the environment²². If it were to go ahead, they reasoned, it would need

²¹ Pg 18, US Energy Information Administration. [Trends in U.S. Oil and Natural Gas Upstream Costs](#). Report, 2016.

²² Health Protection Scotland. [A Health Impact Assessment of Unconventional Oil and Gas in Scotland](#). Volume 1, Report. Health Protection Scotland, 2016 [Report].

tight environmental regulation with a precautionary approach, and intensive monitoring on a well-by-well basis. The responsibility for this would lie with SEPA, and ultimately the public purse.

A regulatory gap exists around private water supplies²³. These might not be widely used to provide drinking water in central Scotland, but they are used for irrigation. Would UOG-related groundwater abstraction depressurise private water supplies in Scotland as it has in drier climates? We don't know.

What about groundwater contamination and gas migration? We urge the Scottish Government to consider the geological and hydrogeological evidence collected during the Public Inquiry into Dart Energy's proposals for Coal Bed Methane extraction near Falkirk²⁴. Extensive faulting and abandoned mine workings, which are abundant throughout central Scotland, were identified during the inquiry as potential pathways for gas migration. Furthermore, nearby mine workings could have been dewatered, causing them to release methane and create an additional gas migration hazard²⁵.

What happens if the costs of decommissioning and remediating sites is passed on to communities and the state when firms go bankrupt, as

²³ Pg 43 Health Protection Scotland. [A Health Impact Assessment of Unconventional Oil and Gas in Scotland](#). Volume 1, Report. Health Protection Scotland, 2016 [Report].

²⁴ Available at <http://www.dpea.scotland.gov.uk/CaseDetails.aspx?id=94326>

²⁵ The Scottish Government, Planning and Environmental Appeals Division. Case PPA-240-2032. [Email from Falkirk Council: Oral Closing Submissions](#). Last Accessed 25/05/2017

has happened across the US²⁶? The polluter can't pay if the polluter no longer legally exists.

What impact might there be on the value of people's homes and the cost, or even availability, of insurance? Financial institutions are increasingly unwilling to shoulder risks to their investments or reputations from environmental hazards. Property value, mortgage availability and property insurance are all at risk.²⁷

How much money would homeowners and landowners in Central Scotland lose from the value of their property if UOG exploration goes ahead? Right now, there are already people in the Falkirk constituency seeking help from their MP because their house sales have fallen through after buyers found out that proposed drill sites were nearby. House values in areas licenced for exploration in the North East of England were found to fall by 2.7-4.1% when the community learned that fracking had commenced²⁸. The UK Government's own figures suggest property prices could fall by up to 7% within a mile of an extraction site²⁹.

In KPMG's economic impact assessment, the central estimate of the Gross Value that UOG could potentially add to Scotland's economy is £1.2 billion. At most, if allowed to proceed with minimal time for

²⁶ Resources for the Future. [Plugging the Gaps in Inactive Well Policy: Summary of Key Findings](#). 2016.

²⁷ Jones, P., Comfort, D., Hiller, D. [Fracking for shale gas in the UK: property and investment issues](#). Journal of Property Investment & Finance. 2014. Vol. 32 Issue: 5, pp.505-517

²⁸ Gibbons, S., Heblich, S., Lho, E., Timmins, C. [Fear of Fracking? The Impact of the Shale Gas Exploration on House Prices in Britain](#). 2016. NBER Working Paper No. 22859

²⁹ DEFRA. [Shale Gas: Rural Economy Impacts](#). 2015. Report.

planning and authorisation, with massive investment and the very best geological good fortune, they estimated that the figure could be as high as £4.6 billion, but under its least favourable scenario this dropped to £0.1 billion.

Meanwhile, by the Scottish Government's own estimates, Scotland's natural environment is worth more than £20 Billion per annum and supports more than 60,000 jobs³⁰. The perception in the minds of consumers and investors that this is a beautiful, clean, sustainable country is vital to key industries and their supply chains.

