

The Potential Impact of Shale Gas Extraction (SGE) in Yorkshire

Green Enterprise Network

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Shale Gas Extraction (SGE) and the Yorkshire Brand

This briefing is a summary of the potential impacts - both positive and negative - of SGE on the regional economy and the Yorkshire Brand. Resolutions relating to SGE have been made in many Local Authorities across Yorkshire, but, to date, no region-wide approach or agreement has been developed.

There is a now growing call from the regional business community for local policy-makers to undertake a more detailed risk-benefit analysis of shale gas extraction, in consultation with affected communities - including businesses.

While there are a wide range of factors to be considered relating to SGE (environmental, ecological, health, ethical and alternatives to SGE etc.), this briefing concentrates on economic impact. The matter of energy security and whether the UK requires SGE is the subject of a separate briefing paper.

This paper does not cover claims of lower gas prices, which were challenged in expert and academic papers and have now been proven false (see recent ruling by the Advertising Standards Authority).¹

Instead, it focuses attention on transport, tourism and jobs; key elements of Local Authority and Local Enterprise Partnership plans, including City Deals.

The LEP areas of North Yorkshire, Leeds City Region and Sheffield City Region, plus the BioVale strategy across Yorkshire and Humber, show great commonality in terms of ambition and key growth areas.

They aim to combine sustainable and vibrant business with enviable quality of life, developments better shaped by, and responsive to, local priorities. There is a widespread recognition of the role that the Yorkshire geography plays in the region's success.

SGE licences

It is acknowledged that offshore SGE operations are proven, however onshore SGE in the UK is not yet proven and the administrations in Wales, Scotland and Northern Ireland have all applied moratoriums or bans on SGE within their borders.

All the oil and gas licences awarded in 2015 covered land north of Leicester, opening over 1,000 square miles to oil and gas exploration around Preston and Bolton, Leeds and Sheffield and Lincoln and Skegness.

There are currently 230 onshore licences, covering 529 blocks. The 14th Licensing Round was announced on the 17th of December 2015, with the award of 159 new blocks under 93 new licences. Draft Government papers suggest that for meaningful production to occur, 12,500 wells would be required across Yorkshire and Lancashire.

Such widespread intensive industrialisation of the Yorkshire urban and rural landscape is not highlighted as part of any local or LEP Plan.

¹ <http://www.telegraph.co.uk/business/2016/09/20/experts-agree-fracking-wont-cut-energy-bills-ad-watchdog-rules/>

Currently, 64 UK Petroleum Exploration and Development Licence (PEDL) areas have been awarded in Yorkshire & Humber.² There would be a minimum of 10 wells per site (probably with multiple horizontal bores for re-fracks) and ten sites per PEDL area i.e. approx. 6,400 wells based on awarded licences.

John Dewar of Third Energy in giving evidence to the environment committee said Third Energy already has nine sites in the (PEDL) area, including Ebberston Moor and the Vale of Pickering. It was “very hard, very speculative” to say what the total number of wells would be. But he said: “To allay people’s fears we’ve said that we do not foresee the need for more than 10 more sites” he added “And how many wells we would put on those sites, we have provided numbers between 10 and depending on the size of the site, it could be 10 to 20, if it was a bigger site it could be 20-50.”

Potential Economic Benefits of SGE

Government and industry-identified economic benefits to SGE (on which 2012 Government policy is based) are as follows:

- Anticipated energy security and lower gas prices
- Licence and tax revenues paid to the UK Government, individuals, communities & LAs
- Effect of shale industry employment
- Direct purchasing activity of the industry: supply chain and accommodation
- Purchasing activity of workers

Whether these benefits are real, sustainable and contributory; or are adequate compensation at a regional and local level has been the subject of numerous consultations and academic and evidence-based papers.

The decision-making ability of regional bodies with regards to SGE has been undermined by new Government rules which state that councils that “repeatedly fail” to make a decision within a 16-week timeframe may be stripped of their power for future applications. Indeed, all shale applications are subject to potential call-in, even if the council has not taken too long in making decisions on previous applications.

Indeed, in a landmark decision, Government recently overruled local councillors and approved Cuadrilla’s plans to explore for shale gas in Lancashire.

An insight into the Government’s rationale behind the ruling is apparent in a letter to George Osbourne MP, then Chancellor, dated July 2015. In the letter, MPs Greg Clark, Amber Rudd and Elizabeth Truss, stated:

“Alongside geology and investment, the biggest challenge we face is to foster a climate of opinion in which the development of our shale resources is seen as safe and acceptable to a majority of the public...i.e. communities likely to be affected. Government has to be united

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440791/draft-shale-gas-rural-economy-impact-report.pdf

2.1 <https://drillordrop.com/2015/03/11/third-energy-planning-100s-of-wells-in-ryedale-say-campaigners/>

facing the levels it can control, and bringing in others to support our policy where we are not in control.

One of the hurdles to overcome to develop a more favourable public attitude is that nobody in the UK has seen or experienced a shale fracking exploration in their area, aside from the limited operations at Peese Hall, abandoned in 2011.”³

N.B. Peese Hall operations were ceased following two minor earthquakes.⁴

Potential Impacts of SGE

- Reliance and burden on regional infrastructure: road maintenance and management, (including cyclist safety), water, waste water treatment etc.
- Additional cost to the public purse, including NHS, Police, Ambulance, Fire & Rescue services etc.
- Sustainability of a regional shale gas extraction industry
- Fit with and impact on regional plans (Local and LEP) e.g. pollution and climate change targets, support for renewable energy alternatives
- The impact of SGE on Yorkshire Economy and the ‘Yorkshire Brand’ particularly in rural areas
- Community cohesion: reliance on skilled migrant workers, coupled with few low-skilled local jobs in SGE companies; impact on local public services (schooling, healthcare, police)
- Longer-term Regional Impacts, e.g. length of time required for meaningful production to commence
- Reduced investment/scaling back of alternative energy projects
- Air quality
- Ecological impacts

Transport

Susan Christopherson, Professor of City and Regional Planning, Cornell University:

“You have not just the well pad, which are big things, but you have 1,000 truck trips per well multiplied by the number of wells, you have compressor plants, you have the pipelines, you have water extraction sites, you have chemicals and gravel that have to be brought in... It drives out other kinds of industry.”

³ <http://www.telegraph.co.uk/news/earth/energy/fracking/12130801/Ministers-plot-to-foil-anti-frackers.html>

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/283837/Seismic_v3.pdf



Congestion is already an issue for many businesses located around key commuter routes. Potential SGE operations would exacerbate the problem.

INEOS Director Tom Pickering has gone on record confirming that each well would necessitate 'a couple of thousand' HGV journeys per fracking well. Data suggests that this is a conservative estimate, with up to 6,590 HGV journeys required.

Using the information on the **minimum** number of wells per site noted above, this would equate to a **minimum total of 12,800,000 HGV journeys and potentially up to 42,176,000 HGV journeys.**⁵

Even using the minimum estimate, a significant burden would be placed on already over-stretched roads. The additional traffic in Yorkshire would use specialist water treatment facilities in Leeds, Sheffield and Hull.

This would place significant additional HGV traffic onto key commuter routes such as A64, A1237, A19, A1, M621, M1 etc. as well as ill equipped country roads, since the majority of PEDL areas have been awarded in rural communities, located away from motorways.

The impact of this additional and increasing volume of traffic must be reviewed in terms of the impacts on one council area caused by decision-making in another. It should also be considered together with area plans relating to road networks and air quality.

These heavy truck fleets have been shown to accelerate deterioration on road and bridge infrastructure. Road, bridge, and railway deterioration, along with other infrastructure services (such as the increased presence of emergency services and law enforcement to account for the industrial accidents that comes along with the drilling process) need to be taken into consideration when evaluating the fracking process.

⁵ <http://www.sciencedirect.com/science/article/pii/S0160412016300277>

In the US, increases in revenues have all been spent on maintaining roads.⁶ The Texas Department of Transportation (TXDOT) reported a preliminary estimate of \$2 billion dollars in damage to farm-to-market and local Texas roads by drilling activity, not including the costs of maintaining interstate and state highways.

Water resources may also be stretched, with Yorkshire Water responsible to supply multiple fracking sites at any one time and treat contaminated/radioactive waste. It has already been highlighted that treatment facilities in Yorkshire are unlikely to be able to deal with the quantity of waste generated, including disposal into Yorkshire waterways, and may need to commission additional facilities or journeys out of area.

A recent study by ReFINE (at Newcastle University - co funded by the Oil and Gas industry) showed that there is a 30% increase in pollution from just one fracking site.⁷ This can add significant ongoing costs and capacity pressure for the NHS: In 2010, 1400 deaths in the region could be attributed to air pollution (Public Health England).⁸

These examples of impact on regional infrastructure impact highlight how cross-region resources and funding would need to be utilised to facilitate the requirements of SGE. They raise questions about what impact that would have on Local Authority and LEP Plans.

Tourism

Regional LEPs have highlighted key assets for improving performance as natural capital in urban and rural areas. This includes wildlife, woodlands and a beautiful natural environment which attracts businesses, investment, skilled employees and tourism.

