

# Master Thesis



**RADBOUD  
UNIVERSITY  
NIJMEGEN**

## Shal(e) we frack?

A value-based comparative case study of the shale gas debate in the United Kingdom and France.

**Elpida Theodoridou**

Master of Human Geography

Specialization: Conflicts, Territories  
and Identities



**Radboud Universiteit Nijmegen**

Information sheet

**Master Thesis:**

In collaboration with the Delft University of Technology

***Shal(e) we frack?***

*A value-based comparative case study of the shale gas debate in the  
United Kingdom and France.*

|                 |                       |
|-----------------|-----------------------|
| Author:         | Elpida Theodoridou    |
| Student Number: | s4225597              |
| Supervisor:     | Dr. Duncan Liefferink |
| Second Reader:  | Prof. Pieter Leroy    |

Internships' Supervisor: Dr. ir. Marloes Dignum

December 2014



**Radboud Universiteit Nijmegen**



**Delft University of Technology**

# **SUMMARY**

## **Background**

The issue of energy security is set to become a crucial aspect in our everyday lives. The struggle for securing an energy resource (preferably a domestic one) has become a crucial aspect in the geopolitical agenda of every state. The recent discussion on the exploitation of shale gas and oil has drawn the attention of several countries and resulted to the adoption of various and strongly antithetic public policies on the issue.

This discussion on whether countries rich in shale gas reserves should proceed with their exploitation, eventually led to the eruption of a public debate in several states where it was introduced. In this paper, we take two characteristic and completely opposite case, the shale gas debate as developed in the United Kingdom and in France. First, the two cases are analyzed separately. Each case includes the major actors involved in this debate (proponents and opponents) and their arguments. Based on these official arguments used, the underlying values of the debate are eventually presented. In the end, there is a comparison of the two cases by applying two separate theories on them; Sabatier's advocacy coalition framework and Hajer's concept of discourse coalitions.

Such an analysis is important as we can link the position of the actors with the subsequent policies adopted in each country and how they are shaping each other. By doing so, we can see whether there is an alignment among the values in the debate and the values articulated in the public policies. Policy makers who wish to achieve a consensus-based outcome and avoid the emergence of grievances (deriving either from the society or from strong business players for example), can use such an analysis in order to make an effort and merge these values into one policy.

## **Research Goal**

The principal goal of this Master is to identify the actors involved in the shale gas debate in the United Kingdom and France and the values that they articulate in this debate. Additionally, there is a twofold objective of comparing the two case studies by applying the theories of Sabatier and Hajer while at the same time comparing these two theories as they are applied on the cases.

## **Research Method**

Various methodological tools have been used throughout the paper. The main method has been the use of a Comparative Case Study. First the two cases are analyzed separately. The actors and the values of each debate are presented and examined. The actors have been categorized into the proponents and opponents of shale gas while they are also classified according to the sector where they are deriving from. In the same chapter, there is an analysis of the substantive values that these actors are promoting in the debate. After that follows the comparison of the two cases, the subsequent drawing of the results (similarities and

differences) and the theoretical reflection of Sabatier and Hajer's ideas as they are applied on the two cases.

The main tool used in order to gather all this information has been content media analysis. The validity of the collected data is strengthened by the use of the personal websites and official reports and published interviews by the actors. The underlying values of the actors are also extracting based on the collection of this data. Additionally, process tracing has been used as a tool for providing a link between the policy programs introduced and the positions that the various actors adopt. Tracing the various processes and developments that took place regarding shale gas in the both countries is a qualitative method used for trying to identify a possible connection; a link between the processes that result to policy change or the ones that form the actors' position.

## **Research Results**

Through the comparison performed, it became obvious that overall, the similar values were articulated in the shale gas debate in both cases. Yet, serious differences could be noticed on the pursuit of these values by the coalitions that the actors have formed. The proponents of shale gas in the UK seem to put aside values that the proponents of shale gas in France choose to preserve. The main antithesis, in the values among the proponents in the two cases, concerns these that relate to the environment and sustainability. As it seems, there is a limit for the proponents of shale gas in France regarding the risks that the extraction of shale gas can bring. The UK proponents though seem more eager to take up on these risks and opt for the reinforcement of the safety rules.

Additionally, we notice that different actors prevail in each case that are capable of influencing to a great extent the direction of the debate. There is a prioritization of the core values and actors and coalitions are more eager to give up the secondary elements of their belief systems. Finally, we investigate the strong points of Sabatier and Hajer's theories but also their weakness and up to which extent they are able to provide a sufficient understanding to the cases.

## **Conclusion**

Issues concerning energy have been and most likely will continue to be ambivalent and contradictory. Unfortunately, the benefits (usually measured in monetary and economic terms) cannot always compensate for the losses produced by the exploitation of an energy resource. Therefore, sometimes conflict among the interested sides is unavoidable.

The scope of this thesis has been to discover which can be the leading actors or coalitions in such energy debates and which values they bring into the debate and also in the relevant policies adopted. Unfortunately so far, little attention has been paid to the crucial aspect of the underlying values although their omnipresence is striking. The careful consideration of these values in crucial debates where a large part of the society is included can assist policy makers achieve outcomes based on consensus with the introduction of the values promoted by all sides.

## **PREFACE**

This Master Thesis has been the result of a long research and also serves as the conclusion of my Master studies on Human Geography. Through this section I want to thank everybody who has assisted me in completing this fascinating and sometimes stressful task. It is a wonderful thing the unconditional expression of gratitude to those who are worth it. My Thesis Supervisor, Mr. Duncan Liefferink who provided me with his complete attention and provide what a good supervisor should provide, academic and constructive supervision and guidance. I am especially grateful to the supervisor of my internship Ms. Marloes Dignum from the Delft University of Technology for assisting me throughout my research.

My family deserves a big thank you. They have been there for me during the good and bad moments supporting me emotionally despite the fact that we are almost 2000 kilometers apart. In cases as such, there are indeed no borders. I am especially thankful to my boyfriend, Peter whose encouragement and knowledge has acted as a motivating mechanism in times when the completion of this Thesis seemed to be an endless effort. Of course I need to mention my close friends who provided me with the strength to continue writing. Only they know how they are.

Finally, the last person I really wish to commemorate in this paper, and I would never forget myself if I didn't is my beloved grandfather who passed away in July 2013. The first big loss I ever faced in my life, while I had just started performing my research. His eternal knowledge and wisdom will always be a point of remembrance. Therefore, this big step for me, this Master Thesis, I wish to dedicate it to him, *για τον παππού μου.*

I hope that each reader will read this thesis pleasantly, free of prejudice and that in the end add a bit of knowledge into their own wisdom.

Elpida Theodoridou

## **LIST OF CONTENT:**

|  |               |
|--|---------------|
| <b>CHAPTER 1 .....</b>   | <b>1</b>      |
| 1.1 INTRODUCTION OF CASES.....   | 1             |
| 1.2 RESEARCH GOAL .....  | 3             |
| 1.3 RESEARCH SIGNIFICANCE.....   | 4             |
| 1.4 RESEARCH QUESTIONS .....   | 5             |
| <br><b>CHAPTER 2 .....</b>   | <br><b>8</b>  |
| 2.1 THEORETICAL FRAMEWORK .....  | 8             |
| 2.2 METHODOLOGY .....  | 16            |
| 2.2.1 Comparative Case Study.....  | 16            |
| 2.2.2 Case Analysis .....  | 19            |
| 2.2.3 Media Content Analysis .....   | 20            |
| 2.2.4 Process Tracing.....   | 23            |
| <br><b>CHAPTER 3 .....</b>   | <br><b>25</b> |
| 3.1 THE SHALE GAS DEBATE IN THE UNITED KINGDOM.....                                      | 25            |
| 3.1.1 General Description of the public debate.....                                      | 25            |
| 3.2 MAIN ACTORS INVOLVED IN THE DEBATE AND THEIR RELEVANT POSITIONING .....              | 26            |
| 3.2.1 Proponents of fracking and shale gas in the United Kingdom .....                   | 27            |
| 3.2.1.a Policy Sector .....  | 23            |
| 3.2.1.b Industry Sector .....  | 27            |
| 3.2.1.c Research Sector.....   | 31            |
| 3.2.1.d Summary of argumentation of proponents .....                                     | 33            |
| 3.2.2 Opponents of fracking and shale gas in the United Kingdom.....                     | 33            |
| 3.2.2.a Policy Sector .....  | 34            |
| 3.2.2.b Research Sector .....  | 35            |
| 3.2.2.c Industry Sector .....  | 36            |
| 3.2.2.d Associations & NGOs .....  | 38            |
| 3.2.2.e Summary of argumentation of opponents.....                                       | 43            |
| 3.3 CONCLUSION OF ACTORS' POSITIONING IN THE UNITED KINGDOM AND THE RELEVANT VALUES..... | 46            |
| <br><b>CHAPTER 4 .....</b>   | <br><b>52</b> |
| 4.1 THE SHALE GAS DEBATE IN FRANCE.....  | 52            |
| 4.1.1 General Description of the public debate .....                                     | 52            |
| 4.2 MAIN ACTORS INVOLVED IN THE DEBATE AND THEIR RELEVANT POSITIONING .....              | 54            |
| 4.2.1 Proponents of fracking and shale gas in France .....                               | 55            |
| 4.2.1.a Policy Sector .....  | 57            |
| 4.2.1.b Industry Sector .....  | 60            |

|         |  |    |
|---------|--|----|
| 4.2.1.c | Research Sector .....  | 63 |
| 4.2.1.d | Summary of argumentation of proponents .....                               | 65 |
| 4.2.2   | Opponents of fracking and shale gas in France.....                         | 65 |
| 4.2.2.a | Policy Sector .....  | 67 |
| 4.2.2.b | Associations & NGOs .....  | 70 |
| 4.2.2.c | Research sector.....   | 72 |
| 4.2.2.d | Summary of argumentation of opponents.....                                 | 73 |
| 4.3     | CONCLUSION OF ACTORS' POSITIONING IN FRANCE AND THE RELEVANT `VALUES ..... | 74 |

## **CHAPTER 5 ..... 80**

|     |  |    |
|-----|--|----|
| 5.1 | APPLICATION OF SABATIER'S AND HAJER'S HYPOTHESES AND COMPARISON IN THE TWO CASE STUDIES..... | 80 |
|     | Theoretical reflection on the UK case.....   | 81 |
|     | Theoretical reflection on the French case.....   | 86 |
|     | Final Conclusions .....  | 89 |

## **APPENDIX ..... 93**

# **CHAPTER 1**

## **1.1 INTRODUCTION OF CASES**

During the past decade, a new issue arose in the area of energy security and supply. Around the mid-2000s, a shale gas bonanza begun in the United States, with the domestic production starting at 1,293 Bcf (Billion per Cubic Feet) in 2007 and reaching 7,994 Bcf in 2011 (EIA, 2013a).

### **What is shale gas?**

Shale gas is considered to be an unconventional type of natural gas that can be found in the shale rock formations of the subsoil. However, shale gas requires specific methods of extracting it, due to the low permeability and the greater depths where it exists. The main technique used so far for extracting the gas from the shale rocks has been hydraulic fracturing (fracking) along with the use of horizontal drilling. “During the hydraulic stimulation process, fluid comprising water, proppant, and chemicals, is pumped at high pressure into the well. Far below the surface, the high pressure fluid passes into the target rock, causing tiny fractures to open up and migrate in all directions for distances up to hundreds of metres” (Dart Energy, 2012).

By investing in the shale gas industry, the consumption of natural gas of the US reached up to 56% of the domestic energy production within a few years, while shale gas is expected to be “*the greatest contributor to natural gas production growth*” (EIA, 2013b). The energy revolution of the United States reinforced the country’s energy security and secured the prosperous supply of gas on the other side of the Atlantic Ocean. Increased domestic production of natural gas and reduced imports are bringing the US closer to energy independency. Additionally, as the shale gas industry is blooming, thoughts of exporting energy are rapidly increasing. Reaching the point where the US starts exporting energy, shale gas could become a game-changer in the energy sector scene. With the country having agreed upon providing liquefied natural gas to the British electricity company Centrica, it is a matter of time before export rates begin to rise, leading possibly to even greater benefits for the US (Werber & Lefebvre, 2013).

The extraction of shale gas and shale oil originally started in the United States and caused a frenzy of reactions, the interest over this relatively new resource has spread in other countries including the European ones. This unexpected boom of energy in the US, brought to the surface the wishes and desires of their European counterparts. Yet, the situation in the European continent is completely different. The various obstacles that emerge make it difficult to proceed not only with the viable exploitation of the shale gas reserves but even with their exploration. Despite any attempts for a further European integration, the issue of energy remains in the hands of the member-states. Consequently, without a common European energy policy, each country is responsible for setting its own regulatory framework on energy issues. The evolvement of the shale gas industry follows two different directions at the two sides of the Atlantic. The United States has proceeded with the economic exploitation of the energy resource while the European



Union has ended at a stalemate where no common decision or policy can be made. The diametrically different energy policies that have been adopted across Europe show that the values that underlie the shale gas debate have also resulted into a stalemate with two conflicting sides.

The shale gas and fracking industry has caused a great discussion and debate in every country where it has been introduced. This debate involves on the one hand an increasingly strong opposition fighting against the exploitation of this energy resource, mainly linked to environmental and health concerns. On the other hand, proponents of shale gas extraction argue that by establishing a tight regulatory and monitoring system, the successful exploitation of the shale rocks will bring economic benefits –among others while hoping for shale gas to become a game-changer in the energy game of imports and exports, leading eventually to a certain degree of energy independence. Although the estimates regarding the size of the reserves vary (there have not been any pan-European exploratory operations yet), according to a report published in 2011 by the US Energy Information Administration, the estimated technically recoverable shale gas resource in Europe is at 624 trillion cbf compared with the 862 tcf in the US” (U.S. Energy Information Administration, 2011). According to a more recent report published by the Centre for European Reform in July 2013, “a literature review of 50 sources by the EU Joint Research Centre (JRC) in 2012 found that the high, best and low estimates of technically recoverable shale gas in the EU were, respectively, 17.6, 15.9 and 2.3 trillion cubic meters (tcm), compared with 47, 20 and 13 tcm in the US” but of course, the estimated vary due to lack of evidence (Buchan, 2013).

Figure 1.1: Resource Estimation of shale reserves in Europe and extraction status

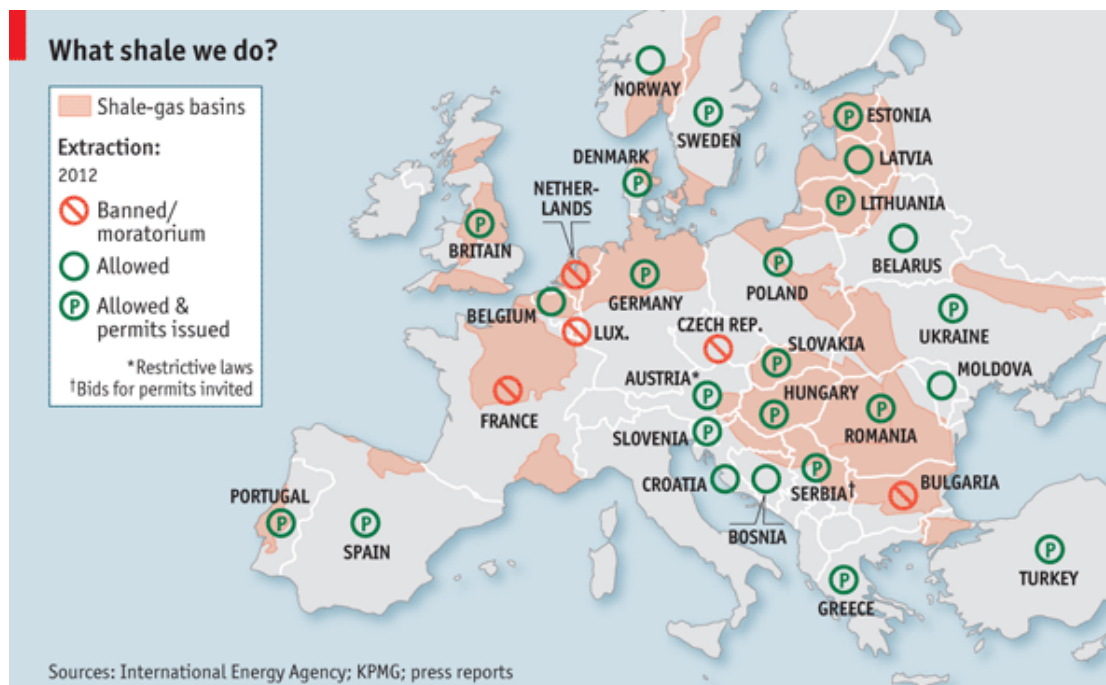


Image Source: From the Print Edition, “Unconventional gas in Europe: Frack to the future”, 02 February 2013, [www.economist.com](http://www.economist.com)

This disagreement over the most suitable way of managing shale gas, shows that a commonly agreed settlement could be a difficult decision. The consequences (regardless whether they are positive or negative) deriving from shale gas that the American citizens have to deal with have drawn the attention in Europe. My aim is to provide a thorough analysis of the public debate on shale gas and the actors who have been involved in it, as it has been depicted through the media of mass communication. The policies adopted so far and the underlying values that have been articulated in the debate and embedded in the public policies adopted are the focus of this Thesis. In order to do so, it is also important to understand the main actors involved in the debate and their positioning behind which one can find these underlying values.

The extreme cases of the United Kingdom and France have been selected to become the subject of this research. The debate on shale gas and fracking has evolved towards two distinctly opposite directions. In the United Kingdom, the government has decided to embrace shale gas and the potential profits that it can bring and allow the continuation of the drilling operations by granting more licenses in 2013 and 2014. This decision, taken after the moratorium that was imposed for over 18 months was lifted, is going against the continuously uprising public opposition while fracking has already began in the country. Yet, we see a harmonious alignment of positions between the UK government and the industrial lobbies. In France on the other hand, the moratorium on shale gas and fracking that was imposed during the Presidency of Sarkozy in 2011, is still valid with the government of President Hollande deciding to continue the ban. Although Hollande declared in November 2012 that in case alternative and environmental-friendly techniques appeared he would take his responsibilities, few months later (July 2013), he took back this promise when he stated that *as long as he remained the French President, there would be no exploration of the French shale gas reserves. With no positive actions taken towards the exploration of the reserves, there is severe pressure from the French industry and French politicians within the government to consider the exploration of the shale gas reserves.* As the debate in both countries keeps developing and spiraling, it is becoming more difficult for the different actors to maintain a neutral stance. The discussion is becoming polarized and leaves only some small space for diplomatic actions. The actors are forced to choose one side or the other. Due to the fact that these two sides are so diametrically conflicting and contradicting, a compromising solution might be difficult. As the opponents and the proponents are adopting more radical stances and positions, the debate is becoming divided into two strong and diverging poles.

## **1.2 RESEARCH GOAL**

As the shale gas developments keep evolving and changing rapidly, it has become a matter that involves a number of different policy and decision makers, while at the same time, the societal opposition against this energy resource is increasing. The environmental concerns and dangers that can emerge from fracking have not been sufficiently tranquilized yet (British Geological Survey, 2011), leaving the discussion of the balance between the benefits and the costs of shale gas extraction to an ambivalent point.

This Thesis provides an analysis of two extreme cases in Europe regarding the shale gas public debate. The core of this research are the various coalitions formed among the different actors and the values that have been embedded through these actors not only in the public debate but also in the relevant policies adopted as a consequence of the shale gas discussion. Additionally, this paper investigates policy changes and the possible correlation to the changes in the actors' position.

The United Kingdom and France have been chosen based on their common ground. The two countries have been for a long time allies while they hold prominent positions in many international organizations. These similarities could be perceived as links between the two nations that have cooperated in creating what is now called "modern Europe". For reasons as such, I decided to include these two countries that share such a common ground, yet they chose such diverging policies regarding their future on energy and especially on shale gas.

In this endeavor, two distinct and widely used theories in policy studies were introduced; Sabatier's Advocacy Coalition Framework and Hajer's analysis on policy discourses and discourse coalitions. There is first of all a twofold objective which is to *apply the two theories on the two case studies and compare these cases with the different lenses that the theories are providing*. At the same time though, the second part of the objective is to *compare simultaneously the two theories and stretch their limits by applying them on the two cases*. Thus, taking into consideration the above twofold objective, the main objective of this research is:

**By thoroughly analyzing the actors involved in the shale gas debate, the coalitions that they have formed in the UK and France and their positions, the goal is to identify the main substantive values articulated in the shale gas public debate, to link their position to the governmental policy programs adopted and to compare the two cases on an empirical and theoretical level.**

In order to substantially grasp the dynamics of the shale gas debate, it is imperative to understand the positions of the actors involved in the discussion. Through their position as presented by mass media, the underlying values will be extracted, analyzed and eventually compared. The key findings from such a comparison can provide an explanation as to which values are the ones leading the debate in the two cases (explaining in this way also the antithesis observed) and furthermore help to provide a basis for future reference for public policy makers who wish to include such crucial values when drawing a public policy on shale gas.

### **1.3 RESEARCH SIGNIFICANCE**

#### **Societal Significance**

The research problem or better called "the need for this study" lies in the fact that there is direct relevance of the issue under examination in relation to prosperous existence and cooperation of the European community. The rise of the disapproval of drilling and fracking that derives mainly from the society and

the environmental cycles, and the active involvement from a variety of actors, as companies and corporations, state and non-state actors and individuals in the shale gas debate, promote this subject to a hot issue of our times that has to be addressed (“Unconventional gas in Europe: Frack to the future,” 2013).

As it will be analyzed, the main opposition regarding the shale gas debate arises from the wider society (meaning citizens and non-governmental institutions). The concern of the possible implications on the health of the citizens due to the use of hydraulic fracturing and the fear of further pollution of our environment certainly is an issue that touches upon every resident of the Earth. Therefore, this matter, along with many others, is a matter that also belongs in the public sphere and the way it will be handled will affect a large number of individuals. As it has also started happening in the United States, the implications and consequences of shale gas and fracking are beginning to reveal themselves and it will not be too long until they reach Europe. Thus, this is an imminent and urgent issue that has to be addressed, discussed and resolved. A value-based analysis as will be carried out in this thesis can help in various ways. Of course gathering such data for the first time can enlighten further the issue under examination and provide useful information. But taking it a step further, finding and analyzing the values can help to provide a firm ground for a consensus-based decision in regards to such a contradicting matter as the shale gas policy adopted by a country.

### **Academic Significance**

The two theories used in this paper (Sabatier and Hajer) have been widely used by academics as they both provide an explanation for the creation of coalitions/communities and their relation to policy programs. Despite the fact that they have common concepts introduced in their theories (e.g. creation of coalitions, discourse vs. belief system, policy change and more), they seem to be moving towards different directions.

By applying these two theories on two different case studies that have though a common ground, I intend to show not only the weaknesses of the theories and their limitation, but also I will try to provide a common basis where perhaps these theories can meet. In this way, perhaps future research can use the findings in order to develop a theory that comprises the strong points of the two theories yet leaves out the weak spots that are unable to provide a sufficient understanding to relevant cases.

## **1.4 RESEARCH QUESTIONS**

This antithesis between the opposing policies particularly in these two countries brings up some serious questions. Who are the main actors involved in such a debate? Which arguments do they present and how do they justify their position? Which are the main values that they are articulating in this debate? Are these values also evident in the energy policies adopted in the two countries regarding shale gas? Is there a link between policy change and the actors’ position? Furthermore, by selecting a media content analysis to gather the data, it is important to check also whether this debate is properly presented by the media and especially the position of the actors. The research questions and the abstract questions posed in the

beginning are also going to be framed in theoretical terms (Sabatier and Hajer) in the next chapter. Below follow the main research questions that I aspire to answer by the end of my research.

The main question and the core of the Thesis lies on the actors involved in the debate and the values that they have embedded in the debate and the relevant policy making process. Thus, it is important to wonder:

**1. Who have been the main actors involved in the shale gas debate in the UK and France, and which have been the underlying values that they introduced in the debate?**

With this question I intend to demonstrate the actors and their core values that have been articulated in the shale gas debate. Additionally, the debate is directly linked to the public policies that each country has adopted regarding shale gas. As it will become soon clear, there is a direct link between values and the public policy making. These values have the potential of influencing not only the direction of the public debate but also the decisions taken on the level of public policy making. Furthermore, identifying the leading actors will provide us with a clear view on who is shaping not only the discussion but also the relevant governmental actions.

Additionally, it would be enlightening to try and provide a link between possible policy changes and the positions that the actors adopt. Actors might adapt or maintain their position depending on the policy programs introduced each time. This would reveal a great deal about the flexibility of their values and the eagerness for negotiation in the public policy making process. Thus, it is important to pose the question:

**2. How can we explain policy change and the position of the actors in the debate? Is there a possible relation between the changes in the positions of the actors, the underlying values and the relevant policy programs and how is this relation proven?**

After these actors have been substantially examined, it is important to verify that their position is appropriately demonstrated and analyzed by mass media. By answering this question, the necessary validity of the data is provided to the Thesis. The verification of their position as presented by the media comes through the inclusion of their own personal websites, published interviews, reports and other sources.

**3. Does the public debate as portrayed by mass media adequately represent the position of the actors?**

Finally, apart from a separate analysis and description of each case and the values and actors involved in the shale gas debate in each country, it is crucial to make a comparison between the two different approaches and put them into context. A comparison between the actors and the values in the two cases can enlighten the current situation and become a firm ground for policy decisions that require some degree of harmony or at least majority of opinion agreement. But as discussed above in the subchapter regarding the research goal, it is necessary to have a twofold question in relation with the theories that are applied on the case studies. Consequently, the final research question is:

**4. What insights does the applicability of the two theories to the cases provide and how are these theories related to each other?**

Such a question will help to provide a better understanding concerning the application of Sabatier and Hajer's theory on the cases and try to connect at the same time the theories used. This is linked to the twofold objective of analyzing the cases studies using the two theories and simultaneously testing the applicability of the two widely used theories of Sabatier and Hajer.

## **CHAPTER 2**

### **2.1 THEORETICAL FRAMEWORK**

Two distinct theories developed for policy analysis will be used in this Thesis in order to frame the topic under examination and further analyze the policies adopted in the United Kingdom and France, regarding the shale gas debate. The two theories have been extensively used in the field of policy studies and are considered quite influential and have been highly used by various researchers. Both of the theories are sufficient in providing a good framework for a policy analysis as they place emphasis on the role of the different coalitions formed by the various actors while they are also investigating the notion of policy change, yet from different perspectives. Although they do share some common concepts and ideas, these two theories are considered by the wider academic society to be quite antithetic with clear contrasting points. The common ground that includes though significant differences is the reason for selecting these two theories among others. It is my intention to compare these two theories by applying them on the same case studies and discovering their strong and weak points, in order to answer research question number 4 and to fulfil the research objective posed.

The first theory chosen is the Advocacy Coalition Framework (ACF) theory as it has been developed by Paul A. Sabatier. Sabatier is paying great emphasis on the element of policy change and the core factors that lead to such a change. Policy change can be achieved through three sets of process. “The first concerns the interaction of competing *advocacy coalitions* within a policy subsystem (...). The second set of processes concerns *changes external to the subsystem* in socioeconomic conditions, system-wide governing coalitions, and output from other subsystems that provide opportunities and obstacles to the competing coalitions. The third set involves the effects of *stable system parameters* –such as social structure and constitutional rules- on the constraints and resources of the various subsystem actors” (Sabatier, 1993). The last set is related to the structure that these parameters set concerning the nature of the problem and they establish the rules and the procedures for achieving policy change. Yet as they are stable for a really long time period, they are not chosen to be changed by the various actors. Sabatier created the concept of advocacy coalitions, meaning groups of actors deriving from various sectors (public and private institutions) who share though the same set of basic beliefs. In these belief systems, he makes a distinction between core and secondary elements.

As these belief systems are assumed to have a stable character (for a decade or more), it is also assumed that the coalition’s composition is stable as well. These various advocacy coalitions that belong within the different policy subsystems are struggling to influence the policy making process towards their benefit in order to achieve their core beliefs. One of Sabatier’s premises for the ACF theory is that these policy subsystems “must include an intergovernmental dimension, that is, they must involve all levels of government” while the different “conflicting strategies from various coalitions are normally mediated by a third group of actors” termed as policy brokers (Sabatier, 1993). They are responsible for mediating and reducing if possible the level of the conflict.

Sabatier in his book on policy change and learning forms various hypotheses that he tests and later confirms, rejects or revises. He rejects the idea that the various actors are mainly driven by their “short-term self-interest” and supports that the values that the actors are striving for have a more stable and perhaps rigid character. For Sabatier changes in the core elements of a coalition can be a result of “significant perturbations external to the subsystem” or when the coalition that instituted a policy program loses its power. Finally Sabatier places the role of technical analysis and information as an important factor that can actually contribute to policy change and for that reason “actors find it necessary to engage in an analytical debate, that is, to present technical substantiation for their positions-if they are to succeed in translating their beliefs into policy” (Sabatier, 1993). In other words, the various actors are trying to present technical information through a debate that might convince other actors of the accuracy of their position regarding the issue.

The second theory specializing in policy analysis is Hajer’s approach on Discourse Analysis and its role in policy making and policy change. According to Hajer, there has been a major shift from the term government to the term governance, meaning that our current world has changed to one that includes a wider range of actors and issues in politics and policymaking. The era of globalization that we live in has created a network society where the attention on various institutions has been shifted towards the newly created unstable and fluid networks (Hajer, 2003). The borders in politics are no longer clearly defined and the network society is characterized by “multi-level governance” (Hajer 2000b). For Hajer, policy analysis is interpretative, practice-oriented and deliberative while “policymaking now operates under conditions of radical uncertainty and deep-value pluralism” (Hajer 2003). Therefore, with the current fluidity in policy analysis one should place more emphasis on the analyzing the various policy discourses introduced by policy makers.

According to Hajer’s theory and in contrast with the view of the classical-modernists, policymaking can be constitutive of politics and not the other way around. As he states, citizens are not always aware of their political identities neither they are actively participating in policymaking. Yet, they do have the possibility of influencing policy making. How is this done? “Citizens could also be seen as political activists on “stand by” who often need to be ignited in order to become politically involved” (Hajer, 2003). A policy program that directly affects their interest could thus become the trigger that invites people to create a shared basis for deliberation and possibly to take part in the policy making process. This policy program that intervenes and disrupts the political indifference of the citizens can also lead to the creation of a “collective identity” and as Hajer states “policy discourse can be constitutive of political identities” (Hajer, 2003). Hajer gives a bottom-up approach to policy making and policy analysis and for him discourse analysis could be perceived as a method that could potentially strengthen policy analysis.

Hajer holds the opinion that these political communities created by a policy program do not exist a priori. Due to the new dynamics of the network society, it is quite often that the problems that need to be addressed do not fit the established administrative boundaries, leading to the creation of new political spaces but also new actors. The communities are created as response to politics and policymaking and



based on his view, “politics leads to the formation of communities” that share common interests. Also new practices in policymaking are introduced, especially the ones linked to interactive policymaking. It becomes clear that as the policymaking process is changing, new methods are required for analyzing and understanding policy conflicts. Hajer suggests that discourse analysis can be used as tool for such an analysis. He focuses on three elements. First, the *terms of policy discourse* meaning the story lines, metaphors, myths; the new policy vocabularies used by the various actors and the epistemic notions used in policy programs. Secondly, he pays emphasis to the different *discourse coalitions* shaped around these story lines and thirdly, “the analysis of the particular institutional *practices* in which discourses are produced” (Hajer, 2003).

These two theories both focus on policy analysis yet adopt different approaches. Despite the fact that they do share some similar points, they also have some significant differences. Starting first from the similarities, we notice that both theories introduce the concept of coalitions in policy making and how they are struggling to influence the overall process towards their benefit. These coalitions one would say are a focal point in their theories. They are both trying to go one step above the officially established institutions of policy and decision making. Sabatier argues that the policy subsystems he is writing about “will normally involve actors from all levels of government. To examine policy change only at the national level will, in most instances, be seriously misleading” (Sabatier, 1993). Hajer in his turn points out the fluidity in the boundaries of the policymaking organizations by mentioning examples such as the various committees in the European Union and the role of informal policy, the Arctic Council and the range of actors deriving from various sectors and the collaborative dialogues in California (Hajer, 2003). Furthermore, both of them have examined the importance of policy change, yet they have adopted a different perspective. Finally, Hajer agrees with Sabatier that “the controversies between these coalitions should always be understood against the background of external parameters” (Hajer, 2003).

However, there are also some serious differences between the two theories. First of all, Sabatier is developing his concept of advocacy coalitions as something existing a priori to the policy program. He takes the creation of the coalitions as a pre-given and that since they are forming them, the actors are trying to establish a policy in their advance. Thus, they are considered these coalitions more of a starting point that leads to the introduction of policies. Hajer places himself on the other side. He considers that the formation of the political communities emerge as a response to a policy program. The different actors come together and deliberate because they are triggered by the policy and they want to influence it and possibly change it. Thus, Hajer takes the creation of the communities as a result of a policy program. This leads also to a different perspective on how policy change can actually be achieved of course. Additionally, Sabatier introduces the importance of values and beliefs. However, he constructs the notion that these values are quite rigid and not flexible and rejects the idea that “actors are primarily motivated by their short-term self-interest” (Sabatier, 1993).

This thesis can become a ground for a test of the two theories on two cases. It is a good ground for showing the strength of each theory and pointing out their weak points. It would be interesting to examine which theory can explain and frame better the two case studies. Since both theories have

common concepts (see above), it is a stimulating encounter to find out where is the point up to which these theories can reach to. The idea is to apply each theory on each case study and eventually show how they are supporting and explaining the case studies, the coalitions created and their values but also the debate that has erupted among the wider society (see research objective and research question no.4).

These two theories are used for demonstrating the coalitions formed by the different actors and pointing out their importance. The various coalitions are trying to influence the relevant governmental policies and, sometimes they actually manage to do so, giving them the chance to promote their values and beliefs and translate them into a specific policy program. When they are not able to do so, they will strive for a policy change that favors their interests. This discrepancy among the actors who are able to establish their beliefs into a policy program and the ones who are not able to do so leads to a debate between them. In this case, the shale gas debate has erupted as some actors managed to influence their government in creating a policy that prioritizes their values while others failed to do so and therefore are struggling to change the relevant policy.

Both theories have policy change as a focal point and in both cases, policy change is something pursued by different actors and coalitions. Thus, the two theories help explain the driving forces that lead to policy change or on the contrary, enhance policy stability. The interesting twist in this analysis is the bilateral function between the theories and the case studies. The theories are used in order to frame the case studies and help understand why antithetic policies have adopted and why a debate has erupted. At the same time though, the case studies form the ground for testing the strengths of these theories (who share common points) and eventually decide which one is able to provide a better and more substantial understanding of the case studies.

So how is it can we compare these two extensive theories in two single cases studies without resulting to a long and tiresome paper? In order to achieve this, I decided to use competing hypotheses which are formed for the same concepts, yet they are approached with a different perspective by Hajer and Sabatier.

First, I am using a set of contesting hypotheses formed by both academics regarding the driving forces that lead to the creation of the various coalitions, either these are what Sabatier calls *advocacy coalitions* or Hajer's coalitions of discourse; both academics have a different approach.

*Hypothesis 1a: Within the subsystem, it is assumed that actors can be aggregated into a number of advocacy coalitions composed of people from various governmental and private organizations who share a set of normative and causal beliefs and who often act in concert. (Sabatier, 1993)*

With this hypothesis, Sabatier puts the set of beliefs as the driving forces that lead the actors to form a coalition, based on these exact beliefs. Their effort to promote these beliefs or values and translate them into a policy program is their main motivation for action. With this hypothesis, Sabatier does not support the notion that the actors are driven by short-term self-interest and therefore, they do not create a coalition of convenience.

Hajer though has a different idea on how the coalitions are formed. For him, the direction is more of a bottom up approach than the top down that Sabatier is introducing. A policy program acts as the trigger that brings actors together in their effort to change it, and not the other way around. Thus:

*Hypothesis 1b: It is a policy program that triggers shared preferences by actors who recognize a bond because they are all potentially affected by it. (Hajer, 2003)*

Hence, according to Hajer, “public policy often creates a public domain, as a space in which people of various origins deliberate on their future as well as on their mutual interrelationship and their relationship to the government” (Hajer, 2003). The beliefs or values are not the one and only motivation that brings people to form these communities of fate. On the contrary, it is rather a set of various elements, values, interests, traditions, backgrounds, etc. that create specific discourses or narratives. And these discourses are brought into the surface and become the motivating forces that lead actors to act accordingly. Hajer puts it even more explicitly when he states that the communities formed by the different actors “are very much based not on share normative beliefs but rather on the fact that their ‘members’ feel affected by the intended public policy program” (Hajer, 2003).

Concerning the composition of the advocacy coalitions and changes within the coalition Sabatier argues:

*Hypothesis 2a: On major controversies within a policy subsystem where core beliefs are in dispute, the lineup of allies and opponents tends to be rather stable over periods of a decade or so. (Sabatier, 1993)*

By forming this hypothesis, Sabatier is arguing that change in a coalition’s composition tends to be stable when the core beliefs are at stake. Thus, he rejects the idea that actors from one coalition can move to another one even if these core values are contested.

Hajer on the other hand, adopts this opposing idea when he states that it can be a certain policy program that brings people together with different backgrounds to create a “community of fate” (van Gunsteren, 1998). Similar to hypothesis 1b, he argues that:

*Hypothesis 2b: In many cases it is a public policy initiative that triggers people to reflect on what they really value, and that motivates them to voice their concerns or wishes and become politically active themselves. (Hajer, 2003)*

Thus, for Hajer, it is very possible that “once the threat is gone, or some acceptable deal has been struck, the community of fate will fade away as a coherent political actor” (Hajer, 2003). This comes on a direct conflict with Sabatier’s idea that the beliefs and values are the ones driving the actors and creating coalitions and not their short-term interests and consequently. Additionally, Hajer focuses on the fluidity of these communities and the flexibility that characterizes them concerning their creation and termination.

Finally, it is important to show the scope of the coalitions that both academics are analyzing. We have already presented the motivation that brings the actors into forming a coalition and how these coalitions change, yet it is also significant to grasp what these coalitions are fighting for and what they are trying to achieve. Sabatier is quite clear when he argues that the coalitions are formed based on the shared beliefs as they intent to influence public policy programs to their benefit. Thus he argues:

*Hypothesis 3a: Coalitions seek to translate their beliefs into public policies or programs (which usually consist of a set of goals and directions, or empowerments, to administrative agencies for implementing those goals).*  
(Sabatier, 1993)

He does take into consideration that there can be limitations to their attempt, greatly depending on the available resources, yet as the actors in the coalitions are concerned with a policy problem, they are trying to promote their beliefs concerning this problem and translate them into a policy program.

Hajer's approach on the scope of the discourse coalitions is a bit different. For Hajer, it is politics that lead to the creation of political communities and not the other way around. Yet, with the evolution of policy analysis and with the existence of the network society, the established governmental institutions are not always able to handle the policy problems that need to be addressed. Thus:

*Hypothesis 3b: Policy making leads to the creation of communities that for themselves have to determine what constitutes legitimate decision in a particular instance.*

This indicates the level of involvement from non-conventional actors that do not necessarily belong in the governmental sector. As they become more and more active and participate in politics, they also have a role in policy making, yet in order to do so they deliberate for a "collectively preferred future" (Hajer, 2003).

Both of the academics pay attention to the concept of values (although they do not explicitly name as values). Sabatier is discussing about belief systems that characterize the actors and motivate them as they are attempting to influence the government's public policies. Hajer is not explicitly talking about values or beliefs in the same way as Sabatier does. Yet, he is using the term discourses (narratives) as an element that characterizes the actors creating the different discourse coalitions yet these discourses are rather a set of different concepts, that include the notion of values among others. Thus, both of them connect the actors and the formed coalitions to the idea of values however, they adopt a different perspective in doing so. In this paper, values are used in a way that they underlie Sabatier's beliefs and Hajer's narratives. Values become here some kind of a common denominator that links the two theories and allows their comparison.