The Scottish Planning Framework specifies that the precautionary principle should be applied "where the impacts of a proposed development on nationally or internationally significant landscape or natural heritage resources are uncertain but there is sound evidence indicating that significant irreversible damage could occur"³¹. As Health Scotland identified in their health impact assessment, there is a high potential for environmental harm if UOG exploration and production were to go ahead. What impact could this have on Scotland's workforce and economy if the existing, profitable industries that depend on Scotland's natural environment had their integrity compromised?

³⁰ Pg28. The Scottish Government. [A Plan for Scotland: The Government's Programme for Scotland 2016-17](#). 2016.

³¹ Page 7, [Scottish Planning Policy: A Natural, Resilient Place](#). 2014. Last Accessed 25.05.2017

The Scottish food and drink sector is our largest export sector. It added £3.8 billion Gross Value to the Scottish economy in 2014³². It employed 34,000 people, and was forecast to create around another 14,000 positions over the next five years³³.

This sectors biggest single industry by far is whisky and spirits. The Scottish Government estimated that £1.8 billion Gross Value was added to the Scottish economy in 2014 by the production of spirits alone, and the Scottish Whisky Association estimates that the whisky industry as a whole directly generated £3.3bn GVA in the same year³⁴.

Malting barley is grown across Scotland for spirit production, and is especially important for whisky³⁵. There is a strong consumer preference that this product be Scottish³⁶. What happens if agricultural land or the water used to irrigate it is contaminated?

Whisky may be conceptualised as a rural product, but some of the biggest distilleries are located in central Scotland. These include Cameronbridge in Leven, Fife, which produces 100 million litres of spirits a year. The 60 hectare bottling facility next door in Banbeath produces around 1400 different products³⁷. All this, and the fate of the

³² Scottish Government. [Annual Business Statistics- Key Facts](#). 2016. Last Accessed 27.04.2017

³³ Bank of Scotland. [Bank of Scotland Research Report 2016 – Food and Drink](#). Last Accessed 27.04.2017

³⁴ Scottish Parliament. [Question S5W-02159: Ruth Davidson, Edinburgh Central, Scottish Conservative and Unionist Party](#). Date Lodged: 26/08/2016. Answered by Keith Brown on 14/09/2016

³⁵ Knowledge Scotland. [Drivers of sustainable malting barley production in Scotland](#). Last Accessed 02.05.2017

³⁶ Glenk, K., Hall, C., Liebe, U. and Meyerhoff, J. [Preferences of Scotch malt whisky consumers for changes in pesticide use and origin of barley](#). 2012. Vol 37 (6), pgs 719–731

³⁷ Scottish Business Insider. [Insider regional report: Fife](#). Last Accessed 02.05.2017

other large grain distilleries and associated facilities scattered across central Scotland depends on the quality of Scotland's water.

The Scottish tourism sector is prioritised as a growth sector in the Scottish Government's 2015 economic strategy. It contributed £3.7 billion GVA in 2014, and it's not solely the preserve of areas remote from those where UOG is proposed. Edinburgh and Glasgow were the local authority areas responsible for the largest individual shares of tourism's 2014 GVA, contributing 15.8% and 15.7% respectively³⁸.

Unconventional Oil and Gas extraction is not an industry that is likely to live up to its economic promises. It is an industry which is vulnerable to cycles of boom and bust, which would bring few jobs and little benefit to local communities, and which poses a grave risk to Scotland's natural environment and the industries dependent on it. Society would bear an as yet unquantifiable burden of regulatory, environmental and social costs for very little gain.

Challenges to Risk Management via Regulation

Proponents of UOG exploration and development argue that regulation can be used successfully to prevent it causing environmental harm. The evidence from elsewhere in the world does not support this argument, and the regulatory agencies in Scotland

³⁸ Scottish Government. [Annual Business Statistics- Key Facts](#). 2016. Last Accessed 02.05.2017

and the rest of the UK lack both the resources and the tools they would need to do this.

