Stability and agility of advocacy coalitions in the French politics of hydraulic fracturing

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INTRODUCTION

Hydraulic fracturing is an exploitation technique of unconventional hydrocarbons. In France, hydraulic fracturing was not a policy issue before 2010, when the Minister of Environment issued three licenses for shale gas exploration. According to the 2013 US Energy Information Administration data, there are approximately 118 billion barrels of shale oil and 727 trillion cubic feet of shale gas in the French soil, making France the country with the largest shale deposit in Europe (Energy Information Administration, 2013, attachment A-2). In 2010-2011, a heterogeneous social movement of opposition put pressure on the public authorities to ban hydraulic fracturing, which occurred in July 2011. This made France the first country to forbid this technique, although in principle, experimental extraction techniques were still allowed. Since January 2017, shale gas exploration has been forbidden, but tight gas and layer gas have not been regulated.

Hydraulic fracturing is controversial because it offers benefits and involves risks at the same time. The benefits are mainly economical. In a nutshell, hydraulic fracturing makes new sources of hydrocarbons accessible to the industry while contributing to job creation and public finances (through taxes). Environmental and health risks relate to potential damages to phreatic tables, to water tankers going to exploitation sites back and forth, to polluting substances added to water, plus the contribution of hydraulic fracturing to the development of the carbon industry and its impact on climate change. One of the objectives of the research program applying the advocacy coalition framework (ACF) to the politics of hydraulic fracturing is to understand why, while benefits and risks related to hydraulic fracturing are pretty similar around the world, some countries allow its use (e.g., the U.S.) while others forbid it (e.g., France).

The ACF conceptualizes policy processes as political struggles among policy actors organized in advocacy coalitions within a policy subsystem. The ACF is a conceptual platform for three theories of policy processes: a theory of policy learning looking at the cognitive and social dynamic of policy actors maintaining or revising their beliefs and preferences toward policy issues and solutions; a theory of collective action looking at the structure and action of coalition members to transform the policy preferences that ‘glue’ them to each other into concrete policy decisions; and, finally, a theory which aims at explaining policy change on the basis of learning processes, collective action, as well as institutional of contextual factors.

One of the main hypotheses of the ACF is that, on major controversies within a policy subsystem when policy core beliefs are in dispute, the lineup of allies and opponents tends to be rather stable over periods of a decade or so. We do not challenge this notion of stability, which is analyzed with individual-level observation of policy actors to assess whether or not they stick to their coalition’s policy options over time. However, coalitions may also be more or less ‘agile’ – a collective-level notion that refers to their ability to respond to contextual events and to their opponent’s strategies in order to push for their policy positions over time. In this paper, we combine individual-level and collective-level data collected through the search and coding of 254 French newspaper articles about the politics of hydraulic fracturing between 2010 and 2017. With the analysis of these data, we examine whether coalitions may be stable and agile at the same time and we contribute to a better understanding of the reasons why agile coalitions can win over the others. We start with a presentation of the concepts and theory supporting this argument before turning to the methods and the results. We conclude with a discussion and agenda for future research.
CONCEPTS AND THEORY

MAIN CONCEPTS OF THE ADVOCACY COALITION FRAMEWORK

The ACF (Jenkins-Smith et al., 2014; Sabatier, 1987; Sabatier & Jenkins-Smith, 1993, 1999; Sabatier & Weible, 2007) conceptualizes policy processes as political struggles among coalitions of policy actors involved in a given policy subsystem. A policy subsystem is a set of ‘actors from various public and private organizations who are actively concerned with a policy problem or issue such as air pollution control, and who regularly seek to influence public policy in that domain’ (Sabatier & Jenkins-Smith, 1999, p. 119). An advocacy coalition is composed of actors from various organizations at different levels of government. They share a set of normative and causal beliefs and show a nontrivial degree of coordination over time to implement their strategy(-ies) envisaging one or more changes in governmental institutions perceived to further their common policy objectives.

At the individual level, the ACF assumes that each policy actor holds a belief system composed of three strata. The first stratum contains ‘deep core’ beliefs, which are personal philosophical precepts that are very broad in scope (e.g. ‘I believe that justice is an important value’). The second stratum is represented by ‘policy core’ beliefs that are precepts specific to one subsystem, such as the proper scope of governmental action or the identification of groups whose welfare is of greatest concern (e.g. poor people, junkies, employees vs. employers, etc.). At this level, actors also hold factual beliefs about the outcomes of policies (e.g. ‘I believe that this policy option increases the degree of justice among population groups’). Those factual beliefs, in turn, determine these actors’ policy core policy preferences (e.g. ‘I believe that this policy option is better than others’). Policy core policy preferences (or ‘policy preferences’) are ‘normative beliefs that project an image of how the policy subsystem ought to be, provide the vision that guides coalition strategic behaviour, and help unite allies and divide opponents’ (Sabatier & Weible, 2007, p. 195). At the third stratum, ‘secondary’ beliefs are more specific. They concern particular administrative rules, budgetary allocations, programme performance, etc. (e.g. ‘I believe that this administrative decision facilitates the implementation of my preferred policy option’).

One important objective of the ACF is to explain policy change, which is defined as ‘fluctuations in the dominant belief systems (i.e. those incorporated into public policy)’ (Sabatier, 1987, p. 682). The main objective of policy actors, the ACF assumes, is to transform their policy preferences into concrete policy decisions. Typically, policy actors maintain and defend their policy beliefs and preferences. They use their resources and coordinate their political activity within ‘advocacy coalitions’ to become ‘dominant’ and impose their understanding of policy problems and their preferred policy solutions on other coalitions (Sabatier & Jenkins-Smith, 1993). This being said, policy change can also result from changes in policy actors’ beliefs and preferences – a causal mechanism called ‘policy learning’. The ACF defines policy learning as ‘relatively enduring alterations of thought or behavioural intentions that result from experience and which are concerned with the attainment or revision of the precepts of the belief system of individuals or of collectivities’ (Sabatier, 1993, p. 42). Beyond social interactions among policy actors and the accumulation of evidence on a policy issue, major ‘shifts in the core attributes of the subsystem’ (or contextual events) are typical causes of policy learning (e.g. a legal shift or a shift in the distribution of natural resources: Weible et al., 2009, p. 124). However, after three decades of research, the ACF shares with many other social learning approaches to the policy process a fair amount of scepticism regarding the actual role of policy learning in policy change (Weible et al., 2009).

When a policy subsystem appears, it is “nascent”. It becomes “mature” when it meets the following necessary and sufficient conditions. First, “the participants regard themselves as a semi-autonomous community who share a domain of expertise” (Sabatier, 1998, pp. 113-114); Second, these participants
seek to influence public policy within the domain over a fairly long period of time, i.e. seven to ten years. This stems from the ACF’S assumption that such an interval is necessary for doing meaningful policy analysis that can deal with learning and real-world impacts” (Sabatier, 1998, pp. 113-114). Third, “there are specialized subunits within agencies at all relevant levels of government to deal with the topic. This follows from (the) assumption that, in the absence of such units, implementation will be exceedingly problematic and coalitions will come to realize this; a persisting subsystem needs to have some "organizational residue”’ (Sabatier, 1998, pp. 113-114). Fourth, “there are interest groups, or specialized subunits within interest groups, which regard this as a major policy topic” (Sabatier, 1998, pp. 113-114).

STABILITY OF COALITIONS

One of the main hypotheses of the advocacy coalition framework is that, ‘on major controversies within a policy subsystem when policy core beliefs are in dispute, the lineup of allies and opponents tends to be rather stable over periods of a decade or so’ (Sabatier & Jenkins-Smith, 1999). The hypothesis holds when policy core beliefs ‘are in dispute’. This means that it does not apply very well to nascent subsystems in which coalitions and beliefs systems are still in formation (e.g., Bandelouw & Kundolf, 2011). This also requires relatively adversarial subsystems, in which the main task of allies from one coalition is to defend stable policy beliefs against the opponents from other coalitions certain degree of conflict between coalitions (Weible, 2008).

Most empirical studies confirm that coalitions are stable over time. For doing so, they use diverse methods of data collection and analysis. Many of them rely on coded legislative statements (e.g., Jenkins-Smith et al., 1991; Jenkins-Smith & St-Clair, 1993; Sabatier & Brasher, 1993). For example, Pierce (2011) looks at legislative hearings to confirm the stability in the membership of the coalitions trying to influence the U.S. foreign policy regarding Israel. Similarly, Zafonte and Sabatier (2004) demonstrate the stability of coalitions involved in the U.S. policy subsystem of automotive pollution control over 26 years, despite disruptive events. Weible (2005) and Ingold (2011) rely on surveys and interviews while Leiffeld (2013) analyzed discourses (Jenkins-Smith et al., 2014). In their literature review of ACF applications, Weible et al. (2009) find thirteen (16%) studies testing the coalitions hypothesis 1. More recently, Pierce et al. (2017) coded 2007-2014 ACF applications and conclude that 30 of them (19%) discussed coalition stability.

To our knowledge, most ACF studies look at the stability of advocacy coalitions by looking at belief systems. Case studies based on qualitative document analyses and interviews are the most common methods in doing so. For example, Hersperger et al. (2014) rely on documents, newspaper articles and expert interviews, to conclude that the beliefs of the coalitions involved in the urban planning policy process of three Swiss municipalities remained stable over time (see also Hirschi & Widmer, 2010). Van Gossum et al. (2008) conduct a ‘detrented correspondence analysis’ on the basis of their interview data, and conclude that the policy coalitions for or against forest expansion in Flanders (Belgium) are stable over time (pp.519-520). Based on a fuzzy cluster analysis of official testimonies, Zafonte and Sabatier (2004) demonstrate that policy actors involved the policy subsystem about automotive pollution control in the U.S. tend to remain in the same coalition over time (see also Svihula & Estes, 2007). Nohrstedt (2008) relies on the same method to look at the belief systems of the coalitions involved in the Swedish nuclear policy subsystem. Sometimes, these researchers argue that they actually operationalize ‘belief coalitions’ (e.g., Nohrstedt, 2008; Zafonte & Sabatier, 2004).

There are also studies that examine the stability of coalitions on the basis of the relations among coalition members. For example, Ingold (2011) articulates a social network analysis with a multicriteria
analysis of policy preferences on the advocacy coalitions involved in the Swiss climate policy process: she shows that the lineup of pro-economy, pro-ecology and intermediate groups remains stable over time (see also, about the contribution of policy brokers to subsystem stability: Ingold & Varone, 2011). Kingiri (2014) looks at the beliefs as well as the coordination structures and patterns of two advocacy coalitions involved in the Kenyan biosafety regulatory process by combining the analysis of direct observations, documents and interviews: the beliefs as well as the coordination structure and patterns of those coalitions prove to be stable over time.

A minority of studies document coalition defections (Pierce et al., 2017). Jenkins-Smith et al. (2014) argue that one of the main analytical challenges is to identify the rationales for defections. In the Swedish forest policy process opposing a production coalition and an environmental coalition, stability may be attributed to convergence of policy beliefs as well as to resource interdependence, but Hysing and Olsson (2008) attribute the defections observed before the signature of the agreement about the ‘Forest Stewardship Council’ to divergences on priorities. Klindt (2011) reports several displacements of member states between coalitions militating for and against EU flexicurity. In the Swedish policy process on nuclear phaseout, Nohrstedt (2008) makes a distinction between evolutions in the dominant coalition’s policy beliefs, which he attributes to learning, and the stability in its policy preferences as well as in concrete policy, which he attributes to persistence of strong interests (see also Svihula & Estes, 2007). In the U.S. policy process on automotive pollution control, Zafonte and Sabatier (2004) distinguish two rationales of coalitions instability that relate to the overall structure of the subsystem: when amorphous coalitions become active or when a new group of ‘moderate’ policy actors emerge. All in all, existing research assumes that coalitions are stable when their members militate for similar belief systems at times t and t-1 and/or when relation patterns among those members remain constant.