The analysis of values in such debates certainly can provide interesting information regarding the motives and interests of the actors involved. Yet measuring the values articulated in a debate as this one can be a difficult endeavor. Therefore, it was decided the use of a value tree depicting values underlying

such debate. Using such a value tree could a sort of guide or a checklist in order to identify which values appear also in the shale gas debate in the two cases. In current literature, a scheme has been introduced in order to describe the values that appear in European energy debates. The values have been divided into substantive and procedural values. Starting first with the **Substantive Values**, there is a distinction among the values of **Security of Supply, Sustainability and Affordability**. These values have been selected since they are the “three values/pillars the integrated approach to climate and energy policy which the EU pursues” (DG Employment, social affairs and equal opportunities, 2007). These key values are promoted by the EU and in order for the countries to achieve a functional and effective energy systems attention should be paid to all sides of this energy triangle. The three values/pillars comprise other values as well.

The idea of such an analysis is deriving from research and the value tree as created by Taebi et al (2013). Below follows the illustration of this value tree of the public debate the way they introduced. Taebi et al distinguished the Substantive and the **Procedural Values** articulated in the debate. These are mainly referring to the ideas of fairness and justice. Based again on the structure provided by Taebi et al, the values are divided to those corresponding to **Accountability, Procedural Justice and Distributive Justice**. First follows value tree of the procedural values in the shale gas debate and afterwards their definition and the arguments supporting these values as created by Taebi et al.

Figure 2.1: Illustration of the value tree of substantive values articulated in the shale gas debate

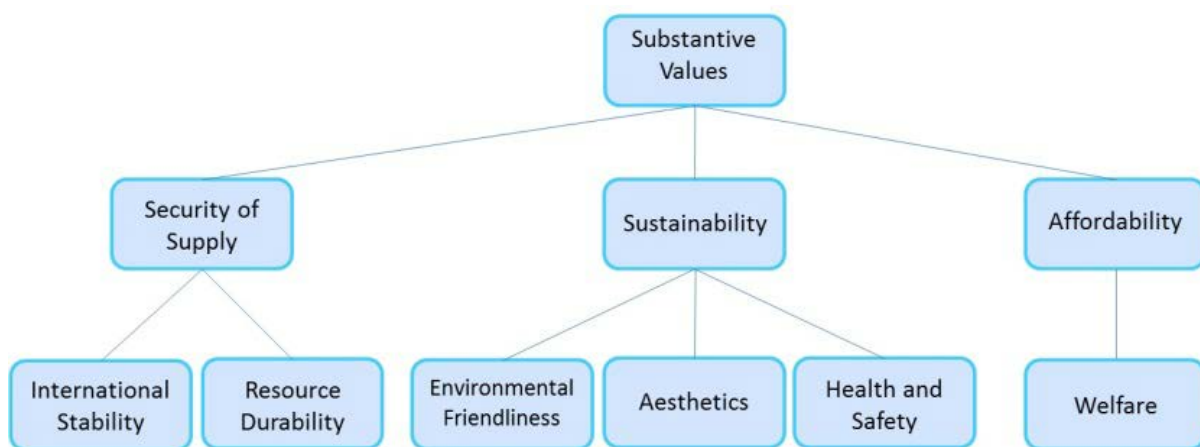
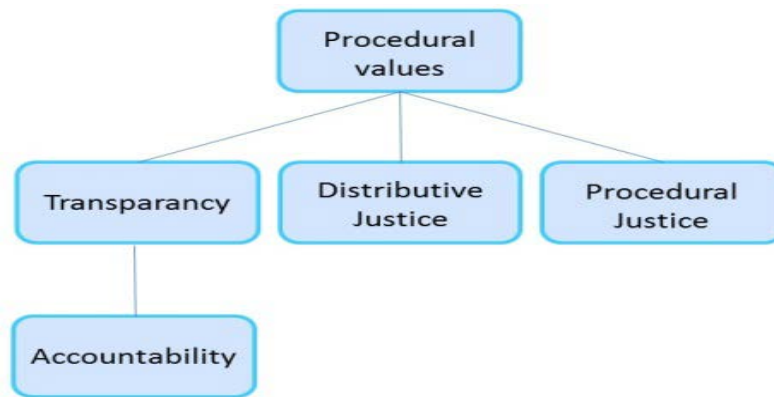


Figure 2.2: Illustration of the value tree of procedural values articulated in the shale gas debate



This type of categorization is inspired by the analysis performed by Taebi et al., as presented during a conference on Responsible Innovation of Shale Gas (Taebi, Correlje, Cuppen, Pesch, & Dignum, 2013), the shale gas debate in the Netherlands.

Despite the fact that such an approach offers a really useful insight in identifying and analyzing the various values underlying the different debates, what is important to keep in mind is the possibility that these values are not applicable in every debate, as a total. Thus, instead of taking this values tree as a given fact, it will rather be used as a check list in order to find out throughout the analysis, which values as given from the values tree of Taebi et al. underlie the shale gas debate in both cases and which do not. Additionally, it is necessary to note that some values might be prioritized by the various actors and refer to them much more often than they do with others. This can show that perhaps there are some core values and secondary ones. Such a notion could confirm Sabatier's hypothesis that:

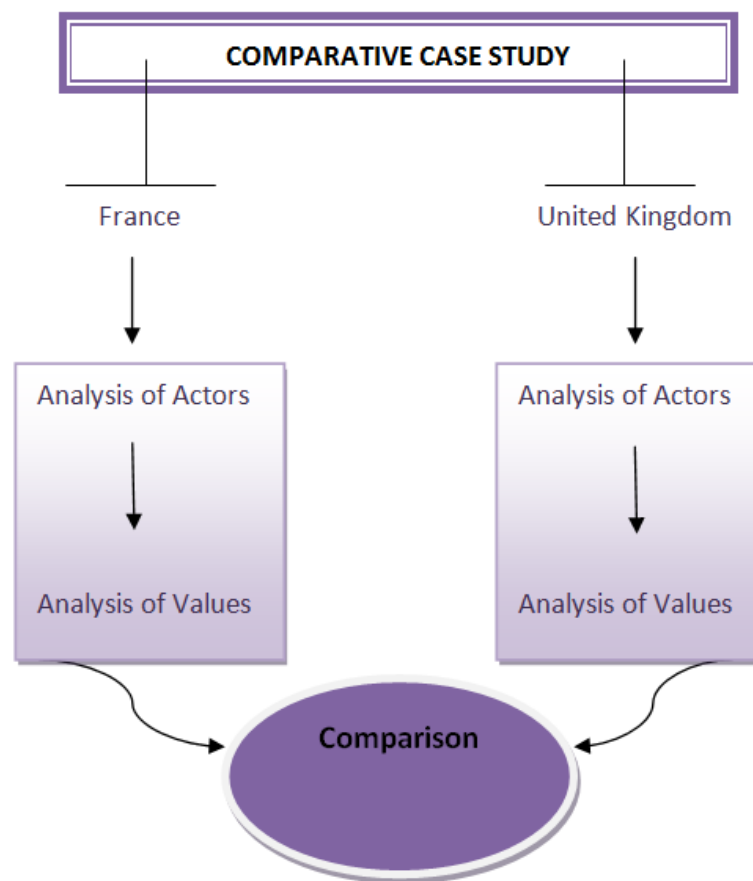
*Hypothesis 4: An actor (or coalition) will give up secondary aspects of a belief system before acknowledging weaknesses in the policy core. (Sabatier, 1993)*

This is a separate hypothesis that was decided to be used without a competing one in order to provide a clear explanation (if necessary) on the possible changes in the actors' values and their position. By testing this hypothesis, we can understand to a certain extent why an actor might choose to change its position yet only to secondary elements of the belief system, without though giving up the core aspects.

## 2.2 METHODOLOGY

The aim is to provide an in-depth analysis of the public debate that has emerged regarding the potential extraction of shale gas. Eventually, the goal of this thesis is to identify the actors and the coalitions involved in the debate and the main substantive values articulated in the shale gas public debate that should be taken into consideration for a consensus-based outcome. Additionally, it is important to test the two theories and their applicability on the cases with the assistance of the hypotheses formed in chapter 2.1. This is accomplished primarily by a Comparative Case Study while gathering and analyzing the data is performed through a media content analysis. Two different cases have been chosen to serve as the basis of this analysis, the public debate on shale gas as introduced in the United Kingdom and in France. The analysis includes the main actors who are involved in this public debate in both countries and the values articulated in the debate through the position of the actors. Below follows an illustration of the way this study is developed. The same scheme stands for the Research Model used in this Thesis.

Figure 2.3: Visual Representation of the Comparative Case Study/ Research Model



### 2.2.1 Comparative Case Study

In this paper, the comparative case study will become the methodological backbone which basically answers the last and very crucial question (4. *What results from the theoretical reflection of Sabatier's and Hajer's ideas as applied on the two case studies?*). As I intent to demonstrate the different approaches that several European countries have adopted regarding shale gas, I decided that it was necessary to select different

cases with opposing positioning on the same matter, analyze them and compare them. Two cases with antithetic characteristics yet with a common basis have been chosen in order to demonstrate the divergence of positions and values that takes place in Europe on the public level regarding the future of shale gas. The fact that the two cases share similar characteristics (they are both members of the European Union, they belong in the so-called Western World and phenomenally share the same cultural, ethical and economic values etc.) yet they have decided to adopt so fundamentally diverging policies for what concerns the management of their shale gas reserves, makes them an interest topic that needs to be further analyzed while the use of a Comparative Case Study seems ideal for performing such a comparison. Of course, a use of such a methodological tool requires a common basis in order to structure the comparison, an independent variable that does not change while it affects the final outcome. The common ground here is the public shale gas debate and what will be analyzed and compared is the different positioning adopted by the relevant actors, leading up to some substantive values that characterize this debate.

France has been largely dependent on its domestic nuclear production while is almost totally dependent on gas imports. By establishing a long history of developing the country's nuclear capabilities that started during the times of President de Gaulle in the 1960s, France established a strong nuclear industry which is the core of its national energy system. On the other hand, in the United Kingdom nuclear power does have a share in the country's electricity mix but the numbers are significantly smaller compared to those in France. The United Kingdom has foremost invested in its domestic gas production, mainly coming from the North Sea. However, during the past few years a decline has been noticed in the production rate leading to higher dependence on imports. For that reason, the UK government is determined to seek and possibly exploit any alternative gas sources such as onshore shale gas. Consequently, it appears that the United Kingdom has put greater emphasis on gas production and consumption (see also Dash for Gas) with nuclear power being a less important energy source. In France, on the contrary, we face an inverted situation where nuclear power is the top priority and gas is largely based on imports. This fact is significant as the UK has a longer history in the gas industry and the strife for ensuring energy independence especially for gas is stronger than the one in France –without meaning that France does not desire its energy independence. Therefore, the exploitation of shale gas has become a priority for the Tories while in France the matter which is still under dispute also includes a time aspect, since the actors disagree on the urgency of extracting shale gas. Finally, despite the fact that both governments are based on coalitions (in UK the Conservative Party and the Liberal Democrats and in France the French Socialist Party and the Europe Ecology – the Greens, EELV), handling the discussion of shale gas within each Coalition government has been completely different in the two countries. The issue of shale gas is non-negotiable for the Greens in France. This leaves little space for the Socialists to make any other decisions which oppose to the Greens' positioning. On the other hand, the British Parties that form the coalition appear to have similar views on this matter –or at least they do not have conflicting attitudes, making it easier to present a unified governmental voice.



There is much debate about case study: is it a methodology or is it part of the theoretical framework? Similar to J. Creswell, I decided to use the Case Study as a methodology, “*a type of design in qualitative research [...] as well as a product of the enquiry*”(Creswell, 2007). Creswell offers a well-formed definition of what case study is: “*Case Study research is a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, and documents and reports), and reports a case description and case-based themes*”. According to R. Yin, “*case study research includes both single- and multiple-case studies. Though some fields, such as political science and public administration, have tried to distinguish between these two approaches (and have used such terms as the comparative case method as a distinctive form of multiple-case studies; see Agranoff & Radin, 1991; Dion, 1998; Lijphart, 1975), single-and multiple-case studies are in reality but two variants of case study designs*” (Yin, 2009). The use of a Comparative Case Study has been selected as it can help “*understand a real-life phenomenon in depth, but such understanding encompassed important contextual conditions-because they were highly pertinent to [the] phenomenon of study*” (Yin, 2009).

The possible differences in the values that prevail in each public debate can point out the antithesis between the two cases as providing just a separate analysis of the public debate around shale gas would only contribute to the already existing literature. Thus, my intention is apart from presenting the each case/debate, to provide also a comparison of the actors in the two cases but also compare the values articulated in this debate.

After the analysis of the actors’ position and based on the statements, the underlying values that characterize the position of the actors and consequently are articulated into the whole public debate are analyzed. The conscious argumentation of the actors and the statements made in order to support their position (either written or verbally and then reproduced by the media or from other valid sources mentioned above), serve as the pool where these values can be extracted. It is important to keep in mind that the extraction of the values is based on the distinct statements made. Hidden and secret agendas can exist yet it is common sense that such interests cannot be analyzed. Ultimately, I want to find out whether the public debate does indeed reflect and represent the position of the actors based on their own argumentation. Based on the statements made by the actors and reproduced by the media but also through their official websites, the underlying values are extracted. Since a statement is a conscious and deliberate choice of words, it leaves only little space for debate or doubts regarding the interpretation of their sayings. Public statements and official positioning as presented either on their websites or reproduced by media of mass communication, provide a clear indication of the actors’ intentions and form the ground where the underlying values can be extracted. The actors included in the whole analysis are perceived as a whole and individual voices are not included. Despite the fact that this approach might seem holistic, it is designed in that way in order to avoid splitting the public debate into too many actors. Thus, any small voices within an actor (i.e. the Government) are not taken into consideration as they do not affect the debate significantly.

### 2.2.2 Case Analysis

The first research question (*1. Who have been the main actors involved in the shale gas debate in the UK and France, and which have been the underlying values that they introduced in the debate?*) provides the ground for describing and analyzing the main actors involved in the public shale gas debate in each case. Their positioning and argumentation is demonstrated as expressed by the media. In order to validate the argumentation used by the actors as represented by the media, official statements, reports and personal websites of the actors were used, where they clearly verify through their statements the arguments presented by the media (see figure 2.4). The core of this comparative analysis are the values articulated by the actors involved in the debate and finding the actors that carry these values in the debate, is a crucial part. The considerably chosen actors as described in figures 3.2, 3.4, 4.2 and 4.3 have adopted a position regarding the exploration and extraction of the shale gas reserves in each country. These are the main actors that stand out in the debate in both countries as represented by the mass media. Their selection has been made based on the frequency of their appearance in the media of mass communication (newspapers, radio, media houses et cetera.) and the frequency and consistency of their active representation of their position, mainly through their websites, reports et cetera. Of course, other voices have been heard in the debate as well yet they are too minor to be mentioned (i.e. made a single statement on shale gas without having a continuous presense in the debate). These specific actors have been selected as they seem to be the ones influencing the direction of the public debate (based on how actively they are involved in the debate) and they have been distinguished in those supporting and those opposing shale gas (proponents and opponents). In order to help the reader understand the background of these actors and how they interact, I created four broad categories within which these actors belong (political sector, industry sector, research sector, associations and NGOs). The actors are active in one of these sectors and they have been placed carefully in one of these categories in order to have a more structured analysis that will allow the easier comparison among them.

Based on the argumentation used by these actors, there has been a broad distinction between the Proponents and Opponents of shale gas. Four tables were created and introduced in the paper, where the actors involved in the public debate are illustrated (see figures 3.2, 3.4, 4.2 and 4.3). Since many of these actors are entities (e.g. institutions, unions, and organizations), there are usually some designated spokespersons that represent the actors and their interest and express their goals. These individuals are also named in the category “*commonly represented by*”. It is important to know these individuals as usually they have a crucial place within these actors. Additionally, the category “*positioning*” simply states whether the stance of the actors (in favor of shale gas, in favor with reservations, neutral or against it). Finally, key words of the arguments and statements used by these actors throughout the paper are included have been summarized in the category “*key words for argumentation used by proponents/opponents*”. This category provides a concise yet clear synopsis of the arguments that the actors used in the debate in order to reinforce their position.

Furthermore, case analysis is a useful indicator for extracting the values articulated in the shale gas debate along with the assistance of the value tree as it was explained in the theoretical part (scheme 2.1

and 2.2). By analyzing the position of the various actors and the coalitions that they have formed, as they have been depicted by the media in each country we can already get an idea on what these actors are representing. Later on, in subchapter 3.3 and 4.3, a careful extraction of the values is provided based on the official statements of these actors. Such an indicator helps provide a clear and valid indication on which are the leading values in the debate and but also who are the actors supporting the same values or opposing to them. In this way, it is easier to test hypotheses especially the ones concerning 1a and 1b.

### 2.2.3 Media Content Analysis

The third research question (3. *Does the public debate as portrayed by mass media adequately represent the position of the actors?*) evaluates the media content analysis performed. The main method of gathering and analyzing the data is through a media content analysis. Due to the lack of empirical data and with almost no theories developed on the link between energy debates and the importance of values, in order to come to useful results, it is necessary to assemble all the necessary information, first hand. The use of interviews would be another asset of the paper and would reinforce the validity of the statements yet due to time and monetary restrictions, I decided to proceed with the media analysis. The media content analysis is a useful tool, yet it depends on the interpretation of the researcher. Maintaining an objective standpoint when analyzing the information gathered has been a difficult task. Yet, cross-checking the same data from different sources and avoid to express my personal opinion or take a position within the debate, have provided a more objective and professional analysis. Furthermore, the verification of the actors' position as presented by the media that describe the public debate comes from their personal websites, reports, published interviews etc.

Using a media content analysis as a lens for understanding this public debate certainly has its advantages. "*Media content analysis was introduced as a systematic method to study mass media by Harold Lasswell (Lasswell, 1927) initially to study propaganda*" (Macnamara, 2005). Despite the dispute on whether content analysis is a quantitative or qualitative method of analysis (see for example Neuendorf vs. Newbold), Neuman provides a definition that can be used by both sides. Neuman "*lists content analysis as a key non-reactive research methodology*" (Macnamara, 2005) and considers it "*a technique for gathering and analyzing the content of text. The 'content' refers to words, meanings, pictures, symbols, ideas, themes, or any message that can be communicated. The 'text' is anything written, visual, or spoken that serves as a medium for communication*" (Neuman, 1997). The media analysis can answer the following questions that Lasswell (Lasswell, 1927) had posed:

- Who
- Says What
- In Which Channel
- To Whom
- With what effect?

As it is imperative to have results characterized by **validity**, **generalizability** and **replicability**, sampling for media content analysis comprises the following three steps (Neuendorf, 2002) in Macnamara, 2005):

1. Selection of media forms (i.e. newspapers, magazines, radio, TV, film) and genre (news, current affairs, drama, soap opera, documentary, and so on);
2. Selection of issues or dates (in this case September 2012 until September 2013);
3. Sampling of relevant content from within those media.

By following these steps, it is possible to meet these three criteria. In this case, regarding the first step, the data derive from specific media forms –newspapers, magazines, online news agencies and radio. They all belong to the news or current affairs genre, with some exceptions that can be found in the documentary category (see Gasland).

As it will be explained later as well, a specific time period has been selected (Sept. 2012-Sept.2013) where some important events took place (in France the debate mainly started with Hollande’s appearance at the Environmental Conference in Sept. 2012 while Hollande decided to cease the discussions on shale gas again in September 2013 after he had argued earlier that summer that shale gas will not be exploited as long as he remains the French president (Le Monde & AFP, 2013)). The articles were selected due to some peaks in the shale gas debate. Using the software *Mendeley* (a reference manager and PDF organizer), these peaks are even more obvious. Based on the date of publication of the articles and various sources used, we find out that in the United Kingdom, there was a significant peak of articles from the late months of Spring 2013 (May) during the whole summer months (until August 2013). This can be explained by the fact that it was during that time when the UK government announced their decision for establishing tax breaks that favored the shale gas companies. In France we find two time periods of high peak in the mass media. First is the November of 2012 when Hollande had opened a small window to the shale gas exploitation. The second period is during the summer of 2013 when the French President along with the Minister of Energy at that time, D. Batho, announced that shale gas will not be exploited as long as he remained at his position.

Finally, regarding the last step, finding the necessary data was performed through a structured research. With the use of search engines (Google but also the search engines of the media that were used, i.e. newspapers or news agencies) and key words (i.e. “shale gas”, “shale gas UK”, “shale gas France”, “shale gas opposition”, “fracking”) or sometimes key authors (i.e. Gosden E., Harvey F., Node-Langlois F., Patel T., etc.), there was an order and structure in the method followed for finding the important data. Through a **desktop and archival research**, the information derives from verified sources. Widely accepted newspapers and news agencies with international prestige on a national and international level have been used in order to extract the statements made by the various actors and based on these statements, subtract the underlying values articulated in the debate. Below follows a table where the different sources of data used have been categorized. The data deriving from mass media are the basis of this media content analysis. The triangulation and validity of the information comes from the official websites, reports, papers or published interviews and articles that the actors have contributed to. First the data and the actors’ statements as reproduced by mass media had been structurally gathered. In order to verify the position of these actors and confirm also the values promoted in the public debate, I used

different sources than these coming from mass media (as mentioned above official websites, reports, papers or published interviews and the actors' published articles). By expressing their position directly (without the mediation of mass media), the information deriving straight from the actors cannot be contested. Thus, by gathering also that information, I cross-checked whether what appeared in the media content analysis was similar or the same as the position that the actors had expressed openly.

Before the analysis, it is important to mention that since this is a hot issue nowadays, the events keep changing rapidly. Positions and actors might change by the time this paper is finished. Therefore I am mainly referring to the time period from September 2012 until September 2013. The situation is quite different in these two countries, in terms of shale gas policy adopted by the English and the French government. Despite the fact that the actors involved are more or less similar, there are some serious differences. These differences are so fundamental that they eventually lead the shale gas debate in these countries towards two different directions, opposite to each other. The analysis begins first with the situation in the United Kingdom and includes the main events that have taken place and influenced the debate. Also the various actors that have played an active role and their positioning are included in the analysis. What follows is the case of France, with the same analysis of the events and the actors.

Figure 2.4 : Main sources used for data collection and triangulation of information

|               | UK Case  | French Case  |
|---------------|--|--|
| Newspapers    | <ul style="list-style-type: none"> <li>▪ The Blackpool Gazette</li> <li>▪ The Financial Times</li> <li>▪ The Guardian</li> <li>▪ The Huffington Post</li> <li>▪ The Independent</li> <li>▪ The Telegraph</li> <li>▪ Engineering and Technology Magazine (Magazine)</li> <li>▪ Utility Week (magazine)</li> </ul> | <ul style="list-style-type: none"> <li>▪ Liberation</li> <li>▪ Le Figaro</li> <li>▪ Le Monde</li> <li>▪ Le Parisien</li> <li>▪ Le Point</li> <li>▪ La Tribune</li> <li>▪ La Voix du Nord</li> <li>▪ Romandie</li> <li>▪ L' Usine Nouvelle (magazine)</li> <li>▪ 20minutes.fr.</li> <li>▪ Le Nouvel Observateur (Magazine)</li> <li>▪ L' Expansion (Magazine)</li> <li>▪ Marianne (Magazine)</li> </ul> |
| News Agencies | <ul style="list-style-type: none"> <li>▪ BBC News</li> <li>▪ Bloomberg</li> <li>▪ Reuters</li> <li>▪ Energy Live News</li> <li>▪ Sky News</li> </ul>   | <ul style="list-style-type: none"> <li>▪ AFP</li> <li>▪ BFMTV</li> <li>▪ Challenges.fr</li> <li>▪ Europe1</li> <li>▪ France Info</li> <li>▪ RMC</li> <li>▪ RTL</li> </ul>  |

|                                 |   |  |
|---------------------------------|---|--|
| Official Websites of the Actors | <ul style="list-style-type: none"><li>▪ British Geological Survey</li><li>▪ British Green Party</li><li>▪ Centrica</li><li>▪ Cuadrilla Resources Ltd.</li><li>▪ Dart Energy</li><li>▪ Department of Energy &amp; Climate Change (DECC)</li><li>▪ Frack Off</li><li>▪ Friends of the Earth UK</li><li>▪ GreenpeaceUK</li><li>▪ IGas Energy</li><li>▪ No Dash for Gas</li><li>▪ Office of Unconventional Gas and Oil (OUGO)</li><li>▪ Royal Academy of Engineering</li><li>▪ Royal Society</li><li>▪ The Co-operative Energy</li><li>▪ The Co-operative Group</li><li>▪ The Energy and Climate Change Committee</li><li>▪ Tim Yeo</li><li>▪ Tyndall Center for Climate Change Research</li><li>▪ UK Government</li><li>▪ WWW-UK</li></ul> | <ul style="list-style-type: none"><li>▪ Académie des sciences</li><li>▪ Association Santé Environnement France</li><li>▪ Europe Écologie Les Verts</li><li>▪ France Nature Environnement</li><li>▪ GreenpeaceFR</li><li>▪ Medef</li><li>▪ Nicolas Hulot Fondation</li><li>▪ No Fracking France</li><li>▪ Sia Conseil</li><li>▪ Total</li><li>▪ Union Française des Industries Pétrolières (Ufip)</li><li>▪ Union pour un Mouvement Populaire (UMP)</li></ul> |
| International Media             |   |  |
|                                 | <ul style="list-style-type: none"><li>▪ Financial Times (International Newspaper)</li><li>▪ The New York Times (International Newspaper)</li><li>▪ The Wall Street Journal (International Newspaper)</li><li>▪ CNN (News Agency)</li><li>▪ International Energy Agency</li><li>▪ Natural Gas Europe</li><li>▪ Energy Information Administration</li></ul>   |  |

#### 2.2.4 Process Tracing

Finally, the second question (2. *How can we explain policy change and the position of the actors in the debate? Is there a possible relation and how is this relation proven?*), is a very interesting question that goes a step further from the “convenient” questions posed so far as it is hard to find a measurable indicator for answering this question. In order to be able to measure the changes that might be observed in the position that the actors

are adopting but also in their values and in the relevant policy changes, it is necessary to have some kind of an indicator. However, due to the nature of the subject under research tough, having a quantitative indicator for presenting these changes is almost impossible. The short time period during which we examine the changes that might have occurred is not sufficient for using a measurable and well-defined indicator. Yet, this does not mean that there are no other ways for pointing out the alteration in the actors' behavior, the coalitions within which they belong and the adopted policies. The most sufficient qualitative indicator that could be used here is process tracing. By analyzing the variations in the actors' positions and their dynamics and connecting them with certain events that could have possibly affected them in the meantime, it can be possible to justify these changes on a solid ground and provide a valid analysis. Of course using such a method is not defined by certainty yet it certainly does provide some explanations. Additionally, in order to indicate these events and the changes in the policy programs adopted by the government and link them to the positions of the actors, two different timelines have been created (one in each case) that illustrate significant chronological events in the debate and the relevant policies that were adopted either prior or following them. This chronological representation can provide a link among the policy changes that have taken place and also the possible changes in the actors' position and values during this certain time period.

Furthermore, using process tracing and trying to associate certain events to the dynamics of the actors' position and the relevant policy changes can be a measurable indicator that can be used for testing the hypotheses formed in chapter 2.1, concerning the theoretical framework (especially in regards with hypothesis 2b) .

## **CHAPTER 3**

### **3.1 THE SHALE GAS DEBATE IN THE UNITED KINGDOM**

#### **3.1.1 General Description of the public debate**

The United Kingdom is a country with a long history of producing oil and natural gas mainly from its offshore oilfields in the North Sea region. However, with the declining production in the North Sea the past few years, the UK government and energy companies have started the quest for alternative sources of energy, other than the traditional ones, in order to reinforce the country's energy security. And it would not be long until their interest would turn to shale gas, following the example of their American allies. So far, there have been predictions that the UK possesses a respectable amount of gas in the subsoil's shale formation. The main areas that are estimated to be rich in shale gas reserves can be found in the Bowland shale of central Britain, in an area between Wrexham and Blackpool in the west, and Nottingham and Scarborough in the east, according to the British Geological Survey (BGS) (British Geological Survey, 2013a). The updated but still rough estimations of 1329 tcf (trillion cubic feet) that were revealed in June 2013 by the BGS and the Department of Energy and Climate Change (DECC), contributed to the revival of the interest for exploiting the reserves.

In the United Kingdom, the situation regarding shale gas and fracking has been inconsistent, with the government becoming eager over the year 2012-2013 to proceed with the exploration and extraction of the reserves. After granting exploratory licenses in 2010, the energy company *Cuadrilla Resources* took the lead and started drilling, something followed though by a revocation of these licenses and an 18-month moratorium imposed in June 2011. This step was taken due to the found connection between the fracking operations and two earth tremor incidents that took place in April and May 2011 in Lancashire, northwestern England, where Cuadrilla Resources was exploring for shale gas (Smith-Spark & Boulden, 2013). The British Green Party, environmental and various protest groups but also companies from related sectors that could be affected (water, renewables, etc.) have been actively demonstrating against the drilling. The opponents of shale gas are making strong efforts to change the trajectory of the debate, moving from the potential economic benefits to the challenges for the environment and the climate, with issues linked to even greater greenhouse emissions, pollution of the air and water but also the potential impact on human and animal health. In 2010, Cuadrilla was granted with a planning permission by the West Sussex County Council to undertake exploration work and in 2013 it was decided to begin with the drilling operations (BBC News, 2013). However, due to the strong opposition and the protests that have drawn the attention of the media and the wider society, Cuadrilla decided in August 2013 to suspend the drilling operations “*after taking advice from the local police in Sussex, following threats of direct action against the exploration site*” (Harvey, 2013b). Even though the company was drilling for shale oil and not gas, the success of the protesters is considered to be symbolic of their efforts against the shale gas activities (Reed, 2013). As the events keep changing rapidly, the actors involved are struggling to change the direction of the debate in their favor. The UK government seems to be on the track of proceeding with the



exploration of the British shale gas reserves despite the increasingly zealous opposition. The ban on fracking was lifted in December 2012, with Ed Davey, the Secretary of State for Energy and Climate Change, announcing that “*the U.K. has set up controls to curb the risk of quakes in developing shale gas*” (Bakewell, 2012). Finally, in July 2013 the UK government announced that they are willing to create a tax regime that would favor the shale gas operations (Press Association, 2013).

Figure 3.1: Resource Estimation of shale gas in the Bowland area

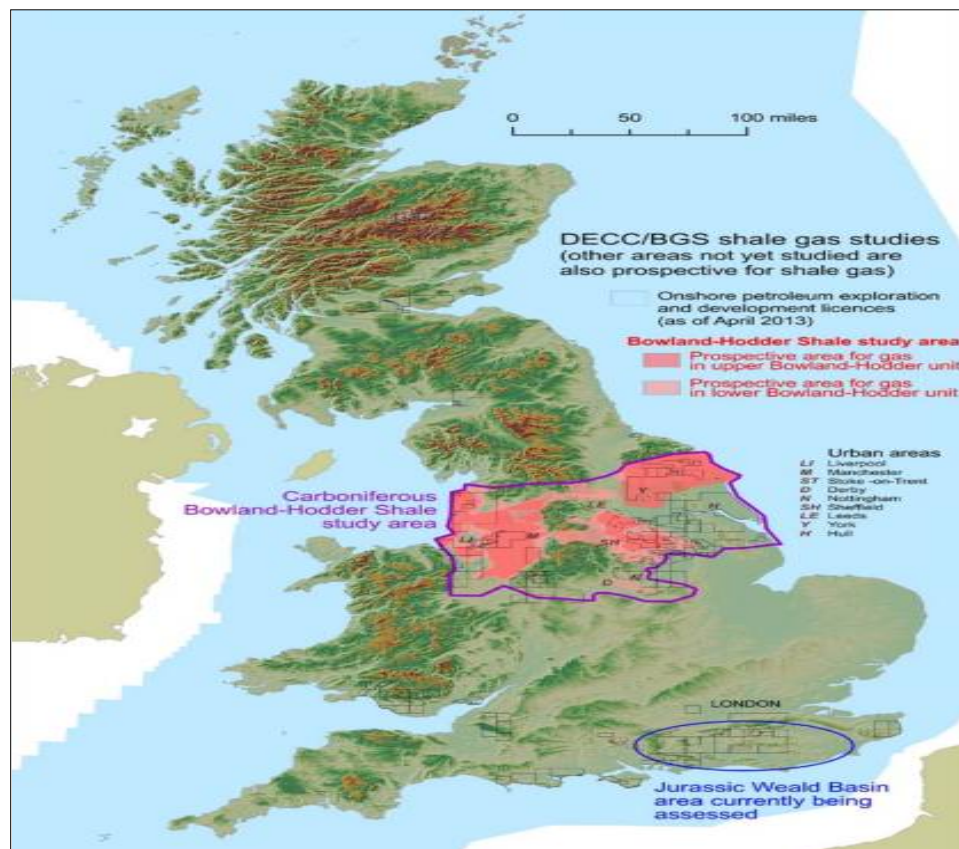


Image Source: British Geological Survey/Department of Energy and Climate Change, “The Carboniferous Bowland Shale gas study: geology and resource estimation”, 27 June 2013, [www.gov.uk](http://www.gov.uk)

### **3.2 MAIN ACTORS INVOLVED IN THE DEBATE AND THEIR RELEVANT POSITIONING**

In the United Kingdom we find multiple actors involved in the shale gas debate and the relevant policy making process. Most of them have strong, conflicting views and persist on their positions. The few actors trying to bridge one way or the other the differing opinions and provide a commonly agreed policy, are failing to do so. So far, there is a distinct division among the actors supporting the extraction of shale gas and those opposing to it. This division of opinions regarding the future of shale gas in the UK leads of course to a subsequent division of the actors supporting certain policies designed by the UK government and again those opposing to them and protesting. For the proponents, the potentially great benefits

deriving from the capitalization of shale gas are limited by the potential risks that such an extraction could bring while the opponents are arguing the opposite. Yet, in spite of the dilemma that these actors are facing, their overall inclination towards one side or the other can be distinguished based on their statements and argumentation and therefore they are placed in the relevant category. On the one side of the debate, we find the British Industrial Sector and the UK government, where the issues of energy independence and economic stability are a matter of priority, following the steps of their fellow American partners. The ruling Tory Party and governmental agencies, energy companies and prestigious personalities of the industrial sector are among the most prominent actors that prevail in the camp of the proponents. Their positioning is reinforced by some research institutions that come to support with their report findings the stance of the actors mentioned. On the other side, the Green Party, environmental groups and local communities are raising their voices, refusing to allow the extraction of this dangerous as the say energy resource (WWF, UK, 2011). Associations and groups that work in the field of renewable energy, water or climate change in the United Kingdom, appear to be skeptical about the shale gas extraction and the controversial method of fracking. But only few of them have explicitly expressed their opposition and their concerns regarding shale gas.

In order to have a structured representation and analysis of the actors and the coalitions that have been created, I created five broad categories (policy, industry, research, associations and NGOs) based on the sectors that they are deriving from. In these five categories, I have included the various actors of the debate in the United Kingdom. Since the main actors of the debate belong in these sectors, this division between them makes the comprehension of their general background simpler. Each category sets up a broad framework within which different actors can be included. Included in the subchapters that analyze the proponents and opponents, there is an illustration showing the actors in favor and those against fracking and shale gas in the UK. The information provided for each actor includes the name of the actor, the persons that often represent the actor, the positioning and the arguments or statements that have been made in order to support the positioning.

### **3.2.1 Proponents of fracking and shale gas in the United Kingdom**

First, the positioning and argumentation presented of the proponents of shale gas in the United Kingdom will be analyzed. On the side of the proponents, we find a variety of actors from different sectors. The benefits for these proponents succeed the potential risks and therefore UK should grasp this unique chance. The policy sector, the industrial grouping and various research institutions, all actors have a positive perspective regarding the productive development of shale gas. Important to note, is that there are different nuances of support. Several actors pursue the exploration and extraction of the gas in an enthusiastic and passionate manner and they appear confident that the establishment and expansion of the gas industry (particularly of shale) is an opportunity that should not be wasted. In addition, there are some actors (i.e. British Geological Survey) which are included in the group of proponents, despite the fact that they have more of more neutral standpoint, yet in one way or the other they contribute to the enforcement of the positioning of the proponents. These actors have been placed in each category

according to their overall presentation and inclination based on statements that denote their support or opposition. Even though it is difficult to be certain about their definite positioning (e.g. hidden agendas), a categorization has been made based on the delicate nuances that they provide through their argumentation and of course based on the network of actors with whom they cooperate, collaborate or comply with.

Figure 3.2: Table of proponents of shale gas and fracking in the UK

| Proponents          |   |   |   |   |
|---------------------|---|---|---|---|
| Sectors of activity | Name  | Commonly represented by   | Positioning   | Key words for argumentation used by proponents  |
| Policy              | British Government                                    | <ul style="list-style-type: none"> <li>David Cameron, PM</li> <li>George Osborne, Min. of Finance</li> </ul>  | In favor of shale gas                                     | <ul style="list-style-type: none"> <li>Economic profits</li> <li>Energy security</li> <li>Creation of jobs</li> <li>Lower gas prices</li> <li>Reinforcement of local economies</li> </ul> |
| Policy              | Department of Energy & Climate Change (DECC)          | <ul style="list-style-type: none"> <li>Ed Davey, Secretary</li> <li>Michael Fallon, Min. of Energy</li> </ul> | In favor of shale gas (with a tight regulatory framework) | <ul style="list-style-type: none"> <li>Energy security</li> <li>Growth</li> <li>Jobs</li> <li>Tight regulatory framework</li> <li>Energy transition</li> </ul>                            |
| Policy              | Energy and Climate Change Committee                   | <ul style="list-style-type: none"> <li>Tim Yeo, chairman</li> <li>(resigned)</li> </ul>                       | In favor of shale gas                                     | <ul style="list-style-type: none"> <li>Energy Security</li> <li>Tax Revenues</li> <li>Skeptical on lower energy prices</li> </ul>   |
| Industry            | Cuadrilla Resources Ltd (Partners of AJ Lucas Group)  | <ul style="list-style-type: none"> <li>Lord Browne, chairman</li> </ul>                                       | In favor of shale gas                                     | <ul style="list-style-type: none"> <li>Energy security/supply of gas</li> <li>Energy transition</li> <li>Economic profits</li> </ul>  |
| Industry            | IGas Energy Plc                                       | <ul style="list-style-type: none"> <li>Andrew Austin, CEO</li> </ul>  | In favor of shale gas                                     | <ul style="list-style-type: none"> <li>Energy security</li> <li>Economic profits</li> <li>Energy transition</li> <li>Chance of lower gas prices</li> </ul>                                |
| Industry            | Dart Energy Ltd                                       | <ul style="list-style-type: none"> <li>John McGoldrick, CEO</li> </ul>  | In favor of shale gas                                     | <ul style="list-style-type: none"> <li>Energy security</li> <li>Energy transition</li> </ul>  |
| Research            | Royal Academy of Engineering                          | --  | In favor of shale gas                                     | <ul style="list-style-type: none"> <li>Energy transition</li> <li>Dangers can be managed sufficiently</li> <li>No great risks for health/earth tremors/safety/environment</li> </ul>      |
| Research            | Royal Society (National Academy of Science in the UK) | --  | Neutral stance but does not reject the exploitation       | <ul style="list-style-type: none"> <li>Energy transition</li> <li>Dangers can be managed sufficiently</li> <li>No great risks for health/earth tremors/safety/environment</li> </ul>      |
| Research            | British Geological Survey                             | --  | Neutral stance but does not reject the exploitation       | <ul style="list-style-type: none"> <li>Estimations for great shale reserves in UK</li> <li>Interested in groundwater impact after exploitation</li> </ul>                                 |

### 3.2.1.a Policy Sector

The first category that will be analyzed is the policy-making sector. This includes the state policy-makers favoring the exploration of the reserves of the British subsoil. The actors in this category are involved in making important policy related decisions and drawing adequate policy programs that have implications in many areas. Their role is very important since with their decisions they are able to influence the route and the direction of the shale gas debate in the country. Therefore, due to their role, the actors of this category hold a position of an important weight in the shale gas debate.

