



House of Commons
Welsh Affairs Committee

Energy generation in Wales: Shale Gas

First Report of Session 2014–15



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The Welsh Affairs Committee

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Committee staff

The current staff of the Committee is Marek Kubala (Clerk), Anwen Rees (Committee Specialist), Shane Murray (Senior Committee Assistant), Baris Tufekci (Committee Assistant), Jessica Bridges-Palmer (Media Officer).

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Summary

Natural gas forms a key part of the UK's energy supply, and is important not only for electricity production, but also for domestic heating, cooking and industrial production. In recent years, the UK has become increasingly dependent on gas imports and, based on current trends, the Government forecasts that nearly 70% of the UK's gas supply will be imported by 2025. We note the growing dependence of Western Europe on gas supplies from countries that may be subject to political instability. We consider it to be vital that the UK identifies new sources of gas if it is to safeguard the UK's security of supply.

Shale gas production in Wales, as elsewhere in the UK, is currently at the exploratory stage. There is currently a lack of data regarding the amount of shale gas in Wales. Should considerable reserves of shale gas be present—as industry representatives predict—it could be a decade before a viable shale gas industry is created in Wales.

Our inquiry examined the potential impacts of the development of a shale gas industry in Wales on local communities, from both an economic and environmental perspective. We conclude that shale gas represents an opportunity for Wales but that this must not be at the expense of Wales's natural environment.

The Committee's key conclusions and recommendations are:

- The UK Government and the Welsh Government should work with commercial companies and others to provide a reliable range of estimates of shale gas available in Wales. This should be published by the end of 2014.
- We recommend both the UK Government and the Welsh Government assess the overall impact of shale gas supply on the level and mix of energy produced in Wales and the UK. This should include an examination of how the combination of nuclear, hydro-power, coal, wave and solar, alongside efforts to reduce overall energy demand, impacts upon carbon emission targets.
- We encourage the Welsh Government to begin considering now how the employment opportunities presented by shale gas production could be maximised. This should include a detailed examination of the skills required by the industry and the extent that Wales already has people with those skills.
- The UK Government must provide further information about how local communities in Wales will benefit, financially or otherwise, from shale gas operations in their area.
- Both the UK Government and the Welsh Government must ensure that the regulatory and planning framework gives due weight to the traffic and noise caused by commercial shale gas operations, in addition to the visual impact and other environmental risks associated with fracking.
- The issue of treatment, transportation and disposal of wastewater is a growing concern. There is a need to ensure toxic and radioactive water is treated and not

allowed to contaminate water courses. Therefore comprehensive impact assessment and mitigation measures need to be ensured in all cases.

- We recommend that the UK Government considers the case for minimising ground-level shale gas operations in sensitive areas in Wales, such as Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, and National Parks. In its reply to this report, the Government must set out how it would ensure that such development did not compromise designated sites, in particular those in environmentally sensitive areas.
- We encourage the Welsh Government to develop a Technical Advice Note for unconventional gas.
- We recommend that the UK Government and the Welsh Government require commercial companies to pay for an independent Environmental Impact Assessment at the exploratory stage of any significant shale gas development.

In this report, **conclusions are printed in bold** and *recommendations are printed in bold italics*.

1 Introduction

1. With an abundance of natural resources, Wales can play an important role in the United Kingdom's future energy supply. Energy policy has been retained as a 'UK function' although responsibility for planning policy has been devolved to the Welsh Government.

2. Shale gas is natural gas (predominately methane) found in shale rocks. Shale gas is often referred to as an 'unconventional' gas because of the methods used to extract it from rock beds. Advances in technology—notably hydraulic fracturing or 'fracking'—over the last decade have made shale gas development economically viable. Fracking is a process whereby water, containing sand, is pumped at high pressure into the rock. The sand keeps the small fractures in the rock open while the gas is extracted. Chemicals are also added to improve the efficiency of the fracking operation.¹

3. The rapid development of shale gas resources in North America has transformed the global gas market. Shale gas is making a significant contribution to US gas production—it increased from only 2% of US production in 2000 to 14% in 2009, and is forecast to continue to increase to more than 30% by 2020.

4. Unconventional gas development in the UK is at an early stage. As in England, planning permission has been given at a number of sites in Wales for exploratory drilling for shale gas. Industry estimates of shale gas resources in the UK as a whole have increased markedly over the last few years. Estimates vary considerably, but one report has estimated that huge shale gas resources in South Wales could be worth up to £70 billion at current market prices.²

Our inquiry

5. Given the possible development of a shale gas industry in Wales, we launched an inquiry in July 2013 to examine the potential economic and environmental impact of exploration and commercial extraction of shale gas in Wales. Shale gas has been examined by various other bodies in recent years, including the House of Commons Energy and Climate Change Committee and the House of Lords Economic Affairs Committee, but our focus in this Report is specifically on Wales.

6. We took oral evidence from academics, environmental organisations, industry representatives, regulatory and monitoring authorities, the Welsh Government and the UK Department of Energy and Climate Change (DECC). A full list of witnesses can be found at the end of this Report. For this inquiry we also undertook two visits. In October 2013 we visited Dragon LNG and Milford Haven port to discuss the role of LNG (Liquefied Natural Gas) within the UK's long-term energy strategy. We also visited Cuadrilla's shale gas site at

¹ British Geological Survey, Shale Gas: BGS Research, 2013

² Eden Energy, UK gas resources, 2012

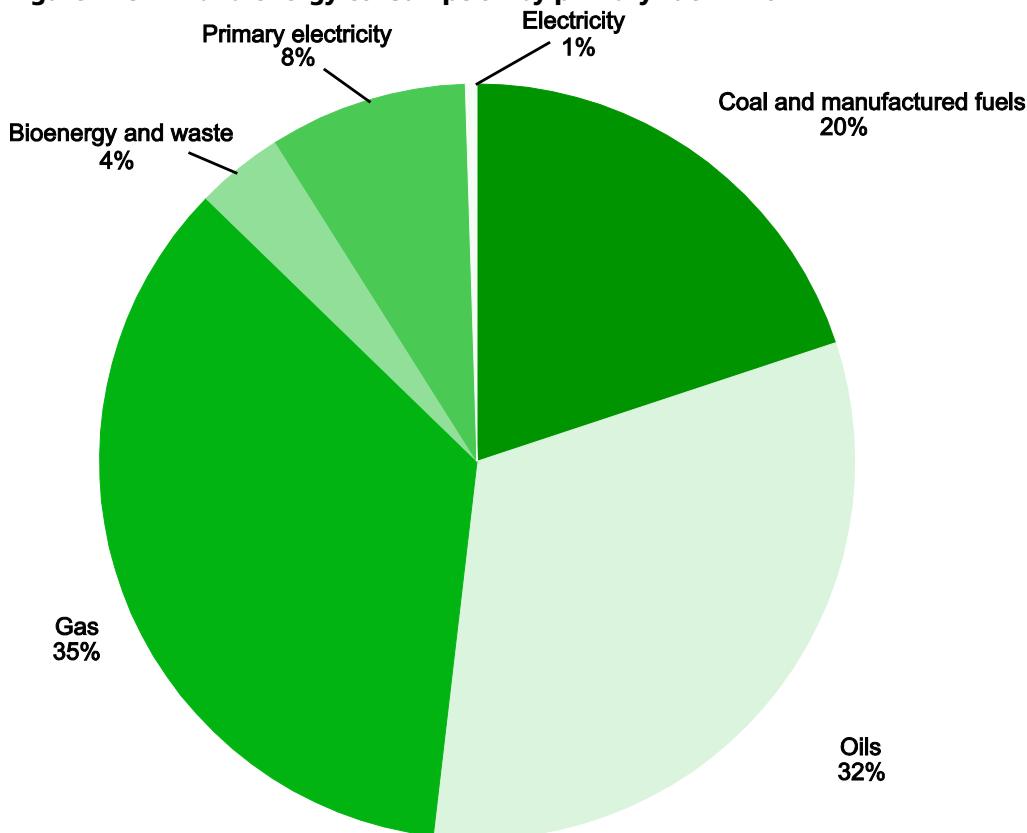
Elswick, near Blackpool, in February 2014. We are extremely grateful to those who provided oral and written evidence and for those we met during our visits.