Indeed, the North Yorkshire LEP vision is to *'be the place in England to grow a small business, combining a quality business location with a great quality of life.'* It states: *'there are few landscapes as famous as Yorkshire' and 'the tourism industry employs thousands of people and we must ensure our plans for growth reflect changing customer demand'.*

Tourism has grown nationally, with Yorkshire placed second in the table of increased overnight stays, with a 20% increase. Tourism is predicted to grow at a higher rate than the overall economy at 2.9% annually.⁹

Sir Gary Verity, chief executive of Welcome to Yorkshire, in giving evidence to the EFRA committee on Rural Affairs stated *'we're very fortunate we have over 200 independent breweries in Yorkshire and lots of fantastic artisan food producers as well. I think one of the things which is a really important point to make... is the fragility of the rural economy, and the importance of tourism within that fragility; because the link between the pub in the village and the Bed & Breakfast (so if the pub shuts, the Bed and Breakfast will shut, because there's nowhere for anyone to go and have their evening meal and the pub can sell the beer from the microbreweries locally and can sell the food produce from the farmers locally and so on), so there is that very fragile coexistence between all of those businesses, and if one thing tips over, the whole thing can unravel quite quickly.'*

⁶ <http://www.star-telegram.com/living/family/moms/article3831884.html>

⁷ <http://www.refine.org.uk/research/wellintegritypollution/>

⁸ <https://www.gov.uk/government/news/estimates-of-mortality-in-local-authority-areas-associated-with-air-pollution>

⁹ <http://www.localgov.co.uk/Councils-can-use-devolution-to-benefit-from-growth-in-staycations/41719>

The impact on tourism and the wider economy through the scale and range of factors involved in SGE operations requires detailed analysis by regional policy-makers.

Direct purchasing activity of the industry – accommodation and supply chain

Impact is felt through specialist and migrant workers taking rooms otherwise empty or used by tourists/business people/long term local renters (generally 'low cost' housing costs increase as the industry takes up rentable property) and income flows into the local area via those businesses.

Jobs

“Inaccurate job creation numbers aren’t the only problem – there is also an issue of how many jobs may be lost. Fracking of this kind is incompatible with tourism and with agriculture because fracking has a heavy industrial footprint on the landscape.”¹⁰

Job claims from the industry have been independently scrutinised in recent peer reviewed research. It has been found that, in general, industry-funded studies have substantially overstated the total jobs impact, economic growth and shale induced opportunity; and that underlying economic growth in areas hosting SGE has fallen behind other regions.

In the UK, jobs will be directly proportionate to the volume of wells fracked. The jobs associated with fracking are highly specialised industry roles which are filled by migrant gas industry workers.

During its public inquiry in 2015, Lancashire Council stated that it found Cuadrilla’s job creation figures had been exaggerated, stating ‘there will be low job creation with no guarantee of jobs for local people given the specialist nature of the jobs.’¹¹

A 2013 report¹² by US-based Multi-State Shale Research Collaborative stated ‘between 2005 and 2012, less than four new shale-related jobs have been created for each new well.’ These low figures are in line with Cuadrilla’s employment targets for each site, reported to equate to just seven direct local jobs. SGE company, Third Energy has not created any local jobs through its approved application in North Yorkshire.

Yorkshire is well known nationally and globally for its high-quality artisan produce, local food fairs, farmers’ markets, food trails, restaurants, bakeries, butchers and world-famous spring water.

The BioVale Strategy states that it ‘relies on the production of renewable biological resources and their conversion into food, feed, bio-based products and bioenergy. It offers a multi- billion pound business opportunity.’

The impact that fracking has on the reputation of an area’s quality of food production, ability to conform to organic accreditations, volume of production etc. has been reported and discussed

¹⁰ <http://www.ourenergypolicy.org/a-comprehensive-economic-impact-analysis-of-natural-gas-extraction-in-the-marcellus-shale/>

¹¹ <http://council.lancashire.gov.uk/documents/s64259/PNR%20Appendix%206%20com%20and%20socio%20econ.pdf>

¹² <http://www.multistateshale.org/>

in Parliament; as well as in reports that have led to bans elsewhere (e.g. Victoria, Australia) where 18 jobs in agriculture have been lost for every ten unconventional gas exploration.

Alternatives

Unlike renewables, SGE provides little opportunity for community-owned or small company development. Bank of England Governor, Mark Carney, has highlighted green finance as an opportunity to boost financial stability whilst tackling climate change.¹³

Sustainable energy supply can increase sustainable growth in the UK economy if that supply is based on future energy generation demand i.e. renewable energy sources. Already, in many regions, the lifetime cost of wind and solar is less than the cost of building new fossil fuel plants, and that trend will continue.

By 2027, building new wind farms and solar fields will often be cheaper than running the existing coal and gas generators.

¹³ <https://www.theguardian.com/business/2016/sep/22/carney-backs-green-finance-to-cut-emissions-and-boost-growth>

Conclusion

The short term intensive nature of SGE, coupled with the widespread and constant requirement for new drilling, is inconsistent with the stated aims of Local Authorities and LEPs.