The kind of precautionary approach to the regulation of the UOG industry advocated in the Health Impact Assessment commissioned by the Scottish Government, with its monitoring regime and well-by-well approach, would be an expensive proposition^{39,40}. The danger is that, rather than place another financial burden on their industry, companies will work to co-opt the political and legal frameworks intended to ensure it is carried out safely to prioritise development interests, and prevent community objections from interfering with these interests.

Between October 2013 and March 2015, oil and gas firms had 143 meetings with government ministers, and at least 30 different lobbying firms were employed to press for industry interests⁴¹. This flurry of lobbying and the election of a majority Conservative government in 2015 coincided with a sharp turn in the UK's energy policy away from renewables and towards gas and nuclear sources.

Similarly, the boom in UOG exploration in the USA was preceded by a \$70 000 000 lobbying campaign to exempt fracking from the

³⁹ Health Protection Scotland. [A Health Impact Assessment of Unconventional Oil and Gas in Scotland](#). Volume 1, Report. Health Protection Scotland, 2016 [Report].

⁴⁰ Stamford, L., Azapagic, A. [Life cycle environmental impacts of UK shale gas](#). Applied energy. 2014. 134, pgs 506-518

⁴¹ Greenpeace: Energy Desk. Revealed: [How the gas industry spent tens of millions of pounds lobbying UK & EU policymakers](#).

provisions of the Clean Water Act of 1972, the Safe Drinking Water Act of 1974 and the Clean Air Act of 1970⁴².

International networks of companies, trade associations and lobbyists have been established by the industry to target officials and influencers at regional, national and international levels^{43,44,45}. Funds and benefits in kind are channelled to sympathetic parties and officials. In the UK in 2016, £130,000 worth was given to members of an All Party Parliamentary Group on Unconventional Oil and Gas by companies with an interest in developing UOG in the UK. These companies and their lobbyists then received privileged access to MPs⁴⁶.

Strategic and deliberate actions on the part of both industry and government in the US and Australia have been used to lock local communities out of the licencing and planning processes. Local communities, whose resources are miniscule compared to industry, find themselves misrepresented and ignored⁴⁷, a pattern which is repeating itself as UOG gains political acceptance in the UK.

⁴² Twomey, D. F., Twomey, R. F., Farias, C., Farias, G.; Harris, D. L. [Fracking: Blasting the Bedrock of Business](#). 2016. Journal of Competitive Studies. Vol 24 (3)

⁴³ InfluenceMap. [An investor enquiry: how much big oil spends on obstructive climate lobbying](#). Report, 2016.

⁴⁴ Graham, N., Daub, S., Carrol B. [Mapping Political Influence: Political donations and lobbying by the fossil fuel industry in BC](#). 2017. Report.

⁴⁵ Greenpeace: Energy Desk. Revealed: [How the gas industry spent tens of millions of pounds lobbying UK & EU policymakers](#).

⁴⁶ DeSmog UK [Mapped: How Fracking Lobbyists From the UK and America Have Infiltrated Parliament](#). January 2017. Last Accessed 09.05.2017

⁴⁷ Kennedy, A., Schafft, K. M. Howard, T. M. [Taking away David's sling: environmental justice and land-use conflict in extractive resource development](#). 2017. Local Environment: The International Journal of Justice and Sustainability. In Press.

The focus of the UKs' UOG planning and licencing policies has shifted from protecting communities from seismic events to enabling development. Powers have been transferred from local to central government, and the power of communities to object to UOG exploration and production has been curtailed⁴⁸.

Community groups participating in the stakeholder workshops held to inform the Scottish Government's UOG health impact assessment were concerned that that the licencing and planning process is already skewed in favour of business interests. They were concerned that communities have very limited means of recourse via the planning appeals process, and that they lack a process of engagement with SEPA, the Health and Safety Executive and other key agencies⁴⁹.

In Falkirk district, the wishes of communities have already been treated with disregard by the UOG industry.

Dart Energy held a series of public outreach events in 2012 to try to obtain the backing of the local community for its coal bed methane project. Under questioning from their audiences, they admitted that the company planned to drill five times the number of wells they had planning permission for, and that they could compulsory purchase orders to acquire land regardless of its owners' wishes⁵⁰. Indeed it

⁴⁸ Cotton, M. [Fair fracking? Ethics and environmental justice in United Kingdom shale gas policy and planning](#). 2017. *Local Environment: The International Journal of Justice and Sustainability*. Vol 2 (2), pgs 185-202.

⁴⁹ Pg 39 [Health Protection Scotland. A Health Impact Assessment of Unconventional Oil and Gas in Scotland](#). Volume 1, Report. Health Protection Scotland, 2016 [Report].

⁵⁰ Frack Off Scotland. [Airth Community Meeting - 12th Dec 2012 - Notes and Points](#). Last Accessed 10.05.2017

later emerged that the farmer whose land was bought for the project had been forced to sell it with the threat of a compulsory purchase order⁵¹.

INEOS made similar admissions about their proposed shale gas developments in the district at public outreach events in 2014. They admitted that no guarantees could be given that wells would not leak; admitted that SEPA lack the resources to police the industry effectively; admitted that wells could be as close as 400m to homes and businesses rather than the 2km recommended by the Scottish Government. To add insult to injury, they admitted that the revenue pledged to communities could go to people living up to 60km from the well sites⁵².

The precautionary principle and prevention rather than mitigation of environmental harm have been identified by EU law and by academics in the US and UK as key for the protection of environmental and human health if UOG goes ahead. Yet it is highly likely that regulatory agencies in the UK will lack the staffing and resources to gather the

⁵¹ Town and country planning (appeals) (Scotland) regulations 2013: [Appeal under section 47\(2\) of the town and country planning \(Scotland\) act 1997 by Dart Energy \(forth valley\) Ltd concerning coal bed methane production, including drilling, well site establishment at 14 locations and associated infrastructure at Letham Moss, Falkirk, and Powdrake Road, near Airth, Pleau](#) (references ppa---240---2032 and ppa---390---2029) Precognition by Leslie Dick on behalf of Concerned Communities of Falkirk (and supporters)

⁵² Thomson, L. [INEOS bosses fail to 'love bomb' Denny residents](#). 2015. Bella Caledonia. Last Accessed 10.05.2017.

scientific evidence needed to create an effective regulatory regime, or the resources needed to implement, monitor and enforce it⁵³.

The vast majority of the research carried out into the environmental impact of the UOG industry is funded by the industry itself, which also controls much of the field site access and technical information that researchers need⁵⁴. This gives the industry considerable scope to manipulate the evidence available about its environmental impacts.

The large scientific uncertainties and failures of consensus in the field allows industry considerable scope to influence research outcomes, even without adding bias to the research itself. Questions put to researchers can be slanted in the industry's favour, and by selectively commissioning research into topics likely to produce evidence they can use to support their case, companies can ensure that those likely to hinder them remain under-researched and are therefore under-represented in the big picture available to policy makers⁵⁵.

To enable their research, researchers have to make assumptions to account for uncertainties and consensus failures. These assumptions, however, can be slanted in favour of UOG, so whilst the work itself could be perfectly unbiased, the framing under which it would be carried out would not be. For example, assuming the presence of

⁵³ Watterson, A. Dinan, W. [A rapid evidence assessment of regulation and regulatory practices involved in fracking and its public health implications](#). 2016. University of Stirling. Report.

⁵⁴ Watterson, A. Dinan, W. [A rapid evidence assessment of regulation and regulatory practices involved in fracking and its public health implications](#). 2016. University of Stirling. Report.