2 Shale gas resources in the UK

Importance of gas to the UK's energy needs

7. Natural gas forms a key part of the UK's energy supply, with annual UK gas consumption of approximately 3 trillion cubic feet (tcf). As shown in Figure 1, 35% of all energy consumed in 2012 came from gas.³ While the most high-profile use of gas is in electricity generation, witnesses highlighted the role that gas has to play in domestic heating, cooking and industrial production: "over two thirds of UK gas demand has nothing to do with electricity generation".⁴ Ron Loveland, the Welsh Government's Energy Advisor, told us that gas was the main source of heating energy in Wales.⁵

Figure 1: UK Inland energy consumption by primary fuel in 2012



Source: Department of Energy and Climate Change

8. In recent years, the UK has become increasingly dependent on gas imports (see Figure 2).⁶ UK-sourced natural gas had come predominately from the North Sea since the early 1970s and reached a peak in 2000, when the UK had been self-sufficient in gas (that is, produced 100% of the gas it needed).⁷ By 2004, however, decreasing production led to the

³ Department of Energy and Climate Change, Digest of UK Energy Statistics

⁴ Cuadrilla (ESG0031) para 1.3

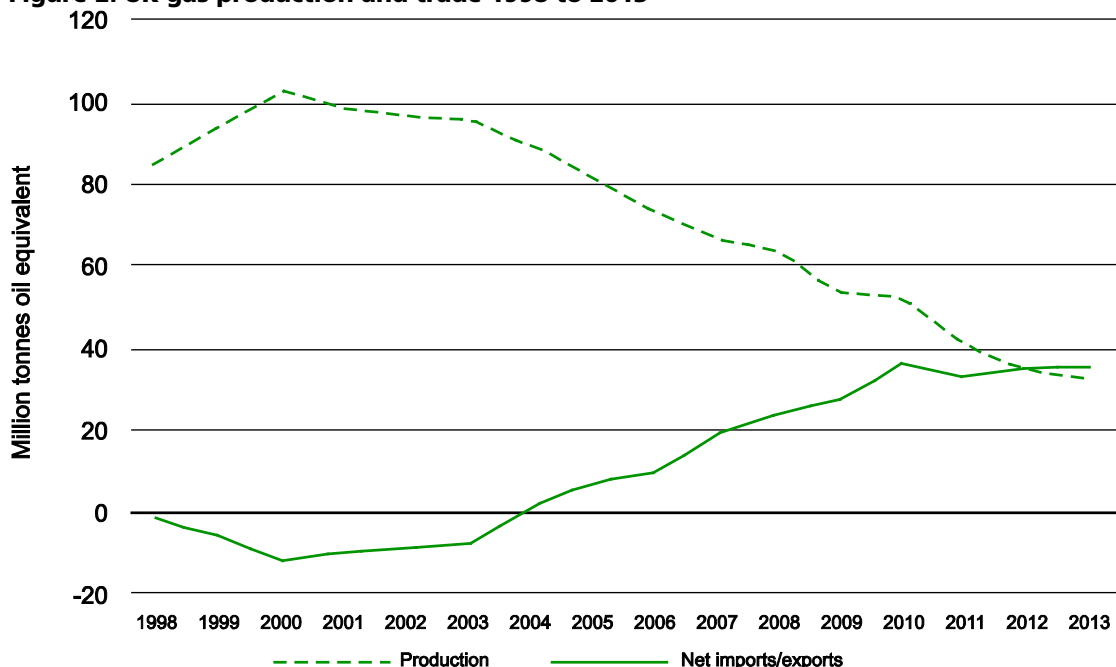
⁵ Q187

⁶ Q274

⁷ Q134

UK becoming a net importer of gas with net imports of gas in 2012 accounting for half (50%) of supply. This imbalance is forecast to continue, with DECC forecasting imports will account for nearly 70% of the UK's gas supply by 2025.⁸

Figure 2: UK gas production and trade 1998 to 2013



Source: Department of Energy and Climate Change

9. The UK imports natural gas by pipelines from Norway, Belgium and the Netherlands, as well as liquefied natural gas (LNG) by sea. Witnesses believed that an increasing reliance on imports generated energy security issues and made the UK more vulnerable to volatility in global energy prices. During our visit to Dragon LNG at Milford Haven Port we heard how the nuclear disaster in Fukushima in 2011 had increased international gas prices by 50%.

10. Most witnesses did not believe the UK could remove gas from the energy mix in the short term and thought that natural gas would continue to supply most of the UK's heating demands. DECC confirmed that gas would continue to be a "crucial part of our energy mix to 2030 and beyond".⁹ Professor Hywel Thomas from Cardiff University told us:

... it is a question of where we might get our gas rather than whether we will have gas for the next 30 years.¹⁰

How much shale gas is there?

11. Shale gas has been known about for decades, but it is only recently that its importance and full potential are beginning to be realised, driven by advances in technology such as

⁸ Department of Energy and Climate Change, UK Oil and Net Gas Production and Demand

⁹ Department of Energy and Climate Change (ESG0014)

¹⁰ Q4

horizontal drilling and hydraulic fracturing. World shale gas reserves are estimated at 450,000 billion cubic metres (bcm) with large amounts of reserves available in North America and Western Europe.¹¹ Shale gas exploitation is particularly advanced in the USA.

Shale gas exploration in USA

Shale gas has been produced in the USA for several decades. However, advances in horizontal drilling and hydraulic fracturing led to a rapid growth in the production of shale gas after 2008; between 2005 and 2010, shale gas production increased by more than 45% per year.¹² The International Energy Agency (IEA) announced in 2009 that unconventional gas had “changed the game” in North America and elsewhere.

In 2012, shale gas constituted 35% of total US gas production.¹³ The US Energy Information Administration has estimated that shale gas will account for 50% of total US gas production by 2040.¹⁴

12. The potentially “recoverable resources”¹⁵ of shale gas in the UK are uncertain, although industry estimates of shale gas resources have increased markedly over the last few years. In 2013, DECC commissioned the British Geological Survey (BGS) to undertake a study to examine the Bowland Shale in the north of England.¹⁶ The BGS estimated that there could potentially be some 1,300 tcf of shale gas recoverable resource in the area—more than twice as much in the north of England than was previously thought to exist across the entire UK. However, DECC recommended caution about these figures:

At present, neither DECC nor the industry have sufficient engineering, geological or cast information to make a meaningful estimate of recoverable reserves.¹⁷

13. There is very little information regarding the amount of shale gas in Wales. Such exploratory work as has taken place has been undertaken by private companies. In 2011, US consultants RPS Group, working for Eden Energy, estimated that parts of South Wales could hold 34 tcf of gas, of which 12.8 tcf was recoverable. If correct, the amount is equivalent to four years of the UK’s gas consumption.

14. Commercial energy companies such as Coastal Oil and Gas have an ongoing exploration drilling programme to sample and test a number of sites in Wales. UK Onshore Gas Ltd told us that there was “immense potential for commercial

¹¹ “Frack responsibly and risks – and quakes – are small”, New Scientist, January 2012

¹² International Energy Agency, Golden Rules for a Golden Age of Gas, 2012

¹³ http://www.eia.gov/dnav/ng/ng_prod_sum_dcu_NUS_a.htm -for US natural gas production figures

¹⁴ US Energy Information Administration, Annual Energy Outlook 2013, 2013

¹⁵ Recoverable resources is the estimated volume of gas that may be recovered from the total resource. Reserves are the fraction of the potentially recoverable resources that are deemed to be commercially recoverable.

¹⁶ The Carboniferous Bowland Shale gas study: geology and resource estimation

¹⁷ Department of Energy and Climate Change (ESG0014)

unconventional gas production in Wales”.¹⁸ It explained that the geological layers underlying the coal layers in Wales—particularly the Namurian measures, Lower Limestone Shale, Devonian Sequence, and the Silurian and Ordovician layers—could have potential to produce unconventional gas. Professor Hywel Thomas agreed that the geology of Wales was “quite rich” for potential shale gas.¹⁹

15. Gas will continue to play a significant part in the UK’s energy mix for the foreseeable future. In addition to using other sources of energy, it is therefore vital that the UK identify new sources of gas if it is to safeguard the UK’s security of supply.

16. We recognise that there is a lack of data regarding the amount of shale gas in Wales. It is therefore difficult to estimate the extent of shale gas resources in Wales and the potential impact shale gas may have on the UK’s dependence on imports.

17. We recommend the UK Government and Welsh Government work with commercial companies and others to provide a reliable range of estimates of shale gas available in Wales. This should be published by the end of 2014.

Development of a shale gas industry in Wales

18. Shale gas production in Wales, as elsewhere in the UK, is currently at the “exploratory” phase. During this phase of the process, commercial companies drill vertical wells to verify the presence of gas, characterise it and determine whether it could be economically produced. This is then followed by the “appraisal” phase—where companies would decide whether to invest—and finally the “production” phase. Further detail on the different stages of development is set out in Appendix A.

19. We were keen to learn how quickly a shale gas industry could develop in Wales and how extensive it might be, provided reasonable reserves of shale gas are identified during the current exploratory phase.

How long to develop an industry?

20. UKOOG (United Kingdom Onshore Operators Group)²⁰ estimated that the exploration phase in the UK would take two to three years while 20 to 40 exploration wells were drilled. Seven companies in Wales, holding 23 licences in total, are currently undertaking exploratory drilling for gas (this includes conventional gas as well as shale gas and coal-bed methane).²¹

¹⁸ UK Onshore Gas Limited (ESG0006) para 10

¹⁹ Q16

²⁰ United Kingdom Onshore Operators Group (UKOOG) is the representative body for the UK onshore oil and gas industry

²¹ Q287

21. Chris Faulkner, Chief Executive Officer of Breitling Energy Companies from the USA,²² told us that the cycle from the beginning of the process until commercial production was approximately 10 years.²³ Ron Loveland from the Welsh Government said that the time scale was difficult to predict: he believed a viable industry could be established in Wales in five to 15 years.²⁴

Extent of shale gas production

22. Some witnesses identified specific barriers in Wales to shale gas development, such as population density and the number of wells that would be needed. Although large parts of Wales are rural, it includes many natural parks, small villages, protected environmental sites and areas of natural beauty. Professor Richard Davies from Durham University believed that “tens of thousands of wells” would be needed to drill economically for shale gas (in the UK).²⁵ Thousands of wells, he believed, would be required to produce as much gas as a large North Sea field. He believed that “it was necessary to ask yourself how many wells are economic and can be drilled in the social environment we are in”.²⁶

23. Industry representatives agreed that a “tremendous” number of wells would have to be drilled.²⁷ However, Breitling Energy Companies emphasised that population density was not a barrier to development of shale gas because it was possible to drill “24 or 30 wells from one single five-acre pad site”²⁸ (known as multi-well pads), thereby increasing the efficiency of production and significantly reducing the visual impact at the surface. Dart Energy said that 1,000 wells could exist on 100 pads of 400 acres using 250,000 acres of reservoir:

... you are looking at a land take of some 0.0002%; it is a very small amount of land, and for 1,000 wells and 400 acres, that is equivalent to three solar farms [...] and the energy return is much greater.²⁹

24. Cuadrilla told us that advances made in drilling horizontally meant that it was possible to drill several laterals from only one surface drilling pad.³⁰ This meant that wells no longer needed to be built immediately on top of shale gas deposits, but could be situated several miles away. This had been done successfully in the USA, where there were large-scale shale gas developments in urban areas in Texas and Los Angeles.

²² Breitling Energy Companies is based in Dallas, America. It is involved in oil and gas exploration, production and investment

²³ Q235

²⁴ Q197

²⁵ Q7

²⁶ Q8

²⁷ Q224

²⁸ Q225

²⁹ Q115

³⁰ Q113

25. The Rt Hon Michael Fallon MP, Minister of Energy, was unable to tell us the number of wells that would be required to drill economically for shale gas in the UK. But, as it was possible to have a significant number of wells on a pad, he did not foresee thousands of locations being used: “You can think in terms of a number of locations, each with a significant number of wells”.³¹

Shale Gas versus renewables

26. Both the UK Government and the Welsh Government are committed to tackling climate change. The UK Government is committed under the Climate Change Act 2008 to reduce the UK’s greenhouse gas emissions by at least 80% (from the 1990 baseline) by 2050. It also has international commitments under the Copenhagen Accord and Cancun Agreements. The Welsh Government has committed to achieving at least a 40% reduction in all greenhouse gas emissions by 2020 (against a 1990 baseline).

27. Both governments have undertaken to increasing renewable sources of energy as a means to meet their emissions targets. The burning of natural gas to produce energy releases around half the carbon emissions from those needed to produce the same amount of energy from coal. In the USA, the move from coal to gas in power generation had helped reduce emissions by 200 million tonnes (Mt).³² However, witnesses disagreed about whether shale gas production was compatible with meeting emissions targets and whether government would be better focussing on developing cleaner sources of energy, such as renewables.

28. UKOOG stated that the use of shale gas could reduce the UK’s overall carbon emissions, as gas would displace coal in the energy mix. Cuadrilla believed that an energy mix was necessary because renewables could not provide the UK’s full energy needs. Currently 4% of current total energy used in the UK comes from renewables³³ and Cuadrilla believed that the UK was not in a position where gas could be replaced by renewables in the near future.³⁴

29. Some witnesses believed that shale gas and renewable energy sources should be developed in parallel in order to meet climate change targets. The Welsh Government considered shale gas to be a transition fuel, as Wales moved towards a low-carbon economy.³⁵ Ron Loveland, the Welsh Government Energy Advisor, said that the issue should not be approached from the absolutist perspective of “renewables good, gas bad” because this was not economically or socially responsible for Wales.³⁶

30. Environmental organisations, however, did not agree that shale gas would necessarily displace dirtier coal. Friends of the Earth Cymru said: “there is no example of a fossil fuel

³¹ Q265

³² International Energy Agency, Redrawing the Energy Climate Map, 2013

³³ Department of Energy and Climate Change, UK Renewable Energy Roadmap Update 2013, November 2013

³⁴ Q134

³⁵ Q183

³⁶ Q204

having displaced another fossil fuel. Every fossil fuel that is exploited is additional”.³⁷ It noted that US exports of coal had increased while the production of shale gas had developed: “coal is not displaced but used elsewhere”.³⁸ WWF told us that there was a need to move towards a “low-carbon power system” without reliance on shale gas: “the UK is not faced with a false choice between a heavy reliance on coal, on the one hand, or a heavy reliance on shale gas, on the other”.³⁹

31. The Tyndall Centre questioned whether shale gas could act as a “bridge” to a low-carbon economy: “if you are serious about climate change, gas cannot be a large part of your future”.⁴⁰ It also expressed concern that exploitation of shale gas could undermine investment in renewable energy. WWF agreed that shale gas development risked “undermining the long-term policies we need to attract a significant amount of investment in low-carbon infrastructure”.⁴¹

32. In evidence to the Liaison Committee in 2014, the Prime Minister said that it was “irrational” to oppose shale gas simply because it was another carbon-based fuel in the UK’s energy mix: “surely it is better for us to extract shale safely from our own country, rather than pay a large price for having it imported from around the world”.⁴² The Secretary of State for Energy and Climate Change, the Rt Hon Edward Davey MP, has said that shale gas is part of the answer to climate change as a “bridge in our transition to a green future”.⁴³

33. Investing in renewable energy technology will be an important factor in the UK becoming a lower carbon economy. The development of shale gas in Wales and the rest of the UK should not be done to the detriment of the development of renewable energy technology.

34. We recommend both the UK Government and the Welsh Government assess the overall impact of shale gas supply on the level and mix of energy produced in Wales and the UK. This should include an examination of how the combination of nuclear, hydro-power, coal, wave and solar, alongside efforts to reduce overall energy demand, impacts upon carbon emission targets.

³⁷ Q55

³⁸ Q55

³⁹ Q59

⁴⁰ Q2

⁴¹ Q55

⁴² Oral evidence taken before the Liaison Committee on 14 January 2014, HC (2013-14) 939, Q72 [David T.C. Davies]

⁴³ Department of Energy and Climate Change, *The Myths and Realities of shale Gas Exploration*, 9 September 2013

3 Impacts of shale gas development on local communities

35. In this Chapter we examine some of the potential impacts of the development of a shale gas industry on local communities in Wales, from both an economic and environmental perspective.

Economic impacts

36. Witnesses told us about three potential economic implications of shale gas production in Wales: job creation; lowering gas prices; and community benefits. We cover each of these below.

Job creation

37. In the USA, the development of the shale gas industry is estimated to have created many jobs. More than 600,000 jobs were estimated to be supported by the shale gas industry in 2010. This is expected to increase to nearly 870,000 by 2015, and contribute more than \$118 billion in GDP to the economy.⁴⁴ Chris Faulkner from Breitling Energy Companies told us that wages in the industry were “very healthy” and had reduced unemployment in some areas to less than 2%.⁴⁵

38. Job creation estimates in the UK and Wales remain uncertain because the size of a potential shale gas industry is not yet known.⁴⁶ However, the Institute of Directors estimated that shale gas production in the UK for the first 100 sites of about two hectares each (about the size of a rugby pitch) could support up to 74,000 jobs, often in regions with high unemployment and in sectors such as manufacturing.⁴⁷

39. Cuadrilla believed that “tens of thousands” of jobs could be created across the UK, including Wales. These would require people with a range of skills, from geologists and engineers, to less-skilled workers. Jobs would also be created in the supply chain surrounding the industry.⁴⁸ The Prime Minister has estimated that “shale gas could bring 74,000 jobs to the UK”.⁴⁹

40. Professor Anderson of the Tyndall Centre pointed out that a shale gas industry in Wales would not necessarily provide many local jobs. He compared the situation to the petrochemical industry in North Wales, where the Point of Ayr gas terminal had not created jobs for local people, but instead staff had been brought in from Scotland and the

⁴⁴ HIS Global Insight, The Economic and Employment Contributions of Shale Gas in the United States, December 2011

⁴⁵ Q239

⁴⁶ Q28

⁴⁷ Institute of Directors, Getting shale working, May 2012

⁴⁸ Q28

⁴⁹ <http://www.bbc.co.uk/news/uk-politics-25705550>

North East of England: “when you ask the employment question, you need to ask it in the context of the local skill set that is actually there and to ask whether or not the industries that would be doing it would use that local skills set”.⁵⁰

41. Education and skills policy is devolved to the Welsh Government. Ron Loveland from the Welsh Government recognised that the initial development of a shale gas industry would require skilled workers from around the UK and abroad, but that the Welsh Government would develop the skills of the local population, as it was doing in respect of the nuclear sector in North Wales.⁵¹

42. It is not yet clear whether shale gas has the potential to develop into a lucrative industry in Wales but it is possible that it could provide jobs across a wide range of skills sets. If so, it is imperative that as many local people have, or quickly obtain, the skills required for these new positions.

43. We encourage the Welsh Government to begin considering now how the employment opportunities presented by shale gas production could be maximised. This should include a detailed examination of the skills required by the industry and the extent that Wales already has people with those skills.

Gas prices

44. Dual fuel bills for the average household have increased by more than 40% between 2006 and 2013, mostly due to an increase in the wholesale price of natural gas. In Wales, the average proportion of household expenditure on energy bills in Wales has risen from 4.3% in 2005–2007 to 5.4% in 2010–2012.⁵²

45. There has been much made of the large decline in the USA gas price as a result of the increase in shale gas production. Gas prices have decreased from nearly \$7/MMBtu⁵³ in 2007 to below \$3/MMBtu by the end of 2012.⁵⁴ However, the closed US gas market is very different from the UK gas market, and shale gas has increased competition between suppliers in the USA.

46. The consulting and engineering firm Pöyry⁵⁵ estimated that gas and electricity prices in the UK could reduce by as much as 4%, assuming that shale gas provided 50% of the UK’s underlying indigenous gas production. UKOOG estimated that a 4% reduction in gas prices would provide an annual saving to the UK economy of £800 million.⁵⁶ However, it

⁵⁰ Q28

⁵¹ Q211

⁵² Office for National Statistics, Family Spending Survey

⁵³ Natural gas is measured in MMBtu’s. 1 MMBtu = 28.263682 m³ of natural gas at defined temperatures and pressure.

⁵⁴ http://www.erec.org/fileadmin/erec_docs/Documents/EREC_Factsheet_on_Affects_of_Shale_Gas_on_RES.pdf

⁵⁵ Pöyry is a consulting and engineering firm focusing on the energy, forest industry and infrastructure and environment sectors.

⁵⁶ United Kingdom Onshore Operators Group (ESG0032)

believed gas prices could reduce much further if significantly more shale gas was produced than estimated.

47. The majority of our witnesses, however, believed that shale gas production in the UK would have a negligible impact on gas prices. Professor Anderson from the Tyndall Centre explained that the UK's inclusion in the European Gas Network,⁵⁷ meant that shale gas would not significantly reduce energy bills in the UK. Cuadrilla acknowledged that shale gas production in the UK was likely to keep prices stable, or “prevent the upward pressure on prices”, in the event of huge European-wide production.⁵⁸

48. In September 2013, the Secretary for Energy and Climate Change, said that Britain's inclusion in the European Gas Network meant it was “far from clear that UK shale gas production could ever replicate the price effects seen in the US”.⁵⁹

49. In the current circumstances, it appears unlikely that shale gas production could significantly reduce household gas prices due to the UK's inclusion in the European Gas Network.

Financial incentives for local communities

50. In June 2013, the shale gas and oil industry introduced a package of “community benefits” for communities near or next to shale gas sites. Supported by the UK Government, the industry agreed to provide local communities with £100,000 and 1% of revenues of commercial production.⁶⁰ Companies pledged to engage with communities at an early stage, prior to any application for planning permission and then again at each stage of development. UKOOG estimated that 1% of all gas revenue could amount to over £1.1 billion in a 25 year period or £5–10 million per site. The UK Government announced in January 2014 that local communities would keep 100% of business rates from shale gas sites, double the 50% currently received.

51. Witnesses highlighted the need for continuous communication with communities near to shale gas sites. Chris Faulkner believed it was important to have “buy-in” from communities and for people to benefit financially from shale gas development in their local area.⁶¹ This had helped the shale gas “revolution” in the USA. The Welsh Government also recognised the need for significant community benefits.⁶²

52. Cuadrilla said that they engaged with the local community near their site in Lancashire, keeping them informed of developments and holding drop-in sessions. It said that regular

⁵⁷ The European Gas Network is a number of gas pipelines across Europe designed to provide EU member states with natural gas.

⁵⁸ Q107

⁵⁹ Department of Energy and Climate Change, *The Myths and Realities of Shale Gas Exploration*, 9 September 2013

⁶⁰ The Government has launched a consultation on increasing the voluntary community payment by £20,00 for those living above horizontal pipes under-ground: “Government proposals to simplify deep underground access for shale gas and geothermal industries”, Department of Energy and Climate Change press release, 23 May 2014

⁶¹ Q23

⁶² Welsh Government (ESG0026) para 18

opinion polling in Lancashire showed an increase in the number of people in favour of the exploration of shale gas.⁶³ The UK Government agreed that it was the responsibility of the industry to make their plans clear to local communities.⁶⁴

53. It is vital that commercial companies seeking to exploit shale gas in Wales engage positively with local communities. Communities should also benefit financially from shale gas operations in their areas.

54. *In its response to this Report, we ask the Government to provide further information about how local communities in Wales will benefit, financially or otherwise, from shale gas operations in their area.*

Environmental impacts

55. Concerns have been expressed that the extraction of shale gas through the fracking process may be detrimental to the local environment and to local communities. Areas of possible environmental concern relate to the large volume of water used for hydraulic fracturing, the risk of water contamination from the process, the emissions associated with unconventional gas, the risk of seismic activity, and increased traffic movement to production sites. Some of these have been covered extensively in recent reports by the Energy and Climate Change Committee,⁶⁵ and the House of Lords Economic Affairs Committee,⁶⁶ and we did not believe it was useful or appropriate for us to cover each in detail.

56. We focussed on three local environmental impacts which are of specific concern for local communities in Wales: traffic and noise pollution; risk of seismic activity; and polluted wastewater. We cover each of these below.

Traffic and noise pollution

57. Once a site is deemed commercially viable, the company prepares the shale gas pad and begins drilling the well bore. Witnesses told us that this preparation phase was the most visible and disruptive in the process, mainly due to vehicles transporting materials, water and gas to and from extraction sites, as well as drilling noise. WWF said that shale gas operations in Wales would have an impact on “land fragmentation, noise, visual impacts, traffic movements and other loss of amenities to local populations”.⁶⁷

58. Industry representatives acknowledged that there would be disruption as the drilling and fracture equipment arrived at the site, and that a large number of trucks would be

⁶³ Q129

⁶⁴ Q279

⁶⁵ Energy and Climate Change Committee, Seventh Report of Session 2012-2013, The Impact of Shale Gas on Energy Markets HC 785

⁶⁶ House of Lords Economic Affairs Committee, Third Report of Session 2013-2014, The Economic Impact on UK Energy Policy of Shale Gas and Oil, HL Paper 172

⁶⁷ WWF-UK (ESG0012) para 13

required to deliver water to the site too. Cuadrilla said there could be “disruption for several months [...] it might be up to two years”:⁶⁸

It is a relatively short term disruption, but it is disruption and it could be a significant amount of lorries for a short time. For a typical well site, you might have 15 lorries a day on average. You might have peaks that are higher than that, or you have might have fewer lorries.⁶⁹

59. Cuadrilla recognised that reducing traffic would be critical to the success of shale gas development in the UK. However, it also said it was important to put the traffic movements into context and compared them to the approximately 370,000 truck journeys each year in rural areas to transport milk produced in the UK by dairy farmers.⁷⁰

60. Industry representatives hoped that new technology would reduce the numbers of truck movement in the future. Coastal Oil and Gas said it was trying to establish a “closed-loop system of water”, which would enable the company to drill for water on-site: “it will not get rid of [tanker movements] all together, but you are not going to see, in the future, trains of water tankers coming in and out of drill sites”.⁷¹ Chris Faulkner told us that “pad drilling”—where several wells are located close to each other on one site—had reduced the number of truck movements in the USA.⁷²

61. The Planning Officers Society for Wales told us that the planning process could mitigate some of these negative impacts. Traffic management plans could be used during particularly busy times of the season: “things like landscape character, visual impact and impact from traffic, noise and dust are all matters that we can deal with at the evidential level”.⁷³

62. The disruption caused by traffic and noise pollution during shale gas development and extraction is a significant issue. We have concerns that large numbers of lorry movements to and from shale gas sites, as well as the noise at those sites, will have a negative impact on the Welsh countryside and the quality of life for local communities.

63. We call on the UK Government to outline in its response an analysis of the Welsh water resources required to service the unconventional gas industry in other parts of the UK.

64. The UK Government and the Welsh Government must ensure that the regulatory and planning framework gives due weight to the traffic and noise caused by commercial shale gas operations, in addition to the visual impact and other environmental risks associated with fracking.

⁶⁸ Q117

⁶⁹ Q117

⁷⁰ Institute of Directors, Getting shale working, May 2013

⁷¹ Q115

⁷² Q242

⁷³ Q176

Seismic activity

65. On average, the UK experiences seismic activity of magnitude 5 (felt by everyone nearby) every 20 years and of magnitude 4 (felt by many people) every three to four years. The British Geological Survey considers an earthquake to be “significant” if it measures above 4 and an earthquake measuring below 3 is generally not felt at the surface and does not tend to cause damage.⁷⁴

66. In the spring of 2011 two earthquakes with magnitudes 2.3 and 1.5 occurred in the Blackpool area. These earthquakes were suspected to be linked to hydraulic fracture treatments at Cuadrilla’s Preese Hall well site. The Government subsequently placed a moratorium on fracking until December 2012.

67. During the moratorium period, the UK Government tasked the Royal Society and the Royal Academy of Engineering to review the scientific and engineering evidence around the risks of hydraulic fracturing. Professor Hywel Thomas, a member of the working group, confirmed to us in evidence their findings that the risk of seismic activity as a result of hydraulic fracturing was “relatively low”.⁷⁵ The emerging consensus, he said, that the magnitude of seismicity induced by hydraulic fracturing was no greater than level 3.⁷⁶

68. Industry operators, such as Coastal Oil and Gas, agreed that there was a low risk of seismic activity from shale gas exploration and production. It stated that seismic activity had gone unnoticed at the height of coalmining in Wales: in 1974, for example, there were 64 active coal mines in South Wales consisting of up to 17 miles of roadway underground.⁷⁷

69. Witnesses also said that new technology and processes would prevent a repeat of the seismic activity that occurred at Preese Hall. A “3D survey” was now the norm before undertaking work: in the case of Preese Hall, Cuadrilla said that the survey would have shown up the fault. A new traffic light system, which used real-time monitoring, also meant that operations would be halted if seismic events of magnitude 0.5 ML or above were detected.

70. We understand the concerns of the public about the risk of seismic activity as a result of fracking. The evidence suggests, however, that this is a low risk. The development of new technologies and safety processes by the industry in recent years has further reduced the risk of serious seismic activity. However, all parties need to remain vigilant. Any persistent occurrences of serious seismic activity in the UK would seriously damage public confidence in shale gas exploitation.

⁷⁴ Professor Hywel Thomas (ESG0029)

⁷⁵ Q39

⁷⁶ Professor Hywel Thomas (ESG0029)

⁷⁷ Q123

Wastewater management

71. After being injected into the well, part of the fracturing fluid is returned to the surface as “flowback” over a period of several weeks. Flowback water contains dissolved solids from the reservoir and chemicals used in fracking; it is estimated that between 15% and 80% of the input can return to the surface.⁷⁸

72. Some witnesses expressed concern about how this wastewater would be captured, treated and disposed. The Wales Green Party told us that existing treatment plants had “nowhere near capacity” to handle the quantities of wastewater that full-scale production would generate.⁷⁹ Professor Thomas believed this was an important area that needed to be addressed.⁸⁰ **The issue of treatment and disposal of wastewater is a growing concern. There is a need to ensure toxic and radioactive water is treated and not allowed to contaminate water courses. Therefore comprehensive impact assessment and mitigation measures need to be ensured in all cases.**

73. Industry representatives told us that they would seek to recycle wastewater wherever possible, in order to minimise water usage.⁸¹ Coastal Oil and Gas told us that the development of a “closed-loop system” for water (see para 60), would involve cleaning the wastewater on-site, and then reusing or discharging it on-site.⁸²

74. Natural Resources Wales (NRW) told us that operators would be asked to provide a waste management plan in respect of the disposal of wastewater from sites. This would be monitored through a combination of audits, spot checks and site visits. It considered that environmental regulations in this area were “robust and well understood”.⁸³

75. We recommend that the UK Government, the Welsh Government and commercial companies work together to assess the extent of facilities currently available in Wales for the safe disposal of wastewater and to identify improvements that will need to be made as the shale gas industry develops.

⁷⁸ Tyndall Centre for Climate Change Research, Shale gas: a provisional assessment of climate change and environmental impacts, January 2011, page 11

⁷⁹ Wales Green Party (ESG 01)

⁸⁰ Q44

⁸¹ Cuadrilla Resources (ESG 31); Q115

⁸² Q115

⁸³ Environment Permitting Regulations 2010, Q92; Q63.

4 Regulatory and planning regime

76. The onshore oil and gas industry in Wales is regulated by a number of statutory bodies including DECC, NRW, the Health and Safety Executive (HSE), and local authorities. The industry is also governed by European legislation. Commercial companies need to obtain several licences or permissions to drill for shale gas, including:

- Petroleum exploration and development licences (PEDLs), issued by DECC;
- Planning permission, granted by local authorities, based on planning guidance by the Welsh Government;
- Any access rights from landowners;
- Up to 11 environmental permits or consents from Natural Resources Wales;
- Health and Safety regulations and permits (mainly related to design, construction and operation of gas wells) from the Health and Safety Executive; and
- Consent to drill and frack from DECC.

The regulation process is shown in Appendix B.

77. During the inquiry we focused on three areas of the regulatory and planning regime: PEDLs; planning guidance to local authorities in Wales; and the need for environmental impact assessments.

Petroleum exploration and development licences

78. DECC issues onshore licences called PEDLs, which confer exclusivity to a company to explore for and later develop shale gas in an area.⁸⁴ PEDLs do not include permission for fracking itself. During licensing rounds, companies apply for PEDLs for unlicensed blocks of land measuring 10km by 10km blocks, corresponding to the Ordnance Survey grid. The next licensing round—the 14th—is scheduled for mid-2014.

79. The UK Government decides which area of land can be licensed to companies. In December 2013, DECC published an environment report for consultation regarding the areas for which licences may be granted. No sensitive areas were ruled out of the draft licensing plan for the 14th round of onshore hydrocarbon licenses.

80. Environmental organisations called for shale gas development to be directed away from particularly sensitive areas. Friends of the Earth told us that areas such as “national parks,

⁸⁴ PEDLs are not specific to shale gas – they may have been sought by a company intending to explore for conventional sources.

Areas of Outstanding Natural Beauty and sites protected under Habitats and Birds Directives” should be exempt from shale gas exploration and production.⁸⁵

81. The Energy Minister stated that he expected strong demand for the licensing round: “We could be doubling the amount of onshore licences in this round,” adding that the Government expected to issue 50-150 licences.⁸⁶ He has also suggested that shale gas development should not be confined to particular areas of the UK: “Shale exists under towns, villages and countryside. Shale gas is everywhere and could well be in quantity under attractive areas of the country as well as industrial areas”.⁸⁷

82. Wales includes many areas of natural beauty and heritage. As a shale gas industry develops in Wales, careful consideration should be given to the proximity to, and the potential impacts on, areas of natural beauty and sites designated for their ecological value.

83. We recommend that the UK Government considers the case for minimising ground-level shale gas operations in sensitive areas in Wales, such as Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, and National Parks. In its reply to this report, the Government must set out how it would ensure that such development did not compromise designated sites, in particular those in environmentally sensitive areas.

Planning guidance

84. The planning system plays a central role in the regulation of shale gas activities. The Welsh Government is responsible for setting the overall framework of the planning system. It provides a series of Technical Advice Notes (TANs) to support specific policy areas. These guide local authorities (acting as Minerals Planning Authorities) when making planning decisions. Local authorities are responsible for granting planning permission for the location of shale gas wells and well pads, but the Welsh Government has not produced a TAN for unconventional gas.

85. Some of our witnesses criticised the lack of a TAN to assist local authorities in Wales in taking decisions on unconventional gas development. Friends of the Earth Cymru suggested that the Welsh Government did not “want the responsibility or the accountability” in case there was local opposition to shale gas projects.⁸⁸ It believed that the Welsh Government had been “absolutely negligent” in terms of the planning framework that they had applied to shale gas and unconventional gas.⁸⁹ The Planning Officers Society for Wales told us that the lack of guidance for Welsh planning authorities should be addressed as a priority.⁹⁰

⁸⁵ Natural Resources Wales (ESG0017), RSPB (ESG0018), Friends of the Earth (ESG0015)

⁸⁶ “Britain to launch shale licensing round next summer”, Reuters, 17 December 2013

⁸⁷ “The South East must accept fracking”, The London Evening Standard, 31 July 2013

⁸⁸ Q68

⁸⁹ Q85

⁹⁰ Planning Officers Society for Wales (ESG0035)

86. In England, the Department for Communities and Local Government (DCLG) produced the equivalent of a TAN for onshore oil and gas in July 2013.⁹¹ The Planning Officers Society for Wales told us that local planning authorities in Wales dealing with exploratory wells were referencing the English guidance. It highlighted the need for consistency in Wales in the handling of planning applications: “I think the DCLG guidance, if we adopted something similar to that, would give that consistency”.⁹²

87. The Welsh Government disagreed that it had been negligent in not producing a TAN. Ron Loveland told us that the guidance and regulations available under current legislation, such as Minerals Planning Policy Wales 2001, were very similar to the guidance promoted by DCLG for English local authorities.

88. It is inherently unsatisfactory that the Welsh planning authorities are looking at guidance that has been promulgated only in England and applying it in Wales. We believe that a Technical Advice Note for unconventional gas would assist local planning authorities making planning application decisions for shale gas exploration and extraction.

89. We encourage the Welsh Government to develop a Technical Advice Note for unconventional gas.

Environmental Impact Assessment

90. Developers are sometimes legally required to undertake an Environmental Impact Assessment (EIA) to assess the likely environmental impacts of a proposed development. Individual shale gas well pads, at least at the exploratory stage, do not usually require an EIA because current UK regulations exempt developments under one hectare. Shale gas operations at the production stage do require an EIA because they exceed one hectare in size.

91. Some witnesses expressed concern about the fact that shale gas development at the exploratory stage did not generally require an EIA, and argued that it should be mandatory for all shale gas operations.⁹³ A report by the Royal Society and Royal Academy of Engineering in 2012 advocated the need for an EIA at the exploratory stage of any shale gas development.⁹⁴ Friends of the Earth Cymru told us that the size threshold was “not a reasonable threshold to allow the (shale gas) industry to evade what any other industry would be required to do”.⁹⁵

92. Others, however, did not believe an EIA at the exploratory stage of operations was necessary. The Planning Officers Society for Wales advocated making EIAs mandatory at

⁹¹ Planning Practice guidance for onshore oil and gas, Department for Communities and Local Government, July 2013

⁹² Planning Officers Society for Wales (ESG0035)

⁹³ Friends of the Earth (ESG0015), RSPB (ESG0018)

⁹⁴ The Royal Society and Royal Academy of Engineering, Shale gas extraction in the UK: a review of hydraulic fracturing, June 2012

⁹⁵ Q72

the production stage of operations, but thought they were not necessary at the exploratory stage. It told us that many of the environmental issues could be dealt with through a planning application: “you could identify what the noise impacts are, you could identify what mitigation the developer is going to put in, and then it is up to the local planning authority to decide what is acceptable or not”.⁹⁶ Ron Loveland from the Welsh Government agreed that there was no need for EIAs at the exploratory stage of shale gas drilling.⁹⁷

93. Shale gas has the potential to have significant environmental effects on the Welsh landscape. We believe that environmental impacts must be understood and properly considered at an early stage in the process.

94. We recommend that the UK Government and the Welsh Government require commercial companies to pay for an independent Environmental Impact Assessment at the exploratory stage of any significant shale gas development.

⁹⁶ Q156

⁹⁷ Q218

5 Conclusion

95. The last decade has seen an increase in shale gas exploration and production on a large scale in the USA, as the combination of hydraulic fracturing and directional drilling have made it economically viable. Shale gas production is still in its infancy in Wales and the UK and its full potential is as yet uncertain. We encourage the Government to explore this potential resource because gas will remain one of the main sources of energy in the coming years and the UK must reduce its reliance on imported gas.

96. The development of a significant shale gas industry in either the UK or Wales is far from assured. For the industry to develop, social and environmental concerns associated with its extraction will need to be overcome. While we are reassured that there is a low risk of seismic activity, large-scale development could have important implications for local communities, particularly in Wales where population density and relative shortage of land present challenges. In particular, the disruption caused by traffic and noise pollution is a significant issue, to which the UK Government and Welsh Government must give due weight in order to develop a shale gas industry in Wales.

97. The growth of a shale gas industry presents a considerable opportunity for Wales. But this must not be to the detriment of Wales' beautiful landscape and natural environment. We make three specific recommendations in this area which, in our view, would improve the regulation of the industry while not being overly restrictive.

98. First, we recommend that the UK Government considers the case for minimising ground-level shale gas operations in sensitive areas in Wales, such as Areas of Outstanding Natural Beauty, Sites of Scientific Interest, and National Parks.

99. Second, it is unsatisfactory that there is no Technical Advice Note in Wales for unconventional gas. We are persuaded by the case that the Welsh Government should produce a Technical Advice Note for unconventional gas to assist local planning authorities. Third, the environmental impacts of shale gas development must be understood and properly considered at an early stage in the process. We therefore recommend that the UK Government and the Welsh Government require commercial companies to pay for an independent Environmental Impact Assessment at the exploratory stage of any significant shale gas development.

Appendix A

The different stages of development of a shale gas site:

Stage 1–Exploration

Exploration typically takes the form of an Operator seeking planning consent to drill a well, which will normally consist of a vertical well and potentially a small number of lateral extensions.

These wells are designed to log and take samples of rock ('core') in order to acquire the geological data from the potential hydrocarbon layers of interest.

Typically, operational activity at an exploration site spans two to four months. The site is normally vacated after that.

Stage 2 - Appraisal

Following data appraisal, Operators may then decide to flow test the well before making any further commercial decision. This may also involve at this stage undertaking one or more hydraulic fracturing procedures, depending on geology. Hydraulic fracturing will typically involve an additional planning consent and a full environmental impact assessment.

Surface operations typically last between four and six months, with on-site activity diminishing as longer-term flow testing is undertaken.

Stage 3–Production

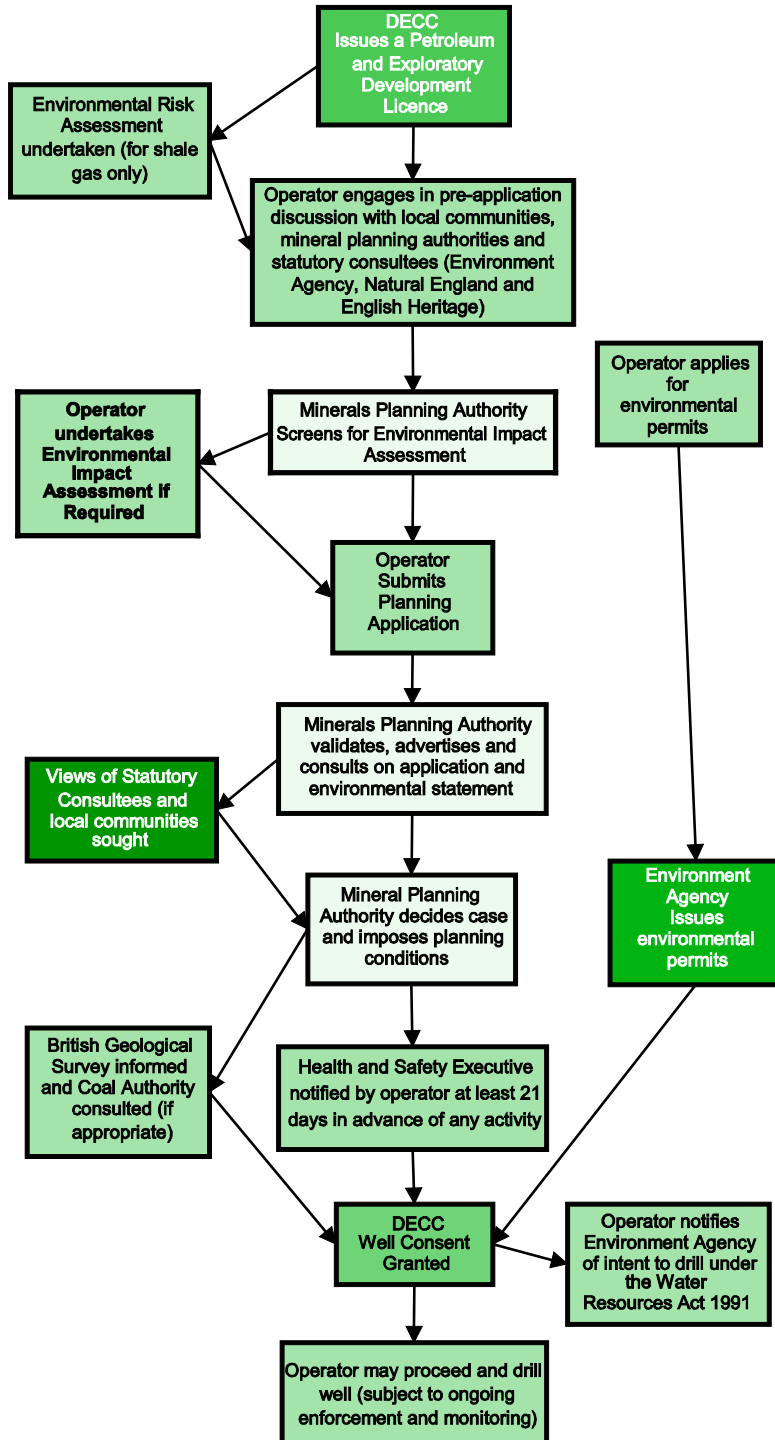
Once commerciality of the development has been determined, planning consent will be sought for a full production site and a pad development plan (PDP), or field development plan (FDP), will be submitted to the Department of Energy and Climate Change (DECC). The submission of the PDP/FDP by the Operator marks the start of the production phase.

Production pads may be different sizes from location to location, depending on the specific geology and surface location, but will typically contain a number of vertical wells and associated underground laterals on a site, which would be about two hectares (five acres) in size.

At this stage, associated equipment, such as pipelines and gas processing facilities, will be constructed, subject to additional planning applications. Once drilling has been completed, surface activity will diminish significantly as wells start to produce gas.

Appendix B

The regulatory process for shale gas production:



Source: Onshore Oil and Gas in the UK, United Kingdom Onshore Operators Group

Conclusions

Importance of gas to the UK's energy needs

1. Gas will continue to play a significant part in the UK's energy mix for the foreseeable future. In addition to using other sources of energy, it is therefore vital that the UK identify new sources of gas if it is to safeguard the UK's security of supply. (Paragraph 15)
2. We recognise that there is a lack of data regarding the amount of shale gas in Wales. It is therefore difficult to estimate the extent of shale gas resources in Wales and the potential impact shale gas may have on the UK's dependence on imports. (Paragraph 16)

Shale Gas versus renewables

3. Investing in renewable energy technology will be an important factor in the UK becoming a lower carbon economy. The development of shale gas in Wales and the rest of the UK should not be done to the detriment of the development of renewable energy technology. (Paragraph 33)

Economic impacts

4. It is not yet clear whether shale gas has the potential to develop into a lucrative industry in Wales but it is possible that it could provide jobs across a wide range of skills sets. If so, it is imperative that as many local people have, or quickly obtain, the skills required for these new positions. (Paragraph 42)
5. In the current circumstances, it appears unlikely that shale gas production could significantly reduce household gas prices due to the UK's inclusion in the European Gas Network. (Paragraph 49)
6. It is vital that commercial companies seeking to exploit shale gas in Wales engage positively with local communities. Communities should also benefit financially from shale gas operations in their areas. (Paragraph 53)

Environmental impacts

7. The disruption caused by traffic and noise pollution during shale gas development and extraction is a significant issue. We have concerns that large numbers of lorry movements to and from shale gas sites, as well as the noise at those sites, will have a negative impact on the Welsh countryside and the quality of life for local communities. (Paragraph 62)
8. We understand the concerns of the public about the risk of seismic activity as a result of fracking. The evidence suggests, however, that this is a low risk. The development of new technologies and safety processes by the industry in recent years has further reduced the risk of serious seismic activity. However, all parties need to remain vigilant. Any persistent occurrences of serious seismic activity in the UK would seriously damage public confidence in shale gas exploitation. (Paragraph 70)

9. The issue of treatment and disposal of wastewater is a growing concern. There is a need to ensure toxic and radioactive water is treated and not allowed to contaminate water courses. Therefore comprehensive impact assessment and mitigation measures need to be ensured in all cases. (Paragraph 72)

Regulatory and planning regime

10. Wales includes many areas of natural beauty and heritage. As a shale gas industry develops in Wales, careful consideration should be given to the proximity to, and the potential impacts on, areas of natural beauty and sites designated for their ecological value. (Paragraph 82)
11. It is inherently unsatisfactory that the Welsh planning authorities are looking at guidance that has been promulgated only in England and applying it in Wales. We believe that a Technical Advice Note for unconventional gas would assist local planning authorities making planning application decisions for shale gas exploration and extraction. (Paragraph 88)
12. Shale gas has the potential to have significant environmental effects on the Welsh landscape. We believe that environmental impacts must be understood and properly considered at an early stage in the process. (Paragraph 93)

Recommendations

How much shale gas is there?

13. We recommend the UK Government and Welsh Government work with commercial companies and others to provide a reliable range of estimates of shale gas available in Wales. This should be published by the end of 2014. (Paragraph 17)

Shale Gas versus renewables

14. We recommend both the UK Government and the Welsh Government assess the overall impact of shale gas supply on the level and mix of energy produced in Wales and the UK. This should include an examination of how the combination of nuclear, hydro-power, coal, wave and solar, alongside efforts to reduce overall energy demand, impacts upon carbon emission targets. (Paragraph 34)

Economic impacts

15. We encourage the Welsh Government to begin considering now how the employment opportunities presented by shale gas production could be maximised. This should include a detailed examination of the skills required by the industry and the extent that Wales already has people with those skills. (Paragraph 43)
16. In its response to this Report, we ask the Government to provide further information about how local communities in Wales will benefit, financially or otherwise, from shale gas operations in their area. (Paragraph 54)

17. We call on the UK Government to outline in its response an analysis of the Welsh water resources required to service the unconventional gas industry in other parts of the UK. (Paragraph 63)

Environmental impacts

18. The UK Government and the Welsh Government must ensure that the regulatory and planning framework gives due weight to the traffic and noise caused by commercial shale gas operations, in addition to the visual impact and other environmental risks associated with fracking. (Paragraph 64)
19. We recommend that the UK Government, the Welsh Government and commercial companies work together to assess the extent of facilities currently available in Wales for the safe disposal of wastewater and to identify improvements that will need to be made as the shale gas industry develops. (Paragraph 75)

Regulatory and planning regime

20. We recommend that the UK Government considers the case for minimising ground-level shale gas operations in sensitive areas in Wales, such as Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest, and National Parks. In its reply to this report, the Government must set out how it would ensure that such development did not compromise designated sites, in particular those in environmentally sensitive areas. (Paragraph 83)
21. We encourage the Welsh Government to develop a Technical Advice Note for unconventional gas. (Paragraph 89)
22. We recommend that the UK Government and the Welsh Government require commercial companies to pay for an independent Environmental Impact Assessment at the exploratory stage of any significant shale gas development. (Paragraph 94)

Formal Minutes

Tuesday 10 June 2014

Members present:

David T.C. Davies, in the Chair

Guto Bebb	Simon Hart
Geraint Davies	Mrs Siân C. James
Stephen Doughty	Jessica Morden
Jonathan Edwards	Mr Mark Williams
Nia Griffith	

Draft Report (*Energy Generation in Wales: Shale Gas*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 53 read and agreed to.

Paragraph—(*Jonathan Edwards*)—brought up and read, as follows:

“We believe that the resources of Wales belong to the people of Wales, and that revenues resulting from any future exploitation of Welsh unconventional gas resources should be collected by the Welsh Government.”

Question put, That the paragraph be read a second time.

The Committee divided:

Ayes, 1	Noes, 8
Jonathan Edwards	Guto Bebb
	Geraint Davies
	Stephen Doughty
	Nia Griffith
	Simon Hart
	Mrs Siân C. James
	Jessica Morden
	Mr Mark Williams

Question accordingly negatived.

Paragraphs 54 to 99 read and agreed to.

Summary agreed to.

Two Papers were appended to the Report as Appendix A and Appendix B.

Resolved, That the Report be the First Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available (Standing Order No. 134).

[Adjourned till Thursday 26 June at 9.15 a.m.]

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the Committee's inquiry page at www.parliament.uk/welshcom.

Tuesday 22 October 2013

Question number

Professor Hywel Thomas, Member of the Royal Society/Royal Academy of Engineering Joint Academies Working Group, Cardiff University, **Professor Richard Davies**, Director of Durham Energy Institute, Durham University, and **Professor Kevin Anderson**, Deputy Director, Tyndall Centre for Climate Change Research, Manchester University

Q1–51

Trefor Owen, Executive Director for National Services, Natural Resources Wales, **Nick Molho**, Head of Policy, Climate Change and Energy, World Wildlife Fund UK, and **Gareth Chubb**, Director, Friends of the Earth Cymru

Q52–103

Thursday 28 November 2013

Gerwyn Williams, Director, Coastal Oil and Gas, **Matt Lambert**, Government and Public Affairs Director, Cuadrilla and **Andrew Nunn**, UK Exploration Director, Dart Energy

Q104–143

Peter Brown, Deputy Director, Policy, Health and Safety Executive, **Andrew Farron**, Chair, Planning Officers Society for Wales and **Richard Poppleton**, Director for Wales, Planning Inspectorate

Q144–181

Monday 9 December 2013

Ron Loveland, Energy Advisor, Welsh Government

Q182–220

Tuesday 17 December 2013

Chris Faulkner, Chief Executive Officer, Breitling Energy Companies

Q221–260

Rt Hon Michael Fallon MP, Minister of State for Energy, and **Duarte Figueira**, Head, Office of Unconventional Gas and Oil, Department of Energy and Climate Change

Q261–294

Published written evidence

The following written evidence was received and can be viewed on the Committee's inquiry web page at www.parliament.uk/welshcom. ESG numbers are generated by the evidence processing system and so may not be complete.

- 1 Barry & Vale Friends of the Earth (ESG0013)
- 2 CDN Planning Ltd (ESG0005)
- 3 Climate Outreach Information Network (ESG0002)
- 4 Cuadrilla Resources (ESG0031)
- 5 Dart Energy (Europe) Ltd (ESG0033)
- 6 David F Maratos (ESG0003)
- 7 David Powell (ESG0007)
- 8 Department for Energy and Climate Change (ESG0014)
- 9 Dr Elen Stokes (ESG0016)
- 10 Energy Saving Trust (ESG0008)
- 11 Friends of the Earth Cymru (ESG0015)
- 12 Health And Safety Executive (ESG0034)
- 13 Institution of Civil Engineers Wales Cymru (ESG0004)
- 14 Mr J Vaughan (ESG0037)
- 15 Mr M Bridger (ESG0010)
- 16 Mr M Howell (ESG0040)
- 17 Mrs C Maratos (ESG0009)
- 18 Natural Resources Wales (ESG0017)
- 19 Natural Resources Wales (ESG0036)
- 20 Planning Officers Society Of Wales (ESG0035)
- 21 Professor Hywel Thomas (ESG0029)
- 22 Professor Richard Davies (ESG0028)
- 23 RSPB (ESG0018)
- 24 The Planning Inspectorate (ESG0030)
- 25 Tyndall Centre For Climate Change Research (ESG0027)
- 26 Uk Environmental Law Association (ESG0038)
- 27 UK Onshore Gas Limited (ESG0006)
- 28 United Kingdom Onshore Operators Group (ESG0032)
- 29 Wales Green Party (ESG0001)
- 30 Welsh Government (ESG0026)
- 31 Welsh Power Group Limited (ESG0011)
- 32 WWF-Cymru (ESG0012)

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the Committee's website at www.parliament.uk/welshcom.

Session 2013–2014

First Report	The Voluntary Code of Practice in the dairy sector	HC 155
Second Report	The impact of changes to housing benefit in Wales	HC 159
Third Report	The Work Programme in Wales	HC 264
First Special Report	Crossing the border—road and rail links between England and Wales: Government Response to the Committee's Third Report of Session 2012–13	HC 158
Second Special Report	Support for Armed Forces Veterans in Wales: Government Response to the Committee's Second Report of Session 2012–13	HC 263
Third Special Report	The Voluntary Code of Practice in the dairy sector: Government Response to the Committee's First Report of Session 2013–14	HC 635
Fourth Special Report	The impact of changes to housing benefit in Wales: Government Response to the Committee's Second Report of Session 2013–14	HC 1012
Fifth Special Report	The Work Programme in Wales: Government Response to the Committee's Third Report of Session 2013–14	HC 1035
Fourth Report	Pre-legislative scrutiny of the draft Wales Bill	HC 962
Sixth Special Report	Pre-legislative scrutiny of the draft Wales Bill: Government Response to the Committee's Fourth Report of Session 2013–14	HC 1205

Session 2012–2013

First Report	Broadband Services in Wales	HC 580
Second Report	Support for Armed Forces Veterans in Wales	HC 131
Third Report	Crossing the border: road and rail links between England and Wales	HC 95
First Special Report	Representation of consumer interests in Wales: Government Response to the Committee's Seventh Report of Session 2010–12	HC 111
Second Special Report	Inward Investment in Wales: Government Response to the Committee's Eighth Report of Session 2010–12	HC 125
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