#### ▪ The Government of the United Kingdom

A main actor of the policy domain that supports the establishment of a strong shale gas industry is the Conservative Party. The British Conservative Party (Tory Party) has been ruling in the United Kingdom since 2010 along with their coalition counterparts, the Liberal Democrats who appear skeptical regarding the appropriate future of shale gas. However, the Tories have a different opinion. According to a Populus's MP (Member of Parliament) Panel that was published in August 2013, 84% of the Conservative MPs think shale gas developments should be encouraged by the government. This percentage shows the great support from the British Conservative side to proceed with fracking operations and their positive attitude towards the production of shale gas from the British reserves. Figure 1.5 shows the opinion of British Conservatives and Labor members in the Parliament, according to Populus's Panel. It illustrates clearly the support by the Conservatives for proceeding with the shale operations compared to other Parliamentary members.

Figure 3.3: Support of MPs on shale gas & fracking

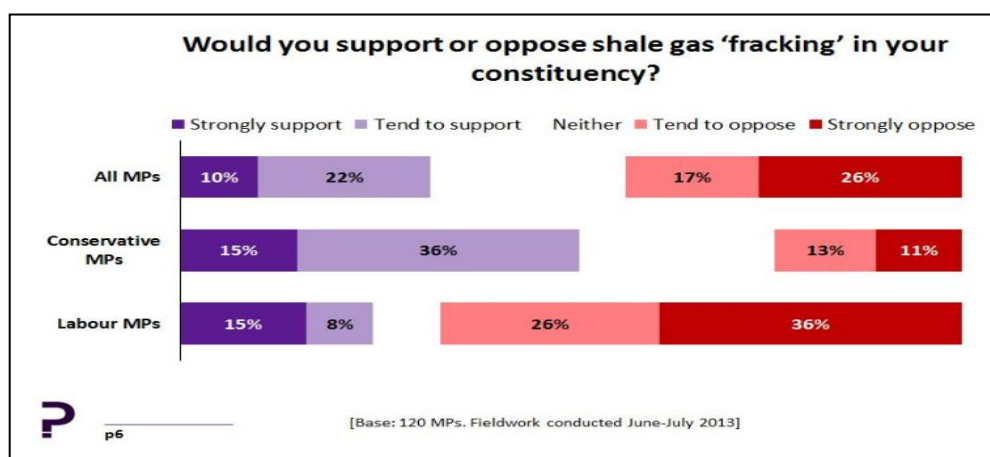


Image source: Richard Bridger, "Shale Gas Dispute – Not All It's Fracked Up To Be", 21 August 2013, [www.populus.co.uk](http://www.populus.co.uk)

As the Conservative Party holds the central position in the UK government, it is no surprise that its positioning coincides with the positioning taken by the UK government. The UK government is a strong proponent of the shale gas utilization foremost stressing that shale gas could potentially reinforce the

country's energy security, lower their energy dependency from imports, create more jobs and assist in the overall economic welfare. The issue of energy security is apparently very important for the country. The state policy for maintaining the UK energy security includes among others the reform of the electricity market while maintaining the security of gas supply. Consequently, according to the arguments of the UK government, the successful domestic production of shale gas could bring significant benefits for the state and also for the British citizens as the following statement exemplifies: *"The government believes that shale gas has the potential to provide the UK with greater energy security, growth and jobs. We are encouraging safe and environmentally sound exploration to determine this potential"* (Department of Energy & Climate Change, 2013a).

The Prime Minister, David Cameron and the Chancellor of the Exchequer, George Osborne, are the key people within the Tory Party involved in promoting the exploitation of shale gas in the United Kingdom. These two people, being the Prime Minister and the Minister of Finance, respectively have a crucial role in the UK government. Despite Cameron's promises for the "greenest government ever" (Randerson, 2010), the current policy seems to be ways apart from this commitment. In an article from his hand -in the British newspaper *The Telegraph* in August 11<sup>th</sup> 2013, Cameron pledged for making shale gas a success. According to this article, Cameron holds the idea that through the technique of fracking, the extraction of shale gas will first and foremost bring great economic benefits for the whole of the country. *"If we don't back this technology, we will miss a massive opportunity to help families with their bills and make our country more competitive. Without it, we could lose ground in the tough global race"* (Cameron, 2013), Cameron writes, making in this way the competitive economic growth of the country a priority of his policy. As he notes in the same article, *"fracking has real potential to drive energy bills down"* (Cameron, 2013) while there is the chance of creating many jobs in the United Kingdom and *"bringing money to local neighborhoods"* (Cameron, 2013). Economic welfare can bring or sustain political stability, the goal of every ruling political Party. The Tory Party is no exception. Securing the economy and providing stable or lower energy prices to the citizens, could give to Cameron's Party a political safety. Furthermore, the successful exploitation of the reserves can bring apart from economic growth, security of energy supply/security. The energy emancipation and the possible independence is a desire that every state shares. No state wishes to be dependent on energy imports and this goes also for the UK. In order to reassure his readers, he finds comfort in writing that *"international evidence shows there is no reason why the process should cause contamination of water supplies or other environmental damage, if properly regulated. And the regulatory system in this country is one of the most stringent in the world"* (Cameron, 2013). These lines presenting the risks and the necessary measures appear in a general and broader framework, contradicting in this way his passionate message in the first paragraphs where he describes the benefits which can arise with the extraction of shale gas.

The current Chancellor of the Exchequer or commonly known as the Minister of Finance, George Osborne, has been trying for a long time now to establish a strong shale gas industry in the country. Osborne is making an effort to make shale gas as much as public-appealing as possible. The best example is his promise for establishing tax breaks for fracking companies and financial incentives to local communities. In July 2013, the Treasury set a 30% tax rate for onshore shale gas production while *"the industry will have to provide 100,000 pounds in benefits and 1% of the revenue from each production site"* (Reuters,

2013). Osborne announced on the 19<sup>th</sup> of July that: *“We want to create the right conditions for industry to explore and unlock [shale's] potential...this new tax regime [a 30% tax rate for onshore shale gas production], which I want to make the most generous for shale in the world, will contribute to that”* (Werber, 2013) (Harvey & Macalister, 2013). This statement could be perceived as a cornerstone in the positive development of the British shale gas industry as it encouraged energy producers to invest in this newly developing industry. For the Chancellor the country's energy security and the economic growth (through the creation of jobs and the maintenance of low energy bills) are top priorities. The Minister is struggling to reduce the energy bills and he certainly believes that this can be achieved through the profitable extraction of shale gas. As he stated, *“shale gas is a resource with huge potential to broaden the UK's energy mix”* (Harvey & Macalister, 2013). Osborne wants Britain to become a leading country in the shale gas domain. Despite the reactions, he seems determined to *“create the most generous regime for shale gas in the world”*, an assumption which can be verified by the announced generous tax breaks (Press Association, 2013). By vowing to *“make shale gas happen”*, the Minister shows his determination and his enthusiasm for the shale gas opportunities (Chazan, 2013).

#### ▪ Department of Energy and Climate Change

The Department of Energy and Climate Change (DECC) is a ministerial department that regulates energy debates (including the shale oil and gas debate), issues the relevant licenses for exploration and controls the environmental regulations of the offshore oil and gas industry. Having a key responsibility in the future of shale gas in the country and being the highest state authority responsible for Climate Change, the department has positioned itself in favour of exploring and possibly extracting shale gas. *“Shale gas has the potential to provide the UK with greater energy security, growth and jobs”* (Department of Energy & Climate Change, 2013a) while at the same time there is encouragement for the *“safe and environmentally sound exploration to determine this potential”* (Department of Energy & Climate Change, 2013a). The DECC has been cooperating with the British Geological Survey (BGS), the Royal Society and the Royal Academy of Engineering. Along with the BGS, they published in June 2013 a report where new estimations for greater shale reserves were made compared to estimations made in the past. The DECC commissioned the Royal Society and the Royal Academy of Engineering to *“review the scientific and engineering evidence on shale gas extraction conducted by the Royal Academy of Engineering and the Royal Society”* (Royal Society & Royal Academy of Engineering, 2012) and the report that resulted favored the exploration and extraction of shale gas in the United Kingdom. Furthermore, the interest for exploring and possibly extracting the reserves from the government's and the DECC's side is demonstrated with the establishment of the Office of Unconventional Gas and Oil (OUGO) in the end of 2012. Despite the fact that there are no assured estimations regarding the recoverable reserves and their economic viability, OUGO openly supports the extraction of these reserves. The purpose of OUGO is to *“promote the safe, responsible, and environmentally sound recovery of the UK's unconventional reserves of gas and oil”* (OUGO, 2012).

The Secretary of State for Energy and Climate Change, Ed Davey, has been the main spokesperson for the DECC. Initially trying to bring a balance into this medley of reactions, concerning the fracking technique and shale gas and being critical and skeptical against those who were supporting the

idea of an energy independence in the United Kingdom based on shale gas (Gray, 2012), Davey gave the green light to proceed with the shale gas extraction while giving his reassurances that *“if fracking results in earth tremors then it will stop”* (Gavell, 2012). Davey eventually shifted his views and adopted a positioning openly in favor of shale gas. During a reception for the all party parliamentary group for unconventional oil and gas in 2013, he stated that he *“loves shale gas”* and that *“the potential for shale gas is fantastic for our energy security... and the climate”* (Ellis, 2013). For Davey, the exploitation of shale gas has a great potential based on the estimated results that it could have on the country’s energy security (providing in this way stability in many terms –economy, politics, interstate and intrastate relations) while the environmental consequences are less significant than those produced by LNG (Liquefied Natural Gas). *“If you look at the carbon footprint of shale gas compared to LNG from the other side of the world, it is a no-brainer”* while he even argued that *“gas complements rather than displaces renewables”* (Utility Week, 2013). The British Energy Minister, Michael Fallon is siding the supporters of shale gas in the DECC. He characterized shale gas as *“an exciting new potential energy resource for the UK, and could play an important part in our energy mix”* (Gosden & Clancy, 2013). The event of Centrica’s (British electricity company) acquisition of Cuadrilla’s (British energy company) 25% of the Bowland Shale in Lancashire, was warmly accepted by Fallon, since it provided *“a welcome boost for the growth of shale gas in the UK”* and earlier in 2013, Fallon said that *“Britain is on track to accelerate its shale gas program by introducing next year (2014) a new licensing round for oil and gas explorers”* (Rowley, 2013; Williams & Werber, 2013).

#### ▪ **Energy and Climate Change Select Committee**

The Energy and Climate Change Select Committee is a select Committee in the Parliament of the United Kingdom, cooperating with the DECC. At least two reports have been published and recommendations were made towards shale gas. The two reports though differ; the first one published in 2011 acknowledged the environmental challenges that can erupt from the shale gas exploration. Yet, two years later, in 2013, the Committee had a different position. The second report advised the government to improve public acceptance of the resource and proceed with its exploitation. In 2011, the Committee was appointed by the House of Commons to form a report estimating the shale gas prospects and risks. The May 2011 report emphasized the environmental and climate risks but eventually gave the green light to the UK government to proceed with any exploration plans, while declined the chance of a moratorium. According to the report, shale gas is *“unlikely to become a “game-changer” to the same extent as it has been in the US”* (The Energy and Climate Change Committee, 2011), yet it has the potential to lead to a gas electricity generation, away from coal and increase the country’s energy supply. Finally, although the environmental risks are acknowledged, these risks should be balanced with *“its potential contribution to energy security”* (The Energy and Climate Change Committee, 2011). On 26 April 2013, the Committee published another report on shale gas and its impact on Energy Markets. A comparison was made between the UK and the US, concluding that the developments in the UK can be different due to dissimilar factors. This time, the report appears to be more enthusiastic about shale gas, with recommendations made for the government in order to ensure public acceptance of the shale gas industry. The exploration of the reserves is necessary



in order to estimate the full volume of the gas while the long 18-month moratorium that was imposed on fracking, could have been shorter although the possibilities of lowering the gas prices in the UK due to the domestic production are quite low. However, this scenario is not excluded, in the case where large quantities of gas are found. Even though the climate challenges should be addressed, shale gas could contribute to the country's energy security, *"provide employment, create additional revenue for the Exchequer, and support the energy intensive sector"* (The Energy and Climate Change Committee, 2013). With the report stating that the regulatory framework is sufficient for the exploration process, the sentence *"we are keen to see exploration proceed quickly to validate current estimates and establish the true potential of shale gas in the UK"* only verifies the support the Committee has for the government's shale gas policy (The Energy and Climate Change Committee, 2013).

Tim Yeo, the former chairman of the Committee, he left this position in June 2013, had expressed his precautions by saying that *"it is still too soon to call whether shale gas will provide the silver bullet needed to solve our energy problems"* (Harrabin, 2013). However, he did not exclude the possibility of lowering the gas prices or reducing the UK's gas reliance on imports, if substantial shale resources are recovered (Energy And Climate Change Committee, 2013). After his resignation from the Committee, Yeo stated that the local communities should be "compelled" to accept fracking, solar farms and wind turbines, while those communities which do accept fracking, should get *"significant cash benefit"*, in exchange (Bennett, 2013). On his website, the former Chairman writes that there are substantial reserves that could reduce the imports, improve the country's energy security (Yeo, 2013). Fracking could be successfully used, as a result of the rightful British regulatory framework and he justifies the tremors as a common event while the most important thing in order to make shale gas a success story, is to win the public acceptance (Yeo, 2013).

### **3.2.1.b Industry Sector**

It is expected that the industrial sector would be involved into such a debate as the focus is on energy. Many energy companies in the United Kingdom have expressed an interest in the development of shale gas in the country. As the domestic production of oil in the North Sea is dropping, there are energy producing companies looking for alternative energy sources that would sustain their profits. Shale gas appears to be an attractive option, in the case that its extraction proves to be viable. Yet, a distinction should be made at this point between the energy companies that use renewable energy and the companies that use non-renewable sources, regardless if they are conventional or non-conventional. Renewable energy sources are non-conventional, meaning that they are inexhaustible, pollution-free and available for free. Shale gas on the other hand is considered as a conventional energy source (basically it is an unconventional form of natural gas). Consequently the majority of renewable energy companies are skeptical towards the extraction of the reserves. Thus, the companies that will be analyzed here, are companies that use conventional energy as their primary source of production (coal, oil or natural gas). These companies are supporting the idea of exploiting shale gas, even though it is much more difficult to extract it from the rock formations where it is trapped in the subsoil.

## ▪ Cuadrilla Resources Ltd

The analysis starts with the company that has drawn the attention of the media in the United Kingdom and abroad. Cuadrilla Resources Ltd., a company based in the UK is privately owned by its management team and two investors, AJ Lucas and Riverstone LLC. AJ Lucas Group is an Australian mining group while Riverstone LLC is a U.S. private-equity firm. The company is known for its interest in exploiting the gas and oil from the shale formations, in the United Kingdom and also in the Netherlands and was the first company that proceeded with the drilling of exploration wells in the United Kingdom. Involved in the Lancashire operations that lead to the earth tremors in 2011 Cuadrilla made an effort in the summer of 2013 to begin with the drilling operations in Balcombe. However, this effort was halted due to the opposition and protests in the area. In the summer of 2013, Centrica, Britain's biggest energy provider decided to invest in the shale gas business by paying *“40 million pounds (\$62.8 million) for 25 percent of the Bowland Shale in Lancashire, owned by license operator Cuadrilla Resources and its Australian private-equity backer A.J. Lucas”*, a move that possibly encouraged further investments in the shale sector (Vukmanovic & Schaps, 2013). Similar to the arguments made by the actors analyzed previously, Cuadrilla positions itself in favor of shale gas. The main reasoning lies on the potential shale gas has to *“boost the UK’s gas production, generating tax revenue for the UK”* (Cuadrilla Resources Ltd, 2013) (and of course for the company itself) and *“reduce the UK’s dependency on vulnerable and expensive foreign energy sources”* (Cuadrilla Resources Ltd, 2013). Based on Cuadrilla’s arguments, securing the country’s energy supply is a priority. The issue of the dropping production in the North Sea that leads to increased dependency on gas importers for the United Kingdom is a matter of concern for the company. As any business is aiming the maximization of the economic profits, it is anticipated that such values is important for Cuadrilla. Yet, this can be assumed since no relevant statement regarding the potential economic benefits has been made.

Cuadrilla also argues that by producing natural gas, there is less atmospheric pollution compared to the emissions emitted from coal and oil (Cuadrilla Resources Ltd, 2013). Thus, this brings their next argumentation that natural gas contributes to the country’s energy transition towards *“low carbon and renewable energy sources”* (Cuadrilla Resources Ltd, 2013). With the prosperous production and distribution of natural gas (shale gas included), the UK has the potential to reduce the gas prices, leading to economic sustainability among others. On the company’s website, it is clear that Cuadrilla acknowledges the future importance of renewable energy. Nonetheless, natural gas is important at the present time, and in order to achieve energy transition, it is significant to invest in natural gas (Cuadrilla Resources Ltd, 2013). So far, Cuadrilla is the main company currently actively involved in the debate and is considered consequently as the biggest actor from the industrial sector. What makes Cuadrilla Resources different from the other energy companies in the United Kingdom is the fact that the company already possesses a fracking license and has started with some fracking projects. This gives of course to Cuadrilla a strategic advantage compared to the companies that have to apply and then receive their licenses. And it is exactly for that reason, due to the company’s effort to establish an operational business for shale gas that Cuadrilla has been the main target of the opposition.

Within Cuadrilla Resources there is a person who holds an important role in the overall shale gas debate. Lord John Browne, chairman of Cuadrilla Resources holds an important role in the wider shale gas debate in the UK. Being the Managing Director of the company's venture capital backers, Riverstone Capital Partners and the former Chief Executive of British Petroleum (BP), Lord Browne has also been the President of the Royal Academy of Engineering until 2011 (this actor will be analyzed) and is the most senior business *adviser* to the coalition *government* (Harvey, 2013a). For Lord Browne, a successful exploitation of shale gas could create many jobs, bring economic and financial profits (increase of revenues and decrease the energy bills) while it could support raising the competitiveness of the country in a variety of terms (Ashton & Bawden, 2012). Despite being a supporter of this controversial resource, Lord Browne had urged for better regulation in the past. During a television interview he agreed that the focus on energy will shift from fossil fuels to other forms of energy. Following the policy of his company, Browne does acknowledge that energy transition will occur, yet shale gas is part of this transition which started from coal and will move to lighter-carbon fuels (BBC HARDtalk, 2013). *"We will finance whatever it takes. Equity finance, then debt and equity. If we really succeed, it will be billions, over 10 years it will be billions [of finance to provide]"* (Harvey, 2013a).

#### ▪ IGas Energy Plc

A second company following Cuadrilla's steps that has been involved in this public debate is IGas Energy Plc. IGas, is a public limited company, identifies itself as a *"leading onshore hydrocarbon producer in the United Kingdom, delivering natural gas and crude oil to Britain's energy market"* (IGas Energy, 2010). With no fracking permissions for shale gas, the company has to apply for a fracking license in order to start any planned exploratory operations for shale gas. IGas Energy is partly owned by a Canadian and a Chinese state company. IGas Energy started evolving into a group of energy companies and recently the company presented an interest in shale gas and started to bestir itself. This increased interest for exploring the shale reserves for gas can be justified by a study of IGas Energy, published in June 2013 according to which, the shale gas reserves of the company may be higher than first thought, in the company's licensed sites, in north-west England (Moses, 2013). IGas Energy is expected to start drilling near Manchester in order to test the kind of gas that lies on the ground and if it economically profitable to extract it (Gosden, 2013c). By exploiting the hydrocarbon reserves in the UK, IGas argues that they contribute to the country's energy security *"while at the same time delivering value to IGas investors"* (IGas Energy, 2010).

IGas Energy's Chief Executive and main spokesman Andrew Austin argues that shale gas has the potential to contribute in UK's economy by securing the supply of resources, tax revenues and creating jobs while shale gas could lower the country's dependency on imports. Doubting initially the idea that the shale gas production could cut the household energy bills or reduce the gas prices (*"if there is a success of shale gas, is it will put a cap on gas bills rather than necessarily driving them down"*) (Gosden, 2013a), after the recent studies that estimated bigger reserves within the sites of IGas Energy, Austin changed his position and he is arguing that with *"a significant amount of supply sourced from shale"* (Gosden, 2013d), the prices could be

brought down and the dynamics of the market could change (Gosden, 2013d). He has also argued that natural gas even though it does have an effect on climate; it emits fewer emissions than coal.

#### ▪ **Dart Energy Ltd**

The Australian company Dart Energy, active in the exploration and production sector of the unconventional gas industry, possesses significant shale acreage in the UK and effort has been made in order to estimate the value and profitability of their reserves. With several licenses acquired for the Western and Eastern Bowland Basin shale, in April 2013 they announced that they were “*seeking appropriate partner(s) to develop the Bowland shale gas position*” (Dart Energy, 2013a). Dart Energy acknowledges that gas plays an important role in the UK’s energy supply system. As the country is turning to be more dependent on imports, UK’s energy independence is becoming crucial. Natural gas could contribute to this endeavor. Furthermore, the replacement of the imports with the domestic gas production could bring more profits and the gas transportation costs will be significantly reduced. Dart Energy is using the same argument as other proponents regarding the environmental friendliness of such a resource. According to the company, the production of natural gas comes with less negative impact on the climate compared to emissions from coal (Dart Energy, 2013b). The main representative of Dart Energy is the Scottish CEO, John McGoldrick. Mr. McGoldrick had welcomed the acquisition of Cuadrilla’s 25% interest in the Bowland shale exploration license by Centrica in early summer 2013. For the CEO, this deal “*managed to inject some urgency into the situation, because a lot of these companies don’t react that quickly*” (Paton, 2013). The event was positively viewed by Dart Energy as the company is looking for potential partners in order to proceed with the shale gas developments. As McGoldrick stated to news agency *Bloomberg*, “*I’m pushing very hard to get something put together shortly. We’re pushing ahead, and maybe this deal will help accelerate things*” (Paton, 2013). Even though the company has not started drilling yet and is way behind to the exploration process compared mainly to Cuadrilla, Dart Energy is considered as an actor and has the potential to emerge more influential in the debate, due to the large possession of shale acreage in the UK.

The CEO of Dart Energy was probably right on the following issue: the business deal made between an energy producing company and an electricity company did attract other ones. Perhaps this deal created or boosted the hopes that shale gas can be a resource worth-investing. Mainly from the beginning of 2013, many energy companies presented an interest in the shale industry. However, these are small or less-known companies instead of big international companies. This pattern is the same as the one in the United States. The shale gas industry was developed by the same small companies that invested in research and technology and eventually resulted to the use of horizontal drilling combined with the fracking technique. A quick but thorough archival research shows that the UK seems to follow the steps of their American allies as a multitude of small enterprises are starting to put their focus also on shale gas, despite the procedural obstacles that they have to overcome. The three major industrial actors that were mentioned, with Cuadrilla being the leader, are proceeding faster in the rally for the British shale exploitation. There are other smaller actors though in the debate. Nevertheless, they will not be analyzed in this paper. The limited statements and actions that they have taken, does not allow for any further

analysis. An exception worth mentioning is the newly founded company Shale Energy Plc. Shale Energy was founded in March 2013 in the United Kingdom particularly for producing shale gas and coal bed methane in the country. Currently, the main focus is on shale gas. Additionally, even though it has been long since the company started operating, in September 2013 they signed a deal with Eden Energy to sell its entire UK shale gas and coal seam methane portfolio to Shale Energy. The company cannot be considered as a major actor yet, yet it is anticipated to start having a more active role in the debate.

### **3.2.1.c Research Sector**

For the proponents of shale gas in the United Kingdom in the research sector, we find some institutions that do not have explicitly supported shale gas but they certainly present a stance more positive than other institutions or the shale regulators of the country and the scientific findings of their reports have actually been used by the policy makers in order to support the relevant policies.

#### **▪ British Geological Survey**

The British Geological Survey (BGS) is a public sector organization which serves as an advisor of the UK government on matters of geoscientific importance. Due to this cooperation with the government, BGS was commissioned by the DECC to undertake a detailed gas analysis for some specific parts of central Britain. The estimate was completed in June 2013 and the BGS concluded that *“there is likely to be some 40 trillion cubic meters (1,300 trillion cubic feet) of shale gas in the ground in this area [Bowland Basin and beyond]”* (Department of Energy & Climate Change, 2013b). These estimations can be perceived as one of the motives that triggered further the interest for shale gas from the various actors in the United Kingdom. Although the BGS has not explicitly embraced the positioning of the actors mentioned so far, meaning the enthusiastic acceptance of shale gas's profits, it also has not rejected the exploration or exploitation. As is stated on their website *“Shale gas clearly has potential in Britain but it will require geological and engineering expertise, investment and protection of the environment”* (British Geological Survey, 2013b). This statement shows a positive stance for the BGS towards shale gas, given that the necessary precautions will be taken.

#### **▪ Royal Society & Royal Academy of Engineering**

Two actors in the British research sector which are interconnected to a considerable degree are the Royal Academy of Engineering and the Royal Society. These are two different academic institutions which have been cooperating with the government as advisory bodies while there has been cooperation between the two institutions as well. In 2012, *“the UK government’s Chief Scientific Adviser, Sir John Beddington FRS [Fellow of the Royal Society], asked the Royal Society and the Royal Academy of Engineering to review the scientific and engineering evidence and consider whether the risks associated with hydraulic fracturing (...) as a means to extract shale gas could be managed effectively in the UK”* (Royal Society, 2013). The main findings of the report, as published in June 29 2012, were:

- The health, safety and environmental risks can be managed effectively in the UK (through Environmental Risk Assessments and co-ordination of the bodies with regulatory responsibilities);
- Fracture propagation is an unlikely cause of contamination;
- Seismic risks are low;
- Regulation must be fit for purpose;
- Policymaking would benefit from further research into *“the relevant climate risks and the public acceptability of all these risks in the context of the UK’s energy, climate and economic policies”*. (Royal Society & Royal Academy of Engineering, 2012).

This report estimates that the fracking technique could be expanded in the United Kingdom. However, a better regulatory system is in order. Despite the fact that these two institutions support the cautious continuation of the operations, it appears that they are adopting a slightly different positioning and point of view. The Royal Society seems to follow the fairly neutral stance of the British Geological Survey towards shale gas. On the institution’s website, is written that the published report should not be considered as *“an exhaustive analysis of all the issues associated with shale gas, nor does it promise to make any judgments on the appropriateness or otherwise of shale gas extraction being undertaken”* (Royal Society, 2012). On the contrary, the review should serve as a scientific contribution able to widen the shale gas debate. However, similar to the BGS, the Royal Society’s position is positive since it does give the green light towards the exploitation of the reserves, based on their assessment.

The Royal Academy of Engineering though is another case. In December 2012, the Academy welcomed the decision of the government to proceed with the exploration of the shale gas reserves as all of recommendations made by the two institutions were accepted by the government (Royal Academy of Engineering, 2012). Additionally, in September 09 2013, the Royal Academy of Engineering issued a press release stating that Professor D. Mackay’s (Chief Scientific Advisor at DECC) report assessing the potential greenhouse emissions related to shale gas was welcomed by the Academy. Dr M. Thomas, Vice President of the Royal Academy of Engineering, stated that *“the Academy agrees that gas is likely to play an important part in energy generation in the coming years and that with good engineering of the wells it can be an important, lower carbon alternative to coal... Shale gas is an opportunity that can't be ignored”* (Royal Academy of Engineering, 2013). Thus, with the Academy’s clear statements, it is obvious that it is an open proponent of shale gas as this energy source could contribute to the energy transition of the country towards a low carbon economy. Finally, until 2011, the President of the Royal Academy of Engineering and Fellow of the *Royal Society* was Lord Browne. During his presidency, Lord Browne had already started to promote shale oil and gas within the Academy. Just before the termination of his term, he gave two lectures to 250 early-to mid-career engineers where he stressed the importance of natural gas for the growing demand, energy security and energy transition. Shale gas was his central point of focus, along with shale oil (Royal Academy of

Engineering, 2011). The positive attitude that Lord Browne had given in the Academy does not seem to have changed significantly as they support the use of this controversial technique and energy resource.

#### **3.2.1.d Summary of argumentation of proponents**

As it becomes apparent from the analysis performed so far, the main argumentation of the proponents is based on the benefits that a successful usage of shale gas can bring. The creation of new jobs in the shale gas industry would be one of the profits of shale gas while the anticipated subsequent flow of money deriving from the salaries could reinforce the economy alongside of course the financial and economic benefits that the energy companies [and the government, i.e. the country at large] will potentially gain from the extraction and distribution of the gas. Supposing that the reserves of the UK formations are as great as expected and that their extractability does not bear any major obstacles, a productive and beneficial exploitation could even bring a drop in the gas prices, bringing down in this way the energy costs of many households and companies. Furthermore, proponents believe that shale gas can be proven to be sufficient enough to bolster the country's energy security. If the availability of natural gas is boosted by the domestic production, then logically, this will allow a decrease on the imports of gas, and consequently on the energy dependence of the UK. Additionally, several actors support the idea that extracting gas (and in this case from shales) could contribute to the UK's international commitments for lowering their greenhouse emissions while the concept of energy transition is to be fulfilled by burning gas instead of the much pollutant coal. The actors have been quite satisfied with the government's decision to lift the moratorium imposed in 2011 as it clearly favored the continuation of the shale gas operations. Due to these expectations, the proponents of shale gas have chosen to promote the shale gas operations as much as possible. They claim that it is necessary to proceed with the exploration of the reserves in order to understand their full volume and if possible subsequently proceed with exploiting the resource. Of course, since hydraulic fracturing is an indispensable part of the drilling and extracting operation, they support also the technique.

Regarding the rising concerns and risks that might emerge by fracking, the proponents support the view that no substantial problems can arise from this method. The allegations that fracking can cause earth tremors and lead to water and air pollution are denied by them, at least to a certain degree. As they argue, the negative consequences from shale gas and fracking cannot cause any major harm to human health or the environment due to the tight existing regulatory framework. Therefore, they tend to play down any concerns and they support the opinion that the risks can be counterbalanced by the benefits of shale gas.

#### **3.2.2. Opponents of fracking and shale gas in the United Kingdom**

On the other side of the spectrum we find the opponents of shale gas. The actors opposing the exploration and exploitation of shale gas are mainly environmental pressure groups and local or even national protests groups. The British society has started opposing to the controversial method of fracking and the subsequent extraction of gas from the shale reserves. Different neighborhoods and communities

from areas which are included in drilling sites plans are raising their voice due to their fears. Villages such as Balcombe or Lancashire, which have been the first experimental places for the companies, are leading the opposition. In their effort to push the companies away from their area of residence, they are usually reinforced by a large number of activists and protesters from environmental NGOs that have a long history in demonstrating against policies malign for our natural environment. NGOs such as Greenpeace or Friends of the Earth have been active in the UK. What might be observed so far is that not that many entities deriving from the industrial sector have expressed openly their opposition. There is of course skepticism and some concerns have been raised by companies belonging in sectors that might be affected (water companies or companies working on renewable energy). Yet, there is no clear evidence that these companies are opposing to shale gas regardless of the potential impact. As we will see later on, the opponents of shale gas have put all of their efforts in changing the government's decision to proceed with the shale gas operations and grant the exploration licences to the energy companies. Different methods of protesting have been used, from petitions and campaigns to large on-site demonstrations.

Figure 3.4 : Table of opponents of shale gas and fracking in the UK

| Opponents                  |                        |   |                   |   |
|----------------------------|------------------------|---|-------------------|---|
| <u>Sectors of activity</u> | Name                   | Commonly represented by   | Positioning       | Key words for argumentation used by opponents   |
| Policy                     | Green Party            | <ul style="list-style-type: none"> <li>Caroline Lucas (resigned)</li> </ul> | Against shale gas | <ul style="list-style-type: none"> <li>Call for moratorium</li> <li>Health hazards</li> <li>Environmental impact</li> <li>Investment on renewables</li> </ul>   |
| Research                   | Tyndall Center         | <ul style="list-style-type: none"> <li>Kevin Anderson</li> </ul>            | Against shale gas | <ul style="list-style-type: none"> <li>Environmental and climate change impact</li> <li>Impact on renewable energy industry</li> </ul>  |
| Industry                   | The Co-operative Group | <ul style="list-style-type: none"> <li>Ramsay Dunning</li> </ul>            | Against shale gas | <ul style="list-style-type: none"> <li>Call for a moratorium until risks are addressed</li> <li>Impact on investments in renewable energy</li> <li>Environmental &amp; climate change impact</li> </ul> |
| Association                | Frack Off              | --  | Against shale gas | <ul style="list-style-type: none"> <li>Health hazards</li> <li>Environmental &amp; climate change impact</li> <li>Benefits for the industry and costs for communities</li> </ul>                        |
| Association                | No Dash for Gas        | --  | Against shale gas | <ul style="list-style-type: none"> <li>Use of renewables, not fossils</li> <li>Continuous utilization of gas will increase the prices and lead to poverty</li> </ul>                                    |
| Association                | Local protest groups   | --  | Against shale gas | <ul style="list-style-type: none"> <li>Health hazards</li> <li>Environmental impact</li> </ul>  |
| NGO                        | GreenpeaceUK           | --  | Against shale gas | <ul style="list-style-type: none"> <li>Impact on human and animal health</li> <li>Environment impact</li> <li>Industrialization of English countryside</li> </ul>                                       |
| NGO                        | Friends of the EarthUK | --  | Against shale gas | <ul style="list-style-type: none"> <li>Environment impact &amp; health hazards</li> <li>Impact on renewables</li> </ul>   |
| NGO                        | WWFUK                  | --  | Against shale gas | <ul style="list-style-type: none"> <li>Call for moratorium</li> <li>Distraction from tackling climate change</li> </ul>   |

### 3.2.2.a Policy Sector



The opponents of shale gas are fewer than the group of proponents in the policy sector. With the exception of the Green Party, the rest of the Political Parties either have not expressed their explicit opposition or they are not opposing to the exploratory and extracting operations. Thus, the Green Party is the sole Party so far within the UK Parliament unquestionably rejecting the concept of developing a shale gas industry in the country, thus the impact it can actually have on changing the established policy program is highly questionable..

#### ▪ **Green Party of England and Wales**

After the report publishing of the 2012 by the DECC which suggested that the drilling method was allowed to continue, the Green Party called for a moratorium “*on the onshore and offshore exploration of shale gas*” (Green Party of England and Wales, 2012). The issues of the water and air pollution, seismic risks, climate change and role of the renewable energy, were at the center of their argumentation. Achieving sustainability is crucial for the Green Party while shale gas is not considered to be an environmental friendly energy resource. According to the argumentation used as presented in a policy pointer in 2013, “*fracking will accelerate dangerous climate change, worsen our dependency on increasingly expensive fossil fuels and forfeit investment in the clean energy sources we need and the many thousands of resulting jobs. Fracking will not prevent significant gas price increases according to the government, which continues to ignore the many differences from the US situation*” (Green Party of England and Wales, 2013a). In the same text, pollution, damage to rural communities, climate incompatibility, higher bills and drilling costs, forfeits clean energy investment, jobs and infrastructure, dubious benefits and undermining energy resilience are mentioned as the main consequences that shale gas can bring. From the above, it seems that the Green Party is placing values such as health and safety of humans and animals as priorities that cannot be jeopardized by the UK government. The same goes for the environmental friendliness of the resource and the impact it has on the environment. Regarding pollution, the Green Party mentions in the policy pointer that there is a chance for “*pollution risks from leaking wells including contamination of drinking water by methane, heavy metals, radioactive elements and carcinogenic chemicals. Air pollution, noise pollution (often including 24 hour drilling and truck movements) and wildlife loss are also threats*” (Green Party of England and Wales, 2013a). The Green Party’s agenda is to invest in renewable energy while the reduction of carbon emissions is vital for the sustainable development of the country and the climate change commitments (Green Party of England and Wales, 2012). Fracking will only have negative consequences such as accelerating climate change, putting communities at risk and raising the energy bills. Regarding the Party’s actions against fracking, their main move has been the organization of a petition with Caroline Lucas (the leader of the Green Party until September 2013 and also Britain’s sole Green Party member in the Parliament) being one of the most active political personalities opposing to shale gas, taking part in various protests against shale gas while the Green MP had asked for a debate on fracking from the House of Commons (Green Party of England and Wales, 2013b).

#### **3.2.2.b Research Sector**

The number of research institutions that openly expressed their opposition is quite limited. Apart from Tyndall Center, the majority of other institutions (e.g. Water UK, Durham Energy Institute, CIWEM-The Chartered Institution of Water and Environmental Management) simply state their concerns on shale gas and what might result from the exploitation, without raising any objections on the planned operations of extracting shale gas.

#### ▪ Tyndall Center for Climate Change Research

The Tyndall Center for Climate Change Research is one of the few research institutions that have adopted a positioning which doubts the positive effects of fracking and consequently, shale gas. Instead, their emphasis has been on the potential negative impact that can arise by facilitating the extraction of this resource. In November 2011, the researchers of Tyndall Center at the University of Manchester, in collaboration with The Co-operative (a group of businesses from various sectors), published a report on shale gas that assessed and demonstrated the possible environmental and climate change impacts that can emerge from the successful usage of this unconventional natural gas. According to the findings, shale gas would “*contribute to climate change and global warming by bringing additional emissions*” (Tyndall Center for Climate Change Research, 2011a), despite the acknowledgment that emissions from gas are less pollutant than coal. The Tyndall report estimates that even in the case where 20% of the Lancashire reserves are extracted and consequently burnt would lead to over 2,000 million tons of carbon dioxide emissions. A development as such would not be in accordance with these state environmental policies that target for a low-carbon economy and would even have the potential to jeopardize UK’s climate commitments while any investments in shale gas would have significant effects on the uninterrupted improvement of the renewable energy sector (Tyndall Center for Climate Change Research, 2011b). Issues again of sustainability and environmental friendliness are put in the first row of the Center’s attention. Contrary to the evaluation performed by the Royal Society and the Royal Academy of Engineering, this report concludes that the risk of *water contamination caused by extracting shale gas, is clear and highly connected with fracking* (Tyndall Center for Climate Change Research, 2011b). The Tyndall Center report suggested that imposing a moratorium would be in order, at least until the overall extraction process and its consequences are substantially understood (Researchers at the Tyndall Centre & University of Manchester, 2011). Kevin Anderson, a professor of energy and climate change who also works at the Tyndall Center, argued during the 2013 Shale Gas World UK Congress that shale gas is just another high carbon fuel and the argument used that gas could replace coal –a fuel much more pollutant than natural gas- is out of order. Hence, the research performed by the Tyndall Center concluded that if the UK intends to be respectful towards its “*international commitments to keep the global temperature below 2 degrees Celsius*” (Lando, 2013), then shale gas cannot have any space in the country’s existing fossil fuel mix.

#### 3.2.2.c Industry Sector

Despite the overwhelming support from the industrial sector regarding the viable economic usage of the gas deriving from shales in the United Kingdom, there is a section within the industrial sector that serves

as an opposition against its exploitation. The main explanation for this resistance is the possibility that these enterprises, companies or businesses, could experience significant losses in the case where investments flow in the direction of shale gas. Yet, as it will become apparent, the issue of profitability and economic welfare is not the sole reason that serves as a justification for this negativism.