⁵⁵ Boogert, A. [Knowledge iteself is Power: how oil and gas producers manipulate shale gas research in the EU](#). 2014. Masters Thesis, Leiden University

favourable geology, that the industry will be profitable, or that employment in other industries will not be impacted by the industry might be justifiable, and even necessary, to keep a project within its scope, but they would have a profound effect on its outcome⁵⁶.

The regulatory system proposed in Scotland has no legal requirement for the monitoring of baseline environmental conditions at or near sites prior to the start of UOG exploration⁵⁷. There is therefore no context in which to judge the impacts of UOG-related activities.

SEPA is to be responsible for overseeing the environmental aspects of UOG, but its role is essentially limited to being a statutory consultee during the planning phase and granting environmental authorisations. Companies are to be trusted to conduct their own monitoring, before, during and after UOG exploration and extraction without direct oversight from SEPA⁵⁸.

Even if it had the power to police the industry, it is doubtful whether SEPA would have the resources to do so. No extra funding has been offered to it to enable it to take on its existing roles in the planning and authorisation phases, indeed it has faced budget cuts in recent years and stands to lose a great deal of EU funding⁵⁹.

⁵⁶ Boogert, A. [Knowledge iteself is Power: how oil and gas producers manipulate shale gas research in the EU](#). 2014. Masters Thesis, Leiden University

⁵⁷ Pg 3 The Scottish Government. [Unconventional Oil and Gas Development in Scotland: Decommissioning, Site Restoration and Aftercare – Obligations and Treatment of Financial Liabilities](#). 2016. AECOM. Report

⁵⁸ The Scottish Government. [Independent Expert Scientific Panel – Report on Unconventional Oil And Gas](#). 2014. Report.

⁵⁹ BBC. [Holyrood's committees examine Scots budget proposals](#). 2017. Article. Last Accessed 11.05.2017

Health impact assessments (HIAs) are a cornerstone of the planning and authorisation process. They are used as a means of safeguarding human and environmental health, but have inherent democratic and technical deficits that are open to exploitation by industry.

Their high cost limits the ability of Communities and individuals to submit their own, or challenge what's been submitted by industry. Depending on the risk analysis and cost-benefit analysis techniques used, benefits can be inflated and risks and costs left only partly quantified. There is no agreement between practitioners, regulators and academics as to how data is to be validated. There is no agreed standard for the incorporation or exclusion of variables. Both can be cherry-picked with impunity, and superficial, flawed studies included. Community engagement can be minimised and wellbeing issues ignored⁶⁰.

Post-decommissioning site remediation and monitoring is another issue where the Scottish regulatory system fails. It may be legally required, but who would be responsible for sites left behind by a company that has gone bankrupt? The polluter can't pay if the polluter no longer exists.

The UK Government has refused to implement measures that would require companies to provide financial security when applying for

⁶⁰ Watterson, A. Dinan, W. [Health Impact Assessments, Regulation, and the Unconventional Gas Industry in the UK: Exploiting Resources, Ideology, and Expertise?](#) 2016. *New Solutions: A Journal of Environmental and Occupational Health Policy*. Vol 5 (4) pgs 480-515

UOG related environmental authorisations⁶¹. The report on site decommissioning produced for the Scottish government gave six possible options, but four of these require the company to still be in existence and solvent.

The two remaining options are extremely unattractive. One, depositing money into an escrow account, would be the most costly to industry and require an accurate estimation of the size of the liability. Since the money only attracts interest, inflation could easily erode the value of the deposit. The other, a mutual fund, requires an accurate calculation of the size of each liability, the value of the fund to keep pace with inflation, and that industry can be persuaded to provide the large up-front contributions and fund management fees required⁶².

The Reality of UOG

The Scottish Government has committed itself to building a low-carbon, non-polluting low-inequality social democracy. This is not compatible with allowing UOG exploration or development.

