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## **The French ban on hydraulic fracturing and the attempts to reverse it: Social mobilization, professional forums, and coalition strategies**

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### **Abstract**

In France, the French Minister of Environment issued three first licenses involving the exploration of shale gas with hydraulic fracturing in March 2010. The large-scale diffusion of *Gasland*—a documentary demonstrating the negative consequences of hydraulic fracturing—as well as an efficient strategy of social and political mobilization allowed a coalition of anti-fracturing policy actors to get a ban on this extraction technique in July 2011. However, the ban discredited the entire unconventional hydrocarbon industry, which galvanized a coalition of pro-exploration policy actors. Since 2011, various politico-administrative committees (or “professional forums”) were created to discuss on shale hydrocarbons. The design of those committees and the strategic participation of pro-exploration actors have not reversed the ban but led to incremental changes which should facilitate hydrocarbon exploration.

## Introduction

In France, hydraulic fracturing was not a policy issue before 2010, when the Minister of Environment issued three licenses for shale gas exploration.<sup>1</sup> Prior to 2011, this technique was regulated according to the subsurface mineral rights (or “*code minier*”) and the general legislation on extractive industries (this was also the case in Switzerland: see Ingold & Fischer, this book). 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 controversial technique, although in principle, experimental extraction techniques are still allowed.

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 2011, 64 exploration licenses aimed at potential unconventional hydrocarbon had been granted to oil and gas companies and dozens were under examination.<sup>2</sup> The two main basins that could be exploited to extract shale hydrocarbons are the Paris basin (center) and the Southeast basin (Bataille & Lenoir, 2013; Bellec et al., 2012). Conventional exploitation is declining in other basins (see Figure 5.1). The Sarre-Lorraine and Nord-Pas-de-Calais basins (five licenses) contain coal gas that does not require hydraulic fracturing for extraction. In 2006 tight gas exploration was conducted by the French branch of Encana, in the Southeast with hydraulic fracturing tests, but it did not meet the Canadian company’s expectation. In March 2010, the Minister of Environment issued three shale gas licenses in the Southeast. Bellec et al. (2012, p. 25) point out that 39 shale oil licenses on the Paris basin had been examined on January 1, 2011 (out of which only six have been explored).

<FIGURE 5.1 ABOUT HERE>

The general objective of this chapter is to examine the policy process of hydraulic fracturing in France (2010-2015) with the conceptual and theoretical lenses of the advocacy coalition framework

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<sup>2</sup> There is no legal definition of unconventional hydrocarbon in the French regulation.

(ACF) (Sabatier & Jenkins-Smith, 1993; 1999; Sabatier & Weible, 2007; Weible, Sabatier & McQueen, 2009). The ACF conceptualizes the policy process as a struggle among coalitions of policy actors within a policy subsystem. A policy subsystem is a set of people who are regularly involved in the policymaking process regarding an issue like the railways, air pollution, or hydrocarbon exploitation. When there are policy conflicts over policy issues, these people mobilize into coalitions to achieve their policy objectives. The members of a coalition share a system of beliefs and preferences regarding policies. Coalition members use their resources and coordinate their actions to promote the translation of their policy preferences into concrete policies.

Policy change can also be induced by events that are not controlled by policy actors. Those events or “shocks” change the major attributes of the subsystem. The ACF distinguishes between external and internal shocks. External shocks are not specific; they exert an influence on more than one policy subsystem (e.g., changes in socioeconomic conditions, public opinion, governing parties, or new decisions made in other policy subsystems). Internal shocks specifically put into question the beliefs that guide existing policies in a given subsystem (e.g., a nuclear catastrophe when the energy sector relies on nuclear power stations, or a large-scale poisoning in the food sector). In the longer term, the accumulation of new experiences and information related to policy issues also provides new ways of thinking about policy problems and solutions (for a more detailed introduction to the ACF, see Weible et al., this book).

The French policy process of hydraulic fracturing must be situated in the larger subsystem of hydrocarbon exploration and exploitation. In France, hydrocarbon exploitation is a competence of the central state. The Minister of Environment issues licenses after an assessment from the Regional Directorate of the Environment, Planning and Housing. Civil servants in the Ministries traditionally rule the subsystem. On average, there is less attention from elected representatives. However, some of them have developed a significant interest and expertise on this policy issue over time. The main policy actors of the subsystem are companies requiring licenses and civil servants issuing them. Most often, those pro-exploration policy actors want to preserve hydrocarbon exploration, even if some of them

acknowledge the potential risks related to hydraulic fracturing. The controversy over shale gas exploitation divided the subsystem between pro-exploration actors and an anti-fracturing coalition gathering heterogeneous stakeholders with different claims, such as environmental activists or citizens' collectives. The anti-fracturing coalition successfully militated to ban hydraulic fracturing in July 2011. This ban led to a *de facto* moratorium on the whole shale industry, as no alternative, profitable technique existed. Anti-fracturing policy actors also pleaded for the empowerment of civil society and for the lower decision levels (regional and local authorities) to make decisions related to the exploitation of natural resources.

Policy processes also depend on the political system in which the policy subsystem is situated. The French central state is presidential. The president and the National Assembly ("*Assemblée Nationale*") are elected separately in the same year, every five years, on the basis of a two-round election system. Through the prime minister, the president runs the government. In turn, the government runs the central administration. Delegates of the local and regional authorities renew half of the senators every three years. The government (bill 'projects') or representatives and senators (bill 'proposals') submit the bills related to hydrocarbon policy, which the parliament must pass. Bill proposals can concern the same object as bill projects as long as they do not put a strain on public resources. The government or the National Assembly Bureau decides on the examination of the bills (reducing the probability that bills introduced by the opposition are taken into account). Then, they are examined by a commission, which may amend it before a debate in a plenary session. Many bills are never examined.