#### ▪ **The Co-operative Group Ltd**

The Co-operative Group is part of a consumers' movement (The Co-operative). Although it is perceived as an enterprise and abides the laws of commerce, it is run and owned by its own members and brings together and represents a large number of various businesses and covers numerous sectors. The Co-op has been one of the few enterprises that clearly demonstrated their antithesis for shale gas in the UK. An important value for the Co-op is the achievement of a sustainable development where coal and other heavily pollutant resources are excluded while the battle against climate change can be achieved by investing in the alternative renewable energy sector.

Clearly opposed to exploring any shale reserves in the UK, at least until the concerns have been properly addressed (The Co-operative Group, 2011a), Co-op argues that this fight can be successfully resolved by investing in renewable energy. This zealous pursuance of evolving the shale gas industry is feared to distract and shift the investments from renewable energy to shale gas (The Co-operative Group, 2011b). In 2011, the Co-op commissioned the Tyndall Center to investigate the possible environmental impacts associated with shale gas. The published report stressed the potential negative consequences that a future exploitation of shale gas could provoke. The Co-operative called for the imposition of a moratorium until at least the risks have been substantially evaluated and addressed. As a result, shale gas and its greenhouse emissions combined with the potential groundwater pollution, is an energy source not positively regarded (The Co-operative Energy, 2013). Thus, with the Co-operative attempting to attract investments in renewable energy, an anti-shale campaign has been launched in order to raise the awareness within society. By financing the UK cinema release of the documentary *Gasland* (a documentary of US production that demonstrates the hazardous consequences of fracking and shale gas), requesting its customers to pressure their local MPs and funding projects for renewable energy, the Co-operative Group is making a strong effort –by involving the wider society- to halt the test drilling and any subsequent operations for shale gas in the United Kingdom (Reyner, 2013).

It appears that the testimonies deriving from the US regarding the impact of shale gas, have been widely accepted and used by the shale gas opposition. They serve as a basis that validates the dreadful impact from fracking. The film “Gasland” was produced by Josh Fox, demonstrated the impact that fracking has on water sources of the American households and any subsequent activities (according to the director's view) became a main point of reference. As the image has been extensively used to describe the route of pollution from fracking and shale gas, it is also replicated here in order to demonstrate the manner that the UK opponents believe shale gas can contaminate their water and air. Yet, it is important to note that the film and its results are heavily disputed as unreliable by the proponents although it does provide an insight of the opponents' perspective.

Figure 3.5: Illustration of negative impacts from fracking and shale gas according to Gasland

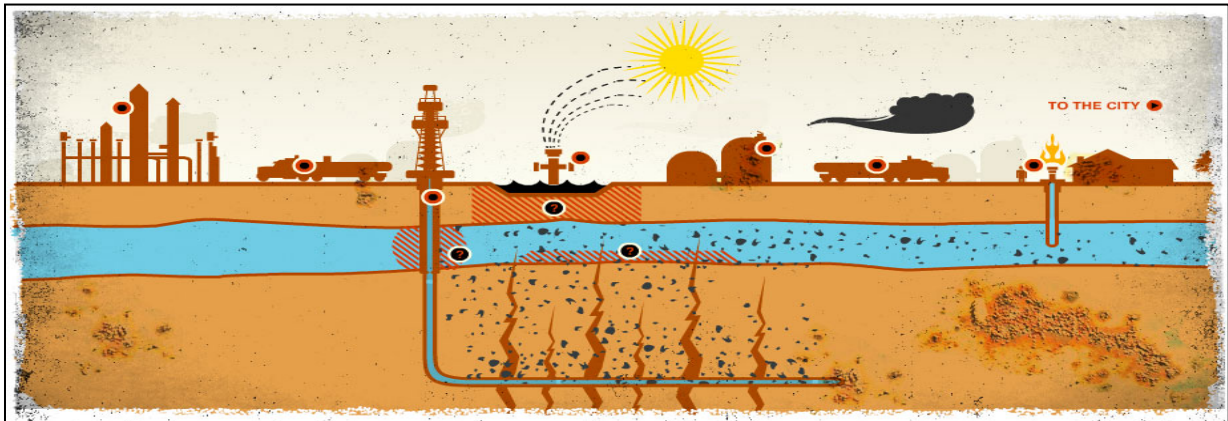


Image source: Josh Fox, “GasLand: A film by Josh Fox”, n.d., [www.GaslandTheMovie.com](http://www.GaslandTheMovie.com)

#### 3.2.2.d Associations & NGOs

Although the different associations or protest groups have been formed in order to unite the citizens, to raise opposition to shale gas in a unified voice and the formation of these associations is based merely on angry citizens that completely oppose on this unconventional gas (while NGOs usually have broader agenda, members, scope and policy), I have created one single category for all these actors. Getting together and creating these associations serves as a means of protesting against the continuation of the drilling or exploring operations. By organizing protest camps, occupying various places (streets, prospective drilling sites, et cetera) or blocking the access of the drilling operators to the sites, the protesters are struggling to prevent the continuation of the shale gas developments. Many protest groups have a local character and are created by the residents of the area. Their goals and ideas though can easily be generalized as they are pursuing similar things. Usually, these protests have a peaceful character but there are some cases where protesters and anti-fracking activists have undertaken more radical actions. For example, in the village of Balcombe where the energy company Cuadrilla has a license to drill for oil, the protesters blocked lorry carrying equipment to operation site, in July 2013. In other cases, protesters stormed the operation sites and halted the shale gas operations (Booth, 2013).

The NGOs that will also be analyzed have a national spectrum of action and have been active against the shale gas operation, which has become a part of their agenda. These NGOs can be considered as pressure groups of interests that regard the protection of our national environment (living and non-living organisms) as the most essential priority. These NGOs do not have an agenda solely based on shale gas nor are they created by worried citizens. Of course they involve within their members citizens who share their views but the core of their action network is formed by activists. Furthermore, there are only few exceptions from the NGOs’ sector that have actively participated in the demonstrations and protests that took place in Balcombe for example, along with the citizens. The majority of the NGOs is occupied with organizing separate campaigns or making public statements and they, other than the protest groups, often have a national character.

#### ▪ **Frack Off**

*Frack Off* is an activist campaign group operating at the national level. It declares to be “*committed to protecting the UK (and the world) from the threat of fracking*”. The group is part of the Extreme Energy Action Network, created as a response to the Extreme Energy concept, which describes a number of energy extracting techniques used to extract the unconventional fossil fuels whose exportation from the ground has though a great environmental impact. The shale gas fracking technique is among these controversial methods. The Frack-Off group lists the main threats to climate change to be “*Coal bed methane, Shale gas, Underground coal gasification and Climate chaos*” or as they also name it “*Extreme Energy*” (Frack-Off, 2013a). All of these are connected however to the fracking technique. Based on the group’s statements as aired on their website, the main dangers which can emerge from fracking and shale gas are “*leaking methane, water contamination, air pollution, radioactive contamination, massive industrialization of the landscape, worsening climate change and earthquakes. Severe health effects in people and animals are beginning to mount areas where shale gas extraction is widespread*” (Frack Off, 2012a). The group seems to have an active involvement in the debate concerning the extracting technique and also shale gas as in 2011, some protesters from the group, stormed at a shale gas exploration site at Merseyride, at Banks, near Southport, in order to halt the operations (Meikle & Malik, 2011). Furthermore, Frack Off has been quite active and involved in the protests taking place in Balcombe during the summer of 2013. The activists, who had camped at the site for several weeks, tried to block the gates of the fracking company facilities, trying to prevent the continuation of the operations (Walker, 2013). Frack Off is a group composed by citizens/activists, ready to proceed even to radical measures against the drilling operations. Despite that there is no chosen representative able to make statements or provide a clear description of the group and their goals, it is safe to assume that the values that describe Frack off are similar to the ones that feature other protest groups. Through their website, it is clear that the protection of the environment and the reversal of the negative consequences deriving from climate change are among the priorities of Frack Off. Moreover, apart from securing the quality of the water, the quantity that is provided to the people and the management of the waste water constitutes another significant aspect (Frack Off, 2012b). The group has named 20 negative consequences that can arise from shale gas and shale oil –ranging from water and air pollution to human, animal health. industrialization of the countryside and energy dependency (Frack-Off, 2013b). Apart from the usual concerns what is additional is the concern that the profitable exploitation of the shales will bring benefits for the industry and corporates while communities will have to face the costs of living within the gas fields. The briefing where all of these problems are mentioned is quite concise and includes more or less all of the issues that worry every opponent of shale gas (Frack-Off, 2013c).

#### ▪ **No Dash for Gas**

The campaign group “*No Dash for Gas*” shares similar views and policies as the Frack-Off group. Created in 2012, this group has as a sole goal to stop the dash for gas on a national level, meaning the shift of the

electricity companies in the United Kingdom towards the use of natural gas. Its members have been involved into various protests and have taken radical actions such as closing power a station in West Burton for seven days while they have also taken up the responsibility of organizing the protests in Balcombe (Wainwright, 2012). Through the active mobilization of the citizens and by raising their awareness, No Dash for Gas concentrated its efforts into halting the planned operations of Cuadrilla in Balcombe. The vindication for this action group came in August 2013 when Cuadrilla announced that it was stopping the drilling operations in the area. The core arguments that build the positioning of No Dash for Gas are concentrated around the increasing support for natural gas and its negative consequences that can ultimately pose a greater burden on the climate change problem. As they note, “*searching and drilling for new fossil fuels is completely ludicrous*” (No Dash for Gas, 2013a) while green energy and the use of renewable resources in the natural environment appear as the best alternative which is supported also by the majority of the society (No Dash for Gas, 2013a). The No Dash for Gas group claims that gas is not a “green” environmental friendly energy source as many tend to believe, as its exploitation emits a significant amount of greenhouse emissions and drives away the country from its commitment of achieving 80% emissions cuts by 2050. Moreover, there is the belief that shale gas will not contribute to the drop of gas prices but, on the contrary, its utilization will keep getting the prices up. Finally, this perpetual dependence on gas and mainly through imports will eventually lead to higher numbers of poverty, due to the also increasing heating prices for the households. Shale gas is not anticipated to change notably the situation. Thus, the only way that a sustainable solution can be reached is through investment in the renewable energy sector based on onshore and offshore production (No Dash for Gas, 2013b).

#### ▪ **Local Protest groups**

There is a growing number of other groups which are active on the local level. In every country within the United Kingdom (England, Wales, Scotland and N. Ireland) several local protest groups have been involved in anti-fracking campaigns and activism. Groups such as *Gas Drilling Balcombe*, *Frack Free Sussex*, *Lingfield Anti-Fracking*, *No Fracking Cowden*, *No Fracking in East Kent*, *Fracking Hell (UK)* and *Wrexham Anti Hydraulic Fracturing Movement* are only an indication of the broad variety of associations which have been formed predominantly by the residents of many areas as a means of opposing to fracking in their neighborhood. These action groups have a strong regional character and a very specific agenda. They have been formed as a way of expressing society’s (or at least some parts of society) disapproval to the fracking operations near their residential area and they have one particular target, to halt the drilling and any subsequent extraction of the gas. The communities of these villages or areas are worried that the establishment of gas extracting sites will bring up a series of troubles including water and air pollution, extensive consumption of the water supply, continuous nuisance, encumber the traffic system and possibly cause earth tremors. Consequently, these action groups have the intention to protect human health (psychological and physical) of the residents but also preserve the environment and the natural landscape of their region. Further characteristic of the UK’s protest groups is their naming. As it can be

noticed, fracking has been placed as the predominant justification of existence. Aiming for the termination of any fracking operations or the cancelation of any future plans is projected as top priority. However, the overall scope of resistance covers of course shale gas which is a subsequent result of fracking. In addition, all of these groups are organized through social media or via online communication, lacking established and tangible headquarters due to their temporary and specific character of existence.

#### ▪ **GreenpeaceUK**

*Greenpeace* is an international independent campaign organization active in fight against many environmental threats. Promoting and pressuring for the solutions of these issues constitutes the core policy of Greenpeace. According to the NGO, its basic values are among others the preservation of our planet's biodiversity, prevent all kinds of pollution (ocean, land, air and fresh water), ending all nuclear threats and promoting peace, global disarmament and non-violence (Greenpeace, 2006). GreenpeaceUK has been quite involved in the debate either by publishing public statements or by participating in protests around the country. Greenpeace members took part in an anti-fracking protest within Chancellor Osborne's Tatton constituency in March 2013 with several activists occupying the Conservatives' headquarters and renaming them as headquarters of "Frack & Co", connecting directly in this way Osborne with fracking. Moreover, they did not hesitate to set fracking equipment including a mock drilling rig (GreenpeaceUK, 2013). Greenpeace's vertical antithesis is obvious by Joss Garman's statement. Garman, one of Greenpeace's spokespersons, argued after Centrica's acquisition of the 25 percent of the Bowland Shale in Lancashire from Cuadrilla that *"now British Gas will be known, not only for sky high fuel bills, but for industrializing the English countryside and pursuing a business plan that's entirely predicated on digging up and burning polluting fossil fuels with no regard for the impacts on climate change"* (Pultarova, 2013). The NGO is openly skeptical regarding the potential of shale gas bringing down UK's gas prices and also on the amount of gas that can be actually successfully and profitably exploited and distributed. In a briefing published in December 2013, Greenpeace questioned the notion of shale gas becoming a *"silver bullet"* for UK's lower gas prices or the reinforcement of its energy security while the idea of a US shale gas bonanza replication in the United Kingdom is highly doubted, based on several estimations from various institutions (European Commission, Deutsche Bank, International Energy Agency et cetera.) (GreenpeaceUK, 2012). The increasing local opposition, the allegations for water contamination, the impact on climate change and the industrialization of the British countryside are some of the issues that concern Greenpeace. In April 24 2013 the organization together with three other NGOs active in the UK (Food & Water Europe, Friends of the Earth and Health & Environment Alliance) published a statement which introduced their position regarding shale gas and fracking that was supported by a large number of other NGOs across Europe. It concentrated all the sectors where shale gas could have an impact on, water and air pollution, climate change, et cetera. The preservation of a healthy natural environment and the protection of human and animal health compose the basic objectives of these NGOs, including Greenpeace. (GreenpeaceUK, Friends of the Earth, Food & Water Europe, & Health & Environment Alliance, 2012).

#### ▪ Friends of the EarthUK

Similar views as Greenpeace are shared by Friends of the Earth. *Friends of the Earth* is an international campaign group mainly working on environmental aspects. As it has its basis in an international network of organizations, Friends of the Earth has established a branch in the United Kingdom representing the values and interests of the general organization. This NGO is dedicated in raising people's awareness on the phenomenon of climate change and fighting for cleaner water and better food. The name of the group indicates a connection with the protection of the earth. Environmental justice where each one is entitled to healthy place for living and access to the planet's natural resources, green economy with little reliance on fossil fuels and creating a new industry of alternative energy resources, natural resources and their preservation from climate change and rainforest destruction are among the main causes that Friends of the Earth are campaigning about. And of course, overcoming the climate change threat is one of them. Thus, fighting against shale gas and its harmful consequences is a part of the group's policy. Similar to the positioning of Greenpeace, the same concerns emerge for Friends of the Earth. Moreover, their antithesis emanates from the suspicion that investing in shale gas may likely have a negative impact on the investments on projects related to renewable energy. Thus, they encourage the government to put more efforts into attracting investments in the renewable energy sector, meeting in this way also the agreements made to mitigate climate change (Harvey & Macalister, 2013). On the occasion of the new findings from the BGS and the tax breaks announced in the summer of 2013, Friends of the Earth commented that "*shale gas is not the solution to the UK's energy challenges*" (Sky News, 2013) and since fracking cannot be considered as a completely safe technique of extracting the gas from the shales, shale gas is regarded as a gamble that UK should not take. Looking for new energy sources in the area of fossil fuels is wrong (Friends of the EarthUK, 2013a). Consequently, the pursuit of clean energy without fossil fuels, including shale gas, has inspired the organization to request for a ban on fracking and block any exploration operations. Labeling shale gas as "*unconventional, unnecessary and unwanted*" (Friends of the EarthUK, 2013a) and urging the citizens to ask for the negative stance from their local council while making a number of statements is some of the ways that Friends of the Earth demonstrate their opposition. What is more, it would only be natural for the organization to support the events taking place in Balcombe either by organizing petitions and sending them to the West Sussex Council or by actively participating in the demonstration at the site (Friends of the EarthUK, 2013b).

#### ▪ WWF-UK

The UK branch of WWF (World Wildlife Foundation) has also been involved with statements and positioned itself against shale gas. This global leading independent conservation body, as they identify themselves, has set as a primary goal the achievement of a harmonic cohabitation between humanity and nature. Sustainability, conservation of our natural world and tackling climate change are the three main pillars that bear the organization's essence (WWF-UK, 2013a). However, numerous other issues can develop from these three concepts and ending shale gas exploitation, which is characterized as a "*dangerous distraction*" is one of them (WWF-UK, 2011). WWF-UK openly stated its antithesis from the early



beginning of the shale gas discussion in the United Kingdom. In 2011, before any polarization and society's extensive opposition, the NGO called for a moratorium until the fears of water contamination and considerable greenhouse emissions were sufficiently comprehended. Keith Allott, Head of Climate Change at WWF-UK described shale gas as "*a dangerous distraction from the urgent need for us to tackle climate change*" while once again notions of investing in renewable energy were made (WWF-UK, 2011). Moreover, in a statement published in July 2013, WWF-UK argued that instead of investing in the shale industry and providing tax breaks, the government should focus instead on "*providing policy certainty for the energy efficiency and renewable technologies of the future*" (WWF-UK, 2013b). The goal according to the group should be to decarbonize the country's energy system instead of relying even further on fossil fuels, if they want to have positive results fighting the rapid changes that global warming brings along. Finally, in July 2013, after the governmental announcements for upcoming tax breaks that will favor many shale gas projects, WWF-UK commented that there is no justification for these tax breaks. Their main argument for their position was that supposing that shale gas is as cheap as its proponents claim to be, then there is no reason in providing this tax incentive to the industry and once again brought up the alternative option of energy efficiency and renewable energy (WWF-UK, 2013b).

The three NGOs issued a joint statement in 2006 regarding the offsetting carbon emissions (Friends of the Earth, Greenpeace, & WWF-UK, 2006). Accordingly, a position statement that was mentioned earlier and was published in 2012 included the identical positions of Greenpeace and Friends of the Earth, among other NGOs. Finally, in September 2012, Friends of the Earth, WWF-UK and RSPB (Royal Society for the Protection of Birds) wrote to Ed Davey, the Secretary of the State for Energy and Climate Change, urging for his caution. Additionally they proposed two requirements that shale gas should meet in order to proceed with its extraction. Firstly, not to influence the country's climate change commitments and secondly not to be harmful for the nature, by any means (WWF-UK, Friends of the EarthUK, & RSPB, 2012). Thus, it is safe to conclude that the majority of the NGOs active in domains such as the environment, health, nature et cetera, are opposed to the exploitation of the shale reserves, mainly due to the possible negative consequences that such an action can bring to the causes that they are fighting for.

### **3.2.2.e Summary of argumentation of opponents**

The opponents of shale gas have been fighting not only in order to raise awareness about the dangers of shale gas but more importantly they have been trying to change the policy adopted by the UK government that allows the exploration and possible extraction of the UK shale gas reserves. They are protesting as a means of showing their disapproval of the decision made by the policy makers regarding the shale gas topic. The main concerns of the opposition are concentrated in the environmental dangers that are linked to the extraction of shale gas. Their concerns focus on mainly water and air contamination, since there have been some allegations of "*gas migration and subsurface contamination of groundwater*" (Geny, 2010). The protests that have taken place in various areas of the United Kingdom, with a focus on Balcombe, bear as the main argument the risk of water contamination. The technique of hydraulic fracturing (fracking)

requires the use of water, sand and chemicals in the subsoil which are ejected under high pressure in the subsoil in order to split the shale rock formations and release the gas. Environmentalists, citizens and scientists are afraid that such a method could create fractures on the casing of the wells and consequently lead to gas leakage, contaminating in this way water resources in the subsurface or even the surface of the nearby area (The Telegraph, 2013). The same can also happen in the case of air contamination.

Arguments against the exploitation of shale gas and linkage to climate change are aired. The debate concentrates on the issue whether emissions from shale gas are higher or lower than coal with some proponents of shale gas arguing that shale gas can contribute to energy transition since the emissions are less than those deriving from coal while the opponents disagree. The main concern, though, is that the recent emphasis put on shale gas, might threaten the exploitation of renewable energy resources as it might “*squeeze out investment in renewable energy*” (Moses, 2013), deranging in this way the sustainability of the state’s energy policy (Martin, 2013). These allegations are becoming more substantial, since in 2012 the inaction of Prime Minister Cameron opposition aired by among others a member of the Conservative Party towards a wind farm project, created suspicion concerning the government’s policy for renewables (Wintour, 2012). This anti-wind farm stand and the support for the shale gas extraction, comes as a major contradiction to Cameron’s words characterizing the newly formed coalition administration as the “*the greenest government ever*” (Randerson, 2010).

Besides fears for shale gas related water and air contamination, there is another danger emerging and drawing the attention of the society in the United Kingdom. With reference to the fracking method used in Blackpool, a town within the Lancashire area which caused two earth tremors in 2011, the opposition is making references to the earthquakes as evidence demonstrating the negative consequences of fracking. Eventually, it was revealed that these minor earthquakes were related to the drilling and the fracking tests performed by Cuadrilla (White, 2011). The possibility of seismic risks is perhaps closer to reality as in the case of Blackpool a link between fracking with earth tremors has been found, although the magnitude is point on which the opponents and proponents of shale gas disagree on. Institutions like the Royal Academy of Engineering and the Royal Society argue with their report that seismic risks due to fracking are low and these minor tremors can be considered as normal and not alarming. The existence of such earthquakes has not caused any public disruption in the US. Yet the desert areas there are not densely populated as in the UK. The situation differs in the United Kingdom as the tremors were just outside of a town and the citizens were able to feel them.

Fracking requires large quantities of water to be inserted in the wells with extremely high pressure, along with some chemical elements and sand. This could cause problems to the water supplying system. If the demand of water for fracking, combined with the use of water for other functions (households, industry, et cetera.), is more than the capability of the system, water shortages are possible. Plus, the establishment of the operation sites for drilling usually requires landscape modifications. Moreover, the availability of large areas in order to set up the appropriate equipment and installations (construction roads, drilling multiple wells, water tanks) is a prerequisite. The industrialization of the rural areas is another concern which worries those citizens of the areas rich in shale gas reserves. According to a survey

conducted by the residents' campaign group "No Fracking in Balcombe Society" (No FIBS) "*85 per cent of local people are opposed to the Cuadrilla operation*" (The Guardian, 2013). Protest spokeswoman Katy Dunne said that they asked every household in the village on the issue of shale gas with the majority of the population expressing their opposition (The Telegraph, 2013). Although Cuadrilla announced that there were no plans for using the fracking method, the residents are afraid that eventually this will occur. A summary of the dangers and concerns for fracking, as expressed by protest group *No Dash for Gas* notes, shows that the residents in Balcombe and consequently the residents of the areas where there is an interest for drilling, have a fear of contaminated water, earthquakes, explosions, air pollution and industrialization of the rural area (No Dash for Gas, 2013c).

### 3.3 CONCLUSION OF ACTORS' POSITIONING IN THE UNITED KINGDOM AND THE RELEVANT VALUES

From the analysis performed so far, we can conclude that the various actors are not supporting the same values. Some of them tend to put more emphasis on certain values while others might prioritize others. Depending on the side, proponents or opponents, there seem to be some core values that they all agree upon, yet they also choose to prioritize different values. This shows that the values tree as introduced in chapter 2.1 has some limitations, as the differences in the intensity and the gravity of the values promoted by the various actors need to be acknowledged. As it will be presented soon, values do not appear in the debate with the same frequency. Thus, it is important to show in this chapter the values that the various actors decide to promote throughout the shale gas debate. Doing so would indicate the key values that they consciously choose to give priority to and are striving to translate into a policy program. Starting first with the proponents, the key actors that have a leading role in the coalition and their core values but also the other actors rallying around them will be presented. The same line of analysis will be followed for the opponents of shale gas.

In the UK, one of the strongest proponents of shale gas has been the UK government. Increased domestic production that can bolster the country's energy security and protect the supply of gas in the internal gas markets with the possibility of a drop in gas prices are beliefs that have been settled in government circles. The creation of more job openings in this newly developing industry and the economic welfare that such an energy expansion can carry have been integrated in their argumentation. Moreover, the government accompanied by the proponents of shale gas exploitation supports the idea that a shift towards gas and the gradual substitution of the heavily polluting coal, could contribute in the country's commitment of an energy transition towards renewables and becoming a lower carbon economy.

The government, mainly represented in the shale gas debate by the Prime Minister D. Cameron and Chancellor G. Osborne, has repeatedly pledged the introduction of tax breaks that will favour shale gas extracting energy companies and bring economic benefits to local communities. With statements as *"fracking has real potential to drive energy bills down"* (Cameron, 2013) and stating that shale gas could be *"bringing money to local neighborhoods"* (Cameron, 2013), it is evident that Cameron and his government have chosen to put priority to the values of **economic welfare** and **affordability**. The same can be noticed with his statement that *"if we don't back this technology, we will miss a massive opportunity to help families with their bills and make our country more competitive. Without it, we could lose ground in the tough global race"* (Cameron, 2013). The UK government is determined to translate these values into a policy program, and their intentions can clearly be noticed with the introduction of tax breaks as announced in July 2013. Additionally, the value of **security of supply** has been highly prioritized by the UK government. As the North Sea oil and gas production is expected to start diminishing, it is imperative for the UK that has a long history of relative energy independence, to find an alternative domestic source of energy production. It has been Chancellor Osborne announcing that *"shale gas is a resource with huge potential to broaden the UK's energy mix"*

(Harvey & Macalister, 2013), making it more evident that the country absolutely needs rapidly an energy source that will allow the UK to sustain its partial energy independence. With the potential challenged posed by the extraction of shale gas and since the UK government can be held politically and morally accountable in case of a contamination or an accident linked to shale gas, procedural values are also articulated by the actor. Thus, the statement that *“the regulatory system in this country is one of the most stringent in the world”* (Cameron, 2013) is an attempt to reassure the opponents and the wider society and also a link to values of **accountability** and **procedural justice** that appear to be a priority for the opponents of shale gas. Additionally, the statement mentioned earlier that shale gas has the potential of bringing income to the local communities and neighborhoods entails elements closely linked to the value of **distributive justice**.

The UK government and the values promoted are strongly supported by other actors within the proponents’ coalition formed in the UK. Despite the fact that there is an official position adopted by the UK government and represented mainly by D. Cameron and G. Osborne, there have been some ministerial departments within this government that had initially adopted a slightly different approach and position (see DECC). The change in the position and the values can be associated (although there is no direct or clear evidence) with the changes that have occurred in the governmental policy regarding shale gas (see timeline 3.6). With the imposition of the moratorium and the constantly rising opposition especially from the wider society, the DECC was adopting a more mediocre stance and was trying to provide bridges between the proponents and the opponents of shale gas in the UK. This initial position changed though as soon as the moratorium was lifted, making the DECC one of the strong proponents in the shale gas debate. The DECC has stated in an announcement that *“shale gas has the potential to provide the UK with greater energy security, growth and jobs”* (Department of Energy & Climate Change, 2013a), a statement that summarizes the values of **security of supply** and **welfare**. Yet two more values that have also been promoted (possibly due to the Department’s responsibility of protecting the environment) has been the one of **sustainability** and **environmental friendliness**. Such values are articulated in the DECC’s encouragement of a *“safe and environmentally sound exploration to determine this potential”* (Department of Energy & Climate Change, 2013a). We see in this case that this actor chose to change secondary elements of its belief system as a means of providing a common ground for negotiation with the opponents. However, the core values of the DECC have been the same from the beginning of the shale gas debate.

The Energy and Climate Change Committee, which is a Parliamentary Committee, is an interesting actor. Having changed its position, in 2011, during the imposition of the moratorium, the Committee was focusing more on the environmental challenges, promoting in this way values as **sustainability** and/or **environmental friendliness**. In 2013 though, once the moratorium was lifted, the Committee revised its position and supported the belief that shale gas could contribute to the country’s energy security, *“provide employment, create additional revenue for the Exchequer, and support the energy intensive sector”* (The Energy and Climate Change Committee, 2013), prioritizing in this way the values of **welfare**, **affordability** and **security of supply**. It is important in this case to keep in mind that the Energy and

Climate Change Committee is closely cooperating with the DECC, a ministerial department of the UK government and an important actor in the shale gas debate.

The energy company Cuadrilla Resources Ltd appears to adopt values very similar to the ones promoted by the UK government. Statements that shale gas can “*boost the UK’s gas production, generating tax revenue for the UK*” (Cuadrilla Resources Ltd, 2013) and “*reduce the UK’s dependency on vulnerable and expensive foreign energy sources*” (Cuadrilla Resources Ltd, 2013), show that the company is interested in fulfilling values linked to **welfare**, **affordability** and **security of supply**, the same ones that the government is trying to incorporate in the relevant policy programs. Being in accordance with the government’s main policy line could fulfil the company’s economic interests as the government could provide the much needed legitimacy for accomplishing any plans related to the shale gas exploration in the UK. Yet Cuadrilla (perhaps due to the fact that the earthquakes that took place in 2011 were linked to the drilling activities performed by the company and in an attempt to reassure the wider society), Cuadrilla seems to promote the value of **sustainability** when it argues that natural gas contributes to the country’s energy transition towards “*low carbon and renewable energy sources*” (Cuadrilla Resources Ltd, 2013). IGas Energy and Dart Energy are both promoting the values **welfare** and **affordability** (“*delivering value to IGas investors*” (IGas Energy, 2010), “*with a significant amount of supply sourced from shale the prices could be brought down and the dynamics of the market could change*” (Gosden, 2013d)). Both companies, following the steps of Cuadrilla are also stating that shale gas could actually contribute to energy transition as it is less pollutant than coal or other sources of energy, making thus an effort to show that they also prioritize values associated with **sustainability**.

The Royal Academy of Engineering has stated that “*the Academy agrees that gas is likely to play an important part in energy generation in the coming years and that with good engineering of the wells it can be an important, lower carbon alternative to coal... Shale gas is an opportunity that can’t be ignored*” (Royal Academy of Engineering, 2013). The values of **security of supply** and **resource durability** are evident in this case.

Finally, the British Geological Survey and the Royal Society have been introduced as actors that belonging in the proponents’ coalition. This is not merely based on a statement that clearly adopts the same values as the previous actors analyzed but rather on the fact that both institutions provided significant actors (especially the UK government and the DECC) with scientific and technical information that reinforce the argumentation used and consequently strengthens their attempt for translating the core values into a policy program.

From the analysis performed it appears that the UK government and the energy companies are the leading actors in the proponents’ coalitions, promoting mainly the values of welfare, affordability and security of supply. The same values are promoted by the majority of the rest of the actors, without any main deviations.

The opponents’ coalition is characterized by an even greater harmony regarding the core values of the actors belonging in this coalition. Yet, rather than a few clearly leading actors there is a larger range of different actors acting in accordance. Perhaps one actor that has been quite consistent in the fight against shale gas in the UK and has been actively protesting is the Green Party of the UK by participating and

organizing anti-fracking campaigns and demonstrations. The Green Party has stated that *“fracking will accelerate dangerous climate change, worsen our dependency on increasingly expensive fossil fuels and forfeit investment in the clean energy sources we need and the many thousands of resulting jobs. Fracking will not prevent significant gas price increases according to the government, which continues to ignore the many differences from the US situation”* (Green Party of England and Wales, 2013a), embracing in this way values related to **health** and **safety, sustainability** and **environmental friendliness** while contesting the validity of the proponents’ values and position regarding the potential of welfare and economic affordability brought by the shale gas extraction. These four values are intensely promoted by the Green Party that is struggling to bring about a policy change.

Another actor that has also been quite actively involved in the debate and has organized and participated in various demonstrations has been the activist campaign group Frack-Off. Several challenges posed by shale gas have been mentioned by the group, namely related to *“leaking methane, water contamination, air pollution, radioactive contamination, massive industrialization of the landscape, worsening climate change and earthquakes. Severe health effects in people and animals are beginning to mount areas where shale gas extraction is widespread”* (Frack Off, 2012a). The fight against these potential changers brings up values of **health** and **safety, environmental friendliness, sustainability** and **aesthetics** that the group is promoting. Also local protest groups take a leading role depending on the location of the drilling sites. Thus, these groups may have a temporary character, yet they are promoting the same values and they have been created as a response and a protest to the government’s granting of drilling licences. In most cases the values promoted by the Green Party and Frack Off are also mentioned and supported by the local protest groups.

The rest of the opponents in the UK with no major exceptions, are promoting very similar values. The NGO’s like GreenpeaceUK, Friends of the Earth and WWF-UK are all supporting the concepts of sustainable development and alternative energy resources, rejecting in this way non-conventional energy resources. Statements such as: *“British Gas will be known, not only for sky high fuel bills, but for industrializing the English countryside and pursuing a business plan that’s entirely predicated on digging up and burning polluting fossil fuels with no regard for the impacts on climate change”* (Pultarova, 2013) and that shale gas is *“a dangerous distraction from the urgent need for us to tackle climate change”* confirms this.

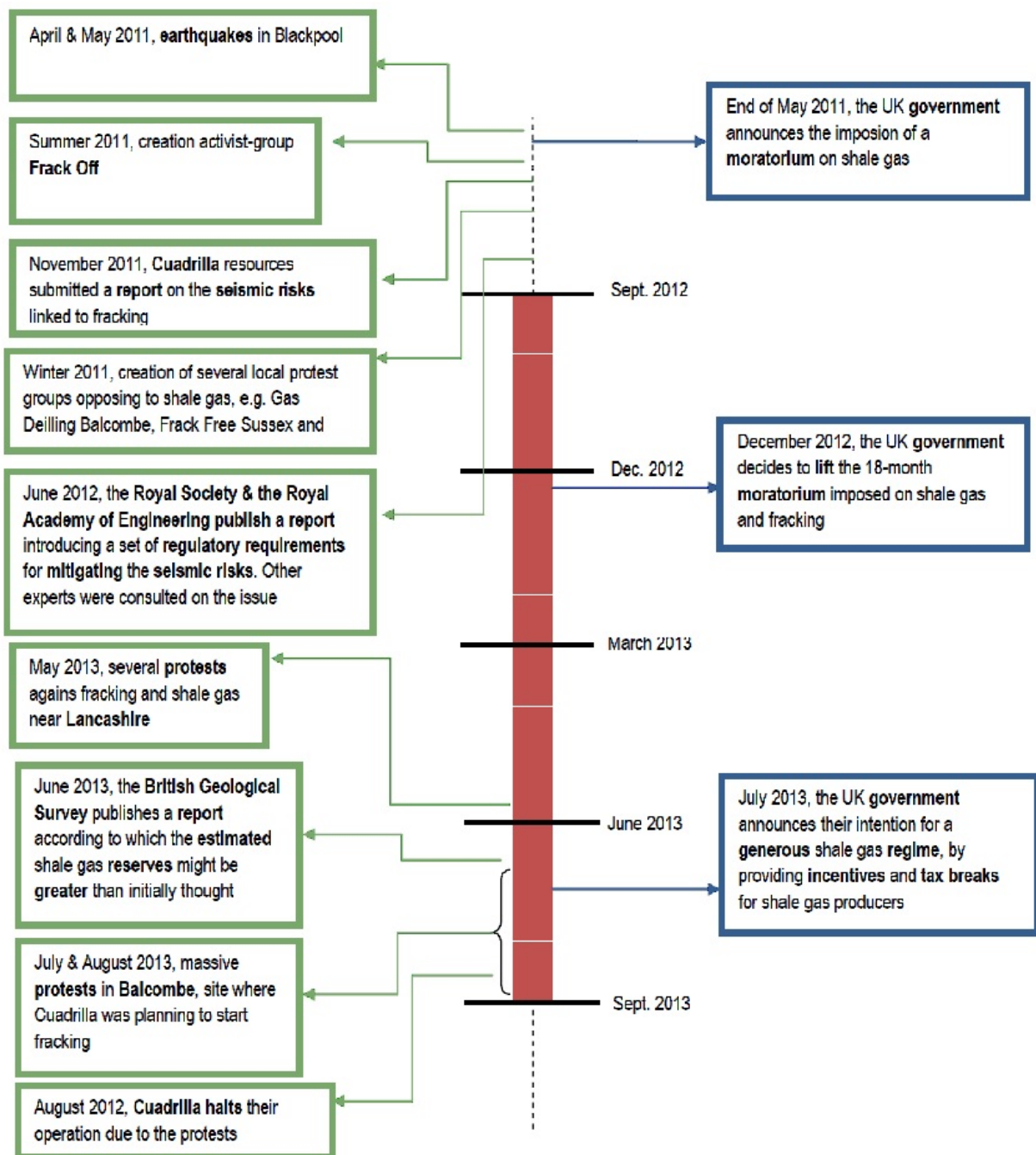
Thus in the opponents’ side we find the Green Party to be a major actor that leads the coalition while several activist groups also contribute to the dynamics of the coalitions. These actors are promoting values related to environmental friendliness, sustainability, health and safety. Occasionally, local protest groups take the lead in promoting the substantive values of the coalition yet they usually have a temporary leading role.

Even though the future of shale gas in the United Kingdom seems uncertain at the moment, the debate has started to really heat up. The continuous polarization of the two conflictive sides where neither appears to be keen on stepping back, is leading to a strong struggle for the domination of their values and interests. With these clashing and non-compatible positions, it is only a matter of time to show towards which direction the debate will evolve and whether there will be a compromise or a further conflict.

In order to reinforce the readability of the thesis, a timeline has been created. Below follows the chronical representation of the main events that took place within the period under examination and the relevant public policies adopted by the UK government.



Figure 3.6: Timeline of main events (left hand side/green boxes) and relevant public policies (right hand side/blue boxes) in the United Kingdom



## **CHAPTER 4**

### **4.1 THE SHALE GAS DEBATE IN FRANCE**

#### **4.1.1 General Description of the public debate**

France involves a large number of actors in the shale gas discussion, both on the individual and collective level. In France, however, the public debate has also erupted within the political parties and the government. The policy decision of imposing a moratorium was supported through a majority vote that promoted the ban on the use of hydraulic fracturing in France, and the subsequent exploration and exploitation of the resources. This moratorium passed on the 30<sup>th</sup> of June 2011, during the Presidency of Nicolas Sarkozy. His successor in the Presidency, François Hollande, of the Socialist Party, maintained the ban on fracking and called additionally for the revocation of seven outstanding permit applications for fracking operations (Shale Gas Europe, 2013). So far in France there has not been a major policy change in favor of shale gas. On the contrary, there has been a rather linear direction on the policy making process. Yet, President Hollande proceeded with making contradicting statements, complicating the discussion and direction of the debate. Hollande did indeed declare the continuation of the moratorium that was imposed during the Presidency of Sarkozy in France. The confirmation of this declaration came during a 2012 environmental conference where he stated that he had authorized the Minister of Energy and Ecology at-that-time, Delphine Batho, to proceed with the rejection of seven pending demands for permission regarding the exploration of the French shale gas reserves. As Hollande stated “*in the present state of our knowledge, no one can confirm that the exploitation of shale gas and oil by hydraulic fracturing, the only technique known today, is free of major risks to health and the environment*” (AFP, 2012b). In this way, the French President decided to enhance the positioning of the Greens (his counterparts in the Coalition government) while at the same time triggered a negative reaction on the other side, meaning mainly the French industry but also members of his own Socialist Party occupying Ministerial positions. Two months later though, Hollande re-opened the discussion on the shale reserves’ exploration. In November 2012, the French President argued that “*research is possible on alternative techniques to hydraulic fracturing*” and affirmed that he was ready to take his responsibilities if a new technique appeared (AFP, 2012a). These new statements created hope among the proponents of shale gas. In the case where a new technique would appear, friendly for the environment or public health, then there could be a chance for the exploitation of the shale reserves. But the French President changed his opinion concerning official state policy on shale gas. In July 2013, Hollande announced that as long as he would remain the Head of the State and the President of France “*there will not be an exploration of the shale gas*”, putting an end on the debate (?) \_at least until 2017\_ and pleasing in this way the Green Party and various environmental and protest groups opposing fracking and shale gas (Baudet M. B., 2013). This decision clearly disappointed and further confused the proponents supporting the reserves’ exploration which had been of the opinion that Hollande would support their wish given his earlier statements in November 2012. In conclusion, it is obvious that the shale gas debate (not on a policy level) in France has not been linear. Despite the fact that

the moratorium is still in force, there is still an ongoing struggle from both sides to change the route of the discussion. It remains to be seen, if the latest decisions taken by the government will be put into action or new directions will occur. Thus, what is highly interesting to study in the French case are not the policy changes (since there not any major ones) but rather the various coalitions that have been formed among the actors and the fact that they have possibly influenced the development of the debate and blocked any serious policy changes against their beliefs. With the President having a pivotal role, there are other actors involved as well that influence the debate. The industrial sector and the Ministry of Industrial Renewal (especially with the former Minister Montebourg), are two central actors that push for positive developments regarding fracking or shale gas. They are facing a strong opposition which, unlike the UK opposition, consists not only of environmental or civil society protest groups. In France, the opponents of shale gas can also be found within the government. In fact, there are many Ministers that have explicitly expressed their direct antithesis for any plans that aim for exploring the shale oil and gas reserves.