If the industry were to reach any great size, emission reductions committed to under agreements to tackle climate change would either have to be abandoned or offset with reductions elsewhere in

⁶¹ Pg 59 The Scottish Government. [Independent Expert Scientific Panel – Report on Unconventional Oil And Gas](#). 2014. Report.

⁶² Pgs 82-91 The Scottish Government. [Unconventional Oil and Gas Development in Scotland: Decommissioning, Site Restoration and Aftercare – Obligations and Treatment of Financial Liabilities](#). 2016. AECOM. Report

the Scottish economy. The Scottish Governments' HIA into UOG exploration and production concluded there is sufficient evidence that water and airborne pollution hazards would be generated, but insufficient evidence to quantify what risks these might pose to the health of nearby communities, even if exposure mitigation measures are used.

Does an environmentally and equality conscious government gamble with the health of its citizens? Would this be a just way to treat people living in areas left polluted and impoverished by the industries of the past?

Great economic gains are promised by those who wish to promote this industry. It will bring tax revenues. Jobs. Lots of jobs. Good quality well paid jobs which could transform communities, especially those in our former coal fields. This does not bear scrutiny.

According to the estimates submitted to the Scottish Government in its economic impact assessment, at its peak, represent 0.3% of Scottish GDP. This represents a scenario where authorisation is fast, oil and gas is as abundant as possible and its extraction is problem free. A 0.1% share of GDP is considered more likely, adding 0.1-1.2 Billion Gross Value to the Scottish economy.

Yet this figure was calculated without consideration of monetary environmental and social costs, costs to other industries, effects on house prices or insurance availability or the costs of regulating the

industry. It also assumes that production will be large enough and gas prices high and stable enough for UOG extraction to be economically feasible, despite the volatility of these markets in reality.

The industries threatened by the environmental damage that the exploitation of UOG could cause include established, profitable industries that dwarf the potential of UOG economically and in terms of employment numbers. The Scottish food and drink industry adds £3.8 billion gross value, tourism 3.7 billion. 34 000 people are employed in the food and drink industry and it is projected that another 14 000 could be created by 2020. In contrast, the Economic Impact Assessment presented to the Scottish Government estimated that the UOG industry was capable of providing at most 3100 jobs at its peak, with estimates of 470-1400 being considered more likely.

This peak would not last long. Many of these jobs created by this industry, including the well paid drilling and scientific support positions, would only be present during the initial period of exploration and well installation. They require specialist expertise and skill sets which may not be available in Scotland, let alone in the communities near the well sites. The jobs left behind during the production phase are mostly low paid service jobs in sectors like security and transport.

Are these jobs worth risking the health of Scotland's people and environment? Are they worth endangering the integrity of established, profitable industries?

The vast uncertainties surrounding the impacts of the UOG industry on health, the environment and the economy mean that if it were to go ahead, it would need to be heavily regulated. Indeed the findings of the reports and studies that have suggested it could be carried out safely are predicated on the presence of an effective regulatory system and the use of best practice by industry.

The likelihood that this would happen is remote. The UOG industry itself is under huge pressure to keep its costs down. It conducts vast, well-funded and highly organised lobbying efforts to prioritise development, silence communities and reduce its legislative burden everywhere it operates, including the UK and Scotland.

The regulatory system we have in place has an environmental protection agency which faces great uncertainty regarding its funding, and is limited to being a statutory consultee and authorisation body. The industry is allowed to conduct its own monitoring without any policing whatsoever. There's no context with which to view their findings since baseline environmental or epidemiological data are not collected. The health and environmental impact assessments the regulatory process relies on are open to abuse. Communities and individuals are already finding themselves excluded from the planning and authorisation process, and are already seeing negative effects on the value of their homes and land.

UOG exploration and production in Scotland would be a risky and potentially pointless endeavour which has the capacity to leave a tremendous legacy of harm to our health, environment, economy and democracy. On this basis we think it would be deeply unwise to allow it to proceed, and ask that the Scottish Government replace its moratorium with a full ban.