AGILITY OF COALITIONS

In everyday language, agility refers to the ability of quickly adapting oneself to changing conditions or environments. For example, in combat sport the agility refers to the response time with respect to an adversary while ‘agile’ organizations, in management sciences, are those which adapt with their environment (Cunha et al., 2018). In long-lasting policy processes such as for or against nuclear energy, conditions may also change over time. For example, the governing coalition or the public opinion may turn from one side of the debate to the other. Coalitions may have to react on external shocks (e.g., a military attack against a nuclear plant) or on internal shocks (e.g., a catastrophe due to a malfunction of the plant). Finally, opponents may take strategic initiatives to push for their own policy ideas within the subsystem. With respect to these changing conditions, advocacy coalition may be more or less agile too.

We distinguish two forms of agility. First, coalitions may be more or less active. Whereas ACF researchers are advised to empirically ascertain, not only active, but also inactive members of policy subsystems, ACF studies have typically focused on active coalition members. This is not surprising. At first glance, this advice seems to be a vain wish when considering how difficult it may be to identify actors who ‘regularly seek to influence public policy’ (Sabatier & Weible, 2007, p. 192) among those who do not demonstrate any such clear attitude or behavior. Still, a good example of inactive subsystem members are those who, due to the institutional position they hold (e.g., high civil servants), influence the political behavior of other actors because the latter expect the former to issue a veto if they plead for some policy options. ACF studies comparing the members of a same subsystem at periods of nascency and maturity are one exception. In such contexts, ‘amorphous’ coalitions of inactive members becoming active over time have been observed (e.g., Zafonte & Sabatier, 2004).
Alternatively, opposed coalitions tending to form one, when the subsystem has become mature and the political attention has decreased, have also been reported (Radaelli, 1999). Yet, active coalitions becoming amorphous and then turning to active again over time, in mature subsystems, are far less documented in empirical research.

Second, coalitions may play with frames and narratives. This idea is not new. Schön and Rein (1994) argue that policy actors, when trying to convince each other, have to communicate on the reasons (or ‘frame’) which justify the validity of their policy solutions, which supposes a reflection on these reasons. In the same vein, in contexts of uncertainty (e.g., technical of political uncertainty), Roe (1994) suggests that policy actors’ power of convincing others lies in their ability to narrate seducing stories that link the past, the present and the future in an obvious way. Occasionally, frame reflection may lead to learning within advocacy coalitions (e.g., Dudley & Richardson, 1999). Radaelli (1999) illustrates the use of narratives by coalitions involved in the EU policy process on harmful tax competition. Stable coalitions sticking to their policy beliefs may be more or less agile in adapting their framing and narratives to changing conditions in the policy system and subsystem.

We look at coalition agility as a strategy playing a role in the causal processes linking (sub)system events, coalition members’ attitudes and behaviors, and policy processes. Following a change in the systemic governing coalition, coalitions may need to become more active, because their policy positions receive less support from the new decision-makers than from the previous ones. For example, a new government may be less favorable toward hydraulic fracturing. Similarly, changes in public opinion may push coalitions to become noisier. More specifically, changes in the geographical scope of the subsystem may require to reframe a policy position. For example, hydraulic fracturing is classically blamed for its environmental or health risks. If a company wants to explore shale gas in a region that has used to rely on the tourism economy, the anti-fracturing coalition may try to focus on the detrimental effects of such a project on tourism-related jobs. Framing agility may also be used to react on the changing strategy of the adverse coalition. Finally, we suggest that agile coalitions should be winning coalitions, because they are the most able to react to the events in their environment and to the strategies of the adverse coalition.

Analyses of coalition stability may demonstrate that individual policy actors tend to stick to their policy beliefs, preferences, and coalition without showing the agility of the group. On the other hand, an analysis concluding that a coalition is agile in activating its members and reframing its message may give an impression of instability. However, without individual-level analysis, there is no evidence that policy actors who become silent for a period of time are ‘just’ silent or actually defected from the coalition. In this paper, we combine an individual-level analysis of coalition stability and a collective-level analysis of coalition agility and we suggest that coalitions are able to be stable and agile at the same time.

METHODS

EMPIRICAL CONTEXT
The French case on hydraulic fracturing is quite unique, in the sense that policy debates and coalition dynamics resulted in a nation-wide ban on hydraulic fracturing. France also features specific characteristics such as a high centralization level (although some form of devolution has been progressively introduced) and the major role played by the local level on fracking-related issues. Also,
despite very few conventional reserves of oil and gas, France with top-tier companies such as Total or GDF Suez has a prominent industrial and scientific expertise on hydrocarbons.

Fracking became a policy issue in France around 2010. Allegedly major reserves of shale oil and gas were reported in the southeastern France and around Paris by the IEA and the EIA. Prior to 2010, policies regulating the exploration of hydrocarbon resources were relatively favorable to oil and gas companies (Chailleux and Moyson, 2016). According to the French subsurface mineral rights code, the subsoil is considered res nullius, which means that there is no owner. On this basis, the state could issue exploration licenses without consultation of local governments and without the owners’ permission.

We distinguish three major policy changes between January 2010 and January 2017. The first major policy change occurred in March 2010. The Minister of the Environment issued the three first shale gas exploration licenses using hydraulic fracturing. These licenses enabled the exploration of shale gas resources in the south-east of France and did not attract the attention of elected officials or environmental associations. It is interesting to note that shale oil permits were also issued in 2008 in the Paris area and that several hydraulic fracturing tests have been carried out (Bellec et al., 2012), but those have only really started being controversial after 2010.

At the end of 2010, elected officials, as well as various groups of citizens and environmental associations, organized themselves to form an “anti-fracking” coalition. Within this coalition, there were several local and regional communities affected by these permits, green politicians such as José Bové or Michèle Rivasi, as well as hundreds of citizens’ groups. This mobilization resulted in protests involving thousands of people (Terral, 2012). The arguments used by this coalition was not confined to a mere NIMBY approach but addressed much broader issues of ecology, public health and transparency (Chailleux and Moyson, 2016).

Social mobilization against fracking in France had common features with those born in developing countries in the midst of mining conflicts (Bebbington et al., 2008). First, actors grouped into coalitions, sharing different values and interests. Second, visibility via media coverage and public opinion, which went far beyond those strictly concerned with the issue. Third, mobilization on a territorial basis acquired (partly due to a non-NIMBY discourse) national and even European transcendence. Last, unconventional and transgressive collective actions, as well as the involvement of elected representatives at all levels of power and transnational components (the debate has been traced back to the European Parliament). The wide diffusion of the documentary Gasland, depicting the negative consequences of the exploitation of shale gas in the United States, helped strengthening the mobilization and put fracking at the forefront of public debate (Moyson & Chailleux, 2016). The anti-fracking coalition discourse and mobilization soon found its way to national government, and the issue of hydraulic fracturing was thus put on the political agenda of both the parliament and the government. At the end of this period, the French policy subsystem on hydraulic fracturing met the conditions of a mature subsystem.

The second major policy change occurred in July 2011. The French parliament passed the “Jacob Bill” prohibiting the use of hydraulic fracturing in France, followed by a governmental moratorium on fracking and the repeal of the licenses previously issued. Yet, the experimental exploration of shale gas was still allowed. Following the ban on hydraulic fracturing implemented by the Jacob Bill, the industrialists, politicians and researchers favorable to the exploitation of these hydrocarbons organized themselves. This pro-fracturing coalition made several attempts to repeal the ban on fracking.
In March 2012, the General Council for Industry, Energy and Technology and the General Council on the Environment and Sustainable Development published a much-awaited report by the pro-fracking coalition. This report acknowledges the potential risks of hydraulic fracturing and the lack of impact studies but advises the government to leave the door open for “cleaner” technology and more sustainable development of hydraulic fracturing (Bellec et al., 2012). The report also suggested that the government should reform subsurface mineral rights. Nevertheless, the report did not draw much attention and was left unfollowed by concrete political effects (Chailleux and Moyson, 2016).

A second attempt at reopening the debate was made through the publication of the report on French competitiveness, also known as the Gallois report. The commissioner general for investment Louis Gallois had to submit a report in which a close examination of the French economy and its competitiveness on various sectors of activity. In this report, he notoriously advocated “conducting research on mining techniques” (Gallois, 2012) including on shale gas despite the call of Minister Delphine Batho not to reopen this sensitive issue.

In June 2013, the report of OPECST (a special parliamentary committee mandated for this purpose) deems hydraulic fracturing "acceptable" and considers that "hydraulic fracturing remains the most effective and best controlled technique" to extract gas (Lenoir & Bataille, 2013). This report will result in greater political and mediatic effects. Junior partner in the Socialist government at the time, Europe Écologie-Les Verts (the French green party) started being particularly vocal to put pressure on its governmental partner to uphold the complete ban on fracking. A few months later, the Constitutional Council formally approved the Jacob Bill.

Next to the publication of these reports, the opposition of the pro-fracturing coalition enjoys some form of support at the political level. Back when François Hollande was elected President of the French Republic in 2012, he reaffirmed his strong opposition to hydraulic fracturing, supporting the complete ban and a strict interpretation of the Jacob Bill. However, a discrepancy quickly developed within the majority, and more specifically between the Minister of Industrial Recovery and the Minister of the Environment. The former openly supported experimentation and exploration on shale oil and gas. He did so primarily based on economic arguments, echoing the anti-fracturing advocates. He even asked for an alternative report that showed the theoretical profitability of propane fracking. The report was leaked in 2015, shortly after he left office. However, each attempt at bringing back controversy on fracking was met with formal disapproval either by the president or the Prime Minister (Chailleux & Moyson, 2016).

A judicial effort to contest the validity of licenses revocations before administrative courts was also undertaken by some industrial members the pro-fracturing coalition. Although resulting in no concrete results (except Total that manages to regain one of its licenses), some will point the finger at the strange behavior of the French government regarding these lawsuits. Indeed, several courts had repeatedly asked the Ministry of the Environment to reconsider the decisions leading to the repeal of licenses. Requests that were left unanswered by the Minister. It has been described has a way for the state to be “forced” to grant these licenses, which would be a result of the duality prevailing within the governments between pro and anti-fracking.

In the end, the various attempts to reopen the debate on fracking resulted in a statu quo embodied by the Jacob Bill. Those who deemed the legislative framework too loose or too hard were not given satisfaction. However, an interesting point is to be highlighted: the dividing line has changed. The initial debate almost exclusively focused on hydraulic fracturing but drifted to a wider debate on unconventional hydrocarbons. In this regard, the Energy Transition Law of 2015 and, mostly, the Subsurface Mineral Rights Reform passed in January 2017 in the National Assembly may be considered
as the third major policy change in this policy process. This reform forbids the exploration and exploitation of shale gas and oil. Perhaps the key to such a change lies in the fact that local and environmental associations were given access to consultative bodies (Sawyer and Gomez, 2008).

Overall, the anti-fracturing coalition may be considered as the main winner of this policy process: after the issuance of permits of shale gas exploration in March 2010, she managed to get a partial ban (Jacob bill, July 2011) and then a full ban (reform of subsurface rights, January 2017) of shale gas exploration and exploitation. This being said, this reform does not say a word about tight and layer gas, i.e. the types of gas that offer interesting opportunities to hydrocarbon companies in France nowadays but which present similar environmental/health risks too.

DATA COLLECTION AND ANALYSIS
In order to analyze the stability and agility of belief coalitions in the French policy subsystem on hydraulic fracturing, we looked at the stances of those actors in French newspaper articles over time. We also looked at the risks and benefits of hydraulic fracturing that the actors mentioned in those articles. Such a case study of the French policy subsystem and process on hydraulic fracturing is appropriate to examine the new theoretical intuitions formulated in this research about coalition agility.

Newspaper articles published in France between January 1st 2010 and January 31st 2017 have been coded. This time period enabled the collection of data when hydraulic fracturing became a policy issue until the discussions and decision on a subsurface mineral rights reform (see above). This resulted in a dataset containing one row for each statement about hydraulic fracturing expressed in each of the coded articles. In columns, data on the institutional affiliation of the actor making this statement, the nature of this statement, his or her (dis)agreements with other actors, as well as the risks or benefits of hydraulic fracturing he or she mentioned are reported.

Eight newspapers were selected. Three of them are regional newspapers from French regions concerned with hydraulic fracturing (i.e. the South East and Greater Paris): Midi Libre, La Provence and Le Parisien. The five others are the most read, national newspapers: Le Figaro, Le Monde, Libération, Les Échos and La Croix. Together, they cover the entire political spectrum. For example, Libération is left-wing while Le Figaro is right-wing. The articles were collected within the newspapers using the Europresse databasis and a custom research algorithm: ‘(gaz+ | pétrole+) de schiste+” (within the full text) OR “fracturation hydraulique” (within the full text) OR “hydraulic fracturing” (within the full text) OR "hydrocarbure de roche-mère" (within the full text) OR "(gaz | pétrole) & non-conventionnel"(within the full text) AND "France" (within the full text). Editorials, opinions pieces, or letters to the editor were rejected. Hydraulic fracturing had to be the main issue discussed in the article. Articles on hydraulic fracturing focused on other countries than France were also rejected. The selection of articles was made on the basis of article abstracts (rather than full texts) provided by Europresse. The

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1 The data have been collected in the context of an international research project on the politics of hydraulic fracturing supervised by Tanya Heikkila and Christopher Weible, professors at the University of Colorado Denver. The same scheme of data collection has been used for collecting data on all countries analysed in this project (Argentina, China, France, India, United Kingdom and United.

2 It should be noted that there was a very clear distinction between those articles and the articles in which hydraulic fracturing was ‘accidentally’ mentioned in such a way that, despite its vagueness, this search criterion did not reveal to be problematic.

3 Finally, it should be noted that this Europresse search was conducted two times (with the same algorithm): a first time, on the whole period covered by the research; and a second time, on each subperiod of six months. Indeed, we noticed that Europresse seems to be more ‘sensitive’ when used with smaller periods of time, which results in the identification of more articles.
selection process resulted in a list of 254 articles. Regional newspapers represent 120 articles while 134 articles come from national newspapers.

Information about 336 different policy actors involved in the French policy subsystem on hydraulic fracturing expressing statements in these 254 articles have been coded in a dataset of 1,510 rows. In this research, an actor is any organization or, within this organization, any individual named in the article. He or she may be mentioned directly by the author of the article or indirectly by someone quoted in the article. If the quoted actors have nothing to do with our subsystem of interest, we did not include them. Substantively, they have to be related to hydraulic fracturing in some way. Geographically, they may not be French, but they have to be actively involved with the French politics of hydraulic fracturing in some way (e.g., an US company having with commercial interests in France).

Our data include generic information on the article such as its title, source, author, date, but also the organizational affiliation, name, and type of organization of the actor. We distinguished pro-fracturing statements (+1), anti-fracturing statements (-1) and neutral/mixed statements (0). An actor’s position had to be obvious in the article through either a quote or a description of the action of the actor. If a position was not obvious, it was coded as “unspecified”. For instance, ‘pro- fracturing’ was coded if the actor was quoted in the article as being supportive of hydraulic fracturing (or oil and gas development that uses hydraulic fracturing), or if the article described the actor’s actions in a way that makes it clear that the actor is supportive of hydraulic fracturing. Benefits and risks of hydraulic fracturing mentioned by each actor were also coded. We distinguished social, environmental, and economical risks and benefits.

The policy process (April 2010 – January 2017) was subdivided into fourteen periods of one semester. Shorter periods (e.g., quarters) result in a too limited and insignificant number of statements per period, while longer periods (e.g., years) eclipse important momentums and trends within periods. If an actor expressed different positions during the same semester, the mean of these statements was calculated. The spectrum of statements ranging from -1 to 1 was divided according to a rule of three: the actor was considered as pro-fracturing if the average score was between 1 and .33 excluded, as neutral between .33 included and -.33 included, and as anti-fracturing between -.33 excluded and -1. For example, if actor A expressed 3 neutral statements and 1 pro statement during one semester, his average stance for this semester was: (0+0+0+1)/4 = .25, which was reported as neutral or 0.

The coding process was carried out by the two first authors of this paper. The 22 first articles were selected and coded by the two of them separately. The comparison of the results showed no difference in the selection of articles nor in the coding of the stances, and only minor differences in the coding risk and benefits. This led to some clarifications in the coding scheme for the next articles. Intercoder reliability will be supported by further checks in the next versions of this paper.

The data were analyzed at two levels: individual and collective. The individual-level analysis allowed to examine the stability or instability of coalitions, i.e. the absence or presence of defectors expressing different statements regarding hydraulic fracturing when compared to previous periods. The collective-level analysis was concerned with the agility of coalitions. At this level, emphasis was put on the activity of coalitions over the different semesters. On the one hand, we looked at the number of statements vis-à-vis hydraulic fracturing per semester (excluding the ‘unspecified’ ones). On the other hand, we looked at the number and types of risks and benefits mentioned by the actors of each coalition. Overall, this collective-level analysis allows to look at the dynamic evolution of the activity of the coalitions, including the actors and the types of organization composing them, as well as, the evolution and predominance of different framings over time. The interpretation of these data is
allowed by a knowledge of the French politics of hydraulic fracturing relying on a case study presented in Chailleux and Moyson (2016), which relied on interviews and document analyses.

RESULTS

ACTORS AND COALITIONS

Only 19 out of the 336 actors expressed only ‘unspecified’ stances: they are excluded from the remainder of this analysis. The dataset being composed of 1510 rows, the average number of statements per actor between January 2010 and January 2017 equals 4.5. The main organizational affiliation is “national government”, which represents 22.4% of the total. This category encompasses national executives and legislatives bodies and their affiliates. Industrial groups and organizations also appear quite prevalent, making up 17.4% of the actors coded. Interestingly, the "Other" category (14.2%) is also well represented among the actors. This can be explained by the presence of a few vocal members of the European Parliament and other EU-level actors, but also by the activity of courts and court officials on this policy issue. Local government officials and institutions (14%), as well as citizens' groups (11.4%) represent a fair share of the actors. In the French case, these two categories highlight the influence of a grassroots mobilization.

Figure 1. Types of actors in the French policy subsystem of hydraulic fracturing (n=317)

Our data also allow to organize the actors by belief coalition according to their statement: a pro-fracturing coalition, an anti-fracturing coalition, as well as a neutral coalition. The pro-fracturing coalition mainly gathers industrial groups as well as national politicians and civil servants. The former ones represent the majority of pro-fracturing actors, with oil companies such as Total, Hess Oil, Schuepbach or Vermilion. The latter ones are mainly French MPs (such as notoriously pro-fracking Jean-Claude Lenoir or Christian Bataille, co-authors of a milestone report) and actors closely related to the Ministry of the Industry. On the other hand, the anti-fracturing coalition is far more heterogeneous and encompasses a lot of actors from different organizations. National politicians and civil servants remain key players. Undeniably, the Ministry of the Environment plays a major role in the anti-fracturing coalition, but it also enjoys the wider support of the national executive and vocal “Anti” fracking advocates in the legislative bodies. Furthermore, local government representatives, citizen groups and environmental groups have been extensively involved in the anti-fracturing coalition efforts and particularly successful in their attempts to raise awareness on the hydraulic fracturing
controversy. Less visible, the neutral coalition is mainly composed of national politicians and civil servants, but also of researchers.

**STABILITY OF COALITIONS**

We notice that only 18 (5.7%) out of the 317 policy actors of the subsystem changed their beliefs about hydraulic fracturing over time. The types of organizations represented among the actors who changed their mind are different from the rest of the subsystem (see Figure 2). In particular, there are more than 50% of actors coming from the national public administration while these actors are only 25% in the entire subsystem. Among them, two of the most involved ministries (Environment and Industry), as well as all the governments that were in office during the period considered. In comparison, policy actors from local and regional governments were relatively less numerous to change their beliefs over time. Also interesting, policy actors from the two main French political parties (i.e. Parti Socialiste and Les Républicains) are relatively more numerous to change their mind over time than they are in the entire the subsystem. More expectable, representatives of industrials companies are relatively less numerous to change their mind.

![Figure 2. Types of policy actors within the entire subsystem and within the ‘instable’ group](image)

Overall, the 18 policy actors changed their mind about hydraulic fracturing 28 times. The numbers of changes per period (see Figure 3) are pretty small. The period between April 2013 and September 2013 is an exception with seven belief changes (i.e., 25% of all belief changes). Higher belief change during this period is consistent with the ACF expectation that policy actors learn more when research activity and policy dialogue is higher among subsystem members from different coalitions within professional forums (Sabatier & Weible, 2007). Indeed, 2013 was a year of intense research activity in two expert committees mandated by the Parliament: a joint-session committee of the General Council of Industry, Energy, and Technologies (“Conseil général de l’industrie, de l’énergie et des technologies” or CGIET) and the General Council of the Environment and Sustainable Development (“Conseil général de l’environnement et du développement durable” or CGEDD) started work. Belief change was also higher before policy changes, especially before the ban of January 2017 – the third major policy change. However, the significance of these data should be nuanced with regard to the small numbers we are dealing with here (i.e., 15 belief changes coded within the two years before this policy change).
Most of the policy actors who changed their beliefs over time became less favorable toward hydraulic fracturing: nine of them were pro and become neutral or anti-fracturing or were neutral and become anti-fracturing. These actors were representatives of public administrations such as the International Energy Agency the national Ministry of Industry, magistrates in administrative courts or political Members of the national Parliament or Government. In other words, they held positions in public agencies that typically play a brokering role in policy subsystems, according to ACF expectations. In contrast, the four policy actors who became more favorable toward hydraulic fracturing were politicians, with the exception of one academic scientist. The five last policy actors who changed their beliefs over time came back to their original beliefs before the end of the period.

**AGILITY OF COALITIONS**

In this section we look at the activity of belief coalitions, as well as their framing of hydraulic fracturing. We look at the activity of coalitions through the number of media statements of their members with respect to hydraulic fracturing (see Figure 4). Three periods may be distinguished. The first one (April 2010 – September 2010) is a period marked by a total occupation of the mediatic space by the pro-fracturing coalition at the expense of other coalitions that have not yet formed. The permits allowing the exploration of sources of unconventional hydrocarbons were issued during this period.

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4 In this figure and the next ones, the dashed lines refer to the three major policy changes that identified during the policy process: the issuance of new permits of shale gas exploration by the Ministry of Industry (March 2010); the Jacob bill passed at the Parliament, forbidding shale gas exploitation but allowing exploration for scientific purposes (July 2011); and the reform of subsurface rights, forbidding any exploitation and exploration of shale gas but without telling a word about tight and layer gas (January 2017).
The second period (October 2010 – March 2011) was marked by the emergence of anti-fracturing coalition, as well as a high level of activity and domination of this coalition during the next three years: until April 2013 – September 2013, between 28 and 53 pro-fracturing statements (up to 70.5% of all statements) were made per period. In contrast, between 11 and 29 anti-fracturing statements (barely exceeding 40% of all statements) were made during same periods of time.

The third period (October 2013 – March 2016) is characterized by a cross between the number of actors activated in the pro-fracturing and anti-fracturing coalitions and thus alternation in their dominance over the debates between October 2013 and March 2016 as well as by oscillations for each of the coalitions. During this period, the pro-fracturing coalition came first in semester 7, when the Gallois report and the preliminary conclusions of the OPECST report were published, and in semester 11, marked by new attempts to reopen the debate by this coalition. Yet it is also during this period that the anti-fracturing coalition reached the peak of its mobilization share (70.6% in the 12th semester). This could be related to the renewed mobilization of the anti-fracturing coalition following Total’s legal victory over its Montelimar permit. The last period is characterized by a decrease and stabilization of the mobilization as well as a relative rise of the neutral coalition (18.2% of the statements in semester 13).

Interestingly, the activity of the pro-fracturing and anti-fracturing coalitions varied together. Two common peaks may be observed in semesters 2 and 7 (see Figure 4). Between October 2010 and April 2011, a total of 77 actors expressed a statement (compared 19 in the previous semester), which aligns with the emergence of the fracking controversy, the grassroots anti-fracking mobilization and the first debates on the future Jacob Bill prohibiting the use of hydraulic fracturing. The level of activity of the actors subsequently fell back to the following semester before gradually increasing from semester to semester and reaching a second peak between April 2013 and September 2013. It is noteworthy that the Gallois report on French economy and competitiveness, as well as the preliminary conclusions of the OPECST committee, were due just after this period.

We look at framing through the number of media statements of coalitions members with respect to the risks and benefits of hydraulic fracturing (see Figures 5 and 6). Overall, economic benefits,
Environmental/health risks, as well as attempts to minimize them, stand out from the crowd. Environmental/health risks are mostly invoked by the anti-fracturing coalition members, whereas their minimization as well as the economic benefits of hydraulic fracturing are mostly mentioned by the pro-fracturing coalition. This is quite expectable.

Figure 5. Number of media statements on the risks/benefits of hydraulic fracturing (pro-fracturing coalition)

Figure 6. Number of media statements on the risks/benefits of hydraulic fracturing (anti-fracturing coalition)

Quantitatively, we notice important variations in the number of statements made by the two coalitions regarding the risks and benefits of hydraulic fracturing over time. These variations are in line with each other. For example, more risks and benefits were mentioned by the members of the two coalitions during the semesters 2, 6-8, and 11. These variations are also in line with the number of statements.
made by the two coalitions regarding hydraulic fracturing (see Figure 4). This can be related to our measurement method: if many newspaper articles in which pro-fracturing and anti-fracturing statements have been found, it is logical to find more pro-fracturing anti-fracturing arguments based on risks and benefits together with these statements than during other periods of time. Still from a quantitative perspective, it should be noted that variations between periods in the number of risks/benefits-related arguments were higher for the pro-fracturing coalitions than for the anti-fracturing fracturing coalition. Similarly, the pro-fracturing coalition made more arguments overall, despite the higher number of statements made by the anti-fracturing coalitions (see Figure 4). More specific statistics will support these observations in the next version of the paper.

Qualitatively, our coding scheme made possible to identify variations in the types of arguments made by the two coalitions over time. But we notice that, compared to economic benefits, environmental/health risks, as well as attempts to minimize them, arguments based on other risks and benefits of hydraulic fracturing remained completely marginal. Semester 7 (April 2013 – September 2013) is an exception: pro-fracturing actors identified social benefits of hydraulic fracturing seven times whereas this kind of arguments remains marginal during the other periods. Similarly, some sort of strategic framing could have been expected. For example, the anti-fracturing coalitions could have acknowledged some benefits of hydraulic fracturing while the pro-fracturing coalition could have acknowledged some risks (while sticking to their core preferences regarding fracturing). However, we do not observe such strategic framing. Semester 7 is an exception again: environmental/health risks were acknowledged by pro-fracturing coalition members four times. Yet, these numbers remain pretty small.5

DISCUSSION

Our results demonstrate that the coalitions involved in the French subsystem on hydraulic fracturing are extremely stable. In order to assess coalition stability, we have looked at the evolution of coalition beliefs, but not at their coordination patterns. Hence, we have operationalized ‘belief coalitions’ (Zafonte & Sabatier, 2004; Nohrstedt, 2008) rather than advocacy coalitions as such. 94.3% of the actors providing a pro, anti, or neutral statement during one period of time provide similar statements if the next periods (or no statement at all). Most of the policy actors who changed their beliefs over time were members of the national government/administration and became less favorable toward hydraulic fracturing, especially during periods of intense research activity and dialogue within professional forums.

Coalitions stability is consistent with previous conceptual research (Sabatier & Jenkins-Smith, 1999) and empirical research on this topic (e.g., Pierce, 2011). As noted earlier, coalition stability is probable in a mature, adversarial policy subsystem such as the French subsystem on hydraulic fracturing nowadays (Bandelouw & Kundolf, 2011; Weible, 2008). This being said, we did not find many defections, even during the nascence of this subsystem in 2010. While newspaper articles were already used qualitatively to look at coalition stability (e.g., Hersperger et al., 2014), to our knowledge, this is the first time they have been coded in such a systematic way on such a long period of time for that purpose. Most of the few actors who did change their beliefs over time were representatives of the national public administration. This is in line with the ACF hypothesis that governmental agencies hold

5 The analysis carried out on the neutral belief coalition is inconclusive because of a low total number of arguments related to risks and benefits made by its members.
more nuanced positions than other subsystem members, in general (Sabatier, 1993). There is also consensus in the literature that central actors in policy network, such as national administration in this case, have also more opportunities to learn and to change their mind than the others (Riche et al., 2017). In comparison, policy actors from local and regional governments were relatively less numerous to change their beliefs, which suggests that they should be considered as relatively core actors of belief coalitions rather nuanced governmental agencies. This is logical when considering that, as far as hydraulic fracturing is concerned, their representatives defend political interests such as environmental concerns or job opportunities or loss involved by shale gas exploitation.

Stable coalitions may be very agile. Our results have shown important variations in the activity of coalitions as measured by the number of statements made by their members regarding hydraulic fracturing in newspaper articles. After the issuance of shale exploration permits, in March 2010, we notice a very strong rise of the anti-fracturing coalition. We also notice a period of intense activity between April and September 2013, when the policy issue hydraulic fracturing was being discussed in several professional forums. As far as framing is concerned, we also notice similar periods in which arguments related to the risks and benefits of hydraulic fracturing have been more numerous than others. The first period may be related to a classical process of actor activation in the context of a nascent subsystem (e.g., Bandelouw & Kandolf, 2011; Hersperger et al., 2014), in which hydraulic fracturing became a policy issue. But our results also show that coalitions can become silent again during some months before becoming active again when the dialogue among coalitions within professional forums becomes critical to make new policy decisions. This means that stable actors of coalitions can become inactive for some time before turning to active again. In other words, they are agile as a group.

Coalitions were agile together. More specifically, the members of the two coalitions became more active (in newspaper articles) and argued more about risks and benefits of hydraulic fracturing at similar periods of time. We were able to relate those periods with contextual events such as the nascence of the subsystem or intense periods of dialogues within professional forums. Our data, however, do not allow to determine whether coalitions responded directly to those events or whether they responded to their opponents’ strategies.

Finally, does agility make a difference? As noted earlier, generally speaking, the anti-fracturing coalition could be considered as the winner of the French policy process on hydraulic fracturing. We notice that this coalition was the most active one over time (see Figure 4). At the same time, we notice that the pro-fracturing coalition was the most argumentative one: its members referred to arguments based on the benefits of hydraulic fracturing and the minimization of its risks most often than the anti-fracturing coalition used arguments based on the risks of this technique. This is especially true when considering that the pro-fracturing coalition had less opportunities to formulate these arguments over time, given they its members made less statements overall. There are also larger intervals between the number of arguments made during intense periods of policy dialogue and the other periods. Qualitatively, the pro-fracturing coalition used more diverse arguments than the anti-fracturing coalitions did. In other words, the pro-fracturing coalition was more agile than the anti-fracturing coalition in framing the issue of hydraulic fracturing over time. However, the latter has won over the former. Hence, as far as the effects of coalition agility on policy processes are concerned, this study gives more credit to the effect of agility in degrees of activity than to the effect of agility in framing the policy issue.
CONCLUSION

The ACF conceptualizes policy processes as political struggles between coalitions of policy actors whose aim is to transform their policy beliefs and preferences into concrete policies (Jenkins-Smith et al., 2014; Sabatier & Jenkins-Smith, 1993). The ACF is a conceptual platform for three theories of the policy process: policy learning (i.e., belief change), collective action (i.e., coalition behavior), as well as policy change. As far as collective action is concerned, an important theoretical intuition of the ACF is that, in a policy process, the lineup between allies and opponents remains stable over time (Sabatier & Jenkins-Smith, 1999). Does stability involve rigidity or are stable coalitions able to be ‘agile’ in responding to system events and opponents’ strategies by becoming more active in the subsystem or by reframing their policy positions? This is the question that we have explored in this paper, thanks to a case study of the French policy process on hydraulic fracturing (2010-2017) based on the coding of 254 newspaper articles. In doing so, we have distinguished to forms of agility: on the one hand, the ability of coalition members, as a group, to become more ‘active’ than the members of the other coalitions in pushing for their policy positions (here, in newspaper articles) in response to contextual events or to their opponents’ strategies; on the other hand, their ability to push for arguments that support those policy positions more than their opponents do (‘framing’). We expected that agility would be an asset for coalitions to transform their policy preferences into concrete policy decisions.

Our findings suggest that the two belief coalitions involved in this policy process – a pro-fracturing coalition and an anti-fracturing coalition – have been very stable while demonstrating a high level of agility. Hence, looking at similar coalitions from an individual perspective (to assess their stability) or from a collective-level perspective (to assess their agility) may provide different pictures of what happens in a policy subsystem and process (see also Witting & Moyson, 2015). Our data showed that coalition agility is driven by contextual events and by opponents’ strategies but we were not able to distinguish the respective influence of these two factors. Furthermore, our findings suggest that agility of coalitions in activating their members to push for policy arguments was a more successful strategy (here, for the anti-fracturing coalition) than the agility in pushing for multiple and diverse arguments framing the policy issue (which was not favorable to the pro-fracturing coalition).

The results of this study depend on the type of data collected through media coding. Quantitatively, our operationalization of coalition activity through the number of statements of policy actors in newspaper articles could be an indication of media attention toward the policy issue of hydraulic fracturing too (Yanovitzky, 2002). Considering our finding that the activity of coalitions has increased and decreased simultaneously, our worry is especially plausible. Qualitatively, studies relying on the coding of media or legislative hearings may also be influenced by some sort of confirmation bias. Such bias can push journalists and members of parliaments to interview or hear people whose statements will fit with their story/argument (Trumbo et al., 1998), with their willingness to present balanced views, or with the requirement to find witnesses quickly. A possible sign of such bias is the low representation of environmental and citizen associations, in our data, whereas, those associations have much expertise and many interests related to the issue of hydraulic fracturing. In comparison, public officials and politicians are easier to find and, often, willing to speak. Another qualitative bias that may have resulted from our method of data collection is our own willingness to find ‘pro’ and ‘anti’ statements, at the expense of neutral ones. Future research should aim at operationalizing coalition agility through data of which the production depends on coalitions’ initiatives rather than on third parties, such as journalists (with newspaper articles) or members of parliaments (with legislative hearings).

The challenges of future research about coalition agility are also conceptual, theoretical, and practical. Conceptually speaking, resources such as expertise or money are conceptualized as means of coalition
members to implement their political strategies, in the ACF. In this paper, we have deliberately avoided to refer to resources. Yet, some policy actors expressing statements in newspaper articles could also be referred to as ‘mobilizable troops’ – a category of resources defined as ‘members of the attentive public who share their beliefs to engage in various political activities including public demonstrations and electoral and fund-raising campaigns’ (Sabatier & Weible, 2007, p. 203). The present study suggests that the conceptual line between coalition members and mobilizable troops may be difficult to trace. Similarly, we looked at the arguments of coalitions members through the lens of framing. Conceptual relations between this lens and the lens of policy learning could be considered.

Theoretically speaking, future studies looking at the causal mechanisms linking coalition agility with its factors and effects should be hypothetico-deductive. While this research has assessed the existence of agility after subsystem events or in context of research activity within professional forums, future research could test which types of events do or do not lead to agile reactions. Similarly, whether coalitions may react to opponents’ strategies remains unclear. Finally, relations between coalition agility and policy outputs should be tested in new empirical contexts.

Practically speaking, this study has assessed whether stable coalitions may be agile with a focus on the dynamic of actors’ beliefs and statements. A next step of this research program is to understand how coalitions may play with agility. For that purpose, future studies could look, not only at the beliefs and statements of coalition members, but also at the relations that link them together, in order to test whether agility may be the result of an intentional, coordinated strategy.
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