In the French parliament, support for shale gas was expressed in June 2013. That month a new parliamentary report was published by two members of the Parliament (Christian Bataille from the Socialist Party and Jean-Claude Lenoir from UMP) appointed by the Parliamentary Office for Evaluation of Scientific and Technological Choices (OPECST). According to this report “*France’s ban on hydraulic fracturing should be eased to estimate the size of its shale oil and gas reserves*” (Patel, 2013a) while concerning the fracking method, “*everything rests on the way the drilling is carried out*” (Patel, 2013a). Furthermore, the two MPs argue that so far fracking has been the best controlled and most effective technique that was used even before the banning in 2011. Based on their report, fracking “*had been used at least 45 times on the French soil without any report on any damage*” (Favre, 2013). This parliamentary report brought up some serious concerns regarding the integrity of the Coalition government formed by the Socialist Party of Hollande (PS) and the Green Party [Europe Écologie-Les Verts (EELV)]. As it will be analyzed further on, the Green Party is totally opposed to the use of fracking and the extraction of shale gas while they urge for a shift towards renewable energy.

It can be understood why the estimations regarding the potential shale gas reserves in France vary. With no official exploration taken place on the ground, the amount of these reserves can only be speculated how much. Figure 4.1 illustrates the status regarding the research and hydrocarbon exploration licenses during 2011.

Figure 4.1: Illustration of research and hydrocarbon exploration licenses in 2011

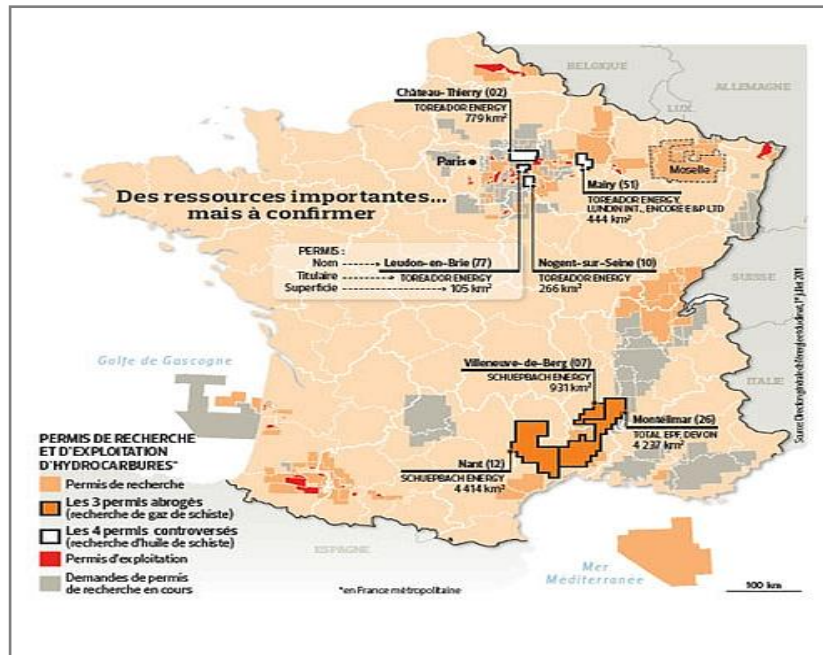


Image source: Le Figaro, “Gaz de Schiste: Total veut des explications” October 2011, [www.lefigaro.fr](http://www.lefigaro.fr)

## 4.2 MAIN ACTORS INVOLVED IN THE DEBATE AND THEIR RELEVANT POSITIONING

Before presenting the actors involved in the public debate and supporting or disapproving the use of fracking and the relevant extraction of shale gas in France and the relevant coalitions that have been formed, it is important to identify the various actors in the economic, political and business sector. The same categories used for the United Kingdom (five different broad categories) will be implemented in the case of France. It appears that at the time of writing the game is foremost played on the policy/industry level. Since no official debate has been established yet, we find only some major forces that put pressure in order to achieve their goals. From the proponents' side we find mainly the actors that belong in the industry sector to have the leading role in pursuing their values, interests and goals regarding shale gas. From the opponents' side though, we find the policy sector holds the helm of the opposing group. Different political actors that include prominent personalities such as the French President and the French Prime Minister have clearly opposed to the exploitation of shale gas in their country.

Regarding the case of France, this large dependency on gas imports and the persistence of some actors on investing in alternative energy sources –mainly renewables, has created a counterweight on the other side of the energy scale with actors arguing that shale gas is an energy source that should definitely be explored and exploited for the sake of France's prosperous endurance. The fact that France depends on energy imports is a factor that could hinder the country's energy and economic security. Therefore, creating a strong gas industry –possibly based on shale gas- is something that many actors consider crucial for the country's gas independence from the gas producing states. Additionally, under the light of studies published by the International Energy Agency, France, following Poland comes second in Europe's list of

the countries with the largest shale gas reserves, (International Energy Agency, 2011). Thus, the proponents of shale gas hold the idea that it is important to grasp this opportunity and exploit as much as possible the existing reserves of unconventional gas in France's subsoil (Patel, 2013b).

It is also crucial to make two references. First of all, there is a strong debate within the government particularly within the ruling Socialist Party. It would be convenient to consider the French Socialist Party as a single actor in the shale gas debate since as a partner of the Coalition government (along with the Greens), it determines the country's energy policy and influences highly the direction of the debate. However, within the Socialist Party there is a strong divergence of opinions between its members regarding the appropriate policy for shale gas in France and whether the government should proceed with the exploration of the shale rock formations or not. While some of its members are in favor, others are fiercely opposed. This divergent and conflicting position of the members of the Party causes problems within the coalition government and confuses the wider society. Shale gas is a non-negotiable issue for the Greens and the fact that the Hollande leadership cannot provide a unified positioning of his Party certainly causes some concerns for the Greens. At the same time, several socialist members hold Ministerial positions and therefore have the ability to influence the debate, up to a certain point of course. Cécile Duflot, the Minister of Territorial Equality and Housing was the one reminding to the public and also to Montebourg that it is Philippe Martin the only Minister for Energy (and not Montebourg), affirming in this way the division within the Party (Joseph, 2013). Based on all these reasons, I decided not to include the Party as a single unified actor since there is no clear positioning, which consequently means a disagreement on the substantive values of the Socialist Party. Thus, I divided the Socialist Party into two groups of members, those in favor and those against the exploration or exploitation of shale gas. I am going to analyze these two groups as two distinct actors where the values are expressed through the values of the members that form each one of these groups.

Secondly, the Socialist Party will be divided into two separate groups, the opponents' side will also represent the position of the Government. Given the fact that France has a strong Presidential political system, it is the President who represents and expresses the views and positions of the government. Hollande has at his side also the Prime Minister, who appears to be even stricter towards the moratorium on shale gas. Consequently, the positioning of the government concurs with the positioning of President Hollande and (former) Prime Minister Ayrault who in turn represent also the main positioning of the Socialist Party. On the other side we find Minister Montebourg along with other members of the Party (i.e. C. Bataille) and have by their side several industrial actors. Thus, just like in the case of the UK, in France the actor Government entails the values and positioning of the ruling Socialist Party.

#### **4.2.1. Proponents of fracking and shale gas in France**

The analysis begins with the proponents of shale gas in the public debate in France. The main actors in each case come from various sectors. We find once again actors deriving from the French political system belong either within the Socialist Party but they also come from other political entities/Parties. Contesting the position and perspective of the state is perhaps more efficient when it originates from within. If the

industry would oppose the government or civil society, chances to change the views in politics might be less good. The support of policy actors (mainly politicians) enhances the pressure on the policy or decision-making actors. And as mentioned, apart from these actors of the policy sector, we find the “industrial actors”, fighting fiercely to make the French government hear their argumentation.

Oil and gas companies are always connected to the developments regarding energy resources and the shale gas industry certainly has attracted their attention. With the domestic production being at extremely low levels, the active companies in France can only hope for the establishment of a legal framework that would allow the exploration and extraction of several types of gas. This not only holds for locals, French companies but international oil companies as well that have invested in the French energy market. And similar to the UK case, the companies are also supported by various institutions –whether these undertake research activities or represent generally the interests of the French energy businesses. For example, the French Union of Petroleum Industries and the Movement of the Enterprises of France are two institutions actively involved in the discussion and by making various statements or taking other actions they are trying to pressure and put more effort towards achieving the establishment of a framework that favors shale gas. Similar to the UK, there are a few research institutes that favor shale gas exploration and state so through publishing reports, organizing events or making various statements have provided a certain kind of support for the proponents in the debate. For example, the French Academy of Sciences published a report in January 2013 which explicitly encouraged any effort for further exploration and the feasibility of the exploitation scenario.

Figure 4.2: Table of proponents of shale gas and fracking in France

| Proponents          |  |  |   |  |
|---------------------|--|--|---|--|
| Sectors of Activity | Name                                     | Commonly Represented by                        | Positioning   | Key words for argumentation used by proponents   |
| Policy              | Socialist Party's Proponents             | Minister of Industrial Renewal (A. Montebourg) | In favor of shale gas but critical on use of fracking | <ul style="list-style-type: none"> <li>Improve Competitiveness of French industry</li> <li>Creation of a public exploiting shale gas company</li> <li>Energy independence</li> <li>Find alternative techniques of exploitation, friendly to the environment</li> </ul>           |
| Policy              | Union for a Popular Movement Party (UMP) | Jean-François Copé                             | In favor of shale gas but with adapted technologies   | <ul style="list-style-type: none"> <li>Experimentation should continue</li> <li>Shale gas could lead to a decline on energy prices</li> <li>Important to protect the environment</li> </ul>  |
| Policy              | Louis Gallois                            | -  | In favor of shale gas                                 | <ul style="list-style-type: none"> <li>Pursue research on shale gas exploiting techniques</li> </ul>   |
| Industry            | Energy Companies                         | Total & Schuepbach                             | In favor of shale gas                                 | <ul style="list-style-type: none"> <li>Contribution to growing energy needs of planet</li> <li>Reduction of energy dependence of France</li> <li>Economic benefits &amp; reduction of consumers' energy costs</li> <li>Potentially decrease reliance on nuclear power</li> </ul> |

|          |   |                       |                                    |   |
|----------|---|-----------------------|------------------------------------|---|
| Industry | Movement of the Enterprises of France (MEDEF) | Laurence Parisot      | In favor of shale gas              | <ul style="list-style-type: none"> <li>▪ Possibility to decrease prices of gas</li> <li>▪ No significant environmental damage associated with shale gas</li> <li>▪ Lever for re-industrialization, competitiveness and economic independence of France</li> </ul>   |
| Industry | French Union of Petroleum Industries (Ufip)   | Jean-Louis Schilansky | In favor of shale gas and fracking | <ul style="list-style-type: none"> <li>▪ Improve France's balance of trade</li> <li>▪ Creation of jobs</li> <li>▪ Lower gas prices in France</li> </ul>   |
| Research | Academie des Sciences                         | -                     | In favor of shale gas              | <ul style="list-style-type: none"> <li>▪ Securitization of supply of energy</li> <li>▪ Lower France's energy dependence</li> <li>▪ Stimulate France's economic competitiveness</li> <li>▪ Integration of renewables through the avoidance of carbons</li> <li>▪ Importance of energy efficiency and energy transition are acknowledged</li> </ul> |
| Research | Sia Conceil                                   | -                     | In favor of shale gas              | <ul style="list-style-type: none"> <li>▪ Creation of jobs</li> <li>▪ Increase of France's energy independence</li> <li>▪ Contribute to reindustrialization</li> </ul>   |

#### 4.2.1.a Policy Sector

Here I present the positioning of these decision-making or decision-taking actors that are active mainly in the policy sector and have expressed their support towards the positive consideration with regards to the benefits that can arise from the shale gas exploitation. By the terms provided, I am predominantly referring to these politicians, political personalities and political groups actively involved in the French political system that have positioned themselves as supporters of the possible shale gas' advantages.

##### ▪ Socialist Party's Proponents

The analysis begins with the group of these socialist members who advocate the exploration of the French shale formations. As mentioned above, I decided that instead of making a separate analysis of each one of these members or of the Socialist Party as a whole, it would be more concise and informative to create two categories which divide the conflicting stances and values among the members: those in favor and those against shale gas in the Socialist Party. In the first category I decided to include those members of the Socialist Party who have a positive attitude towards shale gas, either this involves the exploration or the further exploitation of the resource. A strong example –perhaps the strongest- is Arnaud Montebourg, the former Minister of Industrial Renewal (moved to the Ministry of Economy and Industrial Recovery in April 2014) who has openly been supporting the exploration of the French shale reserves, although he does acknowledge that fracking and the damage caused in the United States should be taken under consideration (Europe1, 2013a). For that reason, Montebourg favors the technological experimentation in

France. This should enable to find a technique that respects the environment. The pollution of the subsoil is a crucial problem that needs to be addressed in order to avoid what happened in the United States. In February 2013, the French Minister expressed his wish that this research would be conducted by a national company (LeParisien & AFP, 2013). The idea of creating a national company is to exploit shale gas and through the economic profits *“provide the funding of the energy transition”* (Camus & Parienté, 2013). This should also allow for an ecological transformation and improve the competitiveness of the French industry. As Montebourg argued during a hearing of the National Assembly on the reform of the mining code, *“we can have a public and national exploiting shale gas company, which will capture the annuity, share it with the territories and affect the most proximate industries, lower the price of their energy and ensure financing of energy transition from the rest of the country, including our liberation -from hydrocarbons”*. *“I think we have a better chance if we entrust the oil industry as the United States did”*, Montebourg noted (AFP, 2013c). Montebourg has repeatedly stated that shale gas is certainly on the table and despite the fact that he shares the skeptical position of the government for fracking, he promotes the opinion that investing on other relevant extracting technologies should be taken seriously as he does not exclude the option of shale gas becoming a factor that will encourage the French competitiveness (RTL.fr, 2012). As he stated in July 2013, *“it is imperative to resolve the problem of the pollution of the subsoil which is a pure scandal for the United States”* (Baudet, 2013a). For Montebourg, the successful exploitation of shale gas would be a chance to exit the deadlock which appears with nuclear power and would allow France to reduce the imports of gas and oil (Baudet, 2013a). As he stated *“I noticed that in all the alternative scenarios to nuclear power, the increased use of gas is advocated”*, justifying in this way why he also supports shale gas (Nodé-Langlois, 2013b).

Although it would seem that Montebourg is almost isolated in his effort to establish the shale industry in France, Laurence Rossignol, the secretary general of environment in the Socialist Party argues that Montebourg is not totally isolated. *“Within the PS (Socialist Party), there has never been a vote so it is difficult to establish a state of forces, but let’s say that the position of Montebourg is a minority”* says Laurence Rossignol (Goar, 2013).

There are other personalities inside the Socialist Party who have expressed their support for shale gas or at least consider the option of exploring the French subsoil. Despite the fact that Montebourg is the only person that holds such a high position, other personalities with other positions share some of Montebourg’s ideas. Alain Vidalies, the French Minister of Relations with the Parliament, holds a similar position as Mr. Montebourg as he stated that *“shale gas should not be excluded for eternity”* (AFP, 2012c). Following his counterpart Vidalies confirmed his support regarding the government’s position on fracking but as he said the banning on hydraulic fracturing is justified by the fact that it is the only known technique until now, yet further research should be conducted regarding the environmental- friendly exploration of shale gas while such richness is important for France (AFP, 2012c). Another proponent of shale gas within the Socialist Party is Bruno Le Roux, the President of the Socialist Group in the National Assembly. Le Roux expressed his assertion in November 2012 that he and his Party are not opposing to an energy source which could become a significant advantage for competitiveness (LeNouvelObservateur & AFP, 2012). He did oppose to fracking, the controversial method of extracting shale gas –following the



line adopted by his other fellow counterparts, Montebourg and Vidalies- but according to his statement, the debate on shale gas should stay open and benefit from research and science (LeNouvelObservateur & AFP, 2012). However, in July 2013, after Montebourg presented the proposal for the creation of a public company responsible for exploiting shale gas in an ecological manner, Le Roux criticized Montebourg for this action. As he stated, Montebourg is “*going too fast*” by proposing this when the President has made it clear that there is no technique which would allow France to give the permission for exploring. On the contrary, Le Roux argued that “*I do not want shale gas to be condemned, since there is a potentiality presented for an asset to our country. Let the industry make the proposals to us*” (AFP & A.D., 2013). Although Le Roux did not close the door to the exploitation of shale gas, he agreed that at the moment there is no such thing as ecological fracturing while he is fiercely arguing to “*make sure to give resources to research and approach the subject when there is a possibility of extraction*”, but not from a public company as Montebourg suggested (Joseph, 2013).

Finally, Christian Bataille, the socialist member in the National Assembly who represents the North and was also responsible for publishing the parliamentary report, verified the assumption that there is a debate within the Socialist Party and that it is not over yet. Bataille is also positive towards shale gas, and after the statements of President Hollande in July 2013, he stated that he is “*a bit surprised when I hear Ayrault and Hollande stepping into an anti-industrial environmental discourse. And we cannot have industry without energy*” (AFP, 2013f). After Hollande closed the door to shale gas as long as he remains the President, Bataille argued that it seems incredible that the country lives on the interdictions of the experimentation on shale gas (La Tribune, 2013). As Bataille had stated in June 2013, after the publication of his report with Lenoir, “*France will need to import oil for another ten years, which means widening further our trade deficit. Energy accounts for 85% of our imports. We recommend to quickly assess the French shale gas and oil resources via potential experimental drilling using hydraulic fracturing, or alternative techniques could also be used to test. If you can quickly find a way to exploit shale gas securely and clean, it would loosen the noose of the trade deficit*” (Lévêque, 2013). However, important to note is that some of the personalities that belong in the actor Socialist Party’s Proponents, apart from Mr. Montebourg, have expressed their opinion only a few times and do not have a consistent presence in the debate. It is already explained though that the group includes these members who have expressed their positive attitude towards shale gas, during the same time period.

#### ▪ Union for a Popular Movement Party

Continuing with the proponents of shale gas from the political spectrum we find the Party “Union for a Popular Movement” (UMP) and the President of UMP Jean-François supporting the potential of shale gas. Copé is the successor of Sarkozy and despite that both belong in the same political Party, Copé, expressing also the views of the Party he is representing, has a different position than the former French President. Although it was his Party that passed the Jacob Law in 2011 that banned shale gas from France, and despite that Christian Jacob, the designer of the law who is also the President of the UMP group in the National Assembly is strongly against shale gas (Baudet, 2013c), in November 2012, he stated his regret for Hollande being a prisoner of the dogmas created by the electoral agreements with the Greens,

leading to the blocking of shale gas while experimentation should continue with the greatest environmental precautions (Europe1, 2012). As he had declared, regarding shale gas *“the door for experimentation should not be closed provided that the technologies are adapted”* (AFP, 2012d). According to Copé, shale gas should not be considered as a taboo issue. On the contrary, due to the energy tariffs imposed on the citizens, Copé suggested that in order to avoid any further increase on the energy prices, it is important to preserve the country’s nuclear capacity and also the research on shale gas should not cease, even though he does understand that it is crucial to protect the environment. Based on an article published also on the Party’s website, Copé argued that *“shale gas may be a unique perspective of growth, employment and technological know-how for the next thirty years”* while three conditions should be met *“heavy investment in research in order to secure the environment, modification in a revolutionary manner of the mining code in order for the landowners not to be forgotten and to receive, along with the local communities, some of the revenues, and lastly, not to renounce anything from other sources of energy, including nuclear energy”* (UMP, 2013). He spoke of *“an absolutely fantastic French energy reserve”* (AFP, 2012c) while arguing that *“in fact, shale gas could result in a substantial decline in energy prices in France and could put an end to this dramatic situation in which the French are plunged”*, argued Copé during an interview in 2013 (Europe1, 2013b). It is important to note as well that it was Jean-Claude Lenoir, an MP from UMP that published with Christian Bataille the report in 2013 that was advocating the extraction of the French shale gas reserves.

#### ▪ Louis Gallois

It is also important to make a special reference to Louis Gallois. It is perhaps not possible to consider Gallois as an actor but he did have a determinant role in the debate regarding shale gas in France. Louis Gallois, an important French businessman, was commissioned by President Hollande to compose a report on *reviving the competitiveness of industry in France* (Gallois, 2012). The report was published on 5 November 2012 and contained twenty two recommendations made by Gallois (Gallois, 2012). One of these recommendations concerned shale gas with Gallois proposing *“to pursue research on techniques to exploit shale gas”* (Shale Gas Europe, 2012). However, the office of the Prime Minister responded by stating that *“the proposed recommendation of research on the exploitation of shale gas, as advocated in the Gallois report is not accepted”* (FrancetvInfo, Reuters, & AFP, 2012). Consequently, Gallois’ recommendation was rejected despite the fact that Minister Montebourg positioned himself positively towards it. Yet, the report has been used by the proponents of shale gas as a basis for supporting their stance that utilizing this energy source could bring benefits in various areas (economy, society, international stability etc.).

#### 4.2.1.b Industry Sector

Outside of the political sphere, the majority of shale gas proponents are part of the industrial sphere. Yet, as it will be demonstrated below, unlike as it occurs in the UK, the oil and gas companies are not the ones struggling fiercely for the exploration of the shale gas reserves. On the contrary, we find various Unions which belong in the industrial sector putting severe pressure on the French government to initialize a national debate on shale gas.

## ▪ Energy Companies

It was consciously decided not to categorize the different companies into separate actors since there have been only some energy companies involved so far in the debate for two reasons. First of all, although France is speculated to possess a large amount of shale gas reserves compared to other countries, only a few companies had expressed their interest on shale gas even before the imposition of the moratorium. One explanation can be the large dependency of France on nuclear power which leaves only some small room for companies utilizing other types of energy to develop. And this leads to the second reason. Due to the government's decision not to proceed with a national debate and based on the fact that there has been a revocation of the exploration licenses, any other company that might considered to invest in the contradictory shale gas exploration was certainly discouraged to do so under these circumstances. Thus, the companies analyzed here are those energy companies which were already involved in the exploration process and had acquired licenses from the French government, particularly through the Ministry of Ecology and Energy. Total and Schuepbach were among the main ones but there were also companies interested in acquiring drilling licenses such as BNK France, 3Legs Oil&Gas. Total is using the argument, as presented above, that *shale gas could have a double beneficial role*. It could indeed *contribute significantly to the growing energy needs of our planet but also reduce the energy dependence of countries like France from the energy producing and exporting countries* (Total, 2009). On the company's website, the environmental challenges are being acknowledged. Yet, Total appeared confident that alternative techniques or strict regulations would optimize the exploration and exploitation of this energy resource. However, the company never got the chance to put these words into action since the drilling licenses were revoked. Total explains on their website that, despite the fact that in 2010 the company had been granted a license for a five-year period, *"On October 13, 2011, against a backdrop of growing controversy over shale gas development, the government announced that the Montélimar license has been revoked - despite the fact that the work program submitted to the authorities complied with the applicable legislation and excluded hydraulic fracturing"* (Total, 2012). What followed was an appeal in the Paris Administrative Court, hoping to clarify the situation but after Hollande's speech at the national environmental conference in September 2012, Total decided that *"the Group was no longer willing to spearhead the shale gas quest in France"* (Total, 2012). The confirmation of this position is expressed in recent articles stating that Total has already developed an interest in bidding for rights in order to explore the shale gas reserves in the United Kingdom (Gosden, 2013b).

The company Schuepbach had also acquired licenses from the French state but as it happened with Total, two licenses were revoked. However, Schuepbach followed a different path than Total did. Schuepbach decided to follow the legal way against the Jacob Law and filed an appeal at the Constitutional Council in July 2013, arguing that the law is discriminatory since it allows use of fracking for geothermal reasons (Schaub, 2013). On the 11<sup>th</sup> of October, the French Constitutional Court ruled that the law that was banning fracking as an environmental unfriendly technique was valid and the law was in accordance with the Constitution. Although Schuepbach complained to the Court that the banning law was unfair (as it did not rule out any geothermal-energy projects using the technique), the decision has not changed. For

the company, *“the exploration of the French reserves could bring great economic benefits to the country and would also reduce the consumers’ energy costs”* (Patel & Viscusi, 2013). Additionally, *“it would allow a reduction of France’s reliance on nuclear energy”* (Patel & Viscusi, 2013). The company does not seem to recognize the potential environmental impact that shale gas could have (unlike other proponents of shale gas that have acknowledged the possible environmental challenges). Marc Fornaciari, Schuepbach’s lawyer had even stated that there has not been any study established that can prove a link to the alleged risks of hydraulic fracturing (Natural Gas Europe, 2013). However, a decision as such from the Court shows that from a juridical perspective, it is quite difficult to alternate the existing law on shale gas, at least for the time being.

#### ▪ Medef (Movement of the Enterprises of France)

There are some industrial entities, though, with a strong and dynamic voice in the debate, pursuing and pressing for at least the establishment of a national debate on shale gas and likely they will stick to this position. For example, Medef, the largest union representing the interests of the French employers, belongs to this group. Laurence Parisot, the President of Medef representing the interests and values of Medef, has been involved in numerous confrontations with the former Minister of Ecology and Energy, Delphine Batho since they had diametrically opposing positions with regard to the future use of shale gas. During a debate she had with Batho, Parisot urged for *“confidence in science”* (Chaillot & Bourdin, 2013) and made even a proposal for the partnership between the shale gas exploitation and the development of renewable energy by financing one the other (Chaillot & Bourdin, 2013) while shale gas could even bring the possibility of decreasing the price of gas, in the same way it is occurring in the United States (Leclercq, 2013). According to *FranceInfo*, for Parisot *“there was no significant environmental damage associated with shale gas, and therefore there is no reason to refrain from seeking the French potential of these hydrocarbons”* (Barral, 2013). For Medef and Parisot (the “boss of the bosses” as she is called) *“shale gas can be a lever for the re-industrialization, the competitiveness and the economic independence of France”* (Dupin, 2013). Of course, there are other benefits which can result from the successful exploitation of shale gas. For example, *“there is an issue of energy independence, of gas prices, of independence from Russia”* (Chaillot & Bourdin, 2013). Parisot requested in April 2013 the revision of the Jacob Law of 2011, because France is the only European country which has imposed a law which prohibits the research on shale gas (Barral, 2013) while she is vigorously trying to establish a national debate on shale gas in France, following the debate she had with Batho on TV, in June 2013 (Medef, 2012). She justifies her position by arguing that since energy is a key-factor for the competitiveness of the French companies, the costs could be reduced through the exploitation of shale gas and a debate on the issue could probably help clear the situation (L’Angevin, 2013). Parisot was replaced in July 2013 by Pierre Gattaz as the head of Medef. Gattaz shares the exact, if not an even more strict, position supporting shale gas. Gattaz is definitely against the energy policy adopted by the government since he is opposing to a moratorium on shale gas, an environmental taxation and the closing of Fessenheim, a nuclear power plant in France (RTL.fr, 2013). His position and consequently Medef’s position is also openly presented on Medef’s website (Medef, 2013) With this dynamic presence of Gattaz

it is possible that the shale gas debate is going to evolve into a grand battle, resembling the one in the United Kingdom.

#### ▪ **French Union of Petroleum Industries (Ufip)**

The French Union of Petroleum Industries (Ufip) is another organization that shares Medef's position. Jean-Louis Schilansky, the President of the Union positions himself and the Ufip in favor of shale gas since "*exploiting the shale gas reserves would improve France's balance of trade and create tens of thousands of job openings*" (Pialot, 2013). Schilansky argues furthermore in favor of fracking since "*in order to test the marketability and the importance of the reserves, it is imperative to fracture*" (Pialot, 2013). Sharing the position of Medef, Ufip agrees that *shale gas could have the potentiality of lowering the gas price in France, as it has been done in the United States* (Pialot, 2013). Schilansky wrote in the introduction of a White Paper published by Ufip that "*the American model shows the exceptional economic potential of the shale oil and gas development and their impact on the global energy balance*" (Ufip, 2013). In this White Paper, Ufip is proposing to establish a wide debate where all arguments can be heard while the Union is also advocating the evaluation of the national hydrocarbon resources (Ufip, 2013). Apart from Ufip and Schilansky, in September 2012 there was a signed call from 22 personalities of the industrial sector (including Parisot) urging the President to provide the country with a national and public debate on shale gas, rather than deciding unilaterally (Jaegher, 2012). The call shows the industry's intention and desire to explore the energy resources of shale in France and proceed with its exploitation in the case that it is economically profitable. In February 2014, Schilansky confirmed one more time his support towards shale gas. He stated that "*not exploiting the shale gas reserves of the country would be a mistake*" while he also defended the highly controversial fracking technique (AFP, 2014). For the President of Ufip there is no proof that fracking is directly and certainly associated with the environmental risks that the banning law has linked to while valuable time for France is being lost as long as this moratorium is valid (AFP, 2014).

#### **4.2.1.c Research Sector**

Despite the fact that there have not been any positive actions taken regarding the potential of shale gas, let alone the establishment for a debate where all actors could get involved and have a discussion providing their argumentation, there have been some research institutions or centers that have published reports supporting the exploration of the shale gas reserves. It is important to note that it has been quite difficult to trace these actors as the media present actors mainly from the policy and industry sectors.

#### ▪ **Academy of Sciences**

The French Academy of Sciences (Academie Des Sciences) is a research institute which together with three other academies composes the French Institute (Institute de France). The Academy of Sciences includes scientists (who are elected for life and are employed in reputable research institutions) from various scientific groups, from mathematical and physical sciences to chemical, biological, geological and medical sciences. Thus, some of the brightest minds of the country contribute in the Academy's scientific

and research work. On the 15<sup>th</sup> of November 2013, the Academy published a report regarding the elements for elucidating the debate on shale gas (Original Title: *Éléments pour éclairer le débat sur les gaz de schiste*). In this report, the Academy does recognize the *necessity of reducing the energy consumption and the importance of energy efficiency and energy transition* (Académie des sciences, 2013). In the same report, the Academy advises that the issue of shale gas should be taken into more serious consideration. The reasons for such a proposition are among others *the securitization of the supply of energy* as fossil fuels still account for the 80% of the primary energy sources found on earth (Académie des sciences, 2013). Moreover, *reducing the country's energy dependency and the consequent impacts* (in economic but also political terms) and *stimulating France's economic competitiveness* have been presented as serious issues that have to be addressed and examined (Académie des sciences, 2013). Finally, the Academy argued that by exploring and possibly exploiting the potential of shale gas, it could also be possible to enable the *integration of renewable energies by compensating their intermittence and avoiding the use of carbon*, an argument used also by some proponents of shale gas in the UK (mainly Lord Browne) (Académie des sciences, 2013). For reasons as such, the Academy published nine recommendations which encouraged the exploration and assessment of the French shale gas reserves by an independent and scientific authority (this is also linked to Mr. Montebourg's proposal). Additionally, regarding fracking, there is no immediate rejection of the controversial technique. On the contrary, what is emphasized in the report is the importance of conducting studies in order to assess and reduce its environmental impact. Yet, even the Academy does understand the risks that such activities could have on water management and therefore considers this issue as a major aspect of the shale gas exploitation. As it appears here, the Academy of Sciences is eager and intrigued into exploring the potential that shale gas has in France, for various reasons. Without diminishing the possible negative impact that can arise from the shale gas operations, the Academy encourages the actors involved to investigate the matter before declining it as it is possible to control the risk associated with the extraction of shale gas with the establishment of an appropriate regulation (Vanlerberghe, 2013).

#### ▪ **Sia Conseil**

Sia Conseil (which means Council in French) is part of Sia Partners, an independent consulting firm active in various countries across the world. Although Sia Conseil cannot be considered as a research institute or organization, it is interesting to include a study that was published by this group in 2012. The analysis made at that time was just before President Hollande's speech at the Environmental Conference in September 2012 where he announced the revocation of the licenses and also that the debate would not open. Thus, it appears that the discussion on shale gas had already started to heat up in France and various entities were trying to affect its direction. With their report, Sia Conseil was estimating that *shale gas could create up to 100.000 job openings*, an estimation that reheated the debate and gave more ground to the proponents of shale gas for supporting their argumentation (Challenges.fr, 2012). According to Sia's report, the recoverable reserves can make it possible to *"increase the energy independence of the country but also to contribute to the reindustrialization"* (Sia Conseil, 2012) and of course, contribute significantly to the country's work force (Sia Conseil, 2012).

#### **4.2.1.d Summary of argumentation of proponents**

The benefits that can derive from the successful exploitation of shale gas are placed in the front line of their argumentation for the French shale gas proponents. The French proponents are not only pushing for the exploitation or extraction of the gas but they have a bigger consideration which is their effort to establish at least a national debate in order to demonstrate their argumentation and by presenting their arguments and the technical information possibly change the policy program that has been established so far. The potential of improving France's economy is strongly supported by the French proponents of shale gas. Either by decreasing the gas prices and lowering the energy costs for the citizens or by contributing to the country's reindustrialization and increasing the work force, the economic benefits should seriously be taken under consideration. The improvement of the competitiveness of the French energy industry could be partially achieved thanks to the shale gas exploitation.

Additionally, a major issue in France has been the country's energy dependence on other energy producing countries. Given that France's main energy resource that is produced domestically is nuclear power, the proponents of shale gas are arguing that the country's dependence on energy imports could be reduced by developing a strong internal gas industry. Shale gas could play a major role in this development. By reducing the oil and gas imports, France could reinforce its energy security and acquire in this way a diplomatic leverage that can be used in various negotiations. As long as this dependency on other countries continues, France has to be careful on any actions taken that might disrupt the continuous flow of energy into the country.

Finally, in the French case we find the various French proponents of shale gas arguing that by investing in the shale gas industry, it is possible to even contribute to the goal towards energy transition. The economic benefits could provide the funding of the energy transition while by moving towards the utilization of gas, they would be moving away and liberated by the use of hydrocarbons.

Important to note here that the actors supporting the exploration and exploitation of shale gas in France do not reject the possible negative consequences that fracking can bring. On the contrary, many have acknowledged that the hydraulic fracturing technique has the potential to harm the environment. Therefore, there have been various actors stating that research on alternative techniques should be funded and developed. The possibility that fracking could have a negative impact on the environment, should not hinder the exploration of this energy resource and its utilization. Thus, several of the actors supporting shale gas that will be analyzed, have urged the government to make a provision for performing a research on the alternative drilling and extracting techniques of the resource, as they consider shale gas as a good opportunity that they cannot miss.

#### **4.2.2 Opponents of fracking and shale gas in France**

The analysis of the public debate in France concerning shale gas exploration and exploitation continues with the opponents of shale gas in France. In the opposition's camp, we find that a multitude of actors are deriving from the policy sector. Additionally, the wider society is only lately starting to get more seriously

involved in the discussion regarding shale gas. This phenomenon can be explained by the decision taken by the French government to ban any shale gas operations and eradicate in this way any hopes for positive developments in the shale gas debate. Yet, there have been various protest groups on a local and national level but also some larger organizations that have expressed their disapproval for any shale gas developments in France. Naturally, different associations and NGOs have already stated their precautions and have immediately rejected any plans for exploiting this specific energy resource. It is also important to note here, that these NGOs often are the French branch of international NGOs. It is crucial to mention the fact that the major decision and policy makers are in the opponents' camp, influencing the policy making process in a significant way.

However, there have not been any significant research institutions positioning themselves against shale gas, yet. This could be explained once again by the affirmation that the French government has stated that the French shale gas reserves will not be exploited as long as Hollande remains the French President. Thus, the opponents of shale gas in France base their assertion regarding the negative impact deriving from this specific energy resource on reports and research performed by international or other foreign institutions.

Figure 4.3: Table of opponents of shale gas and fracking in France

| Opponents           |  |   |                   |   |
|---------------------|--|---|-------------------|---|
| Sectors of Activity | Name   | Commonly Represented by   | Positioning       | Key words for argumentation used by opponents   |
| Policy              | Socialist Party's Opponents/ French Government       | French President (F. Hollande) & French Prime Minister (J.M. Ayrault) | Against shale gas | <ul style="list-style-type: none"> <li>▪ Harmful for the environment and health</li> <li>▪ Limit to the market</li> <li>▪ No ecological exploitation of shale gas</li> <li>▪ Importance of energy transition without shale gas</li> <li>▪ Reduce energy consumption especially of fossil fuels</li> <li>▪ Invest in renewable energy</li> </ul> |
| Policy              | French Green Party/ (Europe Ecologie-Les Verts-EELV) | Jean-Vincent Placé  | Against shale gas | <ul style="list-style-type: none"> <li>▪ Harmful for ecology</li> <li>▪ Invest in renewable energy &amp; sustainable, energy efficiency</li> <li>▪ Not possible to exploit shale gas without shale gas</li> </ul>   |
| Research            | Association Santé Environnement France               | -   | Against shale gas | <ul style="list-style-type: none"> <li>▪ Connection between shale gas and medical illnesses and diseases</li> <li>▪ Water pollution</li> <li>▪ Air pollution</li> <li>▪ Shale gas can absorb large parts of public budgets and bring back no economic benefits</li> <li>▪ Can have a huge impact on infants and cause heart problems</li> </ul> |
| Association         | No Fracking France                                   | -   | Against shale gas | <ul style="list-style-type: none"> <li>▪ Environmental and health risks</li> <li>▪ Downgrading of value of natural capital</li> <li>▪ Investment in renewables</li> </ul>   |



|             |  |               |                   |   |
|-------------|--|---------------|-------------------|---|
| Association | Protest Groups                                     | -             | Against shale gas | <ul style="list-style-type: none"> <li>Protection of nature and environment</li> <li>Impact on human and animal health</li> <li>Energy efficiency and energy transition</li> </ul>  |
| (NGO)       | Greenpeace France                                  | -             | Against shale gas | <ul style="list-style-type: none"> <li>Creation of greenhouse gas emissions</li> <li>Emphasis on energy efficiency and renewable energy</li> </ul>  |
| (NGO)       | France Nature Environnement                        | -             | Against shale gas | <ul style="list-style-type: none"> <li>Hydrocarbons hazardous for health, climate and environment</li> <li>Shale gas could contribute to France's energy independence BUT the exploitation cannot be justified</li> </ul> |
| (NGO)       | Fondation Nicolas Hulot pour la Nature et l' Homme | Nicolas Hulot | Against shale gas | <ul style="list-style-type: none"> <li>Shale gas is not the solution to environmental and climate changes, regardless of technique used</li> <li>Emphasis on renewable energy</li> </ul>                                  |

#### 4.2.2.a Policy Sector

It has already been mentioned that the main actors opposing shale gas and fracking in France belong to the policy sector. These include, for example, members of the ruling Socialist Party that are disapproving shale gas for environmental and health reasons, among others. But apart from these Socialist Party members, perhaps the fiercest opponents of shale gas in France are the members of the Green Party. The Green Party, which forms a coalition government with the Socialists, has already warned their counterparts that if shale gas becomes an option in France, this will be a deal breaker for their coalition. The Greens are strongly rejecting any discussions for even considering shale gas as an alternative source of energy. This comes as no surprise since the Party is also opposing to nuclear power, the country's main source of energy.