This chapter looks at the attributes of the pro-exploration and anti-fracturing coalitions and examines the effect of their strategies on the policy process of shale hydrocarbon extraction and hydraulic fracturing. The analysis also points to the effect of an external shock—the 2012 presidential and general elections—and an internal shock—the large-scale diffusion of *Gasland* (Adlesic et al., 2010), a documentary demonstrating the negative consequences of hydraulic fracturing, and the resulting social mobilization against this extraction technique. Finally, throughout a policy process,

various sorts of councils, groups, or committees are often created, for example to formulate or evaluate a policy. The French policy process of shale hydrocarbon is particularly illustrative of this trend: many committees of civil servants or elected officials were formed to discuss and report on several aspects of hydraulic fracturing and hydrocarbon exploitation. The conclusions of those committees influenced the policy process by increasing the information available for policy actors and widening the range of acceptable policy solutions in favor of hydrocarbon exploration. Those committees may be considered as (imperfect) forms of “professional forums,” a key concept of the ACF, because they brought together participants who represented various policy actors involved in the subsystem. Professional forums are successful when they facilitate policy compromises among competing coalitions. In accordance with the literature on “alternative dispute resolution” (O’Leary & Bingham, 2003; Susskind, McKearman & Thomas-Larmer, 1999), the ACF argues that professional forums have desirable characteristics to be successful, including a good representativeness of the various policy actors involved in the policy subsystem as well as a focus on empirical issues. On the one hand, representative forums allow each coalition to push for its own policy arguments. On the other hand, it is easier to compromise on empirical issues rather than on normative issues (Sabatier & Weible, 2007, pp. 205-207).

To analyze this policy process, we collected 486 press articles from the main French newspapers (*Le Monde*, *Libération* and *Le Figaro*). We also looked at the most important decisions made by the central state (ministerial rules, government decrees, and parliamentary bills). To examine the attributes of the advocacy coalitions in this subsystem, as well their strategies and actions, we relied on 24 interviews with key policy actors, such as civil servants from the central administration, scientists from universities and research centers affiliated to the central administration, as well as delegates from citizens’ collectives and environmental associations.<sup>3</sup> The questions of our interview guide that we used in this study are listed in the Appendix. To map the advocacy coalitions, in addition to some general questions, we submitted our interviewees a list of arguments related to unconventional

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<sup>3</sup> All interviews were recorded by Sébastien Chailleux.

hydrocarbons and hydraulic fracturing retrieved from newspaper articles on this topic (questions 1 to 5 in the Appendix). We combined these questions with other questions on the coordination among policy actors (questions 6 to 10 in the Appendix). Finally, we examined the discussions and reports of four committees (professional forums) that the government or parliament mandated, at different steps of the policy process, to look at several issues related to shale hydrocarbon extraction and hydraulic fracturing (Bellec et al., 2012; Durville et al., 2012; Gonnot & Martin, 2011; Lenoir & Bataille, 2013; Tuot, 2013).

### **Case study: The policy process of hydraulic fracturing in France**

In our case study, we examine the French policy process of shale hydrocarbon extraction and hydraulic fracturing. We use the ACF and identify two coalitions—a “pro-exploration” coalition and an “anti-fracturing” coalition. Over four periods of time between 2008 and 2015, we show how coalition strategies, together with other factors such as external and internal shocks or the effect of professional forums, resulted in concrete policy changes. The milestones of this policy process are summarized in Table 5.1 and analyzed in further details in the next sections of this chapter. The ACF analysis of this policy process is synthesized in our conclusions (see Table 5.2).

<TABLE 5.1 ABOUT HERE>

#### **2008 – February 2011: Mobilization against hydraulic fracturing and activation of an anti-fracturing coalition**

Before 2010, the policies regulating the exploration of hydrocarbon resources were relatively favorable to oil and gas companies. According to the French subsurface mineral rights, subsurface is *res nullius*, which means that there is no owner. Based on this, the state could give exploration licenses with no consultation of local governments and no authorization from the landowners (exploitation licenses required public inquiry and consultation mandated by prefects, who are delegates of the central state at the local level). In March 2010, the Minister of Environment issued three first licenses

involving the exploration of shale gas with hydraulic fracturing. Those licenses concerned shale gas exploration in southeastern France. They did not draw any significant attention from elected officials or environmental associations. However, those licenses became the focus of a growing social protest. It is worthwhile to note that shale oil licenses were also issued in 2008 in the Paris region and several tests involving hydraulic fracturing occurred (Bellec et al., 2012), but they only became contested as a result of the controversy on the licenses of March 2010.

At the end of 2010, some elected officials, together with various citizens' collectives and environmental associations, mobilized and formed an "anti-fracturing coalition." On the one hand, several local authorities, often led by the green party "*Europe Ecologie*," seized upon this policy issue. Several regional parliaments (e.g., the Regional Council of Rhône-Alpes) initiated debates about restrictions on the development of hydraulic fracturing. A green representative insisted, "Europe Ecologie has been a spearhead."<sup>4</sup> With other leading figures of the French green party, like José Bové or Michèle Rivasi, they supported networking and communication in the areas concerned with fracturing licenses. On the other hand, more than a hundred of local citizens' collectives emerged (e.g., in Ardèche), leading to demonstrations gathering thousands of people (Terral, 2012). Those collectives, however, did not pursue a NIMBY approach, which avoided the opposition's interpretation that their argument was simply a NIMBY reaction.<sup>5</sup> Rather, they linked their opposition to environmental worries, health concerns, and transparency problems. This frame demonstrates "the ability of actors to build a set of critiques that fit local problems into a broader issue" (Chateauraynaud & Zittoun, 2014). The social mobilization soon reached the Paris Region as citizens there were also concerned with the shale oil licenses involving hydraulic fracturing.

Our interviews show that the members of this anti-fracturing coalition succeeded in developing a base of shared beliefs related to environment, public health, and participatory decision-making. They

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<sup>4</sup> Interview with a representative of the Green Party in the Regional Council of Rhône Alpes, May 2012.

<sup>5</sup> NIMBY or "Not In My Back Yard" arguments against a project are motivated by the negative consequences of this project on one's personal well-being because it will be developed in one's direct environment or in the direct environment of one's house, office, etc. NIMBY interpretations of opponents' arguments are often used by project proponents to discredit the opponents as egoist people, unaware of wider issues.

saw hydraulic fracturing as a new, dangerous technique for exploiting dirty resources. They supported the prohibition the exploration-exploitation of all hydrocarbon resources that need stimulation techniques to be extracted.<sup>6</sup> They believed that hydraulic fracturing led to air, water, and soil pollution, as well as health and environmental hazards. They also supported a more decentralized and democratic management of local lands, which involved a reform of subsurface mineral rights. They claimed that the shale industry could not be integrated with their local economies, which were based on tourism and agriculture. They favored renewable energies investment over fossil-fuels development.<sup>7</sup>

Despite a common claim against hydraulic fracturing, the coordination among the members of the anti-fracturing coalition was far from obvious. In fact, the anti-fracturing coalition was composed of different groups with their own motivations. These groups agreed on some common, basic claims, including the cancelation of the contested licenses and the ban on hydraulic fracturing. However, their positions covered a wide range of nuances, especially on the conditions to re-introduce hydraulic fracturing. Some policy actors pleaded for a total ban on all hydrocarbons, whereas others simply called for an impact assessment of hydraulic fracturing. This has made the coordination among them quite difficult.

Environmental organizations helped link the controversy on shale gas exploitation to energy transition.<sup>8</sup> Environmental organizations associated with and/or funded by public authorities, such as *France Nature Environnement*, were more prone to compromise whereas the most critical organizations refused any development of shale hydrocarbon exploitation.

Local authorities successfully pressured the central government by taking a stance against the industry within their own jurisdiction. Some of them even went beyond their jurisdiction, such as the municipalities, which banned hydraulic fracturing with municipal bylaws. At the departmental level, some general councils asked jurists for support to oppose gas companies.<sup>9</sup> At the local level, hydraulic

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<sup>6</sup> Interview with a member of Collectif 07, March 2012, as well as with a member of Collectif Causses-Méjean, April 2012.

<sup>7</sup> Those beliefs are present in all interviews with opponents as well as their pamphlets and documentation (e.g., the tracts of the Collectif 07 on <http://www.stopaugazdeschiste07.org>).

<sup>8</sup> Interview with a member of Friends of the Earth, March 2012.

<sup>9</sup> Interview with a member of Conseil Général de l'Ardèche, July 2012.



fracturing did not threaten the different locales in the same way. Communities that rely on tourism or on integrated farm management were specifically concerned with hydraulic fracturing in the southeastern basin.<sup>10</sup>

At the central level, civil servants were divided between an anti-fracturing and a pro-exploration position. This position depended on, among other things, their institutional affiliation. For example, most of the civil servants managing license issuance, at the Ministry of Environment and the Ministry of Economy, were geologists and engineers who tended to see hydraulic fracturing as the mining companies' engineers did: a safe and well-known technique.<sup>11</sup> However, the officials from the Ministry of Environment tended to struggle against hydraulic fracturing more than the officials from the Ministry of Economy. Similarly, at the political level, all of the parties took a position against hydraulic fracturing. This includes the *Union pour un Mouvement Populaire* (UMP), the right-wing party of the Minister of Environment and the Minister of Economy at that time. However, the Minister of Environment opposed the industry without nuance,<sup>12</sup> whereas the Minister of Economy was less prone to a total ban.<sup>13</sup> In fact, overall, the initial number of anti-fracturing ministers, representatives, and senators was relatively scarce (except for a few members of the Green Party). Most of them were agnostic. Shale gas was, however, not an issue in early 2011. As mentioned above, the legislation on hydrocarbon exploitation used to be favorable to hydraulic fracturing. Hence, much of the anti-fracturing policy actors' work was to convince civil servants and elected officials that hydraulic fracturing was undesirable. This occurred during the next period of the policy process.

### **March 2011 – July 2011: Ban on hydraulic fracturing and activation of a pro-exploration coalition**

The Minister of Environment and the Minister of Economy responded to the social and political mobilization by asking companies to postpone all prospecting projects (a *de facto* moratorium).

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<sup>10</sup> Interview with an official from the Conseil Général de l'Hérault, July 2012; with a Mayor from Ardèche, July 2012.

<sup>11</sup> Interview with a member of the General Directorate on Energy and Climate, December 2014.

<sup>12</sup> AFP, « NKM attaque Borloo sur "l'erreur" du gaz de schiste », *Le Point*, May, 5th, 2011.

<sup>13</sup> AFP, « Besson : "La France n'a pas fermé la porte au gaz de schiste" », *Libération*, February 16, 2011.

However, following the broadcasting of *Gasland* (Adlesic et al., 2010), an American documentary showing the impact of the shale industry on the environment and on public health, the mobilization grew.<sup>14</sup> In addition to individual activists, the number of local citizens' collectives increased drastically and local elected officials swelled the ranks of the anti-fracturing coalition.<sup>15</sup> Between January and May, a flash mobilization sprawled (Chateauraynaud & Debaz, 2011; Terral, 2012); hundreds of informative meetings were held in town halls, petitions were signed, demonstrations were organized, and representatives from all political parties used their resources to gather information or to block further developments of the shale industry (e.g., restrictions on the number of trucks on municipal roads or a direct municipal ban on hydraulic fracturing). Opponents demanded the withdrawal of the contested licenses and a ban on hydraulic fracturing.

The media supported the framing of anti-fracturing policy actors: most press articles associated hydraulic fracturing with concerns related to the environment and to public health. Twenty-two out of 60 national press articles from February to May mainly stressed that hydraulic fracturing was a threat. Twenty articles also emphasized ground water pollution, but they also supported the economic advantages of exploring the resources (12 articles stressed the role of technical progress, 11 articles described the shale industry as an Eldorado, and eight underlined the need for exploration).

The National Assembly put hydraulic fracturing on its agenda in March 2011. At that time, the Socialist Party, a left-wing party, was in the opposition whereas the UMP, a right-wing party, was in the majority. Each of them introduced its own bill proposal to ban hydraulic fracturing.<sup>16</sup> Christian Jacob was the first author of this bill. He was also the UMP leader in the National Assembly, as well as the Representative from Seine-et-Marne, an area concerned with licenses for shale oil exploitation. Shortly after, Representatives Havard and Chanteguet delivered a short report on this proposal on behalf of the Sustainable Development Committee of the National Assembly (Havard & Chanteguet,

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<sup>14</sup> The documentary was dubbed, edited and broadcasted in public meetings, on the Internet and even on the national television (Canal Plus), in April. It had a key role in shaping the public awareness of what hydraulic fracturing was and it was credited of a "decisive influence on the national debate" in the official reports (e.g., Gonnot and Martin, 2011, p. 39).

<sup>15</sup> We listed about 200 of such collectives in 2013.

<sup>16</sup> Bill proposal of Mr. Christian Jacob and several of his Colleagues aiming at banning exclusive licenses for exploring unconventional hydrocarbons and forbidding their exploitation on the national territory, nr. 3301, submitted on March 31, 2015.

2011). In spring 2011, a consensus existed among parties about the ban on hydraulic fracturing: “we may not take the risk of allowing on our national territory the development of problematic techniques and accepting that irreversible damage is caused to our environment; securing our energy supply is a major concern to which we may not sacrifice our values” (Havard & Chanteguet, 2011, p. 9).

In accordance with this consensus, the first draft of the bill simply banned unconventional hydrocarbon exploration-exploitation and hydraulic fracturing as a technique for extracting shale hydrocarbons. However, there was no consensus on blocking the exploration of shale hydrocarbons *per se*. Several representatives and senators wanted to preserve an option to exploit shale hydrocarbons with hydraulic fracturing, if this technique was improved. For this reason, Senator Claude Biwer (UMP) introduced an amendment to the bill proposal. According to this amendment, “experimentations” on hydraulic fracturing would be allowed. Further, a committee would annually review progresses and decide whether and how it is possible to develop the shale industry. The bill (including Biwer’s amendment) was passed in June and signed in July.<sup>17</sup> It became known as the “Jacob Bill.” Accordingly, in October 2011, the government canceled the three controversial licenses. The other licenses were maintained, but the companies were forbidden from using hydraulic fracturing. In fact, the company Schuepbach Energy was the only one to declare it would use hydraulic fracturing, so its licenses were automatically removed in accordance with the law. The company Total declared it would stay within the confines of the law and would look for conventional hydrocarbon. However, the Minister of Environment considered that its report was not credible and canceled its license. No shale oil license was canceled.

While anti-fracturing policy actors regretted the authorization of experimentations, the ban actually discredited the whole industry of shale hydrocarbons. Inhabitants and local officials became suspicious of companies that asked for shale oil licenses and then claimed conventional oil targets. Social mobilization expanded to almost all areas concerned with oil and gas licenses. In Jura, for

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<sup>17</sup> Bill nr. 2011-835 of July 13, 2011 forbade the exploration and exploitation of shale gas and oil with hydraulic fracturing and abrogated exclusive exploration licenses, including projects involving the use of this technique, published in the Official Journal of July 14, 2011. The Jacob Bill also created an assessment committee on the experimentations of hydraulic fracturing. However, this committee was never implemented by the government, partly because the anti-fracturing policy actors judged that they were not sufficiently represented within this committee, and refused to participate.

example, the company Celtique Energy has owned three licenses since 2006, however they faced contestation when the ban passed. Hydrocarbon exploration became a touchy issue. In fact, the Ministry of Environment only issued two licenses for coal gas between 2011 and 2014.<sup>18</sup> In addition, no alternative extraction technique was available. Hence, the strict interpretation of the ban meant that the moratorium on the exploration of shale hydrocarbons was maintained.

This led to the activation of a pro-exploration coalition of policy actors who pleaded for the facilitation of shale hydrocarbon exploration, as well as for stabilizing the legal framework of the industry. For those actors, the empowerment of the civil society, as well as regional and local authorities, was sufficient. Environmental protection was already enforced in the *Code minier*. Rather, a reform of the subsurface mineral rights should aim to simplify and shorten the administrative process to get a license (up to 18 months).<sup>19</sup> Pro-exploration actors used article four of the Jacob Bill to claim authorizations for conducting experimentations on hydraulic fracturing and assessing shale resources. “We should be sure that there is a resource before starting debating.”<sup>20</sup> They argue that the exploration of basins would increase our knowledge on existing resources, and that the experimentation of extraction techniques (including hydraulic fracturing) would improve them. The exploitation of shale hydrocarbons is desirable because this could increase the energy independence of the country, decrease the energy costs of citizens and companies, as well as contribute to job creation. The risks of hydraulic fracturing, they argue, are well controlled. The benefits of hydraulic fracturing and related techniques overcome their disadvantages.

The pro-exploration coalition of policy actors was composed of the early few supporters of the industry, who even defended hydraulic fracturing, as well as later supporters who only stressed the importance of exploration and experimentation. In addition to gas and oil companies, the main advocates of the exploration of the shale resources belong to the organizations that provide specific

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<sup>18</sup> Interview with a member of the Directorate of Energy and Climate (Ministry of Environment), December 2014, and Bureau of Exploration-Production Hydrocarbons monthly bulletins.

<sup>19</sup> Interview with a member of European Gas Limited, May 2015.

<sup>20</sup> Interview with a member of IFP Energies Nouvelles, August 2012.

expertise on these topics. For example, a scientist employed in such an organization said that, “there is no insuperable technical problem. We need to take into account environmental and societal issues.”<sup>21</sup> Most of them were insisting on their neutral position, stating that, “our mission is to provide knowledge, not to take stance pro or against this subject.”<sup>22</sup>

At the political level, the support of representatives and senators depended on various factors. Generally speaking, right-wing politicians became more sympathetic to the economic arguments of pro-exploration actors over time.<sup>23</sup> However, the representatives from the regions directly concerned with hydraulic fracturing were less prone to support the shale industry (e.g., Christian Jacob). Some left-wing representatives, such as the future Minister of Industrial Recovery, Arnaud Montebourg, also supported the pro-exploration coalition. It was the shale hydrocarbon industry that was supported and not explicitly hydraulic fracturing.

We interpret the political success of the anti-fracturing coalition as the combined effect of its strategy and an internal shock. Despite the difficult coordination among its members, the anti-fracturing coalition was very strong in mobilizing a wide range of resources to struggle against hydraulic fracturing. In comparison with pro-exploration policy actors, they lacked financial resources as well as strong connections with mobilizable troops with formal authority within the central state (e.g., top civil servants). However, anti-fracturing policy actors succeeded in mobilizing activists, public opinion, the media, and local officials. There were numerous press articles, demonstrations or informative meetings in town halls, which were mainly focused on discussing the dangers of hydraulic fracturing. Citizens’ collectives also achieved success at framing their local worries into concerns of general interest (threats on public health, the environment, and the economy). This being said, the mobilization of the anti-fracturing policy actors benefited from a social mobilization, which largely exceeded the effect of their political strategy. This is partly related to the impact of *Gasland* (Adlesic et al., 2010). This documentary put into light the inadequacy of existing policies regarding the threats

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<sup>21</sup> Idem.

<sup>22</sup> Interview with a member of INERIS, August 2012.

<sup>23</sup> The former President Nicolas Sarkozy proclaimed his support to shale gas in September 2014.

of hydraulic fracturing. Together, the diffusion of *Gasland*, as well as the social and political mobilization, correspond to the ACF definition of an internal shock.

In July 2011, the 2012 presidential and general elections were very close. As such, they can be framed as an external shock. Elections are a specific sort of shock. Unlike other external events, elections are most often very expected. Hence, they produce their effects on policy processes not only after, but also before they occur. The French policy process of hydraulic fracturing is particularly illustrative of this. Between March and July 2011, elected officials were attentive to the effect of their decisions on public opinion and preferred to appear closer to popular worries than to companies' demands. Given the social mobilization against hydraulic fracturing, this probably played a very significant role. However, we have no empirical evidence to prove this analytical speculation.

### **June 2011 – November 2013: Succession of professional forums**

Between June 2011 and 2013, several committees were mandated by the government or the parliament to work and publish their work on issues related to hydraulic fracturing. These committees were “professional forums,” in ACF terms, because they were sufficiently open to welcome—or to hear—people from many groups concerned with hydraulic fracturing (officials, politicians, companies, citizens, associations, etc.). At the same time, they were sufficiently closed to admit only people who were significantly involved in the policy process and who had good knowledge about the policy issue. Some of those forums were mandated before the Jacob Bill was passed, but they only published their report once hydraulic fracturing was banned. In what follows, we show how the design of those forums as well as the strategic participation of pro-exploration policy actors contributed to open minds regarding the exploration of unconventional hydrocarbon resources as well as the experimentation of alternative extraction techniques.

In February 2011, 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. The CGIET is a committee from the Ministry of Economy while the CGEDD is a committee from the Ministry of Environment. They are composed of public officials with expertise. Two officials from each of the two committees composed the Joint Committee. The Joint Committee was mandated by the Minister of Economy and the Minister of Environment in early February, when protests became louder. The Ministers asked companies to postpone their drilling projects until the Committee published its report. The Joint Committee was presented as a regular administrative process by one of its member: “this is quite naturally that ministers turned towards general councils to obtain responses.”<sup>24</sup> It benefited from a technical mandate insisting on potential development, techniques, legal frame, and environmental impacts. The Joint Committee published a stage report in April 2011, but representatives did not wait for the final report to pass the Jacob Bill. The Joint Committee published its final report in February 2012 (Bellec et al., 2012; Durville et al., 2012). This report acknowledged the potential risks of hydraulic fracturing and the lack of impact studies, but advised the government to let the door open for “cleaner” innovations and a more sustainable development of hydraulic fracturing. It also suggested that the government should reform the subsurface mineral rights. The report did not draw much attention. One reason, probably, is that it was published a couple of months before the general elections and no candidate campaigned on a pro-fracturing stance. However, it preceded (and supported) the creation by the government of the national assessment committee mandated to supervise experimentations (despite its creation, this committee planned by the Jacob Bill did never concretely work).

A parliamentary information committee coordinated by Representatives Gonnot and Martin was set up in March 2011 and published its report in June 2011 (Gonnot & Martin, 2011). Pressured by their electorate, representatives wished to collect information without having to wait for the administrative report from the administrative CGIET-CGEDD Committee. The Jacob Bill was also passed before the publication of this report. This report underlined the limited knowledge on the exact

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<sup>24</sup> Interview with a member of the CGIET, October 2014

amount of hydrocarbon resources within the French soil, the lack of impact assessments of hydraulic fracturing on the environment and public health, and the inadequacy of subsurface mineral rights. Interestingly enough, on the basis of a common report, Gonnot and Martin took opposite stances in their conclusions. On the one hand, Gonnot (from the right-wing UMP) displayed his support for exploration and the potential economic opportunities of shale industry. On the other hand, Martin (from the left-wing Socialist Party) underlined energy transition and the goal of reducing green house gas (GHG) emissions.<sup>25</sup>.

The presidential and general elections occurred in April-June 2012. At the National Assembly, the Socialist Party (with smaller allies such as the Green Party) led the new majority. The new President of the Republic is François Hollande. He claimed his strong opposition to hydraulic fracturing, confirming the ban and a strict interpretation of the law.<sup>26</sup> However, discordance soon appeared within the majority between the Minister of Industrial Recovery and the Minister of Environment. Most of the socialist representatives opposed hydraulic fracturing, but they tended to be more open-minded about alternative techniques. Minister of Industrial Recovery Arnaud Montebourg multiplied statements in favor of experimentations and exploration, on the basis of economic arguments. He even asked for a shadow report that showed the theoretical profitability of propane fracturing, which leaked to the media in 2015, only after his dismissal from the government. However, each time, he was rectified by the President or Prime Minister.

In November 2012, the Parliamentary Committee for the Assessment of Scientific and Technological Choices (*“Office Parlementaire d’Evaluation des Choix Scientifiques et Technologiques”* or OPECST) was mandated by Parliament to assess alternative techniques for exploiting shale hydrocarbons<sup>27</sup>. This mission was coordinated by Senator Lenoir and Representative Bataille. The OPECST is composed of 36 representatives and senators. It is supported by a Scientific

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<sup>25</sup> Philippe Martin became Minister of Environment in 2013-2014.

<sup>26</sup> The Ministry of Environment supports a close examination of the licenses and forbids licenses aiming shale deposits even if companies do not declare using hydraulic fracturing.

<sup>27</sup> To be precise, the OPECST Committee asked the Parliament to be mandated on grounds that the assessment committee on experimentations of hydraulic fracturing was not implemented.



Council of Researchers from various public authorities, universities, and companies. The conclusions of this Committee were far more optimistic than previous reports; it concluded that “alternative techniques to hydraulic fracturing do exist, which means that there is no need of water to extract shale hydrocarbons. (...) Hydraulic fracturing has made important progresses (...) this is a technology, admittedly industrial and risky, but mastered and reasonably usable in a developed country with high environmental requirements” (Lenoir & Bataille, 2013, p. 9). The OPECST pleaded for a reinforcement of research in France on this topic and not, “as a strict interpretation of the bill of July 2011 tends to suggest, for a generalized withdrawal of shale hydrocarbons” (Lenoir & Bataille, 2013, p. 9).

All in all, the conclusions that came out of the work of those successive professional forums clearly evolved over time. Admittedly, the classical method of hydraulic fracturing was not approved. However, the distrust over shale hydrocarbons disappeared even though the attempts to reopen the debate all failed. The view on this industry became more and more positive. This evolution results from two key characteristics of those forums. First, their representativeness of anti-fracturing policy actors was weak. In particular, companies and the central public administration were overrepresented in the composition of the committees, compared to the local authorities, environmental associations, and citizens’ collectives. There was also more room for the arguments of pro-exploration policy actors in the hearings conducted in the professional forums as well as among the references used in their reports. The ACF suggests that representative professional forums facilitate policy compromises among competing advocacy coalitions. A corollary statement is that non-representative forums give more room to the arguments of the policy actors who are overrepresented. Our findings fit with this expectation.

Second, professional forums focused on empirical issues (“how should we exploit shale hydrocarbons?”). They looked at issues such as amounts of water, chemical products, security perimeters, numbers of trucks, etc. Related to this, they mostly focused on technical questions that should be addressed to reduce the scientific uncertainty surrounding the extraction of shale

hydrocarbons. By showing the accumulation of knowledge and information about those issues, professional forums highlighted the reduction of technical uncertainty (this trend is also observable in the UK case: see Cairney, Fischer & Ingold, this book). They also pleaded for more research on the questions that remained unresolved. In contrast, the normative question—“should we exploit shale hydrocarbons at all?”—was mostly eluded. The discussion process did not leave much room to the philosophical, societal, or environmental arguments developed by anti-fracturing policy actors. The ACF suggests that it is easier to, within professional forums, compromise on empirical issues than on normative issues. This case study illustrates that a focus on empirical issues can also favor the (empirical) arguments of one coalition, compared to the (normative) arguments of another.

At this period of the policy process, media attention for hydraulic fracturing also decreased. For example, between October and December 2013, only 27 newspaper articles concerned hydraulic fracturing. Newspapers had also become more tolerant or even supportive regarding hydraulic fracturing: nine out of those 27 articles still underlined hydraulic fracturing as a threat and six reported the international struggles against the shale industry. However, nine articles also stressed the necessity of exploration, seven the benefits for energy independence, six suggested to let the door open, and six pointed out the inadequacy of the Jacob Bill. Hydraulic fracturing was still synonymous with social mobilization, but the economic arguments have gained support amongst representatives, media, and public opinion.

### **December 2013 – 2015: Toward a success of the pro-exploration coalition?**

In February 2013, the Prime Minister mandated top official Thierry Tuot to coordinate a working group on the reform of subsurface mineral rights (a previous report had been published in 2011 without any political implementation). This group is composed of delegates from the central administration, local authorities, research centers, companies, unions, as well as activists from environmental associations. It is a new professional forum but it is more representative of anti-fracturing policy actors and, as explained above, its work began in a context where shale hydrocarbons

had lost media attention. The group published a first report in December 2013 (Tuot, 2013). Then, its work stagnated for several months.

In March 2015, however, a draft of bill project was submitted to the government on the basis of the 2013 report.<sup>28</sup> This project contains several measures that should allow all stakeholders, including environmental associations and local citizens' collectives, to be consulted before the issuance of licenses. It also ensures compensations when those activities cause environmental damage. Finally, the project organizes a better distribution of fiscal revenues between the state and the local authorities. However, the project mostly organizes a procedure that should allow companies to get more local allies through better profit sharing with the municipalities. The project also aims at improving the legal security of exploitation projects. Finally, stakeholders are brought together in a "High Council of Mines" that will be responsible for preparing and updating a national plan indicating where and which hydrocarbon resources may be exploited. The composition of such a council has yet to be determined.

A bill on energy transition has also been discussed since June 2014. This bill mainly aims to reduce energy consumption, decrease greenhouse gas emissions, and reduce the rate of fossil fuels in the energy mix. These goals neither favor shale extraction nor dismiss it (greenhouse gas emissions can be reduced by substituting coal by gas). Shale hydrocarbons were only mentioned when a group of senators tried to introduce an amendment on assessing the resources of unconventional hydrocarbons. This amendment reactivated the anti-fracturing policy actors who mobilized through an Internet campaign and succeeded to reject the amendment. This episode showed the still vivid social mobilization against the shale industry.

At the moment of finalizing this chapter, the reform of subsurface mineral rights is being discussed at the governmental level. The bill on energy transition is being discussed at the National Assembly. All in all, the situation has become far more favorable to pro-exploration policy actors. First, pro-exploration narratives benefit from a qualitatively more positive attention from the media. In contrast, anti-fracturing narratives receive a quantitatively less important attention. Second, opinion

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<sup>28</sup> Thierry Tuot was heard by the Committee of Sustainable Development and Land Settlement of the National Assembly on March 10, 2015 .

polls suggest that there was only 48% of experimentation supporters in August 2012 (IFOP, 08/01/2012). But it grew to 58% in March 2013 (IFOP, 03/27/2013) and up to 69% in February 2014 (Opinionway, 02/10/2014). Third, we showed how the reports from various professional forums have become more and more favorable to unconventional resources assessment as well as experimentations on various extraction techniques. As a result, the ban on hydraulic fracturing still applies, but the exploration of unconventional resources and the experimentations on alternative extraction techniques is obtaining official attention and research funding.<sup>29</sup>

The success of pro-exploration policy actors fits with ACF expectations. Proponents of controlled hydraulic fracturing are few in number, but they have strong relations with the key administrative and political decision-makers, within the policy subsystem. At the political level, networks were created by elected officials, such as the *Club énergie et développement* of the Representative Gonnot (UMP). They organize events such as annual meetings. Meetings are held on shale hydrocarbons in the *Académie des sciences* or *Ecole des mines*, for example, and gather top civil servants, delegates of gas/oil companies, as well as politicians (Baudrin et al., 2014). In January 2015, companies coalesced into a new lobbying structure, the Unconventional hydrocarbons center, which militates for shale exploration and a “long term project.”<sup>30</sup>

At the administrative level, there are also well-established relations among top officials and proponents of hydraulic fracturing, especially delegates and lobbyists from the industry as well as public research agencies such as IFPEN,<sup>31</sup> BRGM,<sup>32</sup> or INERIS.<sup>33</sup> Those people share a similar educational background in engineering, geology and other related fields from common organizations

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<sup>29</sup> For example, in July 2013, the National Center for Scientific Research signed an agreement with the Bureau of Geological and Mining Surveys to map and provide new data on the French underground resources; a pluri-disciplinary project on coalbed methane exploration in Lorraine was also funded; in June 2014, the European Research Funds supported the development of innovative techniques to assess the risks related to hydraulic fracturing and to model exploitation.

