

Hydraulic fracturing policy in the UK: coalition, cooperation and opposition in the face of uncertainty

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Abstract. The UK experience of hydraulic fracturing policy is puzzling: its government appears to be ‘all out for shale’ but the process is in its infancy. We explain this outcome by identifying two main advocacy coalitions and explaining how they cooperate to share information and define fracking as a policy problem. We identify a larger *tentatively* pro-fracking coalition (containing the government) and a smaller anti-fracking coalition. One uses the existing evidence base to argue that, if it is regulated well, drilling for shale gas is a low risk, potentially high return industry; the other pursues the ‘precautionary principle’ to identify an issue with unclear risks and potentially catastrophic environmental consequences. These coalitions share technical information, used to address scientific uncertainty, and political information, used to bolster agenda setting strategies. Groups are most likely to share information within their coalitions, and all groups share more technical than political information, but the pro-fracking coalition also seeks to share political information with others to secure more agreement. So far, the process has helped produce a pro-fracking UK government policy, but not a pro-fracking policy outcome, because it is still unclear how devolved and local actors will influence the process.

Introduction

We can learn a lot about the policy process by tracking the extent to which actors exchange information. We can identify ‘advocacy coalitions’ of political actors sharing similar beliefs, then generate evidence that: coalition members share political information largely with each other, and seek to exclude other actors from their deliberations; engage in debates on science and risk with their competitors; or, perform ‘brokerage’ roles to share information and seek compromises (Sabatier and Jenkins-Smith, 1993; Sabatier, 1998; Weible et al, 2009; Jenkins-Smith et al, 2014).

In this chapter, we use this approach to help explain the UK experience of hydraulic fracturing, which highlights an interesting puzzle. Its political system has a reputation for centralised power and top-down policymaking, and its government has made strong statements in favour of shale gas. For example, Prime Minister David Cameron declared: ‘we’re going all out for shale. It will mean more jobs and opportunities for people, and economic security for our country’ (Prime Minister’s Office, 2014), while George Osborne, Chancellor of the Exchequer, recently proposed tax breaks and a ‘sovereign wealth fund’ to encourage private investment and public support, and exhorted Cabinet colleagues to push this agenda forward (BBC News, 2014; The Guardian, 2015). However, very little ‘fracking’ has taken place.¹

The explanation is three-fold. First, the UK Government is part of a large coalition of actors which, on average, is *tentatively* pro-fracking, favouring well-regulated shale gas *exploration* rather than supporting commercial fracking wholeheartedly. Its statements often seem

unequivocal, but its policies betray a more cautious approach. Second, it does not live up to its reputation for policy imposition. Instead, it often seeks to use persuasion and incentives rather than impose policy decisions from the centre. Consequently, it is difficult to identify a single or clear government policy. Rather, this is a multi-level and often-fragmented policy process in which many governmental, quasi-governmental and non-governmental organisations interact to produce what we eventually call ‘fracking policy’. Third, hydraulic fracturing is opposed by a smaller but energetic coalition of actors, which promotes the ‘precautionary principle’ to address an issue with unclear risks and potentially catastrophic environmental consequences.

At the heart of this interaction within, and between, coalitions is an attempt by actors to address a dual sense of uncertainty. First, there is scientific uncertainty in relation to activities, such as unconventional drilling, with a limited track record. Opponents of fracking try to exploit uncertainty to challenge policy. Yet, policymakers also make key decisions despite their limited abilities to understand scientific reports or articulate risk, in part by deciding to rely on information and evaluation from sources they trust. Second, there is uncertainty about who makes key decisions, or how many authorities come together to produce policy. Responsibility for each aspect of ‘fracking’ may be unclear to people seeking to influence the process, since some aspects are addressed by the European Union (such as water quality), the UK (such as mineral rights, licensing, and taxation), devolved governments (such as planning) and local authorities (the permission to pursue drilling in specific local sites). This uncertainty is compounded by ambiguity: as a policy problem, fracking can be ‘framed’ as an economic opportunity or an environmental disaster; as a policy responsibility, it can be defined in terms of national leadership or local veto.

Some of these problems of uncertainty can be solved by the generation and sharing of technical information: to reduce uncertainty about the risks and rewards of fracking. Others are addressed by sharing political information about: where and how best to lobby; how policymakers can engage with groups to produce negotiated outcomes; and, how groups can generate attention for one way to ‘frame’ the issue. In this context, when actors mobilise to influence policy, they may seek to receive and share two types of information:

1. Technical information to address uncertainty about, for example, the effects of drilling and other activities to extract shale gas.
2. Political information, to address uncertainty about who is in charge and what lobbying or framing strategies may be most effective.

Further, they may only share certain types of information with certain actors. For example, actors may only share information regarding political strategies with their allies, but might share technical information more widely, to engage in necessary debate with their competitors or research institutes.

In that context, our aim is to make sense of the fracking policy process by identifying a network, or ‘subsystem’, with competing coalitions. We have three main objectives. First, we

outline the main sources of uncertainty in the fracking debate, identifying how actors frame the problem and policymakers seek to solve it. Second, we identify ‘fracking policy’ as it relates initially to UK government policy then, subsequently, as policy is made or implemented at other levels of government. Third, we identify advocacy coalitions based on shared beliefs and cooperation among key actors in UK politics, and investigate information exchange within, and across, coalitions. Most notably, key actors in the UK Government, and most main UK parties, are part of the coalition which is tentatively in favour of fracking, but this membership alone may be insufficient to produce an ‘all out for shale’ strategy. Much depends on the way that devolved and local governments take this agenda forward, and most seem reluctant to emulate the UK Government’s ‘all out’ approach. The empirical data is based on a postal survey, conducted in summer 2014, and documentary analysis.

Bounded rationality and scientific uncertainty: risk, reward and persuasion

Policymakers are boundedly rational and, by necessity, have to make decisions in the face of uncertainty. No amount of available information can settle matters of risk and reward. Rather, policymakers decide who, and what information, to trust, to help them develop a sense of risk associated with any decision. They then decide what level of risk is acceptable, given the potential reward. Since this is a political process: many actors debate acceptable risk in relation to potential reward; and, policymakers weigh up the risks of their actions in terms of the policy problem and the effect of their decision on, for example, their popularity, or in relation to their other aims. In other words, ‘evidence based policy making’ (EBPM) is a political process like any other, involving competition to decide what counts as evidence, how it should be evaluated, and what policymakers should do with it. Science plays a major part, but the link between scientific information and policy is not linear or unproblematic (Cairney, 2014).

Policymakers also make decisions in the face of ambiguity, which regards the ways in which policy problems can be defined or ‘framed’. People can entertain a large number of ways to understand or think about an issue. Consequently, a large part of the agenda setting process regards the use of persuasion to encourage people to think about issues primarily in terms of their positive or negative aspects; or, the potential for events, media, and powerful actors to shift attention to one at the expense of the others, to determine how governments *primarily* understand and seek to solve the problem at a particular time (Dearing and Rogers, 1996: 1; Baumgartner and Jones, 1993: 11-2; Kingdon, 1984: 3–4; Cairney, 2012: 183).

In the case of hydraulic fracturing, this process of persuasion and framing plays out in relation to the balance between potential risk (negative) and reward (positive). The reward relates primarily to the importance of ‘energy security’, when a state is able to reduce its reliance on energy imported from other countries (a key feature in the US), and economic gains related to: tax revenue from mineral extraction; an improved balance of payments when fuel is exported or less is imported; capital investment and employment; regeneration in areas with low economic activity; and, lower energy bills. There is also a potential environmental (greenhouse gas emissions) gain if the main effect of local shale gas extraction is to rely less on imported fossil fuels (Bradshaw, 2014; Tosun and Lang, 2016).

The risk relates primarily to environmental problems, and the uncertain effects of fracking, including the: contribution of methane gas (leaked during production) to climate change; groundwater pollution, when the chemicals used to fracture shale enter the water supply; greater risk of earthquakes/ tremors from fracturing; and, air and noise pollution to local areas (Bradshaw, 2014; White et al, 2014: 13-6; Jones et al, 2013: 387; Friends of the Earth, 2013). These factors may also affect the quality of life and house value of local populations (Jones et al, 2014a: 512).

Some issues have greater potential to be framed in a positive *and/or* negative way. The most important issue is governance, which relates to how the government consults with the public and interest groups to produce a sustainable political solution (Icaro, 2014). It also relates to the conduct of private companies, and the ways in which *they* consult with local communities, and manage public opposition, when seeking permission to drill (Jones et al, 2013: 384-8). The Institute of Directors (Taylor and Lewis, 2013: 158) describes the need to go beyond seeking drilling licenses to secure a ‘social licence to operate ... it is the responsibility of the industry to make sure that its operations are seen to be acceptable’.

Such trade-offs between risk and reward are compounded by the need to make choices that influence these images, including: (a) the opportunity costs involved in the encouragement of hydraulic fracturing- including the alternative uses for water and waste treatment resources, the money lost to tax breaks to fracking companies, and consequent reductions in comparable investment in renewable energy; (b) uncertainty about the likely effectiveness of the regulatory regime (Bradshaw, 2014); and, (c) ethical questions about which areas to drill, particularly if there appears to be a North/ South divide and it is cheaper to frack in the north of England.

The use of uncertainty by supporters and opponents

Discussions of uncertainty can be technical, discussed primarily by experts, or highly political and subject to charged debate by many groups. In the case of hydraulic fracturing, actors seek to downplay or amplify scientific uncertainty to support or oppose policy. For example, the UK Government has sought information from its trusted sources - professional scientific bodies and businesses - to reduce the appearance of uncertainty and help frame issues (see timeline, appendix 1):

- *The potential for shale gas extraction.* The UK Government’s Department of Energy and Climate Change (DECC) has commissioned reports from bodies such as the British Geological Society (BGS, 2014), including the Bowland Shale Gas Study (Andrews, 2013: 3) which estimates a range between 23.3-64.6 trillion cubic meters (tcm) of gas in place (GIP), which differs markedly from the amount of commercially recoverable gas for which there is no official estimate (Postbox, 2013). Postbox (2013) provides an estimate of 1,800-13,000 billion cubic metres (bcm) based on an ability to recover the gas at a rate found in comparable US sites. It compares this amount to the UK’s conventional gas resources (1466 bcm) and annual consumption of gas (77 bcm).

- *The economic potential.* Individual companies, including Cuadrilla and IGAS, have begun to use (or recommend) test drills in particular areas to assess their economic potential. The Institute of Directors raised the prospect of £3.7bn investment per year and up to 74000 jobs, but DECC Secretary of State, Ed Davey, has been more cautious (White et al, 2014: 6-7). Rapidly falling oil and gas prices also undermine the economic attractiveness of drilling for shale in the short term.
- *The likely environmental impact and the need for regulation.* The Royal Society and The Royal Academy of Engineering's (2012: 4) review argues that fracking is 'an established technology that has been used in the oil and gas industries for many decades', and that the 'health, safety and environmental risks ... can be managed effectively in the UK as long as operational best practices are implemented and enforced through regulation'. It suggests that problems relate to poor practice and regulation, with the risk of: 'fractures propagating from shale formations' minimised if the drilling takes place at an appropriate depth; pollution minimised with 'well integrity' and the use of 'non-hazardous' chemicals; and, 'seismicity induced by hydraulic fracturing' going above natural levels (or those induced by coal mining) 'reduced by traffic light monitoring systems'.

However, none of these reports makes a clear case for commercial fracking. Indeed, the latter argues that, 'This remains the responsibility of the Government' (2012: 5). This kind of uncertainty cannot be separated from a political process in which people disagree about how to weight the risk and reward. Further, in areas of high conflict, actors may question the motives and objectivity of people in influential positions. The 'devil shift' refers to the perception among some actors in coalitions that when 'anyone who disagrees with them must be mistaken about the facts, operating from the wrong value premises, or acting from evil motive' – Sabatier et al, 1987: 452; Fischer et al. 2015). This is not just a scientific exercise to reduce uncertainty; it is a fundamental debate about moral choices, in which scientific information only plays one part.

Uncertainty about what policy is, who is in charge, and what the outcome will be

In comparative politics, the UK's reputation relates to the classic 'Westminster model', stressing the 'majoritarian' nature of policymaking (Lijphart, 1999: 7; Flinders, 2010). In this scenario, power is centralised to central government and policy is made from the 'top down' with little room for consensus building with interest groups or sub-central influence. So, to understand policy we focus on the centre. In policymaking studies, this image is largely rejected (Jordan and Cairney, 2013; Cairney, 2012). UK central government is the home to a large number of 'policy communities' composed of civil servants and groups cooperating on a regular basis, and policymaking has become multi-level. The UK now shares responsibility with the European Union, has devolved many responsibilities to devolved governments in Scotland, Wales, and Northern Ireland, and does not impose policies on local government by default. To understand policy, we focus on the varying degrees of multi-level policymaking in each case.

In this context, ‘hydraulic fracturing policy’ is a *collection* of decisions made at multiple levels. It is difficult to identify. Although the UK central level often seems to be the most important, its pro-fracturing policy has not translated into concrete policy outcomes, partly because it is not the sole decision maker. It has overall responsibility for energy policy, and retains ownership of mineral and gas resources, but has devolved aspects of fracking policy to: devolved governments, responsible for developing national planning guidelines; local authorities charged with granting planning permission for individual drilling sites; and public bodies responsible for ensuring environmental protection and health and safety. It also shares responsibility for environmental policy with the European Union. The UK has taken responsibility for strategic issues, related to energy security, the generation of evidence, the tax and incentives regime, and the UK-wide system granting energy companies the right to operate to extract minerals, but not the decision to approve drill sites in local areas. Further, public bodies responsible for environmental regulation draw on rules devised by at least two levels of government.

What is UK hydraulic fracturing policy? The UK Government position

For the UK government, hydraulic fracturing is associated with three positive frames: ‘energy security, decarbonisation and economic growth’ (DECC, 2014a: 4). It has produced a series of decisions which, combined, give the impression of a *tentative* pro-fracking policy. This includes an overall statement on DECC’s website which frames fracking positively:

The government believes that shale gas has the potential to provide the UK with greater energy security, growth and jobs. We are encouraging safe and environmentally sound exploration to determine this potential (DECC, 2012).

We say ‘tentative’ partly because DECC (2014a: 3) has not made a firm decision about the economic viability of fracking (the likelihood that shale gas will represent an economic ‘game changer’ is much lower than in the US - White et al, 2014: 5). Instead, its strategy is to provide the conditions for private companies to decide how viable their operations will be, when subject to government taxation, and planning and environmental regulations (2014a: 3).

There are some indications of the potential for shale gas extraction to be commercially viable, but the government’s assumption is that it will not have enough knowledge until it gathers information from test drilling sites (White et al, 2014: 4-6). To this end, it reduced regulations and obstacles to drilling, including legislation (in the *Infrastructure Bill*) to: remove the need for energy companies to gain landowner permission to extract minerals from under their property, when they operate at least 300m below the ground; support the energy industry’s voluntary scheme to compensate landowners primarily via a £20,000 payment towards community projects; and, beyond the usual requirements of local planning, hold companies only to a voluntary agreement on notifying local communities of drills (Scotland is exempted from these plans) (2014a: 26-8).²

In part, these proposals are in response to high profile attempts by landowners to oppose drills (Press Association, 2013), and/or to clarify the law on planning, land ownership and

access (Jones et al, 2014a: 512; 2014b: 356). The government has persevered despite quite high levels of activist-led opposition in particular areas, significant public opposition to its legislative plans (expressed through consultation responses, following an organised campaign), and some suggestions that fracking consultations are being rushed (Jones et al, 2013: 389; Beebeejaun, 2013; Gosden, 2014a). In its post-consultation report, it reiterated its support for ‘indigenous energy sources’ to help ‘improve energy security, create jobs and meet carbon targets, and to reduce the costs of exploration (DECC, 2014b: 6). These moves are reinforced by robust rejections, by senior ministers, of fracking critics (Wintour, 2014), and measures to encourage preliminary development, including:

- Tax breaks to encourage capital investment.
- The promise of industry and the government to compensate local areas (DECC, 2013b), including a ‘sovereign wealth fund’ to make sure that shale revenue is ‘invested in the long-term economic health of the north to create jobs and investment’ (HM Treasury, 2013; BBC News, 2014).³
- The formation of the Office of Unconventional Gas and Oil (OUGO) unit, within DECC, responsible for ‘encouraging and overseeing energy development in the UK, including licensing oil and gas exploration and production’ (DECC, 2014c).
- Planning guidance (for England) favouring development (Jones et al, 2014b: 357).
- A ‘sound science’ approach, based on the evidence of low risk when operators meet or exceed regulatory expectations, in DECC’s: explanatory documents (DECC, 2014d); engagement strategy built on generating feedback in local areas likely to host test drilling sites (Sciencewise, 2013); and, adoption of the Royal Society and Royal Academy of Engineering’s (2012) best practice guidance.
- Miscellaneous supporting policies, including tracking data on public attitudes to energy (DECC, 2014f).⁴

We also say ‘tentative’ because there is, as yet, no commercial fracking in the UK (Beebeejaun, 2013). The UK Government has not gone ‘all out’ for shale in the sense of imposing a pro-fracturing policy on local areas with large reserves, or prioritising methane gas above other sources of energy (it also held a brief moratorium on drilling in 2011 following two tremors in England – Harrabin, 2012). Instead, it largely accepts its part of a multi-level policy process and an often-complicated ‘roadmap’ of regulation, including the need for companies to have:

- Obtained a Petroleum Exploration and Development License from DECC
- Secured a lease from the landowner
- Submitted relevant Petroleum Operations Notices (PON) notifications to DECC
- Satisfied DECC that effective operational and environmental management systems are in place

- Secured planning permission from the minerals planning/ local planning authority
- Obtained a permit from the Coal Authority if the well will encroach on coal seams
- Informed the British Geological Survey of the intention to drill
- Completed the consultation processes with all the statutory/relevant consultees
- Obtained all necessary permits from the Environment Agency
- Notified the Health and Safety Executive of the intention to drill and provided details of the proposed well design, examined by an independent/ competent well examiner
- Agreed data-reporting methods with DECC
- Agreed a method for monitoring induced seismicity and fracture growth height with DECC
- Received approval for an outline hydraulic fracturing programme from DECC, where hydraulic fracturing is planned. (DECC, 2013a: 10; 2013b: 10).

The arrangements for the devolved territories are similar, but: Northern Ireland's Department of Enterprise, Trade and Investment provides its own petroleum licenses, PON process, and oversees systems management, data reporting and monitoring; Northern Ireland, Scotland and Wales have their own environment agencies and oversight over local authorities; and, Northern Ireland and Scotland have produced primary legislation on environmental regulation. Further, the licensing of onshore oil and gas extraction will be devolved further to Scotland, in legislation produced soon after the general election in May 2015.⁵ The legislation will also devolve some income tax, which gives some incentive to boost shale-related employment, but not the power to tax the extracted fuel.

The potential for inertia or contradictory fracking policies

Many of these permissions may represent new 'venues' for anti-fracking influence or, at least, a chance to slow down the process - a point used by the House of Lords Economic Affairs Committee (2014: 6-7) to criticise the UK Government's hesitancy and recommend gas exploration to be an 'urgent national priority'. A pro-fracking position at the UK central level is complicated by developments at devolved and local levels and, in some cases, environmental and industrial requirements maintained by the EU (note that these planning and environment powers existed before fracking arose as a new issue; the UK did not devolve powers recently – rather, it chose not to centralise).

In theory, two different policies could develop, with the UK government encouraging general development but devolved or local authorities opposing specific sites. To date, each devolved government has been less positive about fracking. The Scottish Government (2013; 2014a) seeks to balance its focus on environmental protection and community consultation to a commitment to exploring the potential for shale, and introduced a 'moratorium' in January 2015 (Cairney, 2015a). The Welsh Government has considered a 'moratorium' on fracking development (Dean, 2014), albeit without having the powers to 'call in' planning applications, and the Northern Ireland Government has refused to fast-track exploratory drills (Minister of the Environment, 2013). We would also expect more reluctance at local levels, with local authorities conscious of the environmental impact and subject to the most specific

and concentrated opposition (for example, the most recent council report recommended a rejection of test drilling in Lancashire – BBC News, 2015).

Consequently, UK policy documents alone do not provide a full sense of how the lines of responsibility play out in practice, when governments and organisations interact with other bodies to make (separate or joint) decisions. Much depends on: how hydraulic fracturing is defined; how actors deal with ambiguity and use persuasion to influence how governments become involved and make decisions; and, how realistic it is to lobby certain venues and what strategies to use.

How do actors cooperate, and share information, to reduce uncertainty?

In this setting, it is crucial to analyse what political strategies actors pursue, what actions they take to reduce uncertainty, and which beliefs and preferences are put forward. There is thus great value in empirically identifying how actors deal with the kinds of uncertainty related to unconventional gas extraction, regarding the risks and rewards, what policy is, and, who is in charge; to identify how government actors cooperate across multiple levels and how groups work together to influence the ongoing process of fracking regulation and policy design. In short, we want to know how actors form coalitions to influence policy.

A key way to research this issue is to identify ‘advocacy coalitions’ which contain, ‘people from a variety of positions (elected and agency officials, interest group leaders, researchers) who share a particular belief system’ and ‘who show a non-trivial degree of coordinated activity over time’ (Sabatier, 1988: 139). Political actors involved in policymaking form coalitions to join resources, coordinate their influence strategies, and translate their goals into policy (Mahoney 1997, Sabatier and Weible 2007). We expect actors to form coalitions if they have similar policy beliefs.

However, given the early stage of fracking policymaking in the UK, it is not easy to say if early cooperation represents short term ‘coalitions of convenience’, based on very specific beliefs about current developments in fracking, rather than advocacy coalitions that remain stable for many years. Policy-related beliefs can range from ‘Core’ (fundamental and unlikely to change, but generally too broad to guide detailed policy, such as on the nature and motivation of people), ‘Policy core’ (more specific but still deep-seated and unlikely to change), and, ‘Secondary Aspects’ (relating to specific developments, such as the manner in which policy is made, and the kinds of instruments used), and it takes considerable research to determine what kinds of beliefs bring, and keep, actors together in coalitions (Sabatier and Jenkins-Smith, 1993). Below, we examine three main areas, but qualify the results in each case.

First, we assess which collective actors share similar beliefs, agree or disagree on problems and potential solutions, and thus represent the different sides of the conflict. However, due to uncertainty, actors might have a hard time forming advocacy coalitions. Scientific uncertainty, with respect to the risks of technologies and the effects of regulations, involves behavioural uncertainty: it is difficult for actors to anticipate and understand what the

behavior of other actors will be as events progress, people make choices, and others react (Fink and Harms 2012). We can therefore only present initial evidence of advocacy coalitions in which members share similar beliefs.

Second, we examine how actors frame the debate. There are different ways to frame fracking as a policy problem, both in the abstract (before any drills take place) and during policy and regulation development. We expect actors in favour of fracking to rely on scientific evidence outlining the reliability of fracking techniques as well as the economic potential of the exploitation of shale gas; whereas actors opposing fracking will try to emphasize environmental concerns and risk issues.

Third, we look at coalitions' strategies to deal with uncertainty. We examine whether advocacy coalitions try to reduce uncertainty by exchanging technical and political information with specific types of actors.

Data and method

To answer these questions, we rely on empirical data gathered in summer 2014 with a survey among key actors involved in the regulation process on unconventional gas development in the UK. An in-depth study of the policy process on unconventional gas regulation in the UK between 2007 and 2014 allowed us to identify key collective actors involved in decision-making on the issue (see Knoke, 1993). 34 organizations were identified (see the list of actors in appendix 1) and received a survey containing questions on their process participation, venue shopping, core beliefs and policy preferences, (dis)agreement, information exchange, and cooperation relations (see survey in Appendix 2). From the 10 scientific actors, 5 environmental non-governmental organizations (NGOs), 9 industry representatives and 10 political actors in a narrow sense (i.e. political parties or government administration), 53% (18 actors) answered our survey.⁶

First, for the identification of 'advocacy coalitions', we rely on survey data. We asked actors to indicate with which organization, from a list containing all key actors identified before, they agreed or disagreed about policy measures to be taken for the regulation of unconventional gas development in the UK. This information serves as a proxy for the similarity of actors' policy beliefs (Ingold, 2011). Based on this data, we create a network of agreement and disagreement relations between actors, with values of -1 representing disagreement between two actors, and 1 representing agreement. To identify advocacy coalitions, we then identify clusters of actors with similar beliefs. To do so, we rely on the 'balance'-procedure in Pajek (Batagelj and Mrvar, 1996), which re-arranges the data matrix by switching two actors and then comparing whether the new matrix comes closer to a pre-defined ideal structure with only positive within-block-ties and negative between-block-ties (Nooy et al., 2005). This procedure is continued until reaching an arrangement that is closest to the ideal structure. Deviations from this ideal arrangement are indicated with an error term (Doreian and Mrvar, 2009), and the solution (i.e., the number of clusters) with the lowest error term is chosen for interpretation.

Second, to identify substantive areas of agreement and disagreement between actors and actor coalitions, we asked actors to indicate their ‘policy core’ beliefs about state intervention versus individual and market freedom on a 4-point Likert scale (from 1= strongly disagree to 4= strongly agree) (question 10, appendix 2). In the same way, we evaluated their general attitude towards fracking, their perception of the seriousness of problems related to fracking, and their policy preferences to regulate fracking (questions 2, 8 and 9 respectively in appendix 2). This information allows us to see what general beliefs, frames and preferences are put forward by each coalition.

Third, we evaluate the patterns of information exchange among coalitions. Our survey distinguishes between political and technical information. *Political information exchange* is defined as information related to political affairs, i.e. “information that allows your organization to organize during the policy process; as well as information on the preferences of other actors or on the agenda for the next meeting with coalition partners to discuss the influence strategy on the policy process”. *Technical information exchange* is defined as information on the technical aspects of unconventional gas development, as well as scientific information on potential implications for the environment and neighboring population. Examples are given in the survey such as “information on the requirements for the well construction to access unconventional gas or on the estimation on fugitive methane emissions generated by unconventional gas operations”. We then provided survey partners with the same list of actors mentioned above and asked them to indicate a) from which organizations they regularly obtain information related to fracking, and b) which organizations they regularly provide with information related to fracking.

Nascent advocacy coalitions: current membership and levels of agreement

Our analysis of actors’ agreement and disagreement data from the survey results in three broad groupings of actors (see first two columns of table 2). First, we identify one pro-exploration coalition composed of 25 administrative entities, governmental actors, business and research organizations. This coalition cannot be described simply as a ‘pro-fracking’ coalition, since the average position is one that favours the careful / moderate development of fracking potential:

- UK government bodies: Cabinet, Department of Energy and Climate Change DECC, Office of Unconventional Gas and Oil (OUGO)
- Government agencies focused on one aspect, without an expectation of supporting/opposing drills: Environment Agency, Health and Safety Executive. State agencies typically belong to the government coalition: even though some might be rather sceptical or neutral, they perform a role set out for them.
- The three main UK political parties: Conservative Party, Labour Party, Liberal Democrats.
- The Energy and Climate Change Committee of the House of Commons, currently with a government majority.

- Private energy companies (Cuadrilla, IGas Energy, Centrica, Total, Shell, National Grid) and industry groups (United Kingdom Onshore Operators Group, Oil & Gas UK, Chemical Industries Association (industry),
- The NGO, No Hot Air
- Groups generating and sharing research: Royal Academy of Engineering, Royal Society, British Geological Survey, CNG Services, Geological Society, Policy Exchange.

This coalition is opposed by a smaller coalition which can be described meaningfully as ‘anti-fracking’. It consists of six actors of: the Green Party, which has only 1 of 650 MPs in the House of Commons; four NGOs, Campaign to Protect Rural England, Frack off, Friends of the Earth, and WWF UK; and, a research actor, Tyndall Centre Manchester. There is also a group of two research institutes – UK Energy Research Center, Chatham House – which generally exist to gather and share technical, not political, information.⁷

Although there are two separate coalitions, based primarily on shared beliefs, this does not mean that the groups are in total agreement within coalitions. Table 1 identifies the average perceived agreement (0 to 1) and disagreement (0 to -1) among the coalitions. Not surprisingly, agreement among actors dominates within coalitions (values on the diagonal), whereas there is mostly disagreement between coalitions. Whereas the disagreement between the pro-exploration coalition and the anti-fracking coalition is perceived as about equally strong from both sides (-0.25 and -0.29, respectively), the internal agreement is stronger in the anti-fracking coalition than in the pro-exploration coalition. This, again, should not come as a surprise, as it is arguably easier to agree on policy positions in a group of 6 actors than in a group of 25. Yet, it also shows that the goals and policy beliefs of actors in the smaller coalition might be more narrow (oppose fracking) than those of the different types of actors belonging to the larger coalition (support fracking or identify its potential, attract investors, involve local population, regulate fracking through different types of instruments, provide scientific evidence, etc.).

Table 1. (Dis)agreement among coalitions

	Pro-exploration	Anti-fracking
Pro-exploration	0.19	-0.25
Anti-fracking	-0.29	0.28

Beliefs and areas of (dis)agreement

Table 2 outlines the average beliefs of the three coalitions: numbers close to 1 indicate complete disagreement, numbers close to 4 complete agreement with the policy preferences and secondary aspects (columns 2, 3, 4), as well as with the core beliefs (last column). Analyzing these substantive positions allows us to interpret the disagreements between coalitions. It appears that both coalitions are not very different with respect to their deep core beliefs⁸ (column 5) as well as their preferences for pro-environmental fracking regulation⁹ (column 4). The fact that there are no strong differences with respect to deep core beliefs indicates that conflict might not be deeply rooted, and that coalition boundaries are not entrenched yet. Further, the fact that both coalitions favor a pro-environmental fracking regulation supports our interpretation that the majority coalition is not entirely pro-fracking, i.e. is not going ‘all out for shale’. The anti-fracking coalition is slightly more favorable to state intervention in general and pro-environmental fracking regulation in particular, but differences are small.

The main disagreement between the two coalitions is due to divergences on whether fracking projects in the UK should be stopped or not,¹⁰ and on whether problems related to fracking are serious or of no concern.¹¹ On average, actors in the pro-exploration coalition are *slightly* against stopping fracking and favor a *moderate* development of shale gas exploitation (2.22). The relatively favorable position of this coalition towards fracking is sustained by the fact that they do not identify serious problems arising from the development of shale gas (2.08). On the contrary, the anti-fracking coalition wishes to stop fracking completely (4.0) and tends to see serious risks and problems related to fracking activities (2.86).

Interestingly, the two research institutes (UKERC and Chatham House) evaluate problems arising from fracking as being even more serious (3.27) than the anti-fracking coalition. They thus favor more rigorous state intervention with respect to environmental standards related to fracking (3.67), but are against stopping fracking projects (2.0). More specifically, one of the two research institutes, the UK Energy Research Centre, states being in favor of a moderate development of fracking in the UK.

To sum up, while the two main coalitions diverge on whether to continue or stop fracking projects, they agree that a strong pro-environmental fracking regulation is needed. Most importantly, they have a different perception of problems related to fracking, with the pro-exploration coalition seeing no major concerns and the anti-fracking coalition perceiving rather serious problems. Again, this supports the view that scientific uncertainty is a major driver of actors’ positions with respect to fracking in the UK, and that ambiguity plays an important role, as different actors attempt to frame the issue differently with respect to risks it involves.

Table 2. Beliefs of coalitions¹²

Coalitions	Stop fracking	Problems related to fracking	Pro-environ. fracking regulation	Core beliefs
	<i>1= absolutely not</i> <i>4= stop completely</i>	<i>1= no concern</i> <i>4= serious problems identified</i>	<i>1= not necessary</i> <i>4= absolutely necessary</i>	<i>1= individual/ market freedom</i> <i>4= state intervention</i>
Pro-exploration coalition	2.22 (n=9)	2.08 (n=8)	3.35 (n=8)	2.72 (n=7)
Anti-fracking coalition	4.0 (n=4)	2.86 (n=4)	3.6 (n=2)	2.88 (n=2)

Note: One actor (GFRAC) does not have any clear group membership and is therefore not included.

Strategies, actions and information exchange

How do actors coordinate and deal with uncertainty related to the regulation of fracking in the UK? First, looking at the networks of political and technical information exchange, without taking into account the coalitions, we can see that actors tend to engage more in technical than in political information exchange. On average, actors exchange technical information with 18% of the other actors involved in fracking policymaking in the UK. Political information is exchanged only with 8% of other actors. This is an additional indicator for the early stage of policy making on this issue, and for the large amount of uncertainty in relation to fracking techniques and unconventional gas exploitation. Actors thus spend more time searching for technical and scientific information than exchanging information about political strategies and venue shopping.

To assess whether coalition members tend to exchange technical and political information with their peers rather than with their opponents, we rely on an average measure within and across coalitions (Tables 3 and 4).

Table 3. Political information exchange

	Pro-exploration	Anti-fracking
Pro-exploration	0.12	0.06
Anti-fracking	0.02	0.11

Not surprisingly, political information exchange (Table 3) is above average within both the pro-exploration and the anti-fracking coalitions (diagonal values), while it is below average or even inexistent across coalitions. This confirms a basic theoretical assumption on advocacy coalitions: actors with similar beliefs engage in a non-trivial degree of coordination within their coalitions (Sabatier 1998, Schlager 1995). An exception is given by the research group, which does not actively exchange any political information, not even among the two actors it is composed of. This supports the general assumption that research actors are not mainly politically active, but mere providers of scientific information in a policy process. This is true not only for both actors in the research group, but also scientific actors belonging to the pro-exploration and the anti-fracking coalition, which share very little political information.¹³

The pro-exploration coalition is the most active group, and it exchanges political information also with members of the anti-fracking and the research coalitions. This pattern can tentatively be interpreted as the willingness of the pro-exploration coalition to integrate both the anti-fracking coalition and the research group into the process of finding a viable policy solution to the fracking issue in the UK. Given that most members of the anti-fracking coalition take some part in actions against local fracking projects (Jones et al, 2013: 389; Beebeejaun, 2013), providing these actors with political information might be a strategy of the pro-exploration coalition to reduce further protest.

Table 4. Technical information exchange

	Pro-exploration	Anti-fracking
Pro-exploration	0.24	0.15

Anti-fracking	0.09	0.19
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As with political information, technical and scientific information exchange about shale gas extraction and fracking techniques is stronger within than across coalitions. This pattern corresponds to the assumption, discussed above, with respect to political information: that actors within a coalition need to coordinate, and do so in a non-trivial way. Confirming intuitive assumptions, technical information exchange is most intense within the research group (0.50). Technical information exchange is also above-average within the pro-exploration coalition, whereas it is at an average value within the anti-fracking coalition.

The information exchange between different coalitions is clearly more intense than the exchange of political information between coalitions. This corresponds both to the idea that technical information is more ‘politically neutral’ than political information, but also that technical information is important for actors to deal with scientific uncertainty in this domain. The pro-exploration coalition is rather active in providing both other coalitions with technical information (second line in table 4). This might stem from the fact that leading administrative actors such as the DECC and the OUGO belong to this coalition. It could also indicate that the pro-exploration coalition attempts to convince members of the anti-fracking coalition to join their efforts to allow fracking, accompanied by strong pro-environmental legislation and meaningful involvement of local communities. The research group provides more technical information to the anti-fracking coalition (0.25) than the majority coalition (0.02). This closer collaboration could reflect how close the anti-fracking beliefs and risk perception of the members of the anti-fracking and the research group are, or simply reflect the relative lack of information available to the minority coalition.

Discussion and conclusion

We find evidence for two main, nascent advocacy coalitions. There is a larger pro-exploration coalition including governmental actors, the industry, some research groups, and NGOs. It would be wrong to simply describe this coalition as ‘pro-fracking’, since there is a mix of actors who: advocate fracking development relatively strongly (including DECC and the Conservative Party); seek to profit from fracking (private companies); provide government services to help regulate one aspect (government agencies); or, provide supportive information on the risks without making policy recommendations (including the research societies). It would be more accurate to describe this coalition as *relatively* pro-fracking when compared with the smaller coalition which is clearly anti-fracking. The latter, composed primarily of the Green party and NGOs, is unequivocally against fracking and test drilling sites. A third group of two research centers, with moderate beliefs, shares only technical information. Thus, there is a clear majority in favor either of fracking or in favor of exploring its potential by allowing test drills.

Despite this imbalance of participation, and existence of clear minority opposition, there is also some evidence of agreement on many aspects. While both coalitions do not agree on whether to allow fracking or not, both agree that regulation for the protection of the environment is crucial, and that full commercial exploitation should not go ahead without more assurances on safety (and, in many cases, commercial viability).

In general, and in line with the expectations of the ACF, coalition members tend to share information among each other and less so with their competitors. However, there is also some interesting exchange across coalitions: the exchange of political information from the majority coalition to other actors (perhaps to encourage the development of common ground, or seek to influence or convince other actors); and the subsystem-wide exchange of technical information, to reflect widespread sharing of information in relation to relatively high scientific and regulatory uncertainty; and the provision of information from research centres more to the anti-fracking coalition. This latter result is coupled with indications that the coalition makes more political claims from the information than the centres expect.

Finally, this imbalance in favor of fracking development has not led to the types of shale gas extraction that we associate with countries such as the US. Instead, UK policy seems to be more tentative (which might be reinforced if energy prices remain so low), and the policymaking system seems more able to slow or halt development. What we see, so far, is an imbalance between coalitions *at the UK central level only*. We need more data on the multi-level dimension to UK fracking policy, as it progresses from this tentative pro-fracking stage at the centre, towards new developments at local levels. This requires more information of the beliefs, preferences, and strategies of actors in devolved and local areas.

Given the current state of play, and the relative hesitancy of devolved and local governments, we would expect one of three things. First, the anti-fracking coalition may swell, to reflect a growth in opposition or the decision of local authorities to reject planning applications. This is particularly likely if incidents such as tremors/ earthquakes should happen again close to test drilling sites. Second, the majority coalition may swell, but change further, to reflect an important degree of *hesitant* and *prudent* pro-fracking attitudes that are not sufficient to produce policy change. Or, third, the pro-exploration coalition becomes more in favor of fracking, perhaps following the development of test drills and the gathering of evidence that suggests that regulations are sufficient and the commercial potential of shale gas is more certain.

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¹ The terms ‘fracking’, ‘hydraulic fracturing’ and ‘unconventional oil and gas’ generally describe the use of relatively new technology to fracture shale rock (a mixture of clay and minerals) with high pressure fluid (a mixture of water, chemicals and sand) to extract previously inaccessible methane gas or oil, at a depth from several hundred metres to several kilometres underground (there is a longer history of onshore fracking through materials other than shale).

² Although note the Labour Party’s further regulations, now included in the Bill (Macalister, 2014).

³ Note that, unlike in the US, ‘the Crown’ owns the mineral rights in the UK, and the government would collect and administer the compensation (Beebeejaun, 2013).

⁴ There appears to be a ‘permissive consensus’ for further exploration *in principle* across the UK but evidence of higher opposition in local areas (Cairney, 2015b).

⁵ The majority of the UK population is in England (53m (83.9%) of 63m, compared to 5.3m (8.4%) in Scotland, 3.1m (4.8%) in Wales, and 1.8m (2.9%) in Northern Ireland (ONS, 2014), but each territory’s land mass (England 53.5%, compared to 32.2%, 8.5% and 5.7%) is not proportionate to its population size.

⁶ We acknowledge that 18 actors are few. However, for some questions, we are still able to gather information about all 34 actors. For the network questions on actors’ agreement and disagreement as well as their information exchange (“provide with” and “receive”), we use so-called “passive data” on actors who did not answer our survey. This passive data is based on indications from the actors who actually answered the survey, as the network questions ask respondents to indicate whether there was agreement/disagreement or information exchange with every other actor in the set. Obviously, this data only corresponds to perceptions of the actors who answered the survey.

⁷ Although this does not insulate them from politics. The positions of research institutes are often misperceived by political actors, and scientific information is interpreted and framed in a way which might not be intended by the authors.

⁸ Question 10 (appendix 2) includes 8 items evaluating the degree of state and government intervention in society, market and individual decision-making. It asks: « The following statements reflect general attitudes, not related to unconventional gas development. Please indicate whether your organisation agrees or disagrees with each of the eight statements below » (see appendix 2 for details).

⁹ In question 9 (appendix 2) survey participants were asked to evaluate 12 pro-environmental fracking regulations including the control of air and water quality, chemical disclosure, management of infrastructure, risk and nuisance monitoring (see appendix 2 for details).

¹⁰ Original question (Q 2, appendix 2): « Please indicate what comes closest to your current position in relation to unconventional gas development that uses fracking technology in the UK. It should be: Stopped ; Limited ; Continued at current rate/Expanded moderately ; Expanded extensively»

¹¹ Question 8 (appendix 2) asks: «Following the opinion of your organisation, please indicate the extent to which the following issues are current problems related to unconventional gas development. » Survey participants could then evaluate 11 potential risks and nuisances occurring when exploiting unconventional gas sources (see appendix 2 for details)

¹² The response rate to the belief questions were lower than on the whole survey. Number of respondents per category (n) are indicated in brackets.

¹³ This cannot directly be grasped from the tables, but only from the original data matrix.

Appendix 1: UK timeline 2008-15 (Cairney, 2015c)

Jan 2008	Cuadrilla Resources Ltd established.
Apr 2010	West Sussex County Council grants planning permission at Balcombe (West Sussex)
Aug 2010	Cuadrilla begins drilling at Preese Hall (Lancashire)
Apr 2011	First tremor Preese Hall - 2.3 on Richter scale
May 2011	Second tremor Preese Hall - 1.5 on Richter scale. Drilling suspended while DECC commissions report to examine link to fracking (ITV news).
Dec 2011	Cuadrilla has DECC license and planning permission for exploration in Balcombe
Apr 2012	DECC report : fracking (direct fluid injection) caused the Preese Hall earthquakes
Jun 2012	Royal Society and Royal Academy of Engineering report published
Oct 2012	DECC policy statement restates the economic potential for shale
Dec 2012	UK Government lifts the temporary ban on fracking across the UK
Mar 2013	George Osborne offers tax breaks for shale in 2013 budget
May 2013	IOD highlights the need for the industry to secure a 'social license to frack'
July 2013	Lord Howell advocates fracking in the 'desolate' North of England
July 2013	Northern Ireland minister rules out fast-track process for fracking applications
July 2013	British Geological Society report on Bowland reserves
Aug 2013	2000 people march to protest Balcombe fracking; part of summer-long protests.
Aug 2013	Protests interrupt Cuadrilla operation. Balcombe not viable for commercial exploitation.
Aug 2013	David Cameron advocates fracking to help bring energy bills down
Sep 2013	Cuadrilla announces that it has found hydrocarbons at Balcombe
Sep 2013	Green Alliance criticises UK Government position on fracking
Oct 2013	Cuadrilla does not pursue fracking site at Westby in Lancashire
Oct 2013	O'Hara et al suggest that Balcombe has reduced UK public support for fracking
Oct 2013	European Parliament votes for Environmental Impact Assessments at all sites
Oct 2013	Greenpeace launches legal challenge to fracking in England
Dec 2013	Cuadrilla closes site at Preese Hall in Lancashire.
Dec 2013	HM Revenue and Customs outlines new tax breaks for onshore oil and gas
Dec 2013	DECC announces new 'regulatory roadmap'
Jan 2014	David Cameron states that he is 'all out for shale'
Feb 2014	West Sussex landowners launch legal block to fracking at Balcombe
Feb 2014	Cuadrilla proposes two new sites near Blackpool (Bowland, Lancashire)
Mar 2014	Cuadrilla : there could be 330 trillion cubic feet (tcf) of gas in its Lancashire sites
Apr 2014	House of Lords Economic Affairs Committee criticises lack of progress
May 2014	Celtique announces that it will not pursue South Downs site
Nov 2014	George Osborne proposes north of England shale fund
Dec 2014	Announcement that Welsh Government sought legal advice on moratorium
Jan 2015	Leaked letter from George Osborne asking colleagues to push fracking progress
Jan 2015	Westminster vote on Infrastructure Bill produces greater regulation but no moratorium (27 th). The bill will reduce planning obstacles to drill sites.
Jan 2015	Scottish Government announces fracking moratorium (28 th)

Appendix 2: Actors' list

Note: actors in italic did not respond to the survey.

Actor Acronym	Full actor name	Category 1= Political; 2= Industry; 3= NGO; 4= Research
BGS	British Geological Survey	4
<i>CABINET</i>	<i>Cabinet</i>	1
CAMPAIGNRE	Campaign to protect Rural England	3
<i>CENTRICA</i>	<i>Centrica</i>	2
<i>CHATHAM</i>	<i>Chatham House</i>	4
<i>CIA</i>	<i>Chemical Industries Association (CIA)</i>	2
CNG	CNG Services Ltd.	4
CONSERV	Conservative party	1
CUADRILLA	Cuadrilla Resources Holding Ltd	2
DECC	Department of Energy and Climate Change (DECC)	1
ECCCOMMITTEE	Energy and Climate Change Committee of House of Commons	1
<i>ENVAGENCY</i>	<i>Environment Agency</i>	1
<i>FRACKOFF</i>	<i>Frack off</i>	3
FRIENDS	Friends of the Earth	3
<i>GEOLSOCIETY</i>	<i>Geological Society</i>	4
<i>GFRAC</i>	<i>Gfrac technologies</i>	4
GREEN	Green party	1
<i>HSE</i>	<i>Health and Safety Executive</i>	1
IGAS	IGas Energy	2
<i>LABOUR</i>	<i>Labour party</i>	1
<i>LIBERAL</i>	<i>Liberal Democrats</i>	1
NATIONAL	National Grid	2
NO HOT AIR	No Hot Air	3
OUGO	Office of Unconventional Gas and Oil (OUGO)	1
<i>OILGASUK</i>	<i>Oil & Gas UK</i>	2
POLICY	Policy Exchange	4
SHELL	Shell international Ltd.	2
<i>ROYALACADEMY</i>	<i>The Royal Academy of Engineering</i>	4
<i>ROYAL SOCIETY</i>	<i>The Royal Society</i>	4
<i>TOTAL</i>	<i>TOTAL</i>	2
TYNDALL	Tyndall Centre Manchester	4
UKERC	UK Energy Research Centre (UKERC)	4
<i>UKOOG</i>	<i>United Kingdom Onshore Operators Group (UKOOG)</i>	2
WWF	WWF UK	3

Appendix 3: Survey

Policies for Unconventional Gas Development in the United Kingdom

Survey among private and public actors involved in the policy process on the regulation of unconventional gas development

May 2014

This questionnaire is part of a joint research project conducted at the Institute of Political Science at the University of Berne, Switzerland, and the Department of History and Politics at the University of Stirling, UK. The aim of the project is to understand the **Policy Process concerning the Regulation of Unconventional Gas Development in the UK between 2007 and 2013**. We refer to unconventional gas development that uses fracking techniques.

Some of the main outcomes of the policy process in this period are:

- the inclusion of unconventional gas sources into the Gas Generation Strategy,
- the establishment of the Office of Unconventional Gas and Oil (OUGO),
- the updating of the government policy “Providing regulation and licensing of energy industries and infrastructure” for unconventional gas development, and
- the government’s announcement of a new tax regime for shale gas and the package of community benefits brought forward by the industry.

Since your organisation plays an important role in this policy process, your participation in the survey is very important for the success of this research project. We would like to thank you in advance for filling in the questionnaire. This should **not take you more than 15 minutes**.

In order to analyse private and public actors’ involvement in the policy process on unconventional gas development in the UK, our questionnaire includes the following three sections:

Part A: Participation of your organisation in the policy process.

Part B: Collaboration and information exchange.

Part C: Policy preferences of your organisation.

Please return the completed questionnaire by June 11th via email to svetlana.ivanova@ipw.unibe.ch or via postal mail to Prof. Dr. Paul Cairney, Department of History and Social Science, University of Stirling, Stirling, FK9 4LA, United Kingdom. Once all the data is available, we will inform you about the research results. The information that you provide will be used for research purposes only, will be treated as confidential and will not be disclosed to third parties.

Please answer the questions from the perspective of your organisation and not from your individual perspective. Please follow the pre-structured questions. Additional comments are welcome at the end.

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**UNIVERSITÄT
BERN**

Project leaders:

Prof. Dr. Karin Ingold, University of Berne
Dr. Manuel Fischer, University of Berne
Prof. Dr. Paul Cairney, University of Stirling



**UNIVERSITY OF
STIRLING**

If you have questions, please contact:

Svetlana Ivanova, Research assistant

University of Berne, Institute of Political Science
Fabrikstrasse 8, CH-3012 Bern
svetlana.ivanova@ipw.unibe.ch

Name of the person completing the questionnaire: [Click here to enter text.](#)

Name of your department or organisation: [Click here to enter text.](#)

Address: [Click here to enter text.](#) Zip, City: [Click here to enter text.](#)

Telephone: [Click here to enter text.](#) Email: [Click here to enter text.](#)

Would you like to receive a copy of the final report? Yes No

Part A: Participation of your organisation in the policy process

1. Type of organisation

Please indicate the type of organisation you represent.

- Government
- Devolved Government
- Local Government
- Oil and gas service providers and operators
- Industry and professional associations
- Environmental and conservation groups
- Real estate developers and home builders
- Agricultural organisations
- Organised citizen groups
- Academics and consultants
- News media
- Other: [Click here to enter text.](#)

2. Current position on unconventional gas development

Please indicate what comes closest to your current position in relation to unconventional gas development that uses fracking technology in the UK. It should be:

- Stopped
- Limited
- Continued at current rate
- Expanded moderately
- Expanded extensively

3. Phases of the policy process

The following table contains the most important phases of the policy process related to unconventional gas development in the UK between 2007 and 2013. In which phases of the process did your organisation participate?

Please check all phases in which your organisation participated. Participation is defined as: being actively involved in and contributing to research or implementation; participating in working groups, workshops or informal consultations.

Date	Main events	Participation
November 2007 – February 2008	13th Onshore Licensing Round (UK Petroleum Exploration and Development License (PEDL)).	<input type="checkbox"/>
November 2010 – March 2011	Written evidence session and hearings for the forthcoming report on shale gas (organised by the Energy and Climate Change Committee of the House of Commons).	<input type="checkbox"/>
May – July 2011	5th Report „Shale gas“ published by the Energy and Climate Change Committee of the House of Commons <i>and</i> Government response.	<input type="checkbox"/>
April 2012	Publication of expert report “Shale Gas Fracturing: Review and Recommendations for Induced Seismic Mitigation” <i>and</i> invitation for public comments by the DECC.	<input type="checkbox"/>
June – December 2013	Publication of report "Shale gas extraction in the UK: a review of hydraulic fracturing" by the Royal Society and Royal Academy of Engineering <i>and</i> Government Response.	<input type="checkbox"/>
July 2012 – January 2013	Written evidence session and hearings for the forthcoming report “The Impact of Shale Gas on Energy Markets” (organised by the Energy and Climate Change Committee of the House of Commons).	<input type="checkbox"/>
December 2012	Publication of the Gas Generation Strategy by the DECC.	<input type="checkbox"/>
December 2012	Permission for shale gas extraction after the suspension caused by two earthquakes and announcement of new regulatory requirements by the Secretary of State for Energy and DECC.	<input type="checkbox"/>
December 2012	Establishment of the Office of Unconventional Gas and Development (OUGO).	<input type="checkbox"/>
April – July 2013	7th Report “The Impact of Shale Gas on Energy Markets” by the Energy and Climate Change Committee of the House of Commons <i>and</i> Government response.	<input type="checkbox"/>
June 2013	Announcement that the shale gas industry has committed to a package for communities that host shale gas development.	<input type="checkbox"/>
July 2013	Updating of the government policy “Providing regulation and licensing of energy industries and infrastructure” with a Supporting Detail on Shale Gas Development.	<input type="checkbox"/>
July 2013	Publication of “Planning Practice Guidance for Onshore Oil and Gas” by the Department for Communities and Local Government.	<input type="checkbox"/>
July – September 2013	Oral and written evidence session on the Economic Impact on UK Energy Policy of Shale Gas and Oil (organised by the Committee of Economic Affairs of the House of Lords).	<input type="checkbox"/>
July – December 2013	Proposal of UK Government of a new tax regime for shale gas <i>and</i> consultation.	<input type="checkbox"/>
August 2013	Technical Guidance "Onshore oil and gas exploratory operations" published by the Environment Agency	<input type="checkbox"/>
September 2013	Report "Potential greenhouse gas emissions associated with shale gas production and use" published by DECC.	<input type="checkbox"/>

Has your organisation otherwise been involved in the policy process on unconventional gas development in the UK between 2007 and 2013? If yes, please describe your involvement:

[Click here to enter text.](#)

Part B: Collaboration and information exchange

4. Importance of actors

A number of actors have been involved in the policy process on unconventional gas development in the UK between 2007 and 2013. The following table presents a list as complete as possible of actors involved.

In the first column, please check all the actors that have been particularly important in the policy process from the point of view of your organisation.

*In the second column, please make **exactly three crosses for the whole list** to indicate which actors are the three most important actors in the policy process.*

By importance of actors we mean their ability to impact the policy process decisively. If there are actors missing, please add them at the bottom of the list and evaluate their importance.

Actors	Important	3 most important
Government and administration		
Cabinet	<input type="checkbox"/>	<input type="checkbox"/>
Department of Energy and Climate Change (DECC)	<input type="checkbox"/>	<input type="checkbox"/>
Environment Agency	<input type="checkbox"/>	<input type="checkbox"/>
Health and Safety Executive	<input type="checkbox"/>	<input type="checkbox"/>
Office of Gas and Electricity Markets (Ofgem)	<input type="checkbox"/>	<input type="checkbox"/>
Office of Unconventional Gas and Oil (OUGO)	<input type="checkbox"/>	<input type="checkbox"/>
Parliament and political parties		
Energy and Climate Change Committee of House of Commons	<input type="checkbox"/>	<input type="checkbox"/>
Conservative party	<input type="checkbox"/>	<input type="checkbox"/>
Green party	<input type="checkbox"/>	<input type="checkbox"/>
Labour party	<input type="checkbox"/>	<input type="checkbox"/>
Liberal Democrats	<input type="checkbox"/>	<input type="checkbox"/>
SNP	<input type="checkbox"/>	<input type="checkbox"/>
Energy companies		
Cuadrilla Resources Holding Ltd	<input type="checkbox"/>	<input type="checkbox"/>
Électricité de France (EDF) Energy	<input type="checkbox"/>	<input type="checkbox"/>
Exxon Mobil	<input type="checkbox"/>	<input type="checkbox"/>
IGas Energy	<input type="checkbox"/>	<input type="checkbox"/>
Shell international Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
SSE	<input type="checkbox"/>	<input type="checkbox"/>
TOTAL	<input type="checkbox"/>	<input type="checkbox"/>
Utility providers		
Centrica	<input type="checkbox"/>	<input type="checkbox"/>
National Grid	<input type="checkbox"/>	<input type="checkbox"/>

Actors	Important	3 most important
Research		
British Geological Survey	<input type="checkbox"/>	<input type="checkbox"/>
Chatham House	<input type="checkbox"/>	<input type="checkbox"/>
CNG Services Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
Geological Society	<input type="checkbox"/>	<input type="checkbox"/>
Gfrac technologies	<input type="checkbox"/>	<input type="checkbox"/>
Policy Exchange	<input type="checkbox"/>	<input type="checkbox"/>
The Royal Society	<input type="checkbox"/>	<input type="checkbox"/>
The Royal Academy of Engineering	<input type="checkbox"/>	<input type="checkbox"/>
Tyndall Centre Manchester	<input type="checkbox"/>	<input type="checkbox"/>
UK Energy Research Centre (UKERC)	<input type="checkbox"/>	<input type="checkbox"/>
Economic associations		
Chemical Industries Association (CIA)	<input type="checkbox"/>	<input type="checkbox"/>
No Hot Air	<input type="checkbox"/>	<input type="checkbox"/>
Oil & Gas UK	<input type="checkbox"/>	<input type="checkbox"/>
United Kingdom Onshore Operators Group (UKOOG)	<input type="checkbox"/>	<input type="checkbox"/>
NGOs		
Campaign to protect Rural England	<input type="checkbox"/>	<input type="checkbox"/>
Frack off	<input type="checkbox"/>	<input type="checkbox"/>
Friends of the Earth	<input type="checkbox"/>	<input type="checkbox"/>
WWF UK	<input type="checkbox"/>	<input type="checkbox"/>
Related industry		
Société Générale	<input type="checkbox"/>	<input type="checkbox"/>
Others:		
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>

5. Agreement and disagreement with other actors

We are now interested with whom your organisation agreed or disagreed about policy measures during the policy process of unconventional gas development in the UK between 2007 and 2013.

The following table shows exactly the same list of actors as before.

Please check all actors with whom your organisation mainly agreed upon policy measures to be taken to regulate unconventional gas development in the UK (second column).

In a next step, please indicate all actors with whom your organisation mainly disagreed about policy measures to be taken to regulate unconventional gas development in the UK (third column).

If there are actors missing, please add them to the bottom of the list and indicate if your organisation agreed / disagreed with them.

Actors	Agree	Disagree
Government and administration		
Cabinet	<input type="checkbox"/>	<input type="checkbox"/>
Department of Energy and Climate Change (DECC)	<input type="checkbox"/>	<input type="checkbox"/>
Environment Agency	<input type="checkbox"/>	<input type="checkbox"/>
Health and Safety Executive	<input type="checkbox"/>	<input type="checkbox"/>
Office of Gas and Electricity Markets (Ofgem)	<input type="checkbox"/>	<input type="checkbox"/>
Office of Unconventional Gas and Oil (OUGO)	<input type="checkbox"/>	<input type="checkbox"/>
Parliament and political parties		
Energy and Climate Change Committee of House of Commons	<input type="checkbox"/>	<input type="checkbox"/>
Conservative party	<input type="checkbox"/>	<input type="checkbox"/>
Green party	<input type="checkbox"/>	<input type="checkbox"/>
Labour party	<input type="checkbox"/>	<input type="checkbox"/>
Liberal Democrats	<input type="checkbox"/>	<input type="checkbox"/>
SNP	<input type="checkbox"/>	<input type="checkbox"/>
Energy companies		
Cuadrilla Resources Holding Ltd	<input type="checkbox"/>	<input type="checkbox"/>
Électricité de France (EDF) Energy	<input type="checkbox"/>	<input type="checkbox"/>
Exxon Mobil	<input type="checkbox"/>	<input type="checkbox"/>
IGas Energy	<input type="checkbox"/>	<input type="checkbox"/>
Shell international Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
SSE	<input type="checkbox"/>	<input type="checkbox"/>
TOTAL	<input type="checkbox"/>	<input type="checkbox"/>
Utility providers		
Centrica	<input type="checkbox"/>	<input type="checkbox"/>
National Grid	<input type="checkbox"/>	<input type="checkbox"/>

Actors	Agree	Disagree
Research		
British Geological Survey	<input type="checkbox"/>	<input type="checkbox"/>
Chatham House	<input type="checkbox"/>	<input type="checkbox"/>
CNG Services Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
Geological Society	<input type="checkbox"/>	<input type="checkbox"/>
Gfrac technologies	<input type="checkbox"/>	<input type="checkbox"/>
Policy Exchange	<input type="checkbox"/>	<input type="checkbox"/>
The Royal Society	<input type="checkbox"/>	<input type="checkbox"/>
The Royal Academy of Engineering	<input type="checkbox"/>	<input type="checkbox"/>
Tyndall Centre Manchester	<input type="checkbox"/>	<input type="checkbox"/>
UK Energy Research Centre (UKERC)	<input type="checkbox"/>	<input type="checkbox"/>
Economic associations		
Chemical Industries Association (CIA)	<input type="checkbox"/>	<input type="checkbox"/>
No Hot Air	<input type="checkbox"/>	<input type="checkbox"/>
Oil & Gas UK	<input type="checkbox"/>	<input type="checkbox"/>
United Kingdom Onshore Operators Group (UKOOG)	<input type="checkbox"/>	<input type="checkbox"/>
NGOs		
Campaign to Protect Rural England	<input type="checkbox"/>	<input type="checkbox"/>
Frack off	<input type="checkbox"/>	<input type="checkbox"/>
Friends of the Earth	<input type="checkbox"/>	<input type="checkbox"/>
WWF UK	<input type="checkbox"/>	<input type="checkbox"/>
Related industry		
Société Générale	<input type="checkbox"/>	<input type="checkbox"/>
Other:		
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>

6. Information exchange

For the following two questions, we distinguish between technical and political information exchange between your organisation and other actors involved in the policy process on unconventional gas development in the UK between 2007 and 2013. Please see the distinct definitions below.

Technical information
Information on the technical aspects of unconventional gas development, as well as information on potential implications for the environment and neighbouring population.
Examples: requirements for the well construction to access unconventional gas; estimation of fugitive methane emissions generated by unconventional gas operations, etc.

Political information
Information related to political affairs, i.e. information that allows your organisation to organise with others during the policy process.
Examples: agenda for the next meeting with coalition partners to discuss the influence strategy on the policy process, preferences of other actors, etc.

6A. Technical information

The following table shows exactly the same list of actors as before.

Please check all actors from which your organisation regularly obtained technical information during the policy process on unconventional gas development in the UK (2007 – 2013).

Please check all actors which your organisation regularly provided with technical information during the policy process on unconventional gas development in the UK (2007 – 2013).

If there are actors missing, please add them to the bottom of the list and indicate if you obtain technical information from them, or if you provide technical information to them.

Actors	Obtain	Provide
Government and administration		
Cabinet	<input type="checkbox"/>	<input type="checkbox"/>
Department of Energy and Climate Change (DECC)	<input type="checkbox"/>	<input type="checkbox"/>
Environment Agency	<input type="checkbox"/>	<input type="checkbox"/>
Health and Safety Executive	<input type="checkbox"/>	<input type="checkbox"/>
Office of Gas and Electricity Markets (Ofgem)	<input type="checkbox"/>	<input type="checkbox"/>
Office of Unconventional Gas and Oil (OUGO)	<input type="checkbox"/>	<input type="checkbox"/>
Parliament and political parties		
Energy and Climate Change Committee of House of Commons	<input type="checkbox"/>	<input type="checkbox"/>
Conservative party	<input type="checkbox"/>	<input type="checkbox"/>
Green party	<input type="checkbox"/>	<input type="checkbox"/>
Labour party	<input type="checkbox"/>	<input type="checkbox"/>
Liberal Democrats	<input type="checkbox"/>	<input type="checkbox"/>
SNP	<input type="checkbox"/>	<input type="checkbox"/>
Energy companies		
Cuadrilla Resources Holding Ltd	<input type="checkbox"/>	<input type="checkbox"/>
Électricité de France (EDF) Energy	<input type="checkbox"/>	<input type="checkbox"/>
Exxon Mobil	<input type="checkbox"/>	<input type="checkbox"/>
IGas Energy	<input type="checkbox"/>	<input type="checkbox"/>
Shell international Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
SSE	<input type="checkbox"/>	<input type="checkbox"/>
TOTAL	<input type="checkbox"/>	<input type="checkbox"/>
Utility providers		
Centrica	<input type="checkbox"/>	<input type="checkbox"/>
National Grid	<input type="checkbox"/>	<input type="checkbox"/>

Actors	Obtain	Provide
Research		
British Geological Survey	<input type="checkbox"/>	<input type="checkbox"/>
Chatham House	<input type="checkbox"/>	<input type="checkbox"/>
CNG Services Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
Geological Society	<input type="checkbox"/>	<input type="checkbox"/>
Gfrac technologies	<input type="checkbox"/>	<input type="checkbox"/>
Policy Exchange	<input type="checkbox"/>	<input type="checkbox"/>
The Royal Society	<input type="checkbox"/>	<input type="checkbox"/>
Royal Academy of Engineering	<input type="checkbox"/>	<input type="checkbox"/>
Tyndall Centre Manchester	<input type="checkbox"/>	<input type="checkbox"/>
UK Energy Research Centre(UKERC)	<input type="checkbox"/>	<input type="checkbox"/>
Economic associations		
Chemical Industries Association (CIA)	<input type="checkbox"/>	<input type="checkbox"/>
No Hot Air	<input type="checkbox"/>	<input type="checkbox"/>
Oil & Gas UK	<input type="checkbox"/>	<input type="checkbox"/>
United Kingdom Onshore Operators Group (UKOOG)	<input type="checkbox"/>	<input type="checkbox"/>
NGOs		
Campaign to Protect Rural England	<input type="checkbox"/>	<input type="checkbox"/>
Frack off	<input type="checkbox"/>	<input type="checkbox"/>
Friends of the Earth	<input type="checkbox"/>	<input type="checkbox"/>
WWF UK	<input type="checkbox"/>	<input type="checkbox"/>
Related industry		
Société Générale	<input type="checkbox"/>	<input type="checkbox"/>
Other:		
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>

6B. Political information

The following table shows exactly the same list of actors as before.

Please check all actors from which your organisation regularly obtained political information during the policy process on unconventional gas development in the UK (2007 – 2013).

Please check all actors which your organisation regularly provided with political information during the policy process on unconventional gas development in the UK (2007 – 2013).

If there are actors missing, please add them to the bottom of the list and indicate if you obtain political information from them, or provide them with political information.

Actors	Obtain	Provide
Government and administration		
Cabinet	<input type="checkbox"/>	<input type="checkbox"/>
Department of Energy and Climate Change (DECC)	<input type="checkbox"/>	<input type="checkbox"/>
Environment Agency	<input type="checkbox"/>	<input type="checkbox"/>
Health and Safety Executive	<input type="checkbox"/>	<input type="checkbox"/>
Office of Gas and Electricity Markets (Ofgem)	<input type="checkbox"/>	<input type="checkbox"/>
Office of Unconventional Gas and Oil (OUGO)	<input type="checkbox"/>	<input type="checkbox"/>
Parliament and political parties		
Energy and Climate Change Committee of House of Commons	<input type="checkbox"/>	<input type="checkbox"/>
Conservative party	<input type="checkbox"/>	<input type="checkbox"/>
Green party	<input type="checkbox"/>	<input type="checkbox"/>
Labour party	<input type="checkbox"/>	<input type="checkbox"/>
Liberal Democrats	<input type="checkbox"/>	<input type="checkbox"/>
SNP	<input type="checkbox"/>	<input type="checkbox"/>
Energy companies		
Cuadrilla Resources Holding Ltd	<input type="checkbox"/>	<input type="checkbox"/>
Électricité de France (EDF) Energy	<input type="checkbox"/>	<input type="checkbox"/>
Exxon Mobil	<input type="checkbox"/>	<input type="checkbox"/>
IGas Energy	<input type="checkbox"/>	<input type="checkbox"/>
Shell international Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
SSE	<input type="checkbox"/>	<input type="checkbox"/>
TOTAL	<input type="checkbox"/>	<input type="checkbox"/>
Utility providers		
Centrica	<input type="checkbox"/>	<input type="checkbox"/>
National Grid	<input type="checkbox"/>	<input type="checkbox"/>

Actors	Obtain	Provide
Research		
British Geological Survey	<input type="checkbox"/>	<input type="checkbox"/>
Chatham House	<input type="checkbox"/>	<input type="checkbox"/>
CNG Services Ltd.	<input type="checkbox"/>	<input type="checkbox"/>
Geological Society	<input type="checkbox"/>	<input type="checkbox"/>
Gfrac technologies	<input type="checkbox"/>	<input type="checkbox"/>
Policy Exchange	<input type="checkbox"/>	<input type="checkbox"/>
The Royal Society	<input type="checkbox"/>	<input type="checkbox"/>
The Royal Academy of Engineering	<input type="checkbox"/>	<input type="checkbox"/>
Tyndall Centre Manchester	<input type="checkbox"/>	<input type="checkbox"/>
UK Energy Research Centre (UKERC)	<input type="checkbox"/>	<input type="checkbox"/>
Economic associations		
Chemical Industries Association (CIA)	<input type="checkbox"/>	<input type="checkbox"/>
No Hot Air	<input type="checkbox"/>	<input type="checkbox"/>
Oil & Gas UK	<input type="checkbox"/>	<input type="checkbox"/>
United Kingdom Onshore Operators Group (UKOOG)	<input type="checkbox"/>	<input type="checkbox"/>
NGOs		
Campaign to Protect Rural England	<input type="checkbox"/>	<input type="checkbox"/>
Frack off	<input type="checkbox"/>	<input type="checkbox"/>
Friends of the Earth	<input type="checkbox"/>	<input type="checkbox"/>
WWF UK	<input type="checkbox"/>	<input type="checkbox"/>
Related industry		
Société Générale	<input type="checkbox"/>	<input type="checkbox"/>
Other:		
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>

7. Previous collaboration

The following table shows exactly the same list of actors as before.

Please check all actors that your organisation has been collaborating with in other policy processes about environmental or energy issues during the past 10 years.

Collaboration does not necessarily imply that you share the same preferences. By collaboration we mean discussing new information, exchanging opinions, cooperation on finding a policy solution for problems, and evaluating alternatives.

If there are actors missing, please add them to the bottom of the list and indicate if you collaborated with them.

Actors	Previous collaboration
Government and administration	
Cabinet	<input type="checkbox"/>
Department of Energy and Climate Change (DECC)	<input type="checkbox"/>
Environment Agency	<input type="checkbox"/>
Health and Safety Executive	<input type="checkbox"/>
Office of Gas and Electricity Markets (Ofgem)	<input type="checkbox"/>
Office of Unconventional Gas and Oil (OUGO)	<input type="checkbox"/>
Parliament and political parties	
Energy and Climate Change Committee of House of Commons	<input type="checkbox"/>
Conservative party	<input type="checkbox"/>
Green party	<input type="checkbox"/>
Labour party	<input type="checkbox"/>
Liberal Democrats	<input type="checkbox"/>
SNP	<input type="checkbox"/>
Energy companies	
Cuadrilla Resources Holding Ltd	<input type="checkbox"/>
Électricité de France (EDF) Energy	<input type="checkbox"/>
Exxon Mobil	<input type="checkbox"/>
IGas Energy	<input type="checkbox"/>
Shell international Ltd.	<input type="checkbox"/>
SSE	<input type="checkbox"/>
TOTAL	<input type="checkbox"/>
Utility providers	
Centrica	<input type="checkbox"/>
National Grid	<input type="checkbox"/>

Actors	Previous collaboration
Research	
British Geological Survey	<input type="checkbox"/>
Chatham House	<input type="checkbox"/>
CNG Services Ltd.	<input type="checkbox"/>
Geological Society	<input type="checkbox"/>
Gfrac technologies	<input type="checkbox"/>
Policy Exchange	<input type="checkbox"/>
The Royal Society	<input type="checkbox"/>
The Royal Academy of Engineering	<input type="checkbox"/>
Tyndall Centre Manchester	<input type="checkbox"/>
UK Energy Research Centre (UKERC)	<input type="checkbox"/>
Economic associations	
Chemical Industries Association (CIA)	<input type="checkbox"/>
No Hot Air	<input type="checkbox"/>
Oil & Gas UK	<input type="checkbox"/>
United Kingdom Onshore Operators Group (UKOOG)	<input type="checkbox"/>
NGOs	
Campaign to Protect Rural England	<input type="checkbox"/>
Frack off	<input type="checkbox"/>
Friends of the Earth	<input type="checkbox"/>
WWF UK	<input type="checkbox"/>
Related industry	
Société Générale	<input type="checkbox"/>
Other:	
Click here to enter text.	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>

8. Current problems related to unconventional gas development

Following the opinion of your organisation, please indicate the extent to which the following issues are current **problems** related to unconventional gas development.

	Not a Problem	Minor Problem	Moderate Problem	Serious Problem
Misinformation among the general public about the risks, benefits, and effects of fracking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contamination of ground and surface water supplies from chemicals in fracking fluids and methane migration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Degradation of air quality from fugitive methane emissions, flares, diesel exhaust, and dust from well site operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competition for available water supplies from hydraulic fracturing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuisance to the general public caused by truck traffic, noise, and light from well site operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Destruction of public lands by well site operations, processing facilities, and pipelines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A patchwork of local regulations on fracking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confusing share of responsibilities between the local, regional, national and European level.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inadequate regulation at the top-level (national and European).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low consultation of local communities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inadequate (financial) compensation measures for local communities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Policy instruments

Below is a list of policy instruments which may be introduced for the regulation of unconventional gas development in the UK.

Please indicate your organisation's level of agreement with adopting each of the following policy instruments independently of what has been done in the UK thus far.

If there are policy instruments missing, please add them to the bottom of the list and indicate your level of agreement.

	Strongly Disagree	Moderately Disagree	Moderately Agree	Strongly Agree
Monitoring of water quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitoring of air emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disclosure of chemicals in fracking fluids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Setbacks of wells from occupied buildings or natural features	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality control of designing and constructing wells	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disposing or treating produced water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality control of constructing well pads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mitigating risks from induced seismic activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mitigating risks and nuisances to the general public caused by truck traffic, noise, and light from well site operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Implementing attractive fiscal regime for unconventional gas operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obligation to unconventional gas operators to share economic benefits with local communities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Funding scientific research relating to unconventional gas operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. General attitudes

The following statements reflect general attitudes, not related to unconventional gas development. Please indicate whether your organisation agrees or disagrees with each statement.

	Strongly Disagree	Moderately Disagree	Moderately Agree	Strongly Agree
Government should put limits on the choices individuals can make so they do not get in the way of what is good for society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sometimes government needs to make laws that keep people from hurting themselves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is not government's business to try to protect people from themselves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government should stop telling people how to live their lives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government interferes far too much in our everyday lives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We need to dramatically reduce inequalities between the rich and the poor, as well as between men and women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Our society would be better off if the distribution of wealth was more equal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Professional expertise

Please indicate the professional expertise of your organisation.

	No knowledge	Little knowledge	Moderate knowledge	Expert knowledge
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Law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Policy, Planning and Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public Relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ecology or Biology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chemistry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mining	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business Administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well construction for shale gas operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fugitive methane emissions generated by shale gas operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for your time and providing valuable information.

If you have further remarks or ideas about the topic of unconventional gas development in the UK or about the questionnaire, please share them below.

Please return the completed questionnaire by June 11th 2014 to:

Via Email: svetlana.ivanova@ipw.unibe.ch

Via postal Mail: Prof. Paul Cairney, Department of History and Social Science, University of Stirling, Stirling, FK9 4LA, United Kingdom