##### ▪ Socialist Party's Opponents/French Government

Various individuals that belong in the Socialist Party and have expressed their opposition to the exploitation of the French shale gas reserves form this actor. For example, one of the greatest advocates against shale gas has been the French Minister of Ecology, Sustainable Development and Energy and its former Minister, Delphine Batho (Batho was replaced by Philippe Martin in July 2013). Martin (will not be analyzed here since it was only lately that he took over the office) contented himself with stating that he completely supports Batho's and Hollande's view on the shale gas debate as it is harmful for the ecology and there is no technique which is friendly towards the environment (Nodé-Langlois, 2013a). Being the Minister of Energy, Batho along with President Hollande, had a crucial role in the decision making aspect of the energy sector. Batho had been denying changing her opinion ever since she took over the Ministry of Energy in 2012. She has been strongly against the use of fracking, the sole technique existing at the moment for extracting the gas which poses many problems in the United States she argues. In April 2013 she stated *"there is a limit to the market. Sacrificing water, earth and air for the sake of immediate profit is not logical and does not offer a good response to the economic difficulties"* (Barral, 2013). In addition, Batho was fully opposed to an

attempt to change the 2011 Law that bans fracking, a decision which she characterized as a “*democratic victory, following an unprecedented mobilization*” (LeMonde, AFP, & Reuters, 2013). Initially Batho did not completely exclude the exploitation of shale gas as she stated that “*the debate could open in the case that new techniques would appear*”, excluding though the search for new hydrocarbons as part of the energy transition (Le Nouvel Observateur, 2012). Nevertheless, Batho eventually changed her statements on the chance for exploitation of shale gas in the case of new techniques. As she stated “*I think that there is no clean shale gas exploitation and I think that pollution is pollution, so be it public or private, it is pollution and the nature of the capital will not change the problem*” (AFP, 2013d). Thus, she urged the former Prime Minister Jean-Marc Ayrault to lift the ambiguity which transpired the discussion on the exploitation of shale gas. Batho was also strongly opposed to Montebourg’s proposal of assigning and financing the research of technological experimentation to a national company. As she argued, “*there is no money from the governmental side*” (T.B., 2013) and instead “*the oil companies should finance the research*” (LeParisien & AFP, 2013).

Other ministers and members of the Socialist Party have expressed their antithesis towards the exploration of shale gas in France as well. The current Minister for Energy and the Environment, Philippe Martin, has explicitly expressed his opposition. “*The issue of ecological exploitation of shale gas does not exist. My direction, the one that has the President of the Republic set, is to lead the environmental and energy transition, in order to reduce the dependence of France on fossil fuels. My position is not personal, it's the government's*”, noted Mr. Martin (Baudet, 2013b). Stéphane Le Foll, the Minister for Agriculture, criticized Montebourg’s idea of an ecological exploitation of shale gas by a public company and he stated “*this is not consistent with the choice that was made at the environmental conference*”. “*The consistency is to stay on the line that has been set by the government*” Le Foll insisted (Joseph, 2013). But yet, for Le Foll the subject of the exploitation of shale gas by a public company or not, is not the main issue. As he commented, “*it is impossible to imagine drilling with hydraulic fracturing in the Drome near the Vervors*” (AFP, 2013b). Or Geneviève Fioraso, the French Minister for Research who stated in August 2013 that “*it is not necessary to develop any shale gas research project since the private sector has efficiently been performing research on alternative extraction techniques*” while she perceived the decision made by the President and the Prime Minister to rule out shale gas, as a reasonable and a wise one (AFP, 2013g).

Two other members of the Socialist Party possessing at the time of the debate probably the most prominent place within the Party and government have expressed their disapproval on utilising the French shale gas reserves: the French President François Hollande and the (then) French Prime Minister Jean-Marc Ayrault. Hollande declared his support for the Jacob Law (Law of 13 July 2011) as adopted during the tenure of his predecessor, Nicolas Sarkozy. At the environmental conference in September of 2012, Hollande slammed the door for the exploitation of France’s big oil and shale gas reserves using the fracking technique. He did so by referring to the environmental and health risks related with this technique. As he argued at that time, he “*bears the economic arguments*” but “*at the present state of our knowledge, no one can say that the exploitation of shale gas and oil by hydraulic fracturing, the only technique known today, is free of major risks to health and the environment*” (AFP, 2012b). Two months later though, during a press conference on the 13<sup>th</sup> of November 2012, Hollande opened a window to shale gas by stating that “*the research on*

*alternative techniques to hydraulic fracturing should continue*”, opening in this way the debate on shale gas in France (Le Monde & AFP, 2012). What is more, Hollande made further statements assuring that he would take his responsibilities in the case where a clean technique would appear (Visot, 2012). These statements created big confusion within the coalition government since shale gas constitutes a red line for the Greens, that they are not eager to pass. Hollande changed once again his position on the 14<sup>th</sup> of July 2013 during a TV interview, by arguing that *“as long as he remains the French President, there will be no exploration of the French shale gas reserves”*, ending in a way the demands for the extraction of the energy resource and changing once again the scene and the direction for shale gas (Le Monde & AFP, 2013). Regarding Hollande’s position for the extraction of shale gas, it appears quite ambiguous given the fact that he was strictly opposed to hydraulic fracturing, slamming in this way the door to shale gas exploration only to appear positive some months after his initial statements, in the case that a new and appropriate technique shows up. And once again, months after these statements that gave some hopes to the proponents of shale gas, the French President came to take them back by stating that there will be no exploration or exploitation of the shale reserves, as long as he is the President of France.

The former Prime Minister of France, Jean-Marc Ayrault (replaced during the elections in April 2014) has been supporting Hollande’s position all the way. Ayrault went even further, after Montebourg’s proposal for a public company exploiting the French shale gas, by stating that *“it is excluded to exploit shale gas in France”* and *“the position of the French government consists on working to prepare the energy transition, and shale gas is not in the equation of the government”* (AFP, 2013e). Ayrault, perhaps with the intention to tranquilize the Party’s counterparts in the Coalition government (meaning the Greens), after Mr. Montebourg presented his proposal, stated that *“there is only one policy in the government”*, denying in this way the assumption that there is a debate even within the Socialist Party (LeMonde & Afp, 2013). He continued by saying that the government has two targets, the first one *“is to reduce the energy consumption, and particularly the one of fossil fuels in our country by an offensive policy, energy efficiency and thus energy saving”*. The second target according to Ayrault is to *“change our energy mix - today 75% of the energy comes from nuclear power, it should be 50%”*. Ayrault argued that *“this policy must be accompanied by a policy of targeted investments in renewable energy”*. The Prime Minister presented this to be the government’s policy, a clear and coherent one (AFP, 2013e).

In November 2013, the Socialist Party publicly welcomed the decision of the Energy Minister Martin for declining the research for shale oil and gas at the Paris basin, reaffirming in this way officially the Party’s opposition to the shale gas exploitation (Parti Socialiste, 2013).

Nevertheless, this rather unclear stand of the Socialist Party which results from the fact that there is no common understanding on the issues of shale gas creates an environment of discomfort for the other actors, considered that the Party –along with the Greens- is the one which is responsible for taking the decisions and making the policy on the shale energy for the country. As we will see, the other actors (for example the Green Party) have a more definite argumentation and act more unified on the collective level.

- **French Green Party (Europe Ecologie-Les Verts-EELV)**

Starting the analysis of the French Green Party (officially named Europe Ecologie-Les Verts-EELV), we find a concrete position towards shale gas (contrary to the Socialist Party). EELV is clearly against shale gas regardless of the exploration or the exploitation methods (EELV, 2012). All of the Green Party members who have made statements regarding shale gas and fracking are strongly against it. Denis Baupin (member of the Greens and vice-president of the National Assembly) had stated in November 2012, “*we do not want shale gas, with or without hydraulic fracturing*”. Baupin talking for EELV said that Party finds it more important to “*invest in what is sustainable, energy efficiency and renewable energy*” while “*the use of fossil fuels is emitting greenhouse gas emissions*” (Nodé-Langlois, 2012). Jean-Vincent Placé, President of EELV in the French Senate, was the one who had stated that shale gas constitutes “*an impassable red line which could even challenge the agreement between the Socialist Party and EELV for the coalition government*”. According to Placé’s words, there had already been some tension between EELV and the Socialist Party since they were discontent with the policy on nuclear energy, the environmental taxation and the energy transition. Therefore, shale gas could not be put extra on the table as it would be a “*violation of the commitments that we undertook*” Placé said (Zennou, 2012). Placé even more recently, in July 2013, made a statement directly against Minister Montebourg by arguing that he is “*harmful for the ecology and the government*” due to Montebourg’s pressure for the exploitation of shale gas (AFP, 2013a). Also the national secretary of EELV, Pascal Durant, has been involved in the debate and the positioning of the Green Party. As he argues, the shale gas debate is a “*fake*” one given the fact that a certain number of oil companies are totally committed to the misinformation as they try to spread the conviction that shale gas could be successfully exploited without the use of fracking, an argument which is “*a blatant lie*” as Durant called the argument (Beaudoux, 2012).

#### **4.2.2.b Associations & NGOs**

It is only natural to find environmental and protest groups formed by civilians but also NGOs opposing to shale gas. However, given the fact that there has not been an official debate hosted by the government, and also since the government has adopted a policy which is environmental friendly and widely accepted by the society and the environmentalists- these environmental groups are significantly fewer compared to those in the United Kingdom. Yet, there have already been group formations of citizens that are unwilling to let their country undergo the potential negative consequences that shale gas and fracking can bring. Most of these groups are not shale-centered nor have they been created only for this reason. On the contrary, they are following an agenda which includes a multitude of different issues among which are the use of nuclear power, the global warming problem and other environmental challenges that our planet is facing.

- **Protest Groups**

As it has already been mentioned, the protest groups mainly formed by citizens have been arranged within one actor, mainly due to the fact that no severe demonstrations have taken place so far. Here we find different groups, national or local ones like *No Fracking France* (formed particularly to oppose shale gas), *Sortir du nucléaire* (a group with a focus mainly on the impact of nuclear energy and similar opinion on shale

gas), the *Rassemblement pour la Planète* (Rally for the Planet), the *Nicolas Hulot Foundation*, *Le Var dit NON au gaz de schiste et OUI à la transition énergétique* and *Citoyens Entrecasteaux* (Citizens of Entrecasteaux - where shale gas has been found). The environmental risks and the harmful impact that shale gas could have on human or animal health are the central points of argumentation. No Fracking France is arguing that “*health and water must be at the heart of the debate on the issue of fracking*” (No Fracking France, 2011). The goal of energy transition towards a system that embraces energy efficiency primarily through the usage of renewable energy is highly promoted within these groups. The group *Le Var dit NON au gaz de schiste et OUI à la transition énergétique* (Var says NO to shale gas and YES to energy transition) exemplifies with its title in a clear manner the importance of energy transition. In order to achieve their goals, the majority of these associations is trying to raise the awareness of the wider society through campaigns, petitions and being actively involved in conferences and various debates, on a local, national and international level, collectively or individually.

#### ▪ **Greenpeace France**

Greenpeace is one of the groups which explicitly argues that regarding shale gas, the main problem is not the technique of extraction per se, but that this new resource actually is creating greenhouse gas emissions, damaging further in this way the environment. Thus, instead of actually moving away from fossil fuels and climate change, shale gas has the ability to actually move the country away from the goal of energy transition. Following the argumentation of the UK branch, Greenpeace France has argued that “*energy efficiency should be the primary objective here while it is crucial to finally give a chance to renewables, as it is already done in other countries*” (GreenpeaceFR, 2013). After Hollande’s statement in July 2013 where he explained that there will be no exploration of shale gas during his presidential term, the Greenpeace members expressed their satisfaction that the door to shale gas is closed, regardless of the extraction technique (Marillier, 2013).

#### ▪ **France Nature Environnement**

The France Nature Environnement (FNE) is the French federation of the associations devoted in protecting the nature and the environment in France. For the federation, “*unconventional hydrocarbons are hazardous to health, the environment and the climate although they have become some kind of El Dorado for the various energy companies who are granted in recent years with research permits on French soil*” (France Nature Environnement, 2013a). Although the federation does recognize that exploiting the French shale gas reserves could contribute to the country’s struggle for energy independence and decrease the gas imports, it does not justify their exploitation as a wise option, due to the great environmental and health impact that these reserves could bring on a local and international level. Therefore, FNE is fighting not only against shale gas but against all the unconventional energy sources (France Nature Environnement, 2013b). After Hollande’s statement that he will not consider any exploration plans as long as he remains the French President, FNE considered his words as “*very good news to see that the president reaffirms his commitment to a law that prohibits the exploration of shale gas*” (Le Monde & AFP, 2013).

#### ▪ **Nicolas Hulot for Nature and Mankind**

The foundation *Nicolas Hulot for Nature and Mankind* (Fondation Nicolas Hulot pour la Nature et l'Homme) is a well-known environmental group/NGO in France, created in 1990 by the journalist/writer/producer and environmentalist Nicolas Hulot. The foundation is pursuing human welfare and the respect of our Nature while struggling for the ecological transition of our societies and the protection of common goods (fresh water, biodiversity, climate, etc.) (Nicolas Hulot Fondation, 2014). The organization has been strongly against the exploration or exploitation of shale gas ever since the discussion begun around 2011. The Foundation has a wider environmental agenda and the shale gas debate could not escape their attention. According to a national survey published in June 2013 by the European Foundation for the Climate (a partner of the Nicolas Hulot Foundation) with the cooperation of the social, economic and environmental Council and the Poll Institute Harris Interactive, *“in France there is a grand opposition against the exploitation of shale gas while those supporting new energy sources (including shale gas) reach only up to 23%”* (Nicolas Hulot Fondation, 2013). Regardless of the technique used to extract the shale gas reserves, the Foundation reaffirms that *“this is not the solution to the environmental and climate challenges but it is the renewable energy sector where governments and the wider society should be looking for an answer on the energy transition puzzle”* (Nicolas Hulot Foundation, 2012).

#### **4.2.2.c Research sector**

So far, there has not been a major reaction in the French research sector opposing to shale gas (due to the limited voice given to the proponents of shale gas). The opponents of this energy resource usually point to reports and surveys that have been conducted by foreign research institutions. Therefore, no exclusive research has been conducted on the national level in France. Of course this is also justified by Hollande's decision to exclude any type of research regarding the shale gas option in France. Yet, there has been at least one association which is comprised of medical doctors and has a general research character that is opposing to the exploitation of shale gas. Below follows the description and analysis.

#### ▪ **Association Santé Environnement France**

The Association Santé Environnement France (ASEF) comprises approximately 2,500 doctors advising on issues related to health and the environment, such as air quality, biodiversity, etc. ASEF is trying to link the connection between various diseases or medical illnesses (asthma, cancer, etc.) with the environment mainly by conducting surveys, research, conferences and studies (Association Santé Environnement France, 2013). The discussion on shale gas and the allegations regarding the negative impact that can bring on health and the environment, did not escape ASEF's attention. In February 2013, before President Hollande openly rejected the idea of exploring the French shale gas reserves, the association published an article introducing shale gas and explaining the negative consequences that it can bring. According to this article, the exploration of shale gas could produce water pollution, influence the groundwater quality and also the amount of water reserves, pollute the air through *“the evaporation of volatile organic compounds (VOCs)”*

(...) *the diesel emissions, sulfur oxide (Sox), particulate matter (PM), nitrogen oxides (Nox) from the trucks on the site (...) or the methane emissions that can escape from the production well in the case of a leak*". Furthermore, the potential exploration and exploitation of the shale gas reserves could absorb large part of public budgets without any guarantee that the anticipated economic benefits of the exploitation will reimburse the costs and the money needed to support the shale gas operations. Finally, although the association did recognize that it is not possible to provide a clear evaluation of the risks that shale gas can have on health (mainly human), ASEF pointed to a study published by the Journal *Environmental Health Perspectives*, according to which, shale gas could increase the risk of heart defects for babies (J. Maherou, S. Norest, & L. Ferrer, 2013). In February 2014, ASEF wrote an article devoted specifically to the study regarding the cardiac malfunctions that shale gas could create to newborns. According to the association's website it seems that ASEF is mobilized in order to "*fight against the exploitation of shale gas in France*" and has denounced the risks that it can bring to health (S.Norest, 2012).

#### **4.2.2.d Summary of argumentation of opponents**

The argumentation used by the opponents of shale gas in France and their relevant positioning, shows a plethora of reasons and arguments these actors used in order to raise the society's (and not only) awareness and to defend their point of view. The line of argumentation used in the French case resembles also key lines arguments used in the UK case. For example, the struggle towards energy transition and the emphasis on the environmental and health consequences of shale gas is used in both cases. Yet, many of the shale gas opponents in France support the idea that there is no room for alternative techniques. Thus, their opposition is not only against fracking as a controversial and challenging technique but against shale gas as a whole since it constitutes an energy resource harmful for our environment.

The negative environmental consequences of shale gas can be the main reason for concern. The opponents support the argument that there is a limit to the market and its ecologically harmful consequences. It is not possible to sacrifice our air, water and earth for the marketability and development of industrial interests. Additionally, the impact that shale gas can have on human or animal health has also been prioritized as a risk that those opposing shale gas are not willing to take. Regarding their position on fracking, the opponents argue that "*pollution is pollution*" regardless of the technique used. Consequently, even if alternative techniques would arise which are not harmful, they are still going to object to the successful exploitation of shale gas as the result will be the same: a further contribution to the global warming of our planet.

The opponents of shale gas have stated that exploiting this energy resource is a wrong road to walk. The focus should be achieving an energy transition. The search for new hydrocarbons does not constitute a part of this goal, they argue. The reduction of this dependency on fossil fuels should be a priority when moving towards energy sufficiency and environmental sustainability. Therefore, the shale gas opponents support investments in renewable energy projects. This alternative solution is for them the best answer to those supporting shale gas in France.

What is important to mention is the reluctance of the opponents to establish an official debate (perhaps an organized debate represented by the media) where both sides can actually present their technical information and argumentation. There is of course an ongoing general debate among the actors but it would be safe to say that the opponents have the upper hand in this case as the policy already established favors their beliefs and interests.

### **4.3 CONCLUSION OF ACTORS' POSITIONING IN FRANCE AND THE RELEVANT VALUES**

The case of France has been a peculiar one characterized by fluidity despite the overall inelasticity in the policy making sector. Various actors are forming different coalitions, yet political actors that already belong in a certain coalition (a political Party for example), are supporting opposing values and beliefs and adopting conflicting position. In this section the core values will be analyzed and presented as the actors have articulated them in the shale gas debate and furthermore as they are trying to promote and interpret them into a policy program that favors these values.

The coalition of the proponents of shale gas in France is not characterized by a rallying of actors around the leading actors. There are indeed some actors in the coalition with a leading and more active role, yet the actors are not adopting a very radical and inflexible stance, most likely due to the fact that the opposing coalition is in power and is standing strong on its grounds. As it has been analyzed in Chapter 4, the Socialist Party in France is strongly divided regarding the future of shale gas in the country. Despite the fact that the members of the Socialist Party share the same political ideology and approach (or at least they should do so to some extent as members of the same Party), it is remarkable the great division among them regarding the handling of the shale gas issue. The proponents of shale gas within the Socialist Party have been a strong supporting the exploration of shale gas in France. Minister Montebourg, a prominent personality within this group has argued that *“we can have a public and national exploiting shale gas company, which will capture the annuity, share it with the territories and affect the most proximate industries, lower the price of their energy and ensure financing of energy transition from the rest of the country, including our liberation from hydrocarbons. I think we have a better chance if we entrust the oil industry as the United States did”* (AFP, 2013c). For the French Minister and his counterparts in this group, perhaps the most important values are the ones linked to **welfare** and **affordability**. The proponents are pursuing the profitable utilization of the shale gas reserves that can provide the country with additional revenues. Additionally, with France's heavy dependence on external imports from energy-producing countries, and as the geopolitical map and the balance of power is starting to change again, it is essential to start taking some steps towards energy emancipation, if not independence. Mr. Montebourg supported that *“in all the alternative scenarios to nuclear power, the increased use of gas is advocated”*, justifying in this way why he also supports shale gas (Nodé-Langlois, 2013b), promoting in a clear way values closely related to **security of supply** and **resource durability**. Yet, this group does not disregard the environmental challenges that the shale gas extraction could potentially pose. As Mr. Montebourg has stated: *“it is imperative to resolve the problem of the pollution of the subsoil which is a pure scandal for*



*the United States*” (Baudet, 2013a), involving in this way values associated with **environmental friendliness** and **sustainability**. His beliefs are shared within the Socialist Party by other members, i.e. A. Vidalies, B. Le Roux and C. Bataille, yet Montebourg is definitely taking the leading role in representing and struggling to incorporate his values and beliefs into a certain policy program.

The Political Party “Union for a Popular Movement” (UMP) has been the actor that established the most significant policy program in 2011, when it imposed a moratorium on the exploration and exploitation of the shale gas reserves in France, during Sarkozy’s presidency. Only a few years later, his successor Jean-François Copé is advocating the extraction of shale gas in the country as “*shale gas may be a unique perspective of growth, employment and technological know-how for the next thirty years*”, embracing values of **welfare** and **affordability** while three conditions should be met “*heavy investment in research in order to secure the environment, modification in a revolutionary manner of the mining code in order for the landowners not to be forgotten and to receive, along with the local communities, some of the revenues, and lastly, not to renounce anything from other sources of energy, including nuclear energy*” (UMP, 2013), promoting also values linked with **distributive justice**. Additionally, Copé seems skeptical regarding the dubious method of fracking for extracting shale gas. Thus for Copé “*the door for experimentation should not be closed provided that the technologies are adapted*” (AFP, 2012d) paying attention to values related to **environmental friendliness** and **sustainability**. Various prominent members from UMP have actually supported exploring the potential of shale gas. Francois Fillon, a former Prime Minister has been one of them while quite recently (in 2014) Nicolas Sarkozy stated that France should consider the exploration and exploitation of shale gas.

In the shale gas debate there has been a strong proponent of shale gas that has been constantly trying to achieve a policy change that favors the exploration of the French shale gas reserves. This actor is the Movement of the Enterprises of France (MEDEF). Medef, especially during the presidency of Ms. L. Parisot, has kept an active stance in the debate and is constantly pushing for a change in the Jacob Law of 2011 that imposed the moratorium on shale gas. Furthermore, the union has repeatedly requested during public appearances the establishment of a national debate covered by the media, where each side will have the option to present in a clear way their technical information and argumentation. Parisot had stated in the past that “*shale gas can be a lever for the re-industrialization, the competitiveness and the economic independence of France*” (Dupin, 2013), forwarding values and interests linked to **welfare** (mainly in economic terms) and **affordability**. For Medef there is no serious environmental challenge posed by the extraction of shale gas while in the cases of an exploration of the reserves, “*there is an issue of energy independence, of gas prices, of independence from Russia*” (Chaillot & Bourdin, 2013), trying to promote in this way values closely connected to **security of supply** and **resource durability**.

The French Union of Petroleum Industries (Ufip), belonging in the same sector as Medef, is sharing the same interests, beliefs and values and this is obvious with the rhetoric adopted. The president of Ufip, Mr. Schilansky has argued that “*exploiting the shale gas reserves would improve France’s balance of trade and create tens of thousands of job openings*” (Pialot, 2013), supporting values linked to **welfare** and **affordability** while he discards the argument that fracking is directly associated with the environmental dangers that is being accused of, as there is no solid proof. Thus, Ufip certainly puts aside values related to environmental

friendliness or at least is not that concerned with them the way other actors are. Finally, Schilansky has also urged the French government to establish a national debate on the issue and not make decisions on a unilateral level.

Regarding the French energy companies, although they have been fiercely trying to change the current status quo and regain the licences that were taken back by the French government with the imposition of the moratorium in 2011, they seem to have lost their motivation for struggling. Despite the fact that they were the ones bearing perhaps the biggest costs as their exploration licences were revoked, a number of dissatisfying judicial decisions led the different energy companies (i.e. Total, Schuepback) to seek their interests in other countries, including the United Kingdom. For these companies, the values are again the same as in the majority of the coalition of proponents, at least regarding the ones related to **security of supply** and **welfare** –“*shale gas can contribute significantly to the growing energy needs of our planet but also reduce the energy dependence of countries like France from the energy producing and exporting countries* (Total, 2009).

The rest of the actors in this coalition formed by the proponents of shale gas in France do not have a leading role as the actors analyzed so far. Actors like Louis Gallois or the Academy of Sciences and the Sia Conseil, have indeed expressed their support in regards to the exploration and possible profitable exploitation of this energy source but this has mainly occurred through the publication of reports that contain scientific information positive towards the extraction of shale gas. They are sharing the same values as the majority of the actors in the coalition, yet they are rather “along for the ride” than actually and actively struggling for the promotion of these values. As a summary, the leading actors in the French coalition that supports the extraction of shale gas have been mainly the Socialist Party members that support the exploitation and the unions or organizations deriving from the industrial sector, i.e. Medef and Ufip. The values that they have mainly promoted were linked to **welfare**, **affordability**, **security of supply** and **resource durability**.

In the opponents camp though, we find things a bit more consistent and organized. The opponents of shale gas in France have adopted a more rigid position than the proponents of shale gas, in the sense that they do not seem eager to abandon their ground nor succumb to the values promoted by the proponents. This antithesis can also be observed by the values that they intentionally and consciously are choosing to prioritize and promote them into a policy program.

Perhaps the biggest opponent of shale gas has been the group formed by members of the Socialist Party opposing the extraction of the shale gas. Represented by President Hollande and former Prime Minister Ayrault, the French government is strongly disagreeing to allowing the exploration of this energy source. Despite Hollande’s unstable position during the year 2012 – 2013, he remains concerned regarding the environmental challenges that shale gas might pose and as he stated “*at the present state of our knowledge, no one can say that the exploitation of shale gas and oil by hydraulic fracturing, the only technique known today, is free of major risks to health and the environment*” (AFP, 2012b), focusing in this way to the values of **environmental friendliness**, **health** and **safety**. Ayrault had gone a step further and argued that “*the position of the French government consists on working to prepare the energy transition, and shale gas is not in the equation of*

*the government*”, on the contrary, the aim “*is to reduce the energy consumption, and particularly the one of fossil fuels in our country by an offensive policy, energy efficiency and thus energy saving*” (AFP, 2013e), clearly emphasizing on the values closely linked to **sustainability**. The rest of the members of the Socialist Party that are opposing shale gas, usually with the Minister of Ecology, Sustainable Development and Energy at-the-time being a very active and vocal personality arguing against shale gas, are embracing exactly the same values and do not seem eager to retreat from their values and beliefs nor to even allow the proponents to gain any ground in this debate.

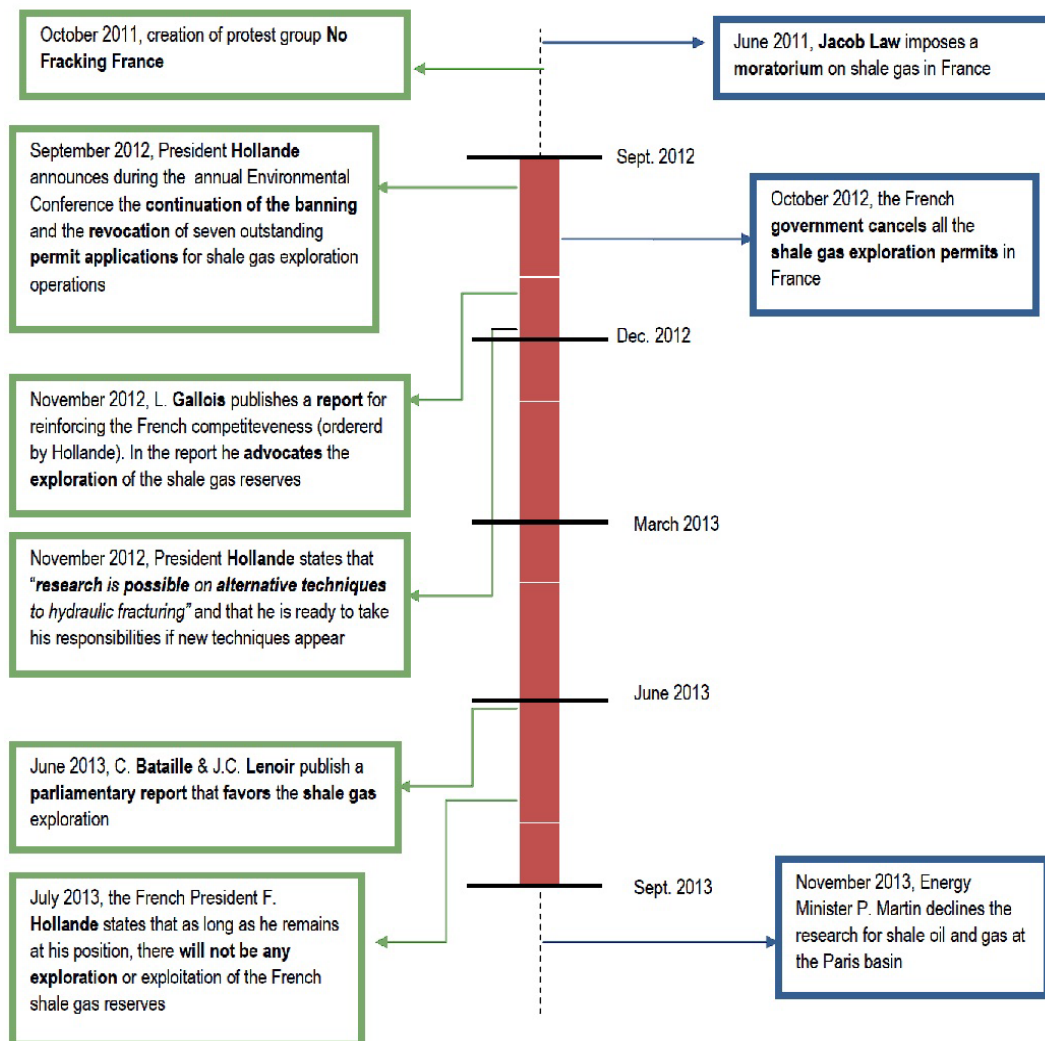
There is also another significant actor in the debate that belongs in the opponents’ coalition that comes as no surprise. Although it is not an actor with constant public appearances or statements regarding the issue under discussion, its position is certainly clear to all the other actors and is definitely a major player in the debate that can influence to a significant level the trajectory of it. This is no other than the French Green Party, the partner of the Socialist Party in the coalition government. The French Green Party is utterly opposing to any exploration and exploitation of the French shale gas reserves, as its extraction constitutes a red line that could lead to the collapse of the coalition government, something which is of course totally expected by a Party whose main values and interests are concentrated around the protection of the environment and the battle against climate change. The values of **environmental friendliness**, **health** and **safety** and **sustainability** are characterizing their statements and position, and they are not eager to even engage in a dialogue with the actors supporting shale gas.

The rest of the actors in the opponents’ coalition do not have a major leading role but they are rather gathering around the major actors and reinforcing their position. These actors are deriving from the wider society. NGOs, local and national protest groups and various other associations are embracing the same values as the actors mentioned above, -“*unconventional hydrocarbons are hazardous to health, the environment and the climate although they have become some kind of El Dorado for the various energy companies who are granted in recent years with research permits on French soil*” (France Nature Environnement, 2013a). Perhaps though due to the stability that has been established in the shale gas policy making sector after the imposition of the moratorium, these groups are more in a hibernate status waiting to be awoken in the case of a policy change that does not favor their interests and values.

The story so far shows that it is going to be quite difficult to actually proceed with the exploration, let alone the exploitation of the shale gas reserves in the country. Even though the French government excluded the possibility of an exploration at least until 2017, the general international unrest regarding shale gas has also alarmed environmentalists and citizens in France. As long as Hollande remains the President of France and the French Green Party is also a part of the coalition government, it is very unlikely –almost impossible- that any positive plans will be fulfilled. Despite the fact that the country is heavily dependent on gas imports, reaching up to 92.1% in 2010 (Shale Gas Europe, 2013), the policy makers (perhaps influenced also by the public’s opinion) are choosing not to try this controversial energy resource. As it appears based on the policies adopted so far, the French government has prioritized sustainability and environmental friendliness and placed it above the issue of national energy security.

Below follows the chronical representation of the main events that took place in France and the subsequent public policies adopted regarding shale gas, during the time period that is analyzed. As discussed above, we notice there is no significant policy change yet it is interesting noting the changes in Hollande's position and the secondary elements of the coalition's belief system that he mentioned and eventually withdrew.

Figure 4.4: Timeline of main events (left hand side/green boxes) and relevant public policies (right hand side/blue boxes) in France



## **CHAPTER 5**

### **5.1 APPLICATION OF SABATIER'S AND HAJER'S HYPOTHESES AND COMPARISON IN THE TWO CASE STUDIES**

From the analysis performed in chapters 3 and 4 result several interesting observations. As mentioned already in the theoretical part, the two cases served as a basis for comparing two competing theories which share though some similar points. This case analysis helped address the first research question that was related to the actors who have been involved in the shale gas debate and the values that they articulate in the overall discussion. The visual representation of the actors and their categorization according to the proponents and opponents of shale gas (as illustrated in the tables 3.2, 3.4, 4.2 and 4.3) assisted in clarifying the background of these actors but also showing how they position themselves in their debate. Eventually, based on the media analysis performed in the two chapters, the underlying values of the actors and the coalitions were extracted and further analyzed.

The second research question, concerning the relation between policy change and the position of the actors, has been a difficult one to answer and prove (due to the fact that there should be a strong measurable indicator) as the time frame chosen for analysis could not always be sufficient for facilitating a significant change (see for example the French case). Yet, through process tracing and with the creation of timelines which depicted major events and relevant public policies, a link was provided among the different changes in the coalitions' position and the changes that took place on a policy or governmental level.

The third research question that was related to the adequate media representation has been addressed throughout the analysis of the various actors and their values in the UK and France as performed in chapters 3 and 4. In these chapters and in order to verify the validity of the actors' statements as represented in the media, a simultaneous analysis was stimulated, where other sources were used. The data derived mainly from personal websites, interviews, reports and other direct sources of data created by the actors themselves.

This final chapter will help answering the last but not least research question. This research question is linked to the application of the theories of Sabatier and Hajer to the case studies. The next two subchapters will provide a theoretical reflection of the two theories on the case studies analyzed earlier. With the use of competing hypotheses formed in the theoretical chapter (2.1) Sabatier's advocacy coalition framework theory and Hajer's discourse analysis theory will be tested upon the cases. Such an theoretical application on the empirical material will present the strong and weak points of the theories and perhaps even help to provide a bridge, a link between the two widely used policy theories.

Below follows this comparative analysis, starting first with the application of the two theories in the UK case and later in the French one. The hypotheses that were formed earlier will provide the guidance needed for estimating and discovering which theories understands and explains in a better way

each case, which of their concepts actually are applicable in the cases and which are the weak points of the two theories when implemented on these two distinct case studies.

First of all, the value tree (Taebi et al) that was introduced in the theoretical framework in chapter 2 has some limitations regarding its applicability on energy debates. It is evident that many of the values mentioned in the value tree did prevail in the UK case, yet it is important to note that not all of them were addressed in the same way nor they have the same gravity for the actors participating in the debate. The same can definitely be said for the French case. Furthermore, there are some values that are greatly prioritized. The proponents are supporting values linked to welfare and security of supply while the opponents are much more concerned about promoting the values connected to health and safety, environmental friendliness and sustainability.

Below follows the individual application of the theories of Sabatier and Hajer on the two case studies and the examination of the theories' strong and weak points.

### **Theoretical reflection on the UK case**

What is noticeable in the UK case is the policy changes that took place within less than two years. From the granting of drilling licenses, to their revocation and the imposition of a moratorium that lasted though only eighteen months and the final encouragement for further exploration and exploitation plans provided by the UK government, shows that there have been swift changes moving from one side of the spectrum to the complete opposite.

The proponents of shale gas in the UK seem to have the upper hand as the last policy program that has been introduced as described in this paper, is favoring their interests and promoting their values. The UK government, a strong proponent of shale gas is adopting narratives that show the positive stance towards the shale gas. This statement is verified by the analysis performed in chapter 3.3 where the statements of the government were linked to values underlying their position. This rhetoric is also induced in the relevant policy programs, with reports published by governmental and non- organizations (see DECC and British Geological Survey) that provide a "legitimation" of the arguments supported by the UK government as they include technical and scientific information, brought into these reports.

The energy companies are definitely reinforcing these narratives created by the UK government. The frequent indication of examples of successful shale gas extraction (mainly referring to the USA), provides some kind of a norm of conformity regarding the positive outcome that shale gas can create that the proponents are seeking for in order to reassure the actors opposing to the extraction of shale gas.

We also observe that the actors are gradually altering their position as the shale gas debate is evolving. A bright example is the DECC and the Secretary of State for Energy and Climate Change, Ed Davey. Initially, also due to the earth tremors caused by fracking in the UK, the DECC had been much more skeptical in openly supporting the extraction of the gas. The imposition of the moratorium did not find the DECC against it, as values linked to health and safety were mentioned. Yet, the coming lift of the ban on shale gas, brought a change not only in the policy sector but also in the stance of the DECC that is

now openly supporting the exploration and exploitation of the shale gas reserves in the UK. We see here that changes in the policy programs brought also significant changes in the values that certain actors were promoting. Such a statement is supporting Hajer's idea due to policy programs communities might be created that are seeking to change it as it affects their core interests and values. Perhaps due to the precarious position (being responsible in this case for the Environmental and Climate Change policies of the country), the DECC was not eager to make any strong statements or commitments on shale gas, before the UK government gave the green light and confirm their support through an established policy program. The Energy and Climate Change Select Committee is again a similar example of how the values and the position of an actor changes in accordance with a policy change that was initiated by the government.

For the majority of the other actors though, we do see a stability regarding the values and interests that they have been promoting throughout the whole debate. The major proponents of shale gas (UK government and energy companies) have adopted since the early discussions on the shale gas extractability a very strong-minded stance and they have stuck to their grounds ever since, embellishing though sometimes their rhetoric with elements that could perhaps provide some kind of reassurance or consolation to their opponents, for example when they introduce concepts linked to environmental friendliness or sustainability in their discourse. The opponents of shale gas in the UK have definitely adopted an even more rigid stance and from what it has been noticed, they are not keen on finding a middle solution as for them the promotion of their values is a non-negotiable task.

Regarding now the hypotheses formed in chapter 2.1, let us test the first two hypotheses.

- Hypothesis 1a: *Within the subsystem, it is assumed that actors can be aggregated into a number of advocacy coalitions composed of people from various governmental and private organizations who share a set of normative and causal beliefs and who often act in concert)*
- Hypothesis 1b: *It is a policy program that triggers shared preferences by actors who recognize a bond because they are all potentially affected by it*

These hypotheses concern the driving forces that lead to the creation of a coalition but also the reason of existence of these coalitions. Sabatier takes these coalitions as a priori, pre-existing of the relevant policy program while Hajer has the opposite idea, arguing that they are created ad hoc, in order to address a current issue.