<sup>30</sup> Jean-Louis Schilansky, former President of the French Oil Producers Coalition and new President of the Unconventional Hydrocarbons Center, in *Le Monde*, January 29, 2015.

<sup>31</sup> “*Institut national du pétrole et des énergies nouvelles*”: National institute of oil and new energies (a former professional organization which became an industrial and commercial public agency in 2010, with research and training missions).

<sup>32</sup> “*Bureau de recherches géologiques et minières*”: Bureau of geological and mining research (mining research, support to public policies, international cooperation, mining security and training).

<sup>33</sup> “*Institut national de l’environnement industriel et des risques*”: National institute for the industrial environment and risks (public agency in charge of assessing and preventing industrial risks as well as studying chemicals and subsurface exploitation).

such as the *Corps des Mines* or *Ecole Polytechnique*. There are also strong links of public research agencies with gas and oil companies.<sup>34</sup> They depend on their money to fund research programs. For example, IFPEN participated in the Gas Shales in Europe (GASH) project sponsored by the main oil and gas companies. Finally, the regulation of hydrocarbon exploitation has usually relied on privileged relationships between companies demanding licenses and the central administration issuing them. “We are told to be too close to the companies and to help them. Sure we help them but we also control them,” a civil servant said.<sup>35</sup> However, the relationships between state engineers and companies’ engineers is far more structured than any relationship between activists and the Ministry of Environment. In addition, even if the Ministry regularly consults associations such as *France Nature Environnement*, these are not the most critical associations.

In 2010-2011, it was difficult for the proponents of controlled hydraulic fracturing to express their point of view. The social mobilization was important, the media attention was high, and the political support for anti-fracturing policy actors was strong. In addition, the presidential and general elections were forthcoming. Since the Jacob Bill was passed in July 2011, however, the anti-fracturing policy actors have lost most of their political resources. First, media attention and popular support decreased. On the one hand, hydraulic fracturing was formally banned. Hence, anti-fracturing arguments lost much of their significance. On the other hand, environmental issues other than hydraulic fracturing have drawn growing attention. They include, for example, the use of pesticides or the construction/extension of public infrastructures such as airports. Second, anti-fracturing policy actors lost many of their activists. Indeed, despite their ability to link hydraulic fracturing to environmental problems, many citizens’ collectives were mainly concerned with the potential problems caused by hydraulic fracturing in the area where they lived. Hence, when the most controversial licenses were canceled, their activism decreased. Finally, the presidential and general elections are less close nowadays than they were in July 2011. Hence, elected officials are probably less pressured to show

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<sup>34</sup> Interview with a geologist from the Université de Montpellier, January 2014.

<sup>35</sup> Interview with a member of the Directorate of Energy and Climate (Ministry of Environment), December 2014

their responsiveness to popular worries, compared to the companies' requests, and the economic promises of shale industry. All in all, this gives more room to the arguments of pro-exploration policy actors.

## **Conclusion**

In this chapter, we looked at the French policy process of hydraulic fracturing (2008-2015). We analyzed this process with the ACF and conceptualized it as a struggle, within the subsystem of hydrocarbon policy, between two coalitions of policy actors. The first coalition is composed of anti-fracturing policy actors. They pleaded, at least, for a ban on hydraulic fracturing and the empowerment of civil society when it comes to issue exploration-exploitation licenses. Some of them even requested a complete prohibition of shale hydrocarbons. Citizens' collectives and environmental associations, together with several scientists and elected officials are the main members of this first coalition. The second coalition does not want to reintroduce hydraulic fracturing *per se*. However, as a result of the ban on hydraulic fracturing, the exploitation of shale hydrocarbons became uncertain and difficult because no credible, alternative extraction technique existed. Hence, those policy actors pleaded for facilitating the experimentation of alternative extraction techniques. To evaluate the profitability of extraction techniques, they also appealed for the assessment of existing unconventional resources. Delegates of oil and gas companies, together with some other scientists and elected officials, are the main members of this coalition. Many civil servants are anti-fracturing or pro-exploration according to their organizational affiliation, their educational background, and their relations with other policy actors. During the policy process, from agnostic, politicians have become rather pro-exploration or anti-fracturing. This evolution mainly depended on their political affiliation, right-wing politicians being more sympathetic to the economic arguments of pro-exploration policy actors than left-wing or ecologist politicians are). However, their attitude toward hydraulic fracturing also depended on their constituency (e.g., concerned with hydrocarbon exploration/exploitation licenses or not) or their

institutional affiliation (e.g., ministers of environment being more skeptical toward exploration projects than ministers of economy).

In 2011, hydraulic fracturing was banned, in France. Between 2011 and 2013, several politico-administrative committees or “professional forums” were mandated to work on various aspects related to unconventional hydrocarbons and hydraulic fracturing. Their discussions and reports became more and more favorable to the assessment of existing shale resources and the experimentation of various techniques to extract them. Between 2013 and 2015, there has been no major change in policy decisions. In particular, hydraulic fracturing has remained formally forbidden (Jacob Bill). However, there have been minor but substantial policy changes. Shale hydrocarbons still carry a rather negative meaning, but other unconventional resources are being explored such as coalbed methane. The company EcorpStim is willing to experiment its alternative technique of propane fracturing in France, but it has no political support yet, nor any public funding. The most important change will, perhaps, come from the ongoing reform of the subsurface mineral rights. This reform could facilitate and improve local support from elected officials and citizens for the issuance of licenses for all kinds of hydrocarbons, which has been stopped since the Jacob Bill of 2011. Pro-exploration policy actors’ interests are mainly related to conventional exploration and opportunities to experiment new extraction techniques. While the Jacob Bill significantly affected those interests, the recent changes in the French policy process on unconventional hydrocarbon exploration and extraction techniques have contributed to recover them.

In our study, we have related those policy outcomes to the effect of external and internal shocks, professional forums, and coalition strategies. The 2011 ban was a major policy change. This change was stimulated by an internal shock—the large-scale social mobilization that emerged against hydraulic fracturing in 2010. This mobilization was partly related to the wide diffusion of *Gasland* (Adlesic et al., 2010), a documentary that shows the negative consequences of the exploitation of shale hydrocarbons. The anti-fracturing coalition won the struggle to frame the shale industry as a threat against almost no defenders of hydraulic fracturing. This policy change also resulted from the ability

of the anti-fracturing policy actors to make use of their political resources, including media attention as well as popular and political support. In addition, in March-July 2011, the 2012 presidential and general elections were close. Hence, elected officials probably wanted to demonstrate that they were responsive regarding popular worries on hydraulic fracturing. This can be interpreted as the *a priori* effect of an external shock.

However, the strict interpretation of the ban on hydraulic fracturing led to a *de facto* moratorium on all exploration projects. This contributed to the activation of a pro-exploration coalition of policy actors. The success of this coalition in promoting the unconventional and conventional hydrocarbons industry, between 2013 and 2015, may be related to three factors. First, the anti-fracturing policy actors lost many of their political resources, including media attention, citizen activism, and political support. Second, pro-exploration policy actors have important financial resources and strong networks of relations with top civil servants and elected officials. Third, the discussions and reports of various professional forums have become more and more favorable to shale hydrocarbons. As a result, skeptical officials became more tolerant regarding unconventional hydrocarbons and pro-exploration officials have gained more room to express their point of view. This facilitated the authorization and funding of research on existing unconventional resources (mainly coalbed methane) and experimentations of extraction techniques (theoretical propane fracturing). These findings are summarized in Table 5.2.

<TABLE 5.2 ABOUT HERE>

At the theoretical level, our findings fit with ACF expectations about the effect of shocks, as well as coalition resources and strategies, on policy change. They also point to the importance of minor but actual policy changes in policy processes. It can be a fruitful strategy to campaign for incremental changes in policy outputs—here, getting authorizations and funding for research projects on unconventional hydrocarbon resources and alternatives extraction techniques— rather than fighting for a major policy change—here, a formal cancelation of the ban on hydraulic fracturing. Finally, our study has shown the crucial role of professional forums in framing the policy process. Consistent with



ACF expectations, their weak representativeness of anti-fracturing policy actors helped pro-exploration participants to frame discussions and reports in a favorable way. Inconsistent with ACF, their focus on empirical arguments did not contribute to a compromise on coalitions' positions. While this gave much room for the empirical arguments of pro-exploration policy actors (on the technical aspects of unconventional hydrocarbon exploration/exploitation), this limited the impact of the normative arguments of anti-fracturing policy actors (on the desirability of unconventional hydrocarbon exploration/exploitation). This calls for more research on the characteristics of successful professional forums.

The propensity for future policy changes will probably depend on the results of the next presidential and general elections in 2017. New subsurface mineral rights favoring upstream information and financial incentives for regional and municipal councils should be decided in the next months (based on the Tuot report and proposals). Other major decisions will be probably made after the 2017 elections. Since the 2012 elections, the economic context has declined; the unemployment rate is still climbing and little economic growth has been generated. In opinion polls, people display a more positive attitude toward the experimentations on extraction techniques of shale hydrocarbons. This is probably related to the potential economic opportunities of the shale industry. As a result, civil servants and elected officials have become more open-minded regarding the exploration of unconventional hydrocarbons. Furthermore, coalbed methane exploration could prove the profitability of a new French gas industry and revive French expertise on mining and hydrocarbon resources. However, a total reverse of the ban on hydraulic fracturing is doubtful. New experimentations and further exploration in the Paris basin could be decided, but it would need a strong political support, which has not been expressed yet (except Nicolas Sarkozy's stance in 2014). In contrast, the Southeast basin will probably be untouchable for a long time if companies do not want to reactivate a massive social mobilization.

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## Appendix – Questions from the interview guide

We list the set of questions from our interview guide that we used in the present study.

### Questions related to policy beliefs and coordination within advocacy coalitions

1. What does your organization represent (legitimacy, values, group)?
2. Which policies does your organization aim to influence (topic, geographical, and functional scope)?
3. What are the policy positions defended by your organization on shale hydrocarbons and hydraulic fracturing?
4. What do you think about shale hydrocarbons and hydraulic fracturing? What do you think about the ban on hydraulic fracturing?
5. What do you think about the following arguments?<sup>36</sup>
  - a. Environmental arguments on water contamination, air pollution, etc.
  - b. Technological arguments on the uncertainty surrounding extraction techniques, the treatment of water, etc.
  - c. Legal arguments on the non-compliance with the environmental code, the Kyoto protocol, etc.
  - d. Social arguments related to the deterioration of landscapes, the negative impact on tourism, and agriculture, etc.
  - e. Health arguments on the risks of cancers and diseases resulting from water and air pollution.
6. How do you situate your organization with regard to other stakeholders in the policy of shale hydrocarbons?

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<sup>36</sup> The interviewer cites a list of arguments within each category: he asks the interviewee whether he/she agrees or disagrees and why.

7. How would you situate the policy position of your organization with respect to the position of the Government?
8. What are the relations of your organization with other organizations advocating similar policy positions?
9. What are the relations of your organization with other organizations advocating different policy positions?
10. How do you feel that your policy arguments and actions are considered by your allies, opponents, officials, and politicians?

**Questions related to factors of policy change (coalition resources & strategies, external and internal shocks, etc.)**

11. What are the sources of information that you used to inform your policy position on shale hydrocarbons and hydraulic fracturing? Did you use scientific sources?
12. What are the resources used by your organization to influence policies (financial, human, etc.)?
13. What types of initiatives did your organization take to relay its arguments and defend its policy position?
14. Did your organization: (A) organize demonstrations? (B) Organize symbolic actions? (C) Formulate public stances? (which media?) (D) Organize legal action? (E) Take up lobbying? (F) Negotiate with other policymakers?
15. What were the three political actions of your organization that had the most important impact on the policy process?
16. How would you describe your relation with the media?
17. What are the aspects of the economic, social, and political context that facilitated or impeded your political strategy? What were the opportunities? What were the constraints?

18. What does your organization expect from the Central Administration, Government and Parliament in the coming months? What does your organization plan to do?

**Questions related to professional forums**

19. What do you think about the different committees that were established to allow policy debates on hydraulic fracturing and shale hydrocarbons (CGIET-CGEDD Committee of February 2011, parliamentary mission of March 2011, OPECST Committee of November 2012, as well as the Working group on subsurface mineral rights of November 2013)?
20. Would you plead for a more public or more official debate on shale hydrocarbons?