The impact on the local environment, distinctive quality of life, local and regional economies and economic growth, is also inconsistent with those aims.

In addition, the short and longer-term impacts on local infrastructure and additional demands on the public purse may well exceed any short-term benefits.

Calls to Action for Policy-Makers

We urge policy-makers to consider the following with regards to how SGE fits with overall plans for the Yorkshire Brand and sustainable economy:

- A regional aspiration to maintain, leverage and develop the distinctive quality of place.
 - New legislation removing the ability of local areas to affect decisions on SGE.
 - Wider impact of the volume and intensity of wells.
1. Understanding the role and impact of decisions across the region, working together and across the private, public and third sectors to coalesce action on sustainable energy provision.
 2. Building upon the distinctive quality of life offering and wonderful geography that is central to future growth and prosperity to empower and support successful and distinctive places.
 3. Growing sustainable businesses, particularly in the renewable energy, digital, bio-renewable, bioscience, agricultural technologies, low carbon assets, engineering, high value, high knowledge and data-led areas:
 - Growing international competitiveness and reputation, bringing together global thinking, supporting and driving innovation
 - Increasing innovation in small businesses, inspiring and supporting new business start ups
 - Increasing sustainable productivity by investing in workforce skills, particularly bringing in sustainable industry and businesses requiring higher level skills
 - Focusing on business and community needs
 - Enabling sustainable rural economies, utilising Yorkshires natural beauty as a driver for rural jobs
 - Supporting and protecting agriculture and food production

4. Valuing the visitor economy, culture, quality of place, and natural capital in urban and rural areas which attracts businesses, investment, skilled employees and tourism.
5. Environmental resilience and renewable energy generation
Reducing carbon emissions, through for example new energy generation with Green Energy infrastructure schemes that progress and balance environmental goals and add to distinctive quality of place.
6. Developing strong empowered communities delivering inclusion and cohesion; skilled people, better jobs and reduced inequalities.
7. Invest in infrastructure for growth
 - Investment in development of the transport infrastructure to develop well connected economies and ease congestion
 - Invest resources in place based regeneration, house building, etc. for example to tackle urban, rural and coastal unemployment

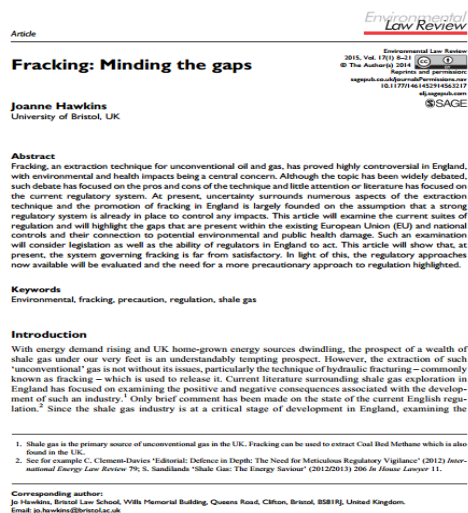
Useful Resources

Podcast and blog by Anthony Day, Sustainable Energy expert

<http://anthonyday.blogspot.co.uk>

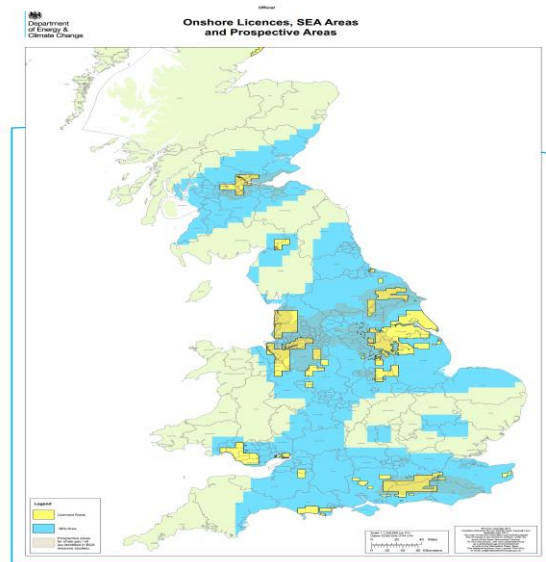
Joanne Hawkins PhD, Lecturer in Business Law, University of Leeds:

'Fracking: Minding the Gaps'



Annex 1

Click on the maps below to expand. View the area on offer for the 14th Landward Licence Round. The map highlights the areas which the British Geological Survey has identified as most prospective for shale gas and shale oil, and the areas which are currently licenced.



Please note that although the above is the most recent map placed on the former Department for Energy and Climate change site, it does not reflect current licence areas – shown below.