In the UK case, both of these hypotheses can be applied. The UK has been trying for a long time to strengthen the country's energy independence as part of the hegemonic agenda that the UK has adopted. Thus, the UK government had already prioritized the values that wanted to promote, before the establishment of the relevant policy that was eventually adopted. This fact agrees with Sabatier' idea of a priori coalitions. The same counts for the energy companies. They had consciously chosen to promote the values of welfare, affordability, security of supply and resource durability, even before the implementation



of the moratorium or the ban of it. The extraction of shale gas and the hunt for energy resources that they can make a profit out of, is part of their core interests and values. The UK has been trying for a long time to strengthen the country's energy independence as part of the hegemonic agenda that the UK has adopted. Thus, when the moratorium was imposed due to the existence of tangible facts that connected the shale gas extraction to the earth tremors (having thus an impact on the sensitive values of health and safety), this came as a direct threat to the promotion of their beliefs and both the government and the energy companies pursued a policy change. The scientific information that was presented in order to reinforce their position (see for example the report by the Royal Society and the Royal Academy of Engineering), acted as a legitimizing act for the upcoming policy changes that were established within some months after the publication of these reports.

On the other side though, there have also been actors who were brought in a coalition because they were directly affected by the policy programs adopted. This counts especially for the various protests groups that were formed in the UK in order to protest against shale gas, and even more in particular the local protest groups that were created by local communities, citizens that were or would be impacted by the extraction of shale gas its potential dangers. Thus, agreeing with Hajer's hypothesis, these "communities of fate" were formed as a response to the government's plans that allowed the creation of shale gas exploration and exploitation sites by the energy companies.

- Hypothesis 2a: *On major controversies within a policy subsystem where core beliefs are in dispute, the lineup of allies and opponents tends to be rather stable over periods of a decade or so)*
- Hypothesis 2b: *In many cases it is a public policy initiative that triggers people to reflect on what they really value, and that motivates them to voice their concerns or wishes and become politically active themselves*

These two hypotheses were formed in order to understand the changes or the absences of changes in the composition of a coalition. Sabatier argued that coalitions where the actors are sharing the same beliefs and values tend to be stable over a period of a decade or so, rejecting the idea that actors change their core beliefs and move from one coalition to another in a short time period. Hajer on the other hand has supported the idea that these communities were formed as a response to a certain policy program in order to defend and promote their narratives. Once these narratives are fulfilled with a policy change that favors them, then it is most likely that the communities will be dissolved into the wider system again from where they were initially created.

Testing these two hypotheses has a limitation in this paper as the shale gas debate has only recently developed in the Europe, including the UK. Additionally, the research and the media analysis have been performed based on a certain time frame, starting mainly from September 2011 until September 2012. This period contains several important events, yet of course events prior or after this frame are also taken into consideration. Thus, it makes it difficult to present major policy changes within this short time

period. Luckily though for the UK case, there have been some swift changes in the government's policy agenda regarding shale gas.

In this case, Hajer's hypothesis regarding the changes within a coalition provides a better explanation. Many of the opponents have been created only as a response to the shale gas threat (see Frack off, local protest groups etc.). These actors did not pre-exist the debate and in some cases they were created only once the drilling plans of the companies were taking a more local character, something that would act as a trigger for the formation of local protest groups. Additionally, Sabatier is not able to explain the changes and the additions in a coalition. The main example here is the DECC and Ed Davey as analyzed earlier. This actor moved from adopting a mediocre and diplomatic stance to fully embracing the proponent's position and their beliefs.

Sabatier's hypothesis though helps understand the stability within the core of the coalitions in the UK, mainly though for the leading actors. The leading actors in both coalitions formed have had core values since the formation of the coalitions/communities within which they belong. The main proponents of shale gas, especially the UK government and the energy companies (with the exception of the DECC) have been promoting the same values (welfare, affordability) ever since the coalition was formed. As already mentioned, the main elements within the coalition have not changed. However, the proponents in the coalition have been eager to give away secondary values and acknowledge the beliefs of the opponents in an effort to create some common ground that could potentially help them adopt a policy program to their benefit (see later also the link to hypothesis 4).

- Hypothesis 3a: *Coalitions seek to translate their beliefs into public policies or programs (which usually consist of a set of goals and directions, or empowerments, to administrative agencies for implementing those goals)*
- Hypothesis 3b: *Policy making leads to the creation of communities that for themselves have to determine what constitutes legitimate decision in a particular instance*

These hypotheses were used in order to test the scope and the general motivation of the coalitions formed. Sabatier argues that the coalitions and the actors that compose them are pursuing to influence governmental policy making and promote the establishment of a policy program that incorporates their beliefs and interests. Thus it seems that for Sabatier there is an existing policy issue and the actors who have a predetermined goal are trying to translate their values into a policy program that will work to their advantage. Hajer's hypothesis though differs as the coalitions formed usually do not have such a long-term character. They are normally striving to achieve a policy change of an already established program since they are directly influenced by it. For Hajer, the communities of fate usually have a temporary and self-interest character and once they achieve their primary goals, they are integrated again in the system. Both of these two hypotheses can be partially applied to the UK case and help explain some of the events. Actors like the UK government has had for a long time the promotion of shale gas in their policy agenda, perhaps ever since its first success stories were heard from the USA somewhere mid-2000s,

yet external factors (the uprising of the wider society) were not allowing them to implement a policy that favored their beliefs. The pursuit of the extraction of shale gas and the orchestration of this pursuit has been performed in a consistent manner. The same counts for the energy companies that are always seeking alternative and profitable sources of energy that they can exploit. Thus, as soon as the energy companies in the USA started to share the “good news” about shale gas, it drew the attention of the UK energy companies (this is proven by commercial agreements that were signed between energy companies in the two countries). These actors have had a really specific agenda when it comes to shale gas. They were aware of the beginning on what their target was, and in the end, they are the ones that laid first the foundations that sparked this debate.

There are other actors though who only started to become more active once a policy program adopted by the government affected their core values. This can primarily be said for the local protests groups. The granting of drilling licenses in their local neighborhood has the act that ignited social unrest and civil protests from the citizens residing nearby the proposed operation sites. The majority of these citizens most likely were not participating in other activist groups protesting against shale gas. However, as soon as they discovered that there were drilling plans that would have a great impact in their neighborhood and perhaps endanger their health and safety or damage the environment and deform their local nature; these citizens came together, formed protest groups as a sign of disapproval of the government’s decision and pursued to change this decision. This could indicate that there can be actors who have formed or joined a coalition yet before a certain policy program was established, they were not really aware of some of their core values. The establishment of this policy program that affected their interests acting in a way as an alarm that “awoke” their core beliefs and forced them to take action in order to protect them, making them also aware of their core values.

- Hypothesis 4: *An actor (or coalition) will give up secondary aspects of a belief system before acknowledging weaknesses in the policy core.*

The last hypothesis regarding the assumption that actors are more eager to give up their secondary beliefs before moving to the core ones, was not formed in order to be tested against a competing one. This hypothesis chosen as it has potential to show the changes in the actors’ position and in the values that they promote. A prime example is the position of the DECC as analyzed so far. This ministerial department changed from an initial compromising position which was placing values linked to environmental friendliness and health and safety as important ones (yet not as substantive values) to the other side, fully promoting the values of welfare, affordability and security of supply. Such a change was performed within a period of a year more or less and shows how this actor chose to give up secondary elements of its belief system with the rise of new technical information that was reinforcing the core values. The same counts for the Energy and Climate Change Select Committee, where two different reports show how the prioritization of the values changed within a time period of 2 years, reinforcing in

this way Sabatier's hypothesis that actors will give up easier their secondary aspects from their belief system before doing the same for the core ones.

### **Theoretical reflection on the French case**

Regarding the French case, and contrary to the UK case, it is crucial to note one more time that during the time period under examination, there has not been any policy change in the program that was established and the 2011 moratorium which was imposed is still valid. So far, there has been indeed stability regarding the relevant policy on shale gas. The same thing cannot not be said though for the positions of some actors (see later President Hollande).

In France, we notice that the proponents of the shale gas in France are characterized by a flexibility regarding their position. Actors like the proponents of shale gas from the Socialist Party or the UMP are promoting values related to welfare and affordability but they have also acknowledged that it is important to take into consideration the values linked to health and safety and primarily the values associated with environmental friendliness and sustainability. Their social status as actors positioned in the societal sphere, being representatives of the wider society and also being responsible of the defense and promotion of the interests of the people who have elected them could offer an explanation on this event. These actors deriving from the political sector seem more eager to adopt a stance more compromising and refrain from any radical argumentation which could bring negative results. The political cost of a wrong decision or position could have a great impact on these political actors, and therefore presenting a diplomatic stance seems like a safer choice. This variety of opinions shows that the coalition is not characterized by homogeneity regarding the secondary values (especially those associated with environmental friendliness and sustainability), yet there is consistency when it comes to the core values of the coalition.

There have been though other proponents in France who have embraced a more vigorous position regarding the future of shale gas in the country. These are the actors deriving from the industrial sector, referring mainly to Medef and Uip. These two actors not only promote zealously values of welfare, affordability and security of supply, but they also have not given any ground to the opponents' allegations concerning the potential challenges that shale gas could pose. The proponents of shale gas have extensively used paradigms referring to the US "success story", yet with a different approach. The actors who had a more compromising position like the supporters from the Socialist Party have acknowledged the possible dangers that shale gas can pose and suggested the search of alternative solutions. The actors coming from the industry sector though have argued that even in the US example no linkage has been found between the shale gas extraction and the alleged dangers. Regardless of the minor disagreement on the secondary values that the coalition is promoting, there has not been any major change neither in the composition of this coalition nor in the substantive values that they have been promoting from the beginning of the debate in France.

In the opponents' coalition, there has not been a major change either. Values connected to environmental friendliness, sustainability, health and safety are strongly promoted by every actor within the coalition. Additionally, compared to the proponents and similar to the UK opponents, the French opponents of shale gas are not willing to put aside any of their core values nor they are eager to take into consideration any of the proponents' beliefs. The opponents of shale gas belonging in the French Socialist Party constitute a strong actor within the coalition and also a leading one in the overall debate. President Hollande and the former Prime Minister Ayrault have been representing not only the Socialist Party but have also been the government's voice, expressing the official governmental position concerning shale gas. For them, the main values that need to be promoted are the ones linked to environmental friendliness and sustainability and as a consequence, there is no place and future in the shale gas exploitation in France.

However, what needs to be noticed here is Hollande's change of position (although there was no change in the relevant introduced policy program) from September 2012 until September 2013. Starting first with a position that fully embraced the value of environmental friendliness, Hollande seemed to be giving some way to the proponents' argumentation in November 2012 as the debate was starting to heat, in an effort perhaps to build a bridge between the two coalitions, due to his pivotal role. However, possibly due to the pressure posed by the Green Party that showed its strong disagreement during the first semester of 2013, Hollande declared in summer 2013 that there will not be any exploration plans as long as he remains the French President. We notice here that actors within a coalition might change elements in their discourse as a debate evolves. Various reasons can lead to such a change, in this case external factors (the pressure from the proponents for considering the shale gas option) but also internal ones (pressure posed from within the coalition). The members of the Socialist Party that oppose to the exploitation of shale gas are reinforced in their efforts by the Green Party. The Green Party is not that actively involved in the debate (compared to other actors) as due to the great influence it has in the coalition government, expects in a way the ruling administration to act according to its core beliefs. In a different case, non-compliance from their political partners could lead to a political break-up with immense consequences for the Socialist Party. This actor is not willing to compromise neither its core beliefs nor the secondary elements of its belief system and has stated very clearly which its values are.

The hypotheses formed in the theoretical chapter will help understand the strong and the weak points of the relevant theories introduced, similar to the UK case. The first two hypotheses, 1a and 1b, were formed in regards with the driving forces that lead the actors to form or join a coalition. What can be observed in the French case is that the majority of these coalitions existed before the specific policy issue that concerns the future of shale gas. The coalitions are trying to influence the government's decision and achieve a policy change, yet this is not their *raison d'être*, the reason that these coalitions or communities exist. On the contrary, they pre-existed the policy program that was established in 2011. These coalitions have a wide variety of goals and different sets of objectives in their agenda and the promotion (or not) of shale gas happens to fall within this wider agenda. More importantly, these coalitions have already some established sets of beliefs and values and they are acting in accordance with them. Even for the Socialist Party, there has already been noticed an ideological split, especially concerning the position that needs to

be adopted towards the economic crisis and the actions need to be taken. With these observations, it appears that Sabatier's idea of *a priori* coalitions that start to mobilize when a policy issue concerns them, offers a better explanation for the French coalitions (hypothesis 1a) since it was not a single policy program that triggered the creation of these coalitions.

The hypotheses 2a and 2b were formed in regards with the composition of the coalition and the changes that might occur (either in the values of the actors or even when actors might move from one coalition to another). In France we find that no major changes have occurred relating to the values of the actors and their position, with only one exception. During the small time period that is under examination, there have not been any major observations concerning changes, reinforcing in a way Sabatier's argument of stability in the coalitions for a period of a decade or so. There has been though one peculiar case that needs to be mentioned and this is the position of President Hollande. He started by adopting a strong opposing stance against shale gas only to change his position after some months from his initial statements, giving hope that shale gas might be an option for France (under certain circumstances). Such a change in position can be linked to the general uncertainty that characterized the actors, the blurred values that they had in the beginning of the debate and the pressure posed by the proponents once the debate started. Eventually though, Hollande not only retreated back to his original position but he also adopted an even more strict discourse. What is also strange here is the role of technical information in the President's position. Actors who were commissioned to undertake a research on the potential of shale gas (i.e. L. Gallois who was assigned to do so by the government but also the report published by Bataille and Lenoir), were not taken into consideration by the government and by the President, although they were favorable towards the exploration of the shale gas reserves in France. This could prove that the internal pressure in the coalition posed by the Green Party is quite strong and giving the green light to the exploration of shale gas could be a deal breaker which could even lead to the collapse of the French coalition government. Such an event shows that there can be parameters within a coalition that can affect its dynamics. In this case, changes in the coalition are controlled to a certain extent by a single actor which is the Green Party.

Sabatier's hypothesis regarding the stability in the composition of the coalitions for a time period of a decade seems applicable here. Precisely to the fact that they have various reasons for existence and objectives reaching beyond the promotion (or discouragement) of shale gas, it is most likely that they will remain in the same formation (more or less), promoting the same values for various policy issues and trying to influence a specific policy, rejecting in this way Hajer's perception of coalitions that will "fade away" once a satisfactory solution is found.

Continuing with the same logic and in relation with hypotheses 3a and 3b, these coalitions that were formed in order to promote their values and influence the government's policy decisions, have a more general and broad scope. They are trying indeed to turn the debate and the policy linked to shale gas to their advantage, yet the coalition formed most likely would not cease to exist once their goal is achieved. On the contrary, probably the French actors in the coalition will turn towards as different policy issue that touches upon their interests and needs to be addressed. Additionally, the flexibility or the lack of

it concerning the actors' values in the debate is not necessarily a standard characteristic of the coalition as it is possible that the coalition is more rigid or more flexible regarding other policy issues. It is possible that the Green Party is adopting a different stance concerning other issues or on the other side, the proponents of shale gas that form the coalition are not willing to negotiate their values in other debates.

Thus, by comparing the hypotheses 3a and 3b we find that in both cases, the different actors, either they belong in the proponents' side or the opponents', are motivated to form coalitions as a means of influencing the government's decision on different issues and not exclusively on a single one as Hajer is implying. Sabatier's hypothesis (no.3a), offers a better explanation on the objectives set by the actors and the role of the coalitions in fulfilling these objectives since the coalitions formed are acting in a broader context.

With reference to the final hypothesis (no.4), it is assumed that actors are more eager to give up secondary elements from their belief system before doing the same with the core values. Such an assumption can be verified in the French case with actors like the Socialist supporters of shale gas. These actors are refraining from adopting a rigid and inflexible position but they are rather taking into consideration secondary values to them (i.e. environmental friendliness) and perhaps they are willing to give away their own secondary elements of their belief system (i.e. the method of extracting shale gas). However, they are not giving up their core values (welfare and security of supply). Such a hypothesis offers a sound basis for understanding changes in the position of the actors but also in the set of values which they are promoting. The secondary beliefs of certain actors or coalitions seem to provide room for negotiation and based on the flexibility of the other side, these actors are forming their position. The same can be considered for Hollande's change of position as analyzed above. Despite the fact that he widened his discourse and he included elements different from the ones he was initially supporting, he actually never gave up the core values that he was representing from the beginning of the debate.

### **Final Conclusions**

What comes as a conclusion from the analysis of these two case studies is that both theories have strong points and valid concepts introduced, yet none of them is sufficient enough to fully explain the debate and describe the coalitions and their changes. On the contrary, it appears that in both cases the theories were complementing each other and combined they could provide a better understanding of the different events. What could increase the applicability of the two theories would be the induction of some tentative conditions based on the limitations of the two theories which appeared in the two case studies which were examined in this paper.

The analysis shows that Sabatier's theory on the advocacy coalition framework and the idea he has regarding the stability of coalitions and their belief systems is applicable under the condition that the deep core values and beliefs are at stake. In this case, when the core values are contested by a different coalition or when the coalition is trying to channel its core beliefs into a policy program, then there is indeed stability in the coalition's composition and substantive values. Yet these core elements that Sabatier

is debating are part of a broader belief system of the coalition which does not only apply to the issue at stake. Coalitions with a broader agenda extended beyond the shale gas topic, had already established their core values before the emergence of this issue. These coalitions have well-formed views about the wider society that refer for example to the relationship between economy and ecology or between the industry and the environment, the significance of economic development and the limits of the energy market. Therefore, these coalitions created under these circumstances have not suffered any major changes but are rather characterized by stability which is what Sabatier is arguing.

Hajer's theory would apply better on similar cases given that the coalitions are formed in relation to a specific issue. Under the condition that a coalition is formed as a direct response to a specific issue and assuming that there are mainly core values the ones that are contested, Hajer's idea of communities of fate works better. We see in the analysis of the two cases that the local protest groups which were attached to specific interests (i.e. the environmental challenges of shale gas), were explained much more sufficiently under Hajer's point of view.

Regarding the first two hypotheses, both of them can contribute to this paper. Sabatier can explain coalitions formed prior to a policy program while he promotes the idea that the actors have pre-determined values. We notice that some actors deriving mainly from the policy sector in both cases had established their core values before the relevant policy programs were introduced and they brought them into the coalitions (i.e. UK government, energy companies, NGOs). This is true to a certain extent. The actors have indeed core values yet they are also adapting the secondary ones as the debate is evolving (see Hollande, Montebourg). Additionally, Sabatier does not offer a solid explanation on actors who changed essential values and move from one coalition to another (as happened with the DECC and the Energy and Climate Change Select Committee).

Hajer's hypothesis is really helpful in explaining all these local protests groups and coalitions that were formed once the debate started. Hajer though does not provide a clarification on whether these communities had the same values before a policy program was established or before the debate was initiated. Nevertheless, it would be wrong to reject the idea that these actors did not promote the same or similar values before the debate. Perhaps a more satisfactory explanation would be to suggest that the substantive values did indeed pre-exist, yet the adoption of a specific policy led to their ignition and the values were in a way "woken up".

Regarding the hypotheses 2a and 2b, Sabatier's idea of a decennial stability era finds limitations in the UK case, where indeed external factors led to policy changes with their core values being in dispute (imposition of a moratorium and lift of it). Sabatier has provided an explanation where external factors can affect policy change within subsystem. For example dynamic system events (socioeconomic conditions and technology and systemic governing coalitions can lead to changes either of a governmental action program or of the actors' position and core beliefs (Sabatier, 1993). Consequently, actors do not always adopt a standard position that stays fixed. On the contrary, actors are usually re-evaluating the values that they promote and they tend to prioritize them to core/substantive values and secondary ones.



And this leads as a consequence to changes within the coalitions. Probably though these coalitions will continue to exist even after the policy issue that concerns shale gas is addressed.

Hajer provides a good explanation for short-term coalitions and their dynamics. He approaches policy change from a societal point of view where citizens are not always actively involved in politics and policy making processes unless a policy issue directly affects their interests. The discourse that they engage in reveals this set of values, interests, beliefs and objectives that were ignited by a certain policy. Usually these coalitions are grouped around really specific interests and are promoting a set of values that is directly linked to these interests. And most likely, as their efforts are concentrated around a really specific policy, as soon as they have achieved their goals, the coalitions will cease to exist or become less active.

The final two hypotheses which are compared, 3a and 3b, are both applicable in both cases, yet none of them is able to provide a full explanation on the entire case. The coalitions formed and existed prior to the policy programs introduced, have been trying to influence various governmental decisions in favour of their values and interests. In the UK for example the coalition formed between the government, the energy companies and the various ministerial departments but also in France the Ministerial department for Industrial Renewal and the energy companies or from the other side the current government and the Green Party, are all coalitions that are struggling to promote their values and translate them in a specific program. This promotion of values and interests is part of a broader scope and policy agenda.

However, Hajer's hypothesis is also correct. The short-term character of the communities formed is eminent as for example local protest groups formed in France were only active for a short period mainly when the debate was starting to get heated up or when there was a possibility for a policy change against their values. Nonetheless, the active participation of the coalitions occurs only during some specific time periods and after these periods, they cease to be as actively involved in the debate as other actors do. This could be explained by the fact that the current policy status does not oppose their values but on the contrary, it reinforces them. The same counts for the UK local protests which have been formed as a means of protesting against the extraction of shale gas. Yet their public appearances and the intensity of their protests increases or decreases as the debate heats up or cools down. Consequently, the objectives of these communities remain the same (which is to achieve a policy change or preserve the existing one), yet the intensity of fighting for their causes adapts to the general debate.

The final hypothesis, number 4, does not have an opposing one, since it was introduced as a hypothesis which could explain the changes in the values that the actors are promoting and their relevant position. The hypothesis as formed by Sabatier is confirmed in both cases where various actors chose to include secondary values in their discourse (i.e. the UK government and energy companies) or gave up secondary aspects from their belief system (i.e. the proponents from the Socialist Party) in order to present a more compromising position to the other side; a position that takes into consideration the values of the opposite coalitions but does not give up the core elements that are crucial to promote. However, the dynamics of the secondary elements of the belief systems of the actors or the coalition can also be linked to Hajer's "volatility" of belief systems. In this case, coalitions and their core elements are related to

the issue at stake every time and they can be formed as easily as they can be dissolved. This final hypothesis concerning the role of the secondary elements of the coalition's belief system is supported in both theories, either directly (Sabatier) or indirectly (Hajer) and this overlap reconciles in a way the two competing theories.

It appears that all hypotheses contribute to both cases, although they are sufficient to explain merely certain aspects. Although the two theories seem to be developing towards opposing directions, they do have a common basis: the role of core and secondary elements in the coalition's belief system. Both theories reason that core values are at stake, coalitions gather around the core values and place the secondary ones aside.

In conclusion, the two theories were tested on a public issue that concerns an on growing number of countries in Europe. The establishment of policy programs or policy changes of these programs that are related to the exploitation of shale gas has become a priority for some actors. Ultimately, this paper could serve as a basis for further reflection on two widely used theories by academics and perhaps this thesis can help to provide some ground for a new theory that comprises the two theories. A theory that uses the strong points of Sabatier and Hajer yet addresses their weak ones and provides a better explanation in a world characterized by a constant fluidity but at the same time maintains a sense of stability and traditionality.

## APPENDIX

### APPENDIX 1: License-granting procedure in the UK

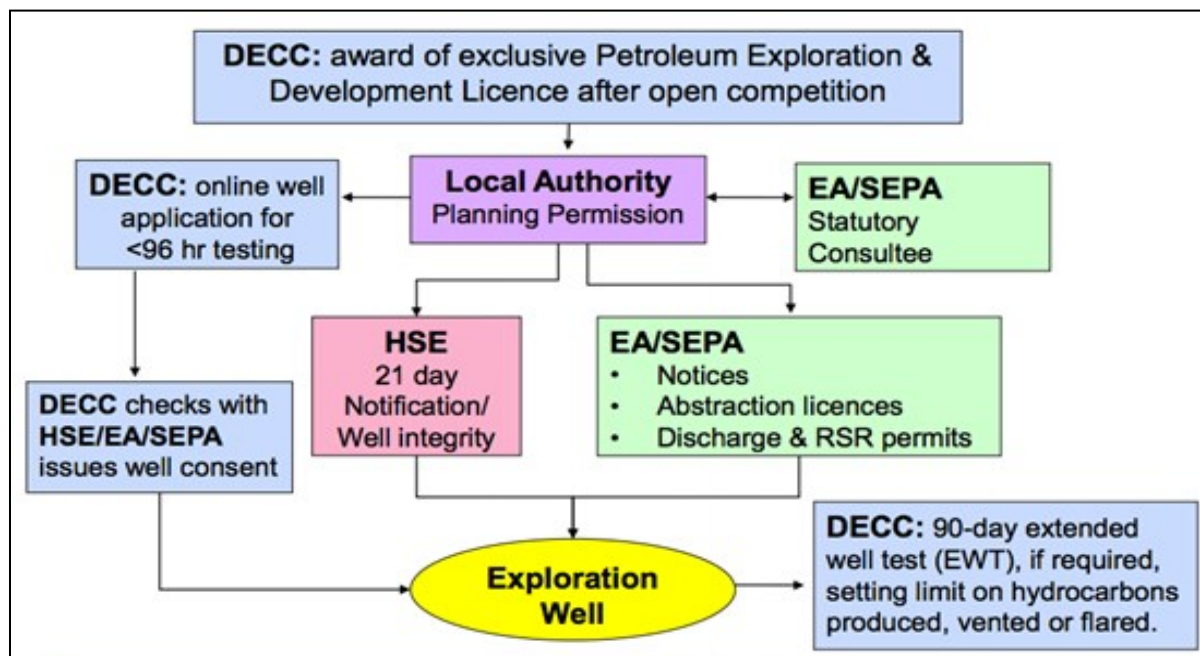


Image Source: Robin Webster, "Is David Cameron right to be confident in the UK's shale gas regulation?", 12 August 2013, [www.carbonbrief.org](http://www.carbonbrief.org).

## **REFERENCES**

- Académie des sciences. (2013). *Éléments pour éclairer le débat sur les gaz de schiste*. Paris. Retrieved from <http://www.academie-sciences.fr/activite/rapport/avis151113.pdf>
- AFP. (2012a). Gaz de schiste: Hollande rappelle que la recherche d'autres techniques "continue". *Agence France-Presse (AFP)*. Retrieved from <http://www.afp.com/fr/node/677597/>
- AFP. (2012b, September). Gaz de schiste : sept demandes de permis vont être rejetées. *Le Point.fr*. Retrieved from [http://www.lepoint.fr/societe/gaz-de-schiste-sept-demandes-de-permis-vont-etre-rejetees-14-09-2012-1506211\\_23.php](http://www.lepoint.fr/societe/gaz-de-schiste-sept-demandes-de-permis-vont-etre-rejetees-14-09-2012-1506211_23.php)
- AFP. (2012c, November 5). On ne peut pas éternellement écarter le gaz de schiste, estime Vidalies. *Libération*. Retrieved from [http://www.liberation.fr/economie/2012/11/05/on-ne-peut-pas-eternellement-ecarter-le-gaz-de-schiste-estime-vidalies\\_858199](http://www.liberation.fr/economie/2012/11/05/on-ne-peut-pas-eternellement-ecarter-le-gaz-de-schiste-estime-vidalies_858199)
- AFP. (2012d, November 5). Gaz de Schiste : ne pas fermer la porte aux expérimentations (Copé). *L'Expansion*. Retrieved from [http://lexpansion.lexpress.fr/economie/gaz-de-schiste-ne-pas-fermer-la-porte-aux-experimentations-cope\\_357899.html](http://lexpansion.lexpress.fr/economie/gaz-de-schiste-ne-pas-fermer-la-porte-aux-experimentations-cope_357899.html)
- AFP. (2013a). Gaz de schiste: Placé (EELV) juge Montebourg nuisible pour l'écologie et le gouvernement. *Romandie*. Retrieved from [http://www.romandie.com/news/n/\\_Gaz\\_de\\_schiste\\_Place\\_EELV\\_juge\\_Montebourg\\_nuisible\\_pour\\_l\\_ecologie\\_et\\_le\\_gouvernement22110720131056.asp](http://www.romandie.com/news/n/_Gaz_de_schiste_Place_EELV_juge_Montebourg_nuisible_pour_l_ecologie_et_le_gouvernement22110720131056.asp)
- AFP. (2013b, July). Le Foll critique Montebourg sur le gaz de schiste. *Le Point.fr*. Retrieved from [http://www.lepoint.fr/economie/le-foll-critique-montebourg-sur-le-gaz-de-schiste-11-07-2013-1702924\\_28.php](http://www.lepoint.fr/economie/le-foll-critique-montebourg-sur-le-gaz-de-schiste-11-07-2013-1702924_28.php)
- AFP. (2013c, July 10). Montebourg prône un groupe public pour exploiter les gaz de schiste. *Libération*. Retrieved from [http://www.liberation.fr/economie/2013/07/10/montebourg-prone-un-groupe-public-pour-exploiter-les-gaz-de-schiste\\_917312](http://www.liberation.fr/economie/2013/07/10/montebourg-prone-un-groupe-public-pour-exploiter-les-gaz-de-schiste_917312)
- AFP. (2013d, July 11). Batho appelle Ayrault à «lever l'ambiguïté» sur les gaz de schiste. *Libération*. Retrieved from [http://www.liberation.fr/politiques/2013/07/11/le-choix-de-montebourg-sur-les-gaz-de-schiste-pas-coherent-selon-le-foll\\_917536](http://www.liberation.fr/politiques/2013/07/11/le-choix-de-montebourg-sur-les-gaz-de-schiste-pas-coherent-selon-le-foll_917536)
- AFP. (2013e, July 11). Ayrault : «Il est exclu d'exploiter des gaz de schiste en France». *Libération*. Retrieved from [http://www.liberation.fr/politiques/2013/07/11/ayrault-il-est-exclu-d-exploiter-des-gaz-de-schiste-en-france\\_917626](http://www.liberation.fr/politiques/2013/07/11/ayrault-il-est-exclu-d-exploiter-des-gaz-de-schiste-en-france_917626)
- AFP. (2013f, July 13). Gaz de schiste: "inouï" de vivre sur des "interdits" (Bataille, PS). *Le Parisien*. Retrieved from <http://www.leparisien.fr/lille-59000/gaz-de-schiste-inouï-de-vivre-sur-des-interdits-bataille-ps-15-07-2013-2984233.php>
- AFP. (2013g, August). Gaz de schiste : Fioraso refuse de développer des programmes de recherche publique. *Libération*. Retrieved from [http://www.liberation.fr/economie/2013/08/04/gaz-de-schiste-fioraso-refuse-de-developper-des-programmes-de-recherche-publique\\_922730](http://www.liberation.fr/economie/2013/08/04/gaz-de-schiste-fioraso-refuse-de-developper-des-programmes-de-recherche-publique_922730)
- AFP. (2014, February). Gaz de schiste : le secteur pétrolier français continue de plaider pour. *Le Point.fr*. Retrieved from [http://www.lepoint.fr/economie/gaz-de-schiste-le-secteur-petrolier-francais-continue-de-plaider-pour-05-02-2014-1788281\\_28.php](http://www.lepoint.fr/economie/gaz-de-schiste-le-secteur-petrolier-francais-continue-de-plaider-pour-05-02-2014-1788281_28.php)

- AFP, & A.D. (2013). Gaz de schiste: Montebourg “va trop vite”, selon Le Roux. *BFMTV*. Retrieved from <http://www.bfmtv.com/politique/gaz-schiste-montebourg-va-vite-selon-roux-557578.html>
- Ashton, J., & Bawden, T. (2012, March 26). Fracking could bring UK 50,000 jobs, says Browne. *The Independent*. Retrieved from <http://www.independent.co.uk/news/business/news/fracking-could-bring-uk-50000-jobs-says-browne-7585027.html>
- Association Santé Environnement France. (2013). Qui Sommes Nous? *Association Santé Environnement France*. Retrieved March 9, 2014, from <http://www.asef-asso.fr/qui-sommes-nous>
- Bakewell, S. (2012). U.K. Government Lifts Ban on Shale Gas Fracking. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/2012-12-13/u-k-government-lifts-ban-on-shale-gas-fracking.html>
- Barral, A.-L. (2013). Batho répond à Parisot sur les gaz de schiste : “Il y a une limite au marché”. *FranceInfo*. Retrieved from <http://www.franceinfo.fr/politique/batho-repond-a-parisot-sur-le-gaz-de-schiste-il-y-a-une-limite-au-marche-963871-2013-04-24>
- Baudet M. B. (2013, July 15). François Hollande et le gaz de schiste : vers un tournant majeur ? *Le Monde*. Retrieved from [http://www.lemonde.fr/planete/article/2013/07/15/francois-hollande-et-le-gaz-de-schiste-vers-un-tournant-majeur\\_3447615\\_3244.html](http://www.lemonde.fr/planete/article/2013/07/15/francois-hollande-et-le-gaz-de-schiste-vers-un-tournant-majeur_3447615_3244.html)
- Baudet, M.-B. (2013a, July 10). Gaz de schiste : Montebourg veut créer un groupe public pour l'exploitation. *Le Monde*. Retrieved from [http://www.lemonde.fr/economie/article/2013/07/10/arnaud-montebourg-veut-creer-un-groupe-public-pour-exploiter-le-gaz-de-schiste\\_3445393\\_3234.html](http://www.lemonde.fr/economie/article/2013/07/10/arnaud-montebourg-veut-creer-un-groupe-public-pour-exploiter-le-gaz-de-schiste_3445393_3234.html)
- Baudet, M.-B. (2013b, July 11). Philippe Martin recadre Arnaud Montebourg sur les gaz de schiste. *Le Monde*. Retrieved from [http://www.lemonde.fr/politique/article/2013/07/11/philippe-martin-recadre-arnaud-montebourg-sur-les-gaz-des-schiste\\_3445991\\_823448.html](http://www.lemonde.fr/politique/article/2013/07/11/philippe-martin-recadre-arnaud-montebourg-sur-les-gaz-des-schiste_3445991_823448.html)
- Baudet, M.-B. (2013c, October 11). Gaz de schiste : “sortons de l'obscurantisme, appliquons ma loi jusqu'au bout”. *Le Monde*. Paris. Retrieved from [http://www.lemonde.fr/planete/article/2013/10/11/gaz-de-schiste-sortons-de-l-obscurantisme-appliquons-ma-loi-jusqu-au-bout\\_3494505\\_3244.html](http://www.lemonde.fr/planete/article/2013/10/11/gaz-de-schiste-sortons-de-l-obscurantisme-appliquons-ma-loi-jusqu-au-bout_3494505_3244.html)
- BBC HARDtalk. (2013). Lord Browne - Chief Executive BP, 1995 - 2007. BBC. Retrieved from <http://www.youtube.com/watch?v=7Q3gkULtQs8>
- BBC News. (2013). Balcombe oil drilling: Protesters block Cuadrilla truck. *BBC*. Retrieved from <http://www.bbc.co.uk/news/uk-england-sussex-23442981>
- Beaudoux, C. (2012). Gaz de schiste : le débat “n'est pas tranché”. *FranceInfo*. Retrieved from <http://www.franceinfo.fr/environnement/gaz-de-schiste-le-debat-n-est-pas-tranche-715001-2012-08-23>
- Becker, G. (1976). *The Economic Approach to Human Behavior*. Chicago and London: The University of Chicago Press.
- Bennett, A. (2013, August 16). Fracking Must Be Accepted For “Cash Benefit”, Says Tim Yeo. *The Huffington Post*. Retrieved from [http://www.huffingtonpost.co.uk/2013/08/16/tim-yeo-fracking\\_n\\_3766413.html](http://www.huffingtonpost.co.uk/2013/08/16/tim-yeo-fracking_n_3766413.html)
- Berlin, I. (1998). *The Proper Study of Mankind: an Anthology of Essays* (p. 127). London: Pimlico.

- Booth, R. (2013, July 25). Anti-fracking protesters halt Sussex shale gas operation. *The Guardian*. Retrieved from <http://www.theguardian.com/environment/2013/jul/25/anti-fracking-protesters-sussex-shale>
- British Geological Survey. (2011). Potential environmental considerations associated with shale gas. *British Geological Survey*. Retrieved July 19, 2014, from <http://www.bgs.ac.uk/research/energy/shaleGas/environmentalImpacts.html>
- British Geological Survey. (2013a). New shale gas resource figure for central Britain. *British Geological Survey*. Retrieved from <http://www.bgs.ac.uk/shalegas/#ad-image-5>
- British Geological Survey. (2013b). Potential environmental considerations associated with shale gas. *British Geological Survey*. Retrieved from <http://www.bgs.ac.uk/research/energy/shaleGas/environmentalImpacts.html>
- Buchan, D. (2013). *Can Shale Gas Transform Europe's Energy Landscape?* London. Retrieved from [http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2013/pbrief\\_buchan\\_shale\\_10july13-7645.pdf](http://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2013/pbrief_buchan_shale_10july13-7645.pdf)
- Cameron, D. (2013, August 11). We cannot afford to miss out on shale gas. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/news/politics/10236664/We-cannot-afford-to-miss-out-on-shale-gas.html>
- Camus, E., & Parienté, J. (2013, July 15). Montebourg : un opposant farouche (re)devenu partisan des gaz de schiste. *Le Monde*. Retrieved from [http://www.lemonde.fr/planete/article/2013/07/15/montebourg-un-opposant-farouche-re-devenu-partisan-des-gaz-de-schiste\\_3447925\\_3244.html](http://www.lemonde.fr/planete/article/2013/07/15/montebourg-un-opposant-farouche-re-devenu-partisan-des-gaz-de-schiste_3447925_3244.html)
- Chaillot, M., & Bourdin, J.-J. (2013). Gaz de schiste : revivez le débat entre Delphine Batho et Laurence Parisot sur RMC. *RMC.fr*. Retrieved from <http://www.rmc.fr/editorial/386726/gaz-de-schiste-revivez-le-debat-entre-delphine-batho-et-laurence-parisot-sur-rmc/>
- Challenges.fr. (2012, September). Le gaz de schiste pourrait créer 100.000 emplois en moins de 10 ans. *Challenges.fr*. Retrieved from <http://www.challenges.fr/entreprise/20120914.CHA0824/le-gaz-de-schiste-pourrait-creer-100-000-emplois-en-moins-de-10-ans.html>
- Chazan, G. (2013, March 20). Budget 2013: Support for shale gas sector. *Financial Times*. Retrieved from <http://www.ft.com/intl/cms/s/0/ca8ce446-9162-11e2-b839-00144feabdc0.html>
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (Second.). London: Sage Publications.
- Cuadrilla Resources Ltd. (2013). About Natural Gas. *Cuadrilla Resources Ltd*. Retrieved from <http://www.cuadrillaresources.com/what-we-do/about-natural-gas/>
- Dart Energy. (2012). The Shale Extraction Process. *Dart Energy*. Retrieved July 19, 2014, from [http://www.dartgas.com/page/Community/The\\_Shale\\_Process/](http://www.dartgas.com/page/Community/The_Shale_Process/)
- Dart Energy. (2013a). UK Vision. *Dart Energy*. Retrieved from [http://www.dartgas.com/page/Europe/United\\_Kingdom/UK\\_Vision/](http://www.dartgas.com/page/Europe/United_Kingdom/UK_Vision/)
- Dart Energy. (2013b). United Kingdom. *Dart Energy*. Retrieved from [http://www.dartgas.com/page/Europe/United\\_Kingdom/](http://www.dartgas.com/page/Europe/United_Kingdom/)

- Department of Energy & Climate Change. (2013a). Developing shale gas and oil in the UK. *gov.uk*. Retrieved from <https://www.gov.uk/government/policies/providing-regulation-and-licensing-of-energy-industries-and-infrastructure/supporting-pages/developing-shale-gas-and-oil-in-the-uk>
- Department of Energy & Climate Change. (2013b). Estimates of shale gas resource in North of England published, alongside a package of community benefits. *gov.uk*. Retrieved from <https://www.gov.uk/government/news/estimates-of-shale-gas-resource-in-north-of-england-published-alongside-a-package-of-community-benefits>
- DG Employment, & social affairs and equal opportunities. (2007). *Cohesion Policy 2007-2013: Energy*. Brussels. Retrieved from [http://ec.europa.eu/regional\\_policy/activity/statistics/2007\\_energy.pdf](http://ec.europa.eu/regional_policy/activity/statistics/2007_energy.pdf)
- Dupin, L. (2013, June). Le débat Parisot - Batho sur les gaz de schiste tourne court. *L'Usine Nouvelle*. Retrieved from <http://www.usinenouvelle.com/article/le-debat-parisot-batho-sur-les-gaz-de-schiste-tourne-court.N198453>
- Dye, T. R. (1978). Understanding Public Policy. *Understanding Public Policy* (1st ed.). New Jersey: Prentice Hall Inc.
- EELV. (2012). Affiche « Non au pétrole/gaz de schiste ». *EELV*. Retrieved from <https://idf.eelv.fr/affiche-gds/>
- EIA. (2013a). Shale Gas Production. *eia.gov*. Retrieved from [http://www.eia.gov/dnav/ng/ng\\_prod\\_shalegas\\_s1\\_a.htm](http://www.eia.gov/dnav/ng/ng_prod_shalegas_s1_a.htm)
- EIA. (2013b). Annual Energy Outlook 2013. *eia.gov*. Retrieved from [http://www.eia.gov/forecasts/aeo/MT\\_naturalgas.cfm](http://www.eia.gov/forecasts/aeo/MT_naturalgas.cfm)
- Ellis, V. (2013). "I love shale gas" – Davey confirms again. *Energy Live News*. Retrieved from <http://www.energylivenews.com/2013/07/10/i-love-shale-gas-davey-confirms-again/>
- Energy and Climate Change Committee. (2013). *MPs publish report on shale gas*. Retrieved from <http://www.parliament.uk/business/committees/committees-a-z/commons-select/energy-and-climate-change-committee/news/shale-gas-report-published/>
- Europe1. (2012). Gaz de schiste : Copé appelle à continuer. *Europe1*. Retrieved from <http://www.europe1.fr/Politique/Gaz-de-schiste-Cope-appelle-a-continuer-1307079/>
- Europe1. (2013a). Gaz de Schiste : le "oui mais" de Montebourg. *Europe1*. Retrieved from <http://www.europe1.fr/Economie/Gaz-de-Schiste-le-oui-mais-de-Montebourg-1434519/>
- Europe1. (2013b). Copé : "Il faut absolument préserver notre potentiel nucléaire". *Europe1*. Retrieved from <http://www.europe1.fr/MediaCenter/Emissions/L-interview-de-Jean-Pierre-Elkabbach/Videos/Cope-Il-faut-absolument-preserver-notre-potentiel-nucleaire-1577985/>
- Favre, H. (2013, June 6). Gaz de schiste: Christian Bataille et Jean-Claude Lenoir mettent la pression. *La Voix Du Nord*. Retrieved from <http://www.lavoixdunord.fr/france-monde/gaz-de-schiste-christian-bataille-et-jean-claude-lenoir-ia0b0n1309519>
- Frack Off. (2012a). Shale gas. *Frack Off*. Retrieved from <http://frack-off.org.uk/extreme-energies/shale-gas/>
- Frack Off. (2012b). The Threat. *Frack Off*. Retrieved from <http://frack-off.org.uk/fracking-hell/>

- Frack-Off. (2013a). Extreme Energy. *Frack Off*. Retrieved June 14, 2014, from <http://frack-off.org.uk/extreme-energy/>
- Frack-Off. (2013b). 20 Impacts of Shale Oil & Gas. *Frack Off*. Retrieved June 14, 2014, from <http://frack-off.org.uk/resource/20-impacts-of-shale-oil-gas/>
- Frack-Off. (2013c). 20 Impacts of Shale oil/gas. Frack-Off. Retrieved from <http://frack-off.org.uk/wordpress/wp-content/uploads/2013/07/ShaleImpactCards.pdf>
- France Nature Environnement. (2013a). Gaz de schiste, le miroir aux alouettes. *France Nature Environnement*. Retrieved from <http://www.fne.asso.fr/fr/nos-dossiers/energie/gaz-de-schiste/>
- France Nature Environnement. (2013b). France Nature Environnement. *France Nature Environnement*. Retrieved from <http://www.fne.asso.fr/>
- FrancetvInfo, Reuters, & AFP. (2012). Gaz de schiste : Matignon rejette la proposition du rapport Gallois. *Francetv info*. Retrieved from [http://www.francetvinfo.fr/economie/commerce/competitivite/gaz-de-schiste-matignon-rejette-la-proposition-de-louis-gallois\\_165389.html](http://www.francetvinfo.fr/economie/commerce/competitivite/gaz-de-schiste-matignon-rejette-la-proposition-de-louis-gallois_165389.html)
- Friends of the Earth, ., Greenpeace, . &, & WWF-UK. (2006). Joint Statement on offsetting carbon emissions. *Friends of the Earth, Greenpeace & WWF-UK*. Retrieved from [http://www.agreenerfestival.com/wp-content/uploads/pdfs/WWF-GP-FoE\\_on\\_offseting.pdf](http://www.agreenerfestival.com/wp-content/uploads/pdfs/WWF-GP-FoE_on_offseting.pdf)
- Friends of the EarthUK. (2013a). Unconventional, unnecessary and unwanted. *Friends of the EarthUK*. Retrieved from [http://www.foe.co.uk/resource/briefings/shale\\_gas.pdf](http://www.foe.co.uk/resource/briefings/shale_gas.pdf)
- Friends of the EarthUK. (2013b). Fracking and shale gas. *Friends of the EarthUK*. Retrieved from [http://www.foe.co.uk/campaigns/climate/issues/fracking\\_background\\_information\\_33157.html](http://www.foe.co.uk/campaigns/climate/issues/fracking_background_information_33157.html)
- Gallois, L. (2012). *Pacte pour la compétitivité de l'industrie française*. Retrieved from [http://medias.lemonde.fr/mmpub/edt/doc/20121105/1786014\\_53da\\_rapport\\_de\\_louis\\_gallois\\_sur\\_la\\_competitivite.pdf](http://medias.lemonde.fr/mmpub/edt/doc/20121105/1786014_53da_rapport_de_louis_gallois_sur_la_competitivite.pdf)
- Gavell, T. (2012, December 14). Davey: Why I said yes. *The Blackpool Gazette*. Blackpool. Retrieved from <http://www.blackpoolgazette.co.uk/news/business/local-business/exclusive-davey-why-i-said-yes-1-5227891>
- Geny, F. (2010). Can Unconventional Gas be a Game Changer in European Gas Market?
- Gilliat, S. (1984). Public Policy Analysis and Conceptual Conservatism. *Policy and Politics*, 12(4), 345–367.
- Goar, M. (2013, July 11). Gaz de schiste: Un débat vraiment clos au PS? *20minutes.fr*. Retrieved from <http://www.20minutes.fr/monde/1187615-20130711-gaz-schiste-debat-vraiment-clos-ps>
- Gosden, E. (2013a, June 3). Shale gas resources ten times bigger than we thought, says IGas. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/finance/newsbysector/energy/10097133/Shale-gas-resources-ten-times-bigger-than-we-thought-says-IGas.html>
- Gosden, E. (2013b, June 25). French energy giant Total considering bidding for rights to explore for shale gas in Britain. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/earth/energy/10142149/French-energy-giant-Total-considering-bidding-for-rights-to-explore-for-shale-gas-in-Britain.html>



- Gosden, E. (2013c, September 12). Shale gas explorer IGas Energy prepares to drill near Manchester. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/10304517/Shale-gas-explorer-IGas-Energy-prepares-to-drill-near-Manchester.html>
- Gosden, E. (2013d, September 14). People need to be educated about fracking, says IGas chief Andrew Austin. *The Guardian*. Retrieved from <http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/10308840/People-need-to-be-educated-about-fracking-says-IGas-chief-Andrew-Austin.html>
- Gosden, E., & Clancy, R. (2013, June 27). Shale gas in northern England could meet Britain's gas needs for 40 years. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/finance/newsbysector/energy/10145414/Shale-gas-in-northern-England-could-meet-Britains-gas-needs-for-40-years.html>
- Gray, L. (2012, May 25). Fracking is not the answer to energy crisis, UK Minister admits, as he orders shale gas survey. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/earth/earthnews/9290026/Fracking-is-not-the-answer-to-energy-crisis-UK-Minister-admits-as-he-orders-shale-gas-survey.html>
- Green Party of England and Wales. (2012). Fracking Report Tells Us Nothing About Real Risks Behind Shale. *Green Party of England and Wales*. Retrieved from <http://greenparty.org.uk/news/fracking-report-reveals-nothing-about-dangers-of-fracking.html>
- Green Party of England and Wales. (2013a). *Fracking 'for' shale 'gas' and 'oil'* (pp. 1–4). Retrieved from [http://greenparty.org.uk/assets/files/PolicyPointers/Green Party policy pointer - fracking.pdf](http://greenparty.org.uk/assets/files/PolicyPointers/Green%20Party%20policy%20pointer%20-%20fracking.pdf)
- Green Party of England and Wales. (2013b). Fracking is not the answer. *Green Party of England and Wales*. Retrieved from <http://greenparty.org.uk/news/2013/06/27/fracking-is-not-the-answer/>
- Greenpeace. (2006). Our core values. *Greenpeace*. Retrieved from <http://www.greenpeace.org/international/en/about/our-core-values/>
- GreenpeaceFR. (2013). Gaz de schistes : le problème principal n'est pas la technique d'extraction. *Greenpeace*. Retrieved from <http://presse.greenpeace.fr/energie-climat/gaz-de-schistes-le-probleme-principal-nest-pas-la-technique-dextraction-3194-31012013>
- GreenpeaceUK. (2012). Shale gas – a silver bullet? London: GreenpeaceUK. Retrieved from [http://www.greenpeace.org.uk/sites/files/gpuk/Greenpeace shale gas briefing\\_1.pdf](http://www.greenpeace.org.uk/sites/files/gpuk/Greenpeace%20shale%20gas%20briefing_1.pdf)
- GreenpeaceUK. (2013). Anti-Fracking Protest in UK. *Greenpeace*. Retrieved from <http://www.greenpeace.org/international/en/multimedia/photos/Anti-Fracking-Protest-in-UK/>
- GreenpeaceUK, Friends of the Earth, ., Food & Water Europe, ., & Health & Environment Alliance, . (2012). Position statement on shale gas, shale oil, coal bed methane and “fracking”. GreenpeaceUK. Retrieved from [http://www.greenpeace.org/eu-unit/Global/eu-unit/reports-briefings/2012/pubs/Pubs 2 Apr-Jun/Joint statement on fracking.pdf](http://www.greenpeace.org/eu-unit/Global/eu-unit/reports-briefings/2012/pubs/Pubs%20Apr-Jun/Joint%20statement%20on%20fracking.pdf)
- Hajer M. & Wagenaar H. (eds.), (2003), *Deliberative Policy Analysis: Understanding Governance in the Network Society*, Cambridge University Press
- Harrabin, R. (2013). UK shale gas bonanza “not assured”. *BBC*. Retrieved June 14, 2014, from <http://www.bbc.com/news/science-environment-22300050>

- Harvey, F. (2013a, March 12). Lord Browne promises to invest “whatever it takes” in UK fracking. *The Guardian*. Retrieved from <http://www.guardian.co.uk/environment/2013/mar/12/lord-browne-uk-shale-gas>
- Harvey, F. (2013b, August 16). Drilling pause for Balcombe fracking protests is sensible move, say police. *The Guardian*. Retrieved from <http://www.theguardian.com/environment/2013/aug/16/drilling-pause-balcombe-fracking-protests-cuadrilla>
- Harvey, F., & Macalister, T. (2013, July 19). George Osborne unveils “most generous tax breaks in world” for fracking. *The Guardian*. Retrieved from <http://www.theguardian.com/politics/2013/jul/19/george-osborne-tax-break-fracking-shale-environment>
- IGas Energy. (2010). IGas Energy. *IGas Energy*. Retrieved from <http://www.igasplc.com/default.aspx>
- International Energy Agency. (2011). *World Energy Outlook 2011 - special report*. Retrieved from [http://www.worldenergyoutlook.org/media/weowebiste/2011/WEO2011\\_GoldenAgeofGasReport.pdf](http://www.worldenergyoutlook.org/media/weowebiste/2011/WEO2011_GoldenAgeofGasReport.pdf)
- J. Maherou, S. Norest, & L. Ferrer. (2013). De l'eau dans le gaz pour le schiste? *Association Santé Environnement France*. Retrieved March 9, 2014, from <http://www.asef-asso.fr/ma-planete/gaz-de-schiste/1416-de-l-eau-dans-le-gaz-pour-le-schiste-la-synthese-de-l-asef>
- Jaegher, T. De. (2012, September). Gaz de schiste : 22 personnalités de l'industrie appellent à relancer le débat. *L'usine Nouvelle*. Retrieved from <http://www.usinenouvelle.com/article/gaz-de-schiste-22-personnalites-de-l-industrie-appellent-a-relancer-le-debat.N182212>
- Joseph, M. (2013, July 11). Ayrault recadre Montebourg après sa sortie sur les gaz de schiste. *Le Figaro*. Retrieved from <http://www.lefigaro.fr/politique/2013/07/11/01002-20130711ARTFIG00284-gaz-de-schiste-montebourg-a-l-origine-d-un-nouveau-couac-au-gouvernement.php>
- L'Angevin, T. (2013, April). Le Medef défend les gaz de schiste et...la compétitivité énergétique. *L'usine Nouvelle*. Retrieved from <http://www.usinenouvelle.com/article/le-medef-defend-les-gaz-de-schiste-et-la-competitivite-energetique.N195884>
- La Tribune. (2013, July 15). Gaz de schiste : le débat n'est pas clos au Parti socialiste. *La Tribune*. Retrieved from <http://www.latribune.fr/entreprises-finance/industrie/energie-environnement/20130715trib000775777/gaz-de-schiste-le-debat-n-est-pas-clos-au-parti-socialiste.html>
- Lando, C. (2013). 60 Seconds with Kevin Anderson, Tyndall Centre for Climate Change Research. *Terrapinn Blog, Shale World*. Retrieved from <http://blogs.terrapinn.com/shale-world/2013/08/09/60-seconds-kevin-anderson-tyndall-centre-climate-change-research/>
- Lasswell, H. D. (1927). *Propaganda techniques in the world war* (First.). New York: Knopf.
- Le Monde, & AFP. (2012, November 14). Hollande relance le débat sur les gaz de schiste en France. *Le Monde*. Retrieved from [http://www.lemonde.fr/planete/article/2012/11/14/ou-en-est-le-debat-sur-les-gaz-de-schiste-en-france\\_1790365\\_3244.html](http://www.lemonde.fr/planete/article/2012/11/14/ou-en-est-le-debat-sur-les-gaz-de-schiste-en-france_1790365_3244.html)
- Le Monde, & AFP. (2013, July 14). Hollande : lui président, “il n'y aura pas d'exploration du gaz de schiste”. *Le Monde*. Retrieved from [http://www.lemonde.fr/planete/article/2013/07/14/hollande-lui-president-il-n-y-aura-pas-d-exploration-du-gaz-de-schiste\\_3447433\\_3244.html](http://www.lemonde.fr/planete/article/2013/07/14/hollande-lui-president-il-n-y-aura-pas-d-exploration-du-gaz-de-schiste_3447433_3244.html)

- Le Nouvel Observateur. (2012, August 28). Batho s'oppose à la fracturation hydraulique, pas au gaz de schiste. *Le Nouvel Observateur*. Retrieved from <http://tempsreel.nouvelobs.com/politique/20120823.OBS0216/batho-s-oppose-a-la-fracturation-hydraulique-pas-au-gaz-de-schiste.html>
- Leclercq, J. (2013). Gaz de schiste : un rapport parlementaire favorable à une exploitation raisonnée. *FranceInfo*. Retrieved from <http://www.franceinfo.fr/economie/gaz-de-schiste-un-rapport-parlementaire-defend-une-exploitation-maitrisee-1015051-2013-06-06>
- LeMonde, & Afp. (2013, July 11). Gaz de schiste : Ayrault réaffirme l'interdiction de l'exploitation. *Le Monde*. Retrieved from [http://www.lemonde.fr/planete/article/2013/07/11/gaz-de-schiste-les-propos-de-montebourg-font-reagir\\_3446268\\_3244.html](http://www.lemonde.fr/planete/article/2013/07/11/gaz-de-schiste-les-propos-de-montebourg-font-reagir_3446268_3244.html)
- LeMonde, AFP, & Reuters. (2013, June 5). Delphine Batho ne veut pas modifier la loi sur le gaz de schiste. *Le Monde*. Retrieved from [http://www.lemonde.fr/planete/article/2013/06/05/delphine-batho-ne-veut-pas-modifier-la-loi-sur-le-gaz-de-schiste\\_3424288\\_3244.html](http://www.lemonde.fr/planete/article/2013/06/05/delphine-batho-ne-veut-pas-modifier-la-loi-sur-le-gaz-de-schiste_3424288_3244.html)
- LeNouvelObservateur, & AFP. (2012, November 19). Le Roux : les gaz de schiste doivent "bénéficier de la recherche". *Le Nouvel Observateur*. Retrieved from <http://tempsreel.nouvelobs.com/planete/20121118.OBS9820/le-roux-les-gaz-de-schiste-doivent-beneficier-de-la-recherche.html>
- LeParisien, & AFP. (2013, February 19). Gaz de schiste : Batho et Montebourg en désaccord. *Le Parisien*. Retrieved from <http://www.leparisien.fr/environnement/gaz-de-schiste-batho-et-montebourg-en-desaccord-19-02-2013-2581249.php>
- Lévêque, E. (2013, June). Christian Bataille (PS): "Exploiter le gaz de schiste est dans l'intérêt de la France". *L'Expansion*. Retrieved from [http://lexpansion.lexpress.fr/economie/christian-bataille-ps-exploiter-le-gaz-de-schiste-est-dans-l-interet-de-la-france\\_388446.html](http://lexpansion.lexpress.fr/economie/christian-bataille-ps-exploiter-le-gaz-de-schiste-est-dans-l-interet-de-la-france_388446.html)
- Macnamara, J. (2005). Media content analysis: Its uses, benefits and Best Practice Methodology. *Asia Pacific Public Relations Journal*, 6(01), 1– 34. Retrieved from <http://snap3.uas.mx/RECURSO1/LibrosElectronicos/BIBAS PERIODISMO - DIGITAL/ART❖CULOS/Media-Content-Analysis-Paper.pdf>
- Marillier, L. (2013). Gaz de schiste : la controverse sans fin. *Marianne*. Retrieved from [http://www.marianne.net/Gaz-de-schiste-la-controverse-sans-fin\\_a230437.html](http://www.marianne.net/Gaz-de-schiste-la-controverse-sans-fin_a230437.html)
- Martin, C. (2013, April 23). U.S. States Turn Against Renewable Energy as Gas Plunges. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/2013-04-23/u-s-states-turn-against-renewable-energy-as-gas-plunges.html>
- Medef. (2012). Gaz de schiste : le Medef favorable au lancement d'un Débat national. *Medef*. Retrieved June 14, 2014, from <http://www.medef.com/medef-tv/actualites/detail/article/gaz-de-schiste-le-medef-favorable-lancement-dun-debat-national.html>
- Medef. (2013). Pierre Gattaz au Grand jury : « C'est par l'entreprise que nous pourrions créer de l'emploi ». *Medef*. Retrieved June 14, 2014, from <http://www.medef.com/medef-tv/actualites/detail/article/pierre-gattaz-au-grand-jury-cest-par-lentreprise-que-nous-pourrions-creer-de-lemploi.html>
- Meikle, J., & Malik, S. (2011, November 2). Fracking protesters storm shale gas exploration site. *The Guardian*. Retrieved from <http://www.guardian.co.uk/environment/2011/nov/02/fracking-protesters-storm-shale-gas-site>

- Moses, K. (2013, June 3). iGas: shale gas resource higher than previously thought. *The Guardian*. Retrieved from <http://www.theguardian.com/environment/2013/jun/03/igas-shale-gas-reserves>
- Natural Gas Europe. (2013). France Faces Potential of Compensation Claims on Fracking Ban. *Natural Gas Europe*. Retrieved February 25, 2014, from <http://www.naturalgaseurope.com/france-shale-gas-fracking-ban-compensation>
- Neuendorf, K. (2002). *The Content Analysis Guidebook* (First.). Thousand Oaks, CA:: CA: Sage Publications.
- Neuman, W. (1997). *Social research methods: qualitative and quantitative approaches* (First.). Needham Heights: Needham Heights, MA: Allyn and Bacon.
- Nicolas Hulot Fondation. (2013). La Transition Énergétique : Une Urgence Pour 85 % Des Français. *Nicolas Hulot Fondation*. Retrieved March 8, 2014, from <http://www.fondation-nicolas-hulot.org/blog/la-transition-energetique-une-urgence-pour-85-des-francais>
- Nicolas Hulot Fondation. (2014). Qui Sommes Nous? *Nicolas Hulot Fondation*. Retrieved March 8, 2014, from <http://www.fondation-nicolas-hulot.org/fondation/qui-sommes-nous>
- Nicolas Hulot Foundation. (2012). Fondation Nicolas Hulot : Les gaz de schiste ne sont pas une solution... *Ecolopresse.fr*. Retrieved March 8, 2014, from <http://ecolopresse.20minutes-blogs.fr/archive/2012/11/17/fondation-nicolas-hulot-les-gaz-de-schiste-ne-sont-pas-une-s.html>
- No Dash for Gas. (2013a). 28 Days Later: Please spread far and wide. *No Dash for Gas*. Retrieved from <http://www.nodashforgas.org.uk/uncategorized/28-days-later/>
- No Dash for Gas. (2013b). Disaster Gas. *No Dash for Gas*. Retrieved from <http://www.nodashforgas.org.uk/why-we-must-stop-gas/>
- No Dash for Gas. (2013c). Protesters occupy Lichfield HQ of fracking company Cuadrilla in support of Balcombe protests. *No Dash for Gas*. Retrieved from <http://www.nodashforgas.org.uk/uncategorized/protesters-occupy-lichfield-hq-of-fracking-company-cuadrilla-in-support-of-balcombe-protests/>
- No Fracking France. (2011). Notre Objectif. *No Fracking France*. Retrieved March 3, 2014, from <http://nofrackingfrance.fr/notre-objectif-100>
- Nodé-Langlois, F. (2012, December 11). Les Verts veulent interdire totalement le gaz de schiste. *Le Figaro*. Retrieved from <http://www.lefigaro.fr/politique/2012/12/11/01002-20121211ARTFIG00434-les-verts-veulent-interdire-totalement-le-gaz-de-schiste.php>
- Nodé-Langlois, F. (2013a, July 3). Gaz de schiste : Martin sur la même ligne que Batho. *Le Figaro*. Retrieved from <http://www.lefigaro.fr/conjoncture/2013/07/03/20002-20130703ARTFIG00392-gaz-de-schiste-martin-sur-la-meme-ligne-que-batho.php>
- Nodé-Langlois, F. (2013b, July 10). Montebourg veut nationaliser l'exploitation du gaz de schiste. *Le Figaro*. Retrieved from <http://www.lefigaro.fr/conjoncture/2013/07/10/20002-20130710ARTFIG00507-montebourg-veut-nationaliser-l-exploitation-du-gaz-de-schiste.php>
- Norest S., (2012). NOS ACTIONS EN 2012. *Association Santé Environnement France*. Retrieved March 9, 2014, from <http://www.asef-asso.fr/quelles-sont-nos-actions/1579-nos-actions-en-2012>
- OUGO. (2012). Office of Unconventional Gas and Oil (OUGO). *gov.uk*. Retrieved from <https://www.gov.uk/government/policy-teams/office-of-unconventional-gas-and-oil-ougo>

- Parti Socialiste. (2013). Une nouvelle décision pour la transition énergétique de la France. *Parti Socialiste*. Retrieved July 22, 2014, from <http://www.parti-socialiste.fr/communiqués/une-nouvelle-decision-pour-la-transition-energetique-de-la-france>
- Patel, T. (2013a). French Fracking Ban Should Be Eased to Assess Shale Reserves. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/2013-06-06/french-fracking-ban-should-be-eased-to-assess-shale-reserves.html>
- Patel, T. (2013b). France Should Explore Potential of Shale Resources, Senator Says. *Bloomberg*. Retrieved June 5, 1BC, from <http://www.bloomberg.com/news/2013-04-18/france-should-explore-potential-of-shale-resources-senator-says.html>
- Patel, T., & Viscusi, G. (2013). France's Fracking Ban "Absolute" After Court Upholds Law. *Bloomberg*. Retrieved February 25, 2014, from <http://www.bloomberg.com/news/2013-10-11/fracking-ban-upheld-by-french-court-as-constitutional.html>
- Paton, J. (2013). Dart Says Centrica Deal May Spur Talks for U.K. Shale Partner. *Bloomberg*. Retrieved from <http://www.bloomberg.com/news/2013-06-19/dart-says-centrica-deal-may-spur-talks-for-u-k-shale-partner.html>
- Pialot, D. (2013, May 16). La France doit-elle autoriser l'exploitation des gaz de schiste? *Le Monde*. Retrieved from [http://www.lemonde.fr/economie/article/2013/05/16/la-france-doit-elle-autoriser-l-exploitation-des-gaz-de-schiste\\_3263815\\_3234.html](http://www.lemonde.fr/economie/article/2013/05/16/la-france-doit-elle-autoriser-l-exploitation-des-gaz-de-schiste_3263815_3234.html)
- Press Association. (2013, July 19). George Osborne Unveils Tax Breaks For Shale Gas "Fracking". *The Huffington Post*. Retrieved from [http://www.huffingtonpost.co.uk/2013/07/18/fracking-tax-breaks\\_n\\_3618084.html](http://www.huffingtonpost.co.uk/2013/07/18/fracking-tax-breaks_n_3618084.html)
- Pultarova, T. (2013). Greenpeace frowns at Centrica's getting a shale-gas venture stake. *Engineering and Technology Magazine*. Retrieved from <http://eandt.theiet.org/news/2013/jun/centrica-shale-gas-lancashire.cfm>
- Randerson, J. (2010, May 14). Cameron: I want coalition to be the "greenest government ever". *The Guardian*. Retrieved from <http://www.guardian.co.uk/environment/2010/may/14/cameron-wants-greenest-government-ever>
- Reed, S. (2013, August 16). Shale Gas Company Suspends Drilling in Southern England. *The New York Times*. Retrieved from [http://www.nytimes.com/2013/08/17/business/energy-environment/shale-gas-company-suspends-drilling-in-southern-england.html?emc=edit\\_tnt\\_20130816&intemail0=y&r=0](http://www.nytimes.com/2013/08/17/business/energy-environment/shale-gas-company-suspends-drilling-in-southern-england.html?emc=edit_tnt_20130816&intemail0=y&r=0)
- Researchers at the Tyndall Centre, & University of Manchester. (2011). *Shale gas: an updated assessment of environmental and climate change impacts*. Manchester. Retrieved from [http://www.tyndall.ac.uk/sites/default/files/coop\\_shale\\_gas\\_report\\_update\\_v3.10.pdf](http://www.tyndall.ac.uk/sites/default/files/coop_shale_gas_report_update_v3.10.pdf)
- Reuters. (2013). Jobs and education needed to win British over to fracking: survey. *Reuters*. Retrieved from <http://www.reuters.com/article/2013/07/29/us-britain-energy-fracking-idUSBRE96S14K20130729>
- Reyner, G. (2013, August 5). Shale gas: Co-op is major corporate backer of anti-fracking movement. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/earth/environment/10223936/Shale-gas-Co-op-is-major-corporate-backer-of-anti-fracking-movement.html>

- Ripley, R. B., & Franklin, W. A. (1987). *Congress, the Bureaucracy, and Public Policy* (4th ed., p. 1). Chicago: The Dorsey Press.
- Rowley, E. (2013, May 15). UK shale gas programme to “accelerate”, say ministers. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/10060075/UK-shale-gas-programme-to-accelerate-say-ministers.html>
- Royal Academy of Engineering. (2011). *For the engineering leaders of tomorrow: Two lectures by Lord Browne of Madingley President, The Royal Academy of Engineering 2006-2011*. London. Retrieved from [http://www.raeng.org.uk/news/publications/list/reports/engineering\\_leaders.pdf](http://www.raeng.org.uk/news/publications/list/reports/engineering_leaders.pdf)
- Royal Academy of Engineering. (2012). Government decision on fracking. *Royal Academy of Engineering*. Retrieved from <http://www.raeng.org.uk/news/releases/shownews.htm?NewsID=815&print=true>
- Royal Academy of Engineering. (2013). Academy welcomes Professor David Mackay’s report on shale gas. *Royal Academy of Engineering*. Retrieved from <http://www.raeng.org.uk/news/releases/shownews.htm?NewsID=881>
- Royal Society. (2012). Shale gas extraction. *Royal Society*. Retrieved from <http://royalsociety.org/policy/projects/shale-gas-extraction/>
- Royal Society. (2013). Shale gas extraction: Final report. *Royal Society*. Retrieved from <http://royalsociety.org/policy/projects/shale-gas-extraction/report/>
- Royal Society, & Royal Academy of Engineering. (2012). *Shale gas extraction in the UK: a review of hydraulic fracturing*. Retrieved from [http://royalsociety.org/uploadedFiles/Royal\\_Society\\_Content/policy/projects/shale-gas/2012-06-28-Shale-gas.pdf](http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/projects/shale-gas/2012-06-28-Shale-gas.pdf)
- RTL.fr. (2012). Compétitivité : Arnaud Montebourg était l’invité de RTL. *RTL.fr*. RTL. Retrieved from <http://www.rtl.fr/actualites/info/economie/article/direct-video-competitivite-arnaud-montebourg-invite-de-rtl-des-7h50-7754295043>
- RTL.fr. (2013). Pierre Gattaz : “Non à toute fiscalité écologique”. *RTL.fr*.
- Sabatier P.A. & Jenkins-Smith C. (ed.), (1993), *Policy Change and Learning: An Advocacy Coalition Approach*, CO: Westview Press
- Schaub, C. (2013, July). Schuepbach, Texas rancœur. *Libération*. Retrieved from [http://www.liberation.fr/economie/2013/07/11/schuepbach-texas-rancoeur\\_917735](http://www.liberation.fr/economie/2013/07/11/schuepbach-texas-rancoeur_917735)
- Scott, J. (2000). *Understanding Contemporary Society: Theories of the Present*. (G. Browning, A. Halcli, & F. Webster, Eds.) (1st ed., pp. pp.126–129). London: SAGE Publications Ltd.
- Shale Gas Europe. (2012). The Gallois Report: How Long Can France Reject Shale Gas? *Shale Gas Europe*. Retrieved from <http://www.shalegas-europe.eu/en/index.php/news-room/blog/entry/the-gallois-report-how-long-can-france-reject-shale-gas>
- Shale Gas Europe. (2013). France. *shale gas europe*. Retrieved from <http://www.shalegas-europe.eu/en/index.php/resources/shale-opportunities-in-europe/france>

- Sia Conseil. (2012). *Les Gaz Non Conventionnels : un potentiel d'emplois évalué à 100 000 en France d'ici 2020*. Paris. Retrieved from <http://energie.sia-partners.com/20120914/les-gaz-non-conventionnels-un-potentiel-demplois-evalue-a-100-000-en-france-dici-2020/>
- Simon, C. A. (2010). *Public Policy: Preferences and Outcomes* (2nd ed., p. 22). Pearson Education Inc.
- Sky News. (2013). Shale Gas Reserves “Far Bigger Than Thought”. *Sky News*. Retrieved from <http://news.sky.com/story/1108698/shale-gas-reserves-far-bigger-than-thought>
- Smith-Spark, L., & Boulden, J. (2013). UK lifts ban on fracking to exploit shale gas reserves. *CNN*. Retrieved from <http://edition.cnn.com/2012/12/13/business/uk-fracking>
- Sunay, R. (2012). The Importance of Public Debate in Democratic Regimes. *European Scientific Journal*, 08(09), 34–45. Retrieved from <http://eujournal.org/index.php/esj/article/view/144/149>
- T.B. (2013). Batho : “pas d’argent à mettre dans la recherche sur le gaz de schiste”. *BFMTV*. Retrieved from <http://www.bfmtv.com/politique/batho-pas-dargent-a-mettre-recherche-gaz-schiste-454092.html>
- Taebi, B., Correlje, A., Cuppen, E., Pesch, U., & Dignum, M. (2013). Responsible Innovation of Shale Gas: A Value Sensitive Design Approach. *4S Conference*. San Diego: 4S Conference. Retrieved from [http://4sonline.org/files/print\\_program\\_final\\_.pdf](http://4sonline.org/files/print_program_final_.pdf)
- Taebi et al. (2014). Responsible innovation as an endorsement of public values: the need for interdisciplinary research. *Journal of Responsible Innovation*, 1(1), 118–124.
- The Co-operative Energy. (2013). Statement from Co-operative Energy on UK shale gas development. *The Co-operative Energy*. Retrieved from <http://www.cooperativeenergy.coop/2013/06/28/statement-from-co-operative-energy-on-uk-gas-shale-development/>
- The Co-operative Group. (2011a). What is shale gas and why we’re campaigning? *The Co-operative Group*. Retrieved from <http://www.co-operative.coop/join-the-revolution/our-plan/clean-energy-revolution/fracking/what-is-shale-gas/>
- The Co-operative Group. (2011b). *Memorandum submitted by The Co-operative Group*. Retrieved from <http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/writetv/shale/sg18.htm>
- The Energy and Climate Change Committee. (2011). *Shale Gas*. London. Retrieved from <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/795/795.pdf>
- The Energy and Climate Change Committee. (2013). *The Impact of Shale Gas on Energy Markets*. London. Retrieved from <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenergy/785/785.pdf>
- The Guardian. (2013, August 4). Fracking: Balcombe says no to shale gas drilling. *The Guardian*. Retrieved from <http://www.telegraph.co.uk/news/newsvideo/10219882/Fracking-Balcombe-says-no-to-shale-gas-drilling.html>
- The Telegraph. (2013, August 4). Fracking: Balcombe says no to shale gas drilling. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/news/newsvideo/10219882/Fracking-Balcombe-says-no-to-shale-gas-drilling.html>

- Total. (2009). Des Reserves considerables, un enjeu majeur pour l'avenir du gaz. *Total*. Retrieved February 25, 2014, from <http://total.com/fr/energies-savoir-faire/petrole-gaz/exploration-production/secteurs-strategiques/gnc/gaz-schiste-1/gaz-naturel-abondant/reserves>
- Total. (2012). In Europe: Denmark, France and Poland. *Total*. Retrieved from <http://www.total.com/en/special-reports/shale-gas/international-deployment/europe-france-danemark-201961.html>
- Tullock, G. (2008). Public Choice. In S. N. Durlauf & L. E. Blume (Ed.), *The New Palgrave Dictionary of Economics* (2nd ed.). Palgrave Macmillan.
- Tyndall Center for Climate Change Research. (2011a). *Environmental and climate change impacts of Shale Gas*. Manchester. Retrieved from <http://www.tyndall.ac.uk/shalegasreport>
- Tyndall Center for Climate Change Research. (2011b). Shale Gas expansion could jeopardise climate commitments. *Tyndall Center for Climate Change Research*. Retrieved from <http://www.tyndall.ac.uk/communication/news-archive/2011/shale-gas-expansion-would-jeopardise-climate-commitments>
- U.S. Energy Information Administration. (2011). *Shale Gas and the Outlook for U.S. Natural Gas Markets and Global Gas Resources*. Retrieved from [http://www.eia.gov/pressroom/presentations/newell\\_06212011.pdf](http://www.eia.gov/pressroom/presentations/newell_06212011.pdf)
- Ufip. (2013). *Et si la France avait a la fois du petrole, du gaz et des idées... Contribution au Debat sur les hydrocarbures de schiste*. Retrieved from [http://www.ufip.fr/uploads/documents/UFIP\\_Roche\\_mere\\_2013.pdf](http://www.ufip.fr/uploads/documents/UFIP_Roche_mere_2013.pdf)
- UK government. (2012). *Government response to Royal Academy of Engineering and Royal Society report on "Shale Gas Extraction in the UK: a review of hydraulic fracturing"*. Retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/49541/7269-government-response-sg-report-.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/49541/7269-government-response-sg-report-.pdf)
- UMP. (2013). L'UMP est stabilisée. *Union for a Popular Movement*. Retrieved May 17, 2014, from <http://www.u-m-p.org/actualites/a-la-une/lump-est-stabilisee-96351507>
- Unconventional gas in Europe: Frack to the future. (2013, February 2). *The Economist*. London. Retrieved from <http://www.economist.com/news/business/21571171-extracting-europes-shale-gas-and-oil-will-be-slow-and-difficult-business-frack-future>
- Utility Week. (2013). Davey: UK can lead the world on shale gas. *Utility Week*. Retrieved from [http://www.utilityweek.co.uk/news/news\\_story.asp?id=198871&title=Davey:+UK+can+lead+the+world+on+shale+gas](http://www.utilityweek.co.uk/news/news_story.asp?id=198871&title=Davey:+UK+can+lead+the+world+on+shale+gas)
- Vanlerberghe, C. (2013, November 21). Gaz de schiste: des risques maîtrisables, selon l'Académie des sciences. *Le Figaro*. Retrieved from <http://www.lefigaro.fr/sciences/2013/11/21/01008-20131121ARTFIG00842-gaz-de-schiste-des-risques-maitrisables-selon-l-academie-des-sciences.php>
- Visot, M. (2012, November 18). Le gaz de schiste empoisonne le débat sur l'énergie. *Le Figaro*. Retrieved from <http://www.lefigaro.fr/conjoncture/2012/11/18/20002-20121118ARTFIG00163-ouverture-de-l-epineux-debat-sur-la-transition-energetique.php>
- Vukmanovic, O., & Schaps, K. (2013, June 13). Centrica investment boosts UK shale gas prospects. *Reuters*. London. Retrieved from <http://uk.reuters.com/article/2013/06/13/uk-centrica-shale-idUKBRE95C08E20130613>



- Wainwright, M. (2012, October 29). Climate activists occupy West Burton gas power station. *The Guardian*. Retrieved from <http://www.theguardian.com/environment/2012/oct/29/climate-activists-west-burton-gas>
- Walker, P. (2013, August 1). Frack Off protesters bring a little fire engine trouble to Balcombe oil site. *The Guardian*. Retrieved from <http://www.theguardian.com/environment/2013/aug/01/frack-off-protest-fracking-fire-engine-balcombe-oil>
- Werber, C. (2013, July 18). U.K. Offers Tax Breaks to Kick-Start Shale-Gas Production. *The Wall Street Journal*. Retrieved from <http://online.wsj.com/article/SB10001424127887323309404578613900640725218.html>
- Werber, C., & Lefebvre, B. (2013, March 25). U.K.'s Centrica Plans to Import U.S. LNG. *The Wall Street Journal*. Retrieved from <http://online.wsj.com/news/articles/SB10001424127887324789504578382472643241056>
- White, G. (2011, November 2). Cuadrilla admits drilling caused Blackpool earthquakes. *The Telegraph*. Retrieved from <http://www.telegraph.co.uk/finance/newsbysector/energy/8864669/Cuadrilla-admits-drilling-caused-Blackpool-earthquakes.html>
- Williams, S., & Werber, C. (2013). Centrica Cautious on U.K. Shale-Gas Prospects. *The Wall Street Journal*. Retrieved from <http://online.wsj.com/article/SB10001424127887323734304578543393713502794.html>
- Wintour, P. (2012, November 14). Tory MP escapes discipline over anti-windfarm comments. *The Guardian*. Retrieved from <http://www.guardian.co.uk/politics/2012/nov/14/tory-mp-discipline-anti-wind>
- WWF-UK. (2011). WWF: shale gas is a dangerous distraction. *WