How is policy made in ‘majoritarian’ and ‘consensus’ democracies? The case of ‘fracking’ policy in the UK and Switzerland

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Abstract. It is common to expect that macro-institutional context influences policy outputs decisively: for example, majoritarian systems produce quick policy change while consensus democracies do not. However, there are few systematic and comparative empirical tests of this expectation. To fill the gap, we apply the advocacy coalition framework to identify macro-institutional effects on subsystem policymaking. We use new comparative survey data to compare ‘fracking’ policy in UK and Switzerland. These countries represent contrasting political system archetypes but produce (a) similar policies and (b) only subtle differences in subsystem processes when coalitions share information to influence policy outputs.

Keywords: Hydraulic Fracturing; Advocacy Coalition Framework; Policy Subsystem; Comparative Policy Analysis; United Kingdom; Switzerland
INTRODUCTION

What is the effect of macro-political factors on policy and policymaking? This question is at the heart of comparative studies, but debates between classic explanations of policymaking remain unresolved. One literature emphasizes the importance of the macro-political institutions of political systems. It identifies contrasting archetypes and the often-misguided expectation for ‘top-down’ policymaking to produce quicker and more radical policy change in majoritarian systems (Lijphart, 1999). Another literature identifies important policymaking practices common to policy subsystems (Richardson, 1982), but does not track systematically the ‘macro-political effect’ on subsystem dynamics. To address these limitations in comparative policy studies, we provide a systematic case study analysis of hydraulic fracturing for shale oil and gas (‘fracking’) policy and policymaking in the ‘majoritarian’ UK and ‘consensus’ Switzerland.

We first examine to what extent policy change differs in the UK and Switzerland. In this case study study, policy change most often means a shift from the absence of clear policy to: (a) policy in favour of commercial fracking development; or (b) the introduction of clear regulations to halt or ban fracking activity. The UK and Swiss experiences suggest that we should not base our expectations for policy change primarily on the role of macro-political institutions. Only the UK government has gone ‘all out for shale’ (Prime Minister’s Office, 2014) and only the UK’s national policymaking institutions can be exploited to promote this change quickly, but the effect on policy outcomes has been limited. The clearer policy output is in Switzerland, where fracking has been temporarily banned in the most relevant cantons. Therefore, despite representing contrasting political systems, UK and Swiss policy outcomes are similar as no commercial fracking has taken place.

Second, we ask to what extent policymaking differs in the UK and Switzerland. We begin with the well-documented insight that contrasting political systems produce similar processes: policymaking often happens at a decentralized level, and governments and other actors negotiate political settlements in subsystems. Yet, differences in macro-political context produce the possibility that the UK and Switzerland have distinctive subsystem dynamics. We use a systematic comparative analysis, gathering the same type of data and applying identical methods to two ‘most different’ systems, to identify differences and similarities in the two countries and link them to macro-institutional factors. We use the Advocacy Coalition Framework (ACF) to analyse subsystem practices, showing how actors with shared beliefs form coalitions, how they exchange information within and across coalitions, and how coalitions compete with each other to turn their beliefs into policy (Sabatier and Weible, 2007).

Specifically, we identify a non-trivial distinction between pro- and anti-fracking advocacy coalitions, and show how they share information to influence the policy agenda and policy outputs. As a new issue, fracking is marked by unusually high uncertainty and ambiguity. Uncertainty relates to incomplete information on the risks and rewards of commercial development. The benefits and costs remain unclear while there is scientific and economic uncertainty, exacerbated by environmental events and rapid shifts in fuel price. Ambiguity
describes the many ways in which actors can frame problems, from an economic windfall to an environmental disaster. In that context, the main source of potential differences in policymaking relate to the ways in which actors exchange information to help define policy problems and their most effective solutions.

Overall, we identify a dynamic that is best explored with comparative ACF analysis: the exchange of information by advocacy coalitions in subsystems varies across political systems. In all systems, actors share information primarily with their allies in coalitions, but also with their competitors to aid negotiation. In the relatively competitive atmosphere of majoritarian systems, actors appear more likely to internalise the supply of information and refuse to share it with their competitors. Thus, macro-level institutional differences do not necessarily prompt differences in policy, but they influence the ‘culture’ of policymaking. Consequently, the macro-political context is important, but not in the ways usually expressed in comparative politics.

The impact of institutions on policy-making: why should we focus as much on common subsystem dynamics as formal institutional differences?

A key approach in comparative politics is to focus on formal macro-institutional structures of political systems. The point is made most strongly by Lijphart (1984; 1999: 5-7; see also Gallagher et al, 1995; Lane 2001): the UK and Switzerland represent contrasting institutional archetypes: ‘majoritarianism’, a unitary government structure, and ‘top-down’ policymaking characterizes the UK; while Switzerland is known for its ‘consensus’ democracy, federalist structure, and participative politics. Switzerland has an established culture of direct and regular participation via referendums (Vatter, 2009; Papadopoulos, 2001; Lijphart, 1999). Direct-democratic instruments oblige public authorities to negotiate policy solutions with minority groups. Federalism offers potential veto points and allows actors to defy a policy solution favoured by central government (Thorlakson, 2003; Linder and Vatter, 2001; Tsebelis, 1995). It contrasts with the alleged ‘government knows best’ approach of the ‘British political tradition’ (Cairney, 2011) even following governance reforms such as devolution (Flinders, 2010). In this limited comparison, consensus democracies encourage ‘compromise and concertation’ between government, regions, and interest groups; in majoritarian systems, there are fewer attempts by governments to compromise with, or build consensus among, different actors (Lijphart 1999: 5).

This approach would assume that differences in policy outputs and outcomes are best explained by divergent political systems. Policy change driven from the ‘top’ would be quicker and more substantive in the UK, since power is more concentrated in the centre and there are fewer ‘veto points’. However, a focus on macro-level institutions exaggerates policymaking differences in different political systems.

An alternative, found in comparative policy studies, is to focus on where the action is: policy subsystems. When we go beyond reputations built on macro-political institutional analysis, we find striking similarities in policy processes within different political systems. Further, differences in policymaking processes can be attributed to a minor degree to macro-
institutional differences only, but often depend on the policy context and specific series of events and decisions in each country.

The latter point is central to contemporary public policy analysis: the UK’s ‘majoritarian’ image has long been challenged in comparative studies (Richardson, 1982), and its alternative image as ‘consultative and non-radical … has been reinforced in an impressive number of studies comparing British policymaking with that of other countries and the European Union’ (Jordan and Cairney, 2013: 240; Cairney and Widfeldt, 2015; Cairney, 2011; Cairney, 2012: 88-91). Early studies showed that UK central government is the home to many ‘policy communities’ composed of civil servants and groups. These findings have become reinforced by modern developments: the UK shares responsibility with the European Union, has devolved many responsibilities to governments in Scotland, Wales, and Northern Ireland, and does not impose policies on local government by default. Adam and Kriesi (2007: 140) argue that the formal concentration of power in Britain is used ‘with a certain informal restraint’, while Kriesi et al.’s (2006: 357–8) comparative empirical study suggests that: ‘British policy networks turned out to be quite fragmented, resembling more closely those expected for consensus than for majoritarian democracies’. This image brings the UK much closer to Switzerland. It suggests that ‘research should no longer aim at national level generalizations about power configurations and policy processes’ (Kriesi et al, 2006: 357–8). Instead, the nature of the subsystem dealing with particular issues can be more important.

**Policymaking through the lens of the Advocacy Coalition Framework**

The Advocacy Coalition Framework (ACF) is conducive to comparative analyses of policymaking in two countries: it takes into account the macro-political institutional differences identified by comparative studies of political systems to identify the context for actors’ interaction, or their institutional opportunities to influence subsystem politics. However, it focuses primarily on actors and coalitions in subsystems (Sabatier and Jenkins-Smith, 1993; Sabatier, 1998; Weible et al, 2009; Jenkins-Smith et al, 2014; Mahoney, 2007, Sabatier and Weible, 2007). Comparative ACF studies explicitly taking into account the macro-institutional context are rare (Lubell, 2003). We thus take the research forward with a systematic two-country comparison.

The ACF suggests that individuals and collective actors engage in politics to translate their beliefs into policy solutions. Actors with shared beliefs form coalitions to cooperate with each other, and compete with coalitions with opposing beliefs (Sabatier, 1988: 139; Cairney, 2015). Coalitions are composed of actors ‘from a variety of positions (elected and agency officials, interest group leaders, researchers) who ‘show a non-trivial degree of coordinated activity over time’ (Sabatier, 1988: 139). Beliefs can range from ‘core’ that are difficult to change, to ‘policy core’ that are still deep-seated, but more specific and related to one policy subsystem, and ‘secondary aspects’ linked to technical matters on how policy aims should be met.

A key aspect of interaction in policy subsystems is the process in which actors share information. Information exchange is crucial, as policymakers are boundedly rational and, by
necessity, have to make decisions in the face of uncertainty (Simon, 1976; Zahariadis, 2007; Walker et al., 2013; Newig et al., 2005; Sigel et al., 2010; Ingold and Metz, 2015). Actors lack knowledge of all current and future institutions, the interconnectedness of others’ decisions, and the strategies and preferences adopted by others (Lubell, 2013). No amount of available information can settle matters of risk and reward. Rather, uncertainty can be used strategically. Some actors portray issues as clear and straightforward, and others stress uncertainty (Newig et al., 2005). Policymakers then decide who, and what information, to trust, to help them develop a sense of risk associated with any decision. Actors debate risk in relation to potential reward; and, policymakers weigh up the risks of their actions in terms of the problem and the effect of their decision in relation to their popularity and other aims. In other words, ‘evidence-based policymaking’ is a political process, involving competition to decide what counts as evidence, how it should be evaluated, and what policymakers should do with it (Cairney, 2016; Ingold and Gschwend, 2014).

Policymakers also make decisions in the face of ambiguity, which regards the ways in which policy problems are framed. Actors can entertain a large number of ways to understand or think about an issue. Agenda setting as well as policymaking involves 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 other (Dearing and Rogers, 1996: 1; Baumgartner and Jones, 1993: 11-2; Kingdon, 1984: 3–4; Cairney, 2012: 183).

The ACF suggests that coalition partners primarily share information with each other and seek to exclude actors from opposing coalitions from their deliberations. In particular, they are careful with political information on strategies designed to frame problems, accentuate the risks or rewards of policy change, and influence which level of government should have responsibility for policy. Yet, actors also engage in more technical debates on science and risk, and they are expected to do so with their competitors. One coalition may try to promote technical information to reduce the appearance of uncertainty. Another may exploit uncertainty and challenge the status of technical information to highlight the risks of policy change. Consequently, we show how actors promote or block the exchange of (what we and they describe as) technical and political information within and across coalitions.

**Fracking policy: unequivocal opposition in in Switzerland, tentative support in the UK**

One expectation, based on macro-political institutions, is that rapid or substantial policy change in favour of fracking is more possible in the UK. Yet, we do not find evidence of this shift, despite Prime Minister David Cameron declaring: ‘we’re going all out for shale’ (Prime Minister’s Office, 2014) and George Osborne, Chancellor of the Exchequer, proposing supportive economic and regulatory measures to reduce the planning burden on firms (in the Infrastructure Act 2015), and increase financial incentives for local communities (BBC News, 2014; The Guardian, 2015). Its strategy is to provide the conditions for private companies to decide (following test drills) how economically viable their operations will be (DECC, 2012; 2014a: 26-8; 2014b: 6; White et al., 2014: 4-6). These moves are reinforced by measures to encourage preliminary development, including: tax breaks on capital investment;
the promise of government compensation to local areas (DECC, 2013b; HM Treasury, 2013; BBC News, 2014 - note that ‘the Crown’ owns the mineral rights and the government would collect and administer the compensation - Beebeejaun, 2013); the reform of planning guidance for England (Jones et al., 2014b: 357); and, a pro-fracking public engagement strategy (DECC, 2014c; Sciencewise, 2013).

This policy has not translated into concrete outcomes, partly because central government is not the sole decision maker. It has overall responsibility for energy policy, and retains ownership of mineral and gas resources, but so far it has left crucial aspects of policy to devolved governments, responsible for national planning guidelines, and local authorities charged with granting planning permission for drilling sites. It has not gone ‘all out for shale’ in the sense of imposing policy on local areas. Instead, it accepts its part of a multi-level process which includes the need for companies to have licenses from DECC and multiple public bodies (such as the Environmental Agency) and planning consent from devolved and local areas (DECC, 2013a: 10; DECC, 2013b: 10). Scotland will also receive licensing powers from the Scotland Act 2016. Many of these points of consent represent new ‘venues’ for anti-fracking actors to slow down the process (House of Lords Economic Affairs Committee, 2014: 6-7). For example, in 2015, the Scottish and Welsh governments introduced moratoriums and Lancashire council rejected a major planning application.

In Switzerland, the exploitation and use of natural resources in the underground is regulated in a decentralized way. Cantons have a mineral royalty law that regulates the use of those resources and gives the competence to the canton to distribute concessions to firms. No fracking can take place without the express permission of cantons. The permission procedures have to take into account the protection of natural resources, drinking water and ecosystems, which are regulated by national law.

Hydraulic fracturing has been a policy issue mainly in three Swiss cantons - Neuchâtel, Bern and Vaud - and policy differs slightly among them. In Neuchâtel, Celtique Energie engaged in a preliminary discussion with cantonal authorities about exploration for any type of gas drilling. Its proposed drilling project in Val-de-Travers induced public opposition and parliamentary initiatives. This led to a moratorium in 2014 on all development for ten years, and a new cantonal mining law will ban shale gas exploration and extraction. In Bern, Seag and Celtique Energie hold exploration concessions. The parliamentary initiative asked for the opinion of the cantonal government on the prospective use of fracking, which was critical but did not envision a legal ban. Consequently, the cantonal Green party and environmental organizations started a successful popular initiative to incorporate a ban in the revision of the mineral royalty act. The first canton passing a moratorium on shale gas extraction was Vaud in 2011, following neighbouring France. It was installed following a parliamentary interpellation, arguing that risks and environmental dangers are too high and national coordination should be installed first. Development is suspended (although three gas companies previously held exploration concessions, and one received drilling permission and found gas).
Although there are differences in policy in the UK and Switzerland, their political choices have not been reinforced by differences in macro-political institutional design. UK policy is only tentatively in favour of fracking, and the more unequivocal decisions have been taken in Switzerland. Further, the final outcome (no commercial fracking) remains remarkably similar in both countries.

**Advocacy coalitions in the UK and Switzerland: Survey and data**

These similarities extend to the formation of fracking subsystems, albeit at a different territorial scale to reflect the initial division of responsibilities in each country. At the heart of these subsystems is a process of coalition formation, based partly on the beliefs of participants, and a competition between coalitions to set the policy agenda. Put simply, we aim to explain the direction of policy in terms of the structure of, and interactions within and across, coalitions. We focus primarily on information exchange. The main currency in policy debate is information: technical information to influence the scientific debate on the risks of fracking, and political information to influence the primary way in which policymakers understand the policy problem.

We use empirical data gathered in surveys among key actors to identify advocacy coalitions and the ways in which they exchange information. We identify key actors, in the public and private sector, based on an in-depth analysis of official documents, media articles and secondary sources, and use *positional* (actors’ formal competence), *decisional* (their process participation) and *reputational* (power perception by experts and peers) analyses of networks (Laumann et al., 1983). For the UK, this resulted in a list of 34 organizations; for Switzerland, a total of 34 actors for Neuchâtel, 27 for Bern, and 25 for Vaud. Response rates reached 53% in the UK, and 65%, 74% and 48% in Neuchâtel, Bern, and Vaud. For the identification of advocacy coalitions in Switzerland, we excluded some actors (mainly because of non-responses) and include 30 actors for Neuchâtel, 23 for Bern and 22 for Vaud. In all four cases, the same survey questions and methods guided the identification of coalitions (first based on agreement and disagreement relations, then validated via belief assessment), their problem and uncertainty perception, policy preferences, and information exchange (see online Appendix I).

**What is the nature of advocacy coalitions in the UK and Switzerland?**

Based on agreement and disagreement relations, we find evidence for two main advocacy coalitions in both countries. A pro-exploration coalition, which is in favour of determining the commercial potential of fracking, opposes an anti-fracking coalition. Table 1 displays mean values of beliefs and perceptions per coalition and case. In all four cases, the anti-fracking coalition perceives problems related to risks and environmental uncertainties much more seriously than the pro-exploration coalition. To reduce risks and uncertainties, anti-fracking members would like to rely on stronger state intervention and enhanced pro-environmental regulation (with the exception of the anti-fracking coalition in Vaud) such as water and air quality controls and chemicals disclosure (see online Appendix I, questions 9, 10 and 11). The latter confirms its perspective that fracking is primarily a potentially
economically beneficial measure to improve the region’s or country’s competitiveness on the energy market.

Table 1: Mean values in coalition beliefs

<table>
<thead>
<tr>
<th>Coalitions per case and country</th>
<th>Stop fracking</th>
<th>Problems related to fracking</th>
<th>Pro-environ. fracking regulation</th>
<th>Core beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1= absolutely not</td>
<td>1= no concern</td>
<td>1= not necessary</td>
<td>1= individual/ market freedom</td>
</tr>
<tr>
<td></td>
<td>4= stop completely</td>
<td>4= serious problems identified</td>
<td>4= absolutely necessary</td>
<td>4= state intervention</td>
</tr>
<tr>
<td>Pro-exploration UK</td>
<td>2.22 (n=9)</td>
<td>2.08 (n=8)</td>
<td>3.35 (n=8)</td>
<td>2.72 (n=7)</td>
</tr>
<tr>
<td>Anti-fracking UK</td>
<td>4.0 (n=4)</td>
<td>2.86 (n=4)</td>
<td>3.6 (n=2)</td>
<td>2.88 (n=2)</td>
</tr>
<tr>
<td>Pro-exploration Neuchâtel</td>
<td>1.33 (n=3)</td>
<td>2.19 (n=4)</td>
<td>3.39 (n=4)</td>
<td>2.23 (n=4)</td>
</tr>
<tr>
<td>Anti-fracking Neuchâtel</td>
<td>2.72 (n=18)</td>
<td>3.00 (n=18)</td>
<td>3.71 (n=13)</td>
<td>2.63 (n=14)</td>
</tr>
<tr>
<td>Pro-exploration Bern</td>
<td>1.5 (n=2)</td>
<td>2.52 (n=3)</td>
<td>3.07 (n=3)</td>
<td>2.23 (n=3)</td>
</tr>
<tr>
<td>Anti-fracking Bern</td>
<td>2.5 (n=14)</td>
<td>2.61 (n=14)</td>
<td>3.36 (n=13)</td>
<td>2.53 (n=13)</td>
</tr>
<tr>
<td>Pro-exploration Vaud</td>
<td>1.5 (n=2)</td>
<td>2.04 (n=3)</td>
<td>3.35 (n=3)</td>
<td>2.43 (n=3)</td>
</tr>
<tr>
<td>Anti-fracking Vaud</td>
<td>2.5 (n=8)</td>
<td>2.84 (n=7)</td>
<td>2.69 (n=8)</td>
<td>2.55 (n=8)</td>
</tr>
</tbody>
</table>

Note: “n” per cell indicate the number of respondents to the respective survey question. Differences in number between coalition membership (Tables 1-4) and numbers displayed here (Table 5) stem from the fact that survey partners did not answer all questions.

In the UK, the largest coalition is pro-exploration and contains the most powerful UK Government actors (Table 2). It cannot be described simply as a ‘pro-fracking’ coalition, since the common position is one that favours the careful development of fracking potential. It is opposed by a smaller coalition which can be described as ‘anti-fracking’. While the anti-fracking coalition consists of only 6 actors (in contrast to 25 pro-exploration members), they are often successful in their attempts to impede sub-national fracking projects.

Table 2: UK pro-exploration and anti-fracking coalitions

<table>
<thead>
<tr>
<th>Pro-exploration (25)</th>
<th>Anti-fracking (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK government bodies: Cabinet, Department of Energy and Climate</td>
<td>Parties: Green</td>
</tr>
</tbody>
</table>
In all three Swiss cantons the largest coalition is opposed to fracking (Tables 3-5). The respective coalitions include actors from the cantonal administration, green and centre-left political parties, municipalities and NGOs. In all three cantons, a smaller coalition is not explicitly pro-fracking, but is opposed to a ban and thus labelled as ‘pro-exploration coalition’. It usually includes the economy-friendly Swiss People’s Party (unless in Neuchâtel) and Radical Democratic Party, as well as energy firms interested in specific gas exploration projects. Federal administrative actors are split among both coalitions (with offices responsible for the Environment and for Spatial Planning in the anti-fracking coalition, and for Energy and for Topology in the pro-exploitation coalition). The anti-fracking coalitions more successfully translate their beliefs into policy outputs. While Neuchâtel and Bern are planning a ban, actors agreed on a moratorium in Vaud, where the size and constitution of the two coalitions is more balanced.

**Table 3: Neuchâtel pro-exploration and anti-fracking coalitions**

<table>
<thead>
<tr>
<th>Pro-exploration (4)</th>
<th>Anti-fracking (25)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal administration:</strong></td>
<td><strong>Cantonal administration:</strong> Cantonal Government, Cantonal Parliament, Department of Spatial Development and the Environment, Office of Consumption and Veterinary, Office of Energy and Environment.</td>
</tr>
<tr>
<td><strong>Political parties:</strong></td>
<td><strong>NGOs:</strong> Pro Natura, WWF, Collectif Val-deTravers, Greenpeace, Association of Friends of Farm “Robert”, House of Nature Association, Radical</td>
</tr>
</tbody>
</table>
Democratic Party.

**Companies:** Celtique Energie Ltd.

**Fishers’ Society of Bass-Areuse.**


**Municipalities:** City Council Neuchâtel, City Council La-Chaux-de-Fonds, City Council Val-de-Travers.

**Science:** University of Neuchâtel.

### Table 4: Bern pro-exploration and anti-fracking coalitions

<table>
<thead>
<tr>
<th>Pro-exploration (5)</th>
<th>Anti-fracking (17)</th>
</tr>
</thead>
</table>

**Federal administration:** Federal Office of Topography.

**Cantonal parties:** Liberal Democratic Party, Swiss People’s Party.

**Companies:** Swiss Oil and Gas Company (SEAG), Geo Explorers Ltd (Oil and Gas Company).

**Cantonal administration:** Department of Construction, Transport and Energy.

**Federal administration:** Federal Office for the Environment, Federal Office for Spatial Development.

**Companies:** Energy Water Bern, Geo Energy Suisse.

**Cantonal parties:** Christian Democratic Party, Green Liberal Party, Social Democratic Party, Bourgeois Democratic Party, Evangelic Democratic Party, Green Party.

**NGOs:** Pro Natura, WWF, Greenpeace.

**Municipalities:** City of Thun, Municipality of Rapperswil.

### Table 5: Vaud pro-exploration and anti-fracking coalitions

<table>
<thead>
<tr>
<th>Pro-exploration (6)</th>
<th>Anti-fracking (15)</th>
</tr>
</thead>
</table>

**Federal administration:** Federal Office of Topography, Federal Office for Energy.

**Cantonal administration:** Cantonal Parliament, Cantonal Government, Cantonal Department of Spatial Planning and Environment, Cantonal Office for Energy.

**Municipalities:** City Council Lausanne.
How do advocacy coalitions exchange information?

In a new issue such as fracking, one key aim of actors is to exchange and use technical/scientific information to exploit or downplay unusually high levels of uncertainty, and to use political information to address ambiguity: influencing how actors frame the problem and decide how the problem should be addressed, and identifying the most promising political strategies. This focus is particularly useful to explain why the UK government pursues a tentative pro-fracking policy: it has a clear way to frame the policy problem and seek to persuade other actors (low ambiguity) but not to settle how actors should weigh up the potential environmental costs and economic benefits (high uncertainty).

In both countries, there is a sense of ‘unfinished business’ because key actors are still wrestling with issues of uncertainty and ambiguity. First, there is scientific uncertainty in relation to activities, such as drilling techniques for unconventional gas development, with a limited track record. Opponents of fracking try to exploit uncertainty to challenge policy. Yet, policymakers make key decisions despite their limited abilities to understand scientific reports or articulate risk, in part by relying on information from sources they trust. Second, in multi-level systems, in which a range of policy instruments can be adopted by different governments, there is political uncertainty about who makes key decisions, or how many authorities come together to produce policy. Both types of uncertainty are 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. Indeed, opponents have gained a lot of traction by highlighting the UK Government’s lack of respect for local policymaking (Bomberg, 2015).

This process of persuasion and framing plays out in relation to the balance between potential risk and reward. 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, and economic gains related to: tax revenue from mineral extraction; an improved balance of payments; capital investment and employment; regeneration in areas with low economic activity; and, lower energy bills. There is also a potential environmental 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 - over and above the risks to climate change of burning fossil fuels - 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). This risk is not shared equally across populations (Jones et al., 2014a: 512).

Unsuccessful attempts to remove uncertainty and promote a positive image of fracking

Pro-fracking actors seek to downplay scientific uncertainty (Newig et al., 2005; Ingold and Gschwend, 2014). For example, the UK government – which frames the issue in terms of ‘energy security, decarbonisation and economic growth’ (DECC, 2014a: 4) - has sought information from its trusted sources, professional scientific bodies and businesses, to support its pro-exploration stance and frame the issue as an economic benefit with low risk when well regulated:

- Commissioning reports from the British Geological Society (BGS, 2014; Andrews, 2013: 3) to identify considerable shale gas reserves (Postbox, 2013).
- Encouraging companies to use test drills to assess their economic potential (White et al., 2014: 6-7).
- Commissioning the Royal Society and The Royal Academy of Engineering’s (2012: 4) to identify the regulations required to minimise environmental risks.

In Switzerland, on the federal government level, the Federal Office for the Environment (BAFU) is the main responsible actor. It formed a broad expert commission working on a report covering the technology of hydraulic fracturing, the geological potential, the regulatory context, environmental aspects, and economical and societal aspects. Whereas the parts on technology, geology and environment are supposed to inform the government and its administration on aspects of scientific uncertainty, the parts on regulatory context and economical and societal aspects are to deal with political uncertainties.

In both countries, the production and sharing of technical information is not enough to settle the matter. Rather, the ‘devil shift’ argument suggests that anti-fracking coalitions will not accept technical information at face value (actors in one coalition ‘demonsie’ the actions of another - Sabatier et al., 1987), while genuine uncertainty about the future cannot be resolved by estimates on the impacts of fracking. Instead, current developments offer a snapshot of: a debate that has yet to be resolved; and, the nature of each coalition, including the extent to which they seek to resolve policy debates by sharing information. Some issues are addressed by the generation and sharing of technical or scientific information to attempt to reduce uncertainty about the risks and rewards of fracking. Policy uncertainties can also be
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 ‘frame’ the issue. When actors mobilise to influence policy, 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 debate with their competitors.

*The evidence on information exchange within and between coalitions*

To assess the intensities by which coalition members exchange technical and political information with their allies and opponents, we rely on average densities within and across coalitions (Table 6; see online Appendix I, question 7). Densities indicate the proportion of observed relations compared to all possible relations within a group of actors.

In the UK, densities of political information exchange are consistently higher within than across coalitions. This confirms a broad ACF assumption: actors with similar beliefs engage in a non-trivial degree of coordination *within* their coalitions (Sabatier, 1998; Schlager, 1995). We further find that the pro-exploration coalition is the most active, and that it shares some information across coalitions. It provides the anti-fracking coalition with some political information and more technical information. This pattern can be interpreted as the willingness of the pro-exploration coalition to integrate the opposing coalition into the process of finding a viable policy solution. 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 to reduce further protest. The relatively high amount of cross-coalition exchange of technical information (0.15) suggests that it is more ‘politically neutral’ than political information, but also that it is important for actors to deal with scientific uncertainty.

This activity of the UK pro-exploration coalition 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.

**Table 6: Sharing political and technical information**

<table>
<thead>
<tr>
<th></th>
<th>Political information</th>
<th>Pro-exploration</th>
<th>Anti-fracking</th>
<th>Technical information</th>
<th>Pro-exploration</th>
<th>Anti-fracking</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>Pro-development</td>
<td>0.12</td>
<td>0.06</td>
<td>Pro-development</td>
<td>0.24</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>Anti-fracking</td>
<td>0.02</td>
<td>0.11</td>
<td>Anti-fracking</td>
<td>0.09</td>
<td>0.19</td>
</tr>
<tr>
<td>NE</td>
<td>Pro-exploration</td>
<td>0.13</td>
<td>0.17</td>
<td>Pro-exploration</td>
<td>0.38</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>Anti-</td>
<td>0.00</td>
<td>0.21</td>
<td>Anti-</td>
<td>0.14</td>
<td>0.20</td>
</tr>
</tbody>
</table>
The effect of macro-institutional factors on subsystem dynamics

In the UK, there some cross-coalition exchange of information (Table 6), but it is consistently less intense than within-coalition information exchange. Does this pattern correspond to Lijphart’s (1999) expectation of conflict and competition in majoritarian systems, or to the more consensual types of interactions identified by Kriesi et al 2006? It is only by comparing systems that we can make a firm judgement about these patterns. We find ‘face value’ consensus policymaking at the UK national level, but only a comparison with a country like Switzerland allows us to identify a meaningful reference point. Indeed, some patterns of information sharing are different in the Swiss subnational constituencies (cantons). There is no clear coalition pattern because, in all three cantons, both political and technical information are exchanged within as well as across coalitions on a scale not found in the UK. More specifically, information exchange from the pro-exploration actors to the anti-fracking coalition is consistently more intense than information exchange within each of these two coalitions. On a general level, this corresponds to the expectation of more fragmented policy-making in consensual Switzerland (Kriesi et al. 2006). Our data thus helps us identify a more subtle influence of macro-political context than provided by Lijphart (1999): in the relatively competitive atmosphere of majoritarian systems like the UK, actors seem more likely to internalise the supply of information, whereas cross-coalition exchange is more common in consensus systems like the Swiss one.

Discussion and conclusion: macro-political institutions can only explain so much

A comparative politics perspective suggests that policy change in favour of fracking would be greater and faster in the UK compared to Switzerland. In reality, the UK government has pursued a tentatively pro-fracking position within a multi-level system in which subnational actors are less in favour of development, while Swiss cantons have produced the less equivocal policy change by prohibiting fracking development. Consequently, the policy outcomes in both countries are remarkably similar: national governments have not imposed the development of commercial fracking, sub-national governments are introducing fracking restrictions and bans, and local communities have demonstrated high, and generally successful, resistance. A focus on macro-political institutions and initial policy choices does not explain these initial developments.
Instead, we need to know more about the ways in which advocacy coalitions, composed of actors operating at many levels of government, compete with each other to turn their beliefs and aims into policy. Our ACF analysis shows a sense of nascent policymaking with not-yet clearly defined coalitions, combined with some level of agreement between pro- and anti-fracking organizations about treading carefully via some pro-environmental regulation. The UK output can be explained by an imbalanced coalition structure where one coalition seems to dominate the process, but is only tentatively in favour of commercial development, and prefers a careful assessment of economic potential and environmental risks. Even though this coalition does not perceive serious environmental problems, it still agrees with the smaller anti-fracking coalition about the introduction of pro-environmental regulations. Further, what we see, so far, is an imbalance between coalitions at the UK central level only. We need more survey data on the multi-level dimension to confirm our initial finding, based on the analysis of events and policy documents, that this imbalance is overturned at subnational levels. Such decisions by devolved governments (Scotland, Wales, Northern Ireland) would, to all intents and purposes, be binding, while decisions by local authorities in England have more potential to be overturned by the UK Government.

In Switzerland, it is currently unclear if the national level will produce any regulatory guidelines or whether the issue is kept at the sub-national level. At the moment, this seems less important than the decisions of each relevant canton to prohibit commercial development. Neuchâtel and Bern wish to ban the application of fracking techniques whereas Vaud may extend a moratorium. Those outputs reflect negotiations and debates within and across coalitions focused on canton-level policymaking. In Neuchâtel and Bern, two larger anti-fracking coalitions, dominated by regional public authorities and centre-left parties promoted the planned ban. In Vaud, public authorities were split across the two opposing coalitions. This slightly more even situation led to Vaud’s more temporary moratorium.

Further, crucially, it is in this analysis mainly focusing on policy subsystems, that we find differences that can be linked meaningfully to different macro-institutional arrangements in political systems: both countries process policy through subsystems, but the nature of information exchange within them differs significantly. Generally, coalition members tend to share information among each other and less so with their competitors. However, this effect is far more pronounced in the UK, reflecting a more competitive atmosphere. There is some exchange of political information from the larger coalition to other actors, perhaps to encourage the development of common ground, or seek to influence other actors; and the subsystem-wide exchange of technical information, to reflect widespread sharing of information in relation to scientific and regulatory uncertainty. In Switzerland, the pro-exploration coalitions appear to be less well organized – based on relatively low levels of information exchange within them – but there are still more significant flows of information from actors in the pro-exploration coalition to anti-fracking coalition members than within some of the coalitions.

Thus, although a focus on macro-political differences between divergent political systems such as the majoritarian UK and the consensus Switzerland does not always explain
differences or similarities in policy change, political systems seem to influence how policy is made, when actors and coalitions interact with each other at the subsystem levels.

Overall, the case of hydraulic fracturing demonstrates a broader point about the study of politics: we would produce a limited explanation of events if we relied simply on a comparison between majoritarian and consensus systems. Instead, it is important to identify the common problems that governments face, the common policy processes that they produce, and the extent to which coalitions form to cooperate with each other and compete with others. The UK and Switzerland comparison highlights important differences in government set-up, policy choices, and information-exchange which have, so far, produced quite-similar outcomes. Further, many differences can be better explained with reference to politics, or the policymaking context and events in each country, than their formal institutional differences. This may be a puzzling outcome to the student of comparative politics, but not the student of comparative policymaking.
References


Bomberg, Elizabeth. 2015. Shale We Drill?, Journal of Environmental Policy & Planning, Early view DOI: 10.1080/1523908X.2015.1053111


Appendix I – Survey questions

Note: Original surveys are in English (UK), German (Bern) and French (Neuchâtel, Vaud). Surveys in the three Swiss cantons and the UK were exactly the same (except of the actors’ list presented to the survey participants, see Tables 2-5 for actor details per case). The example is from canton of Neuchâtel.

Question 6: Agreement and disagreement between actors

The political debate on the regulation of hydraulic fracturing in the canton of Neuchâtel involved a big number of actors. The following table (list of actors, consult here actors in Tables 2-5) contains a list as complete as possible of the relevant actors. Please check all actors with whom your organization mainly agreed upon policy measures to be taken to regulate hydraulic fracturing in the canton of Neuchâtel (second column). In a next step, please indicate all actors with whom your organization mainly disagreed about policy measures to be taken to regulate hydraulic fracturing in the canton of Neuchâtel (third column). If there are actors missing, please add them to the bottom of the list and indicate if your organization agreed / disagreed with them.

Question 7. Technical and political information exchange

The following table shows exactly the same list of actors as before. First, please check all actors from which your organization regularly obtained technical information during the policy debate on the regulation of hydraulic fracturing in the canton of Neuchâtel. Second, please check all actors which your organization regularly provided with technical information during the policy debate on the regulation of hydraulic fracturing in the canton of Neuchâtel. Third, please check all actors from which your organization regularly obtained political information during the policy debate on the regulation of hydraulic fracturing in the canton of Neuchâtel. Fourth, please check all actors which your organization regularly provided with political information during the policy debate on the regulation of hydraulic fracturing in the canton of Neuchâtel. 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.
Question 9: Current problems related to fracking
Following the opinion of your organization, please indicate the extent to which the following issues are current problems related to unconventional gas development: 1 not a problem/no concern, 2 minor problem, 3 moderate problem, 4 serious problem.
Issues to be selected:
- Contamination of ground and surface water
- Competition of water supplies
- Air pollution and air quality degradation
- Landscape degradation
- Nuisance to general public related to site development
- Destruction of public lands
- Patchwork of regulations across different institutional levels
- Unclear competence distribution
- Seismic activities
- Local specificities are not taken into account
- Lack of financial compensation for local communities

Question 10a: Pro-environmental fracking regulation
Below is a list of policy instruments which may be introduced for the regulation of unconventional gas development in the UK. Please indicate your organization’s level of agreement with adopting each of the following policy instruments independently of what has been done in the UK thus far: 1 strongly disagree, 2 moderately disagree, 3 moderately agree, 4 strongly agree.
- Monitoring of water quality
- Monitoring of air emissions
- Disclosure of chemicals in fracking fluids
- Setbacks of wells from occupied buildings or natural features
- Quality control of designing and constructing wells
- Disposing or treating produced water
- Quality control of constructing well pads
- Mitigating risks from induced seismic activity
• Mitigating risks and nuisances to the general public caused by truck traffic, noise, and light from well site operations
• Funding scientific research relating to environmental impacts of unconventional gas operations

Question 10b: Favorite concession regime/stop fracking
Please indicate to what degree you agree with following types of concessions: 1 strongly disagree, 2 moderately disagree, 3 moderately agree, 4 strongly agree.
• Exploration concession
• Concession for site development
• Exploitation concession
• Moratorium
• Ban

Question 11: General attitudes/core beliefs
The following statements reflect general attitudes, not related to unconventional gas development. Please indicate whether your organization agrees or disagrees with each statement: 1 strongly disagree, 2 moderately disagree, 3 moderately agree, 4 strongly agree
• Independence of Switzerland from other countries
• Economic efficiency
• Ecological compatibility
• Free market/competition
• Security of the population
• Social equity

1 Agreement and disagreement about policy design and measures to be taken has proved to be a good proxy grasping similar/divergent beliefs by one pair of actors (Weible and Sabatier, 2005; Henry and Ingold, 2011). Based on this relational data, actors with similar belief profiles can be identified and grouped within coalitions of actors (footnote 2, Ingold 2011; Fischer 2015). In a second step, we assess core beliefs and secondary aspects of coalition members (see Table 1).

2 To identify advocacy coalitions, we identify clusters of actors with similar beliefs. We rely on the ‘balance’ procedure in Pajek (Batagelj and Mrvar, 1996), which re-arranges the data matrix by randomly switching two actors and then comparing whether the new matrix comes closer to a pre-defined ideal structure (Nooy et al., 2005). This procedure is continued until reaching an arrangement that is closest to the ideal structure. In accordance with the theoretical idea of the ACF, the ideal structure corresponds to a data matrix partitioned in groups, with only positive within-group-ties and negative between-group-ties. Deviations from this ideal arrangement are indicated with an error term (Doreian and Mrvar, 2009), and the solution with the lowest error term is chosen for interpretation (see Fischer 2014, 2015).

3 A third, small group is not presented: two research institutes – UK Energy Research Center, Chatham House – which exist to gather and share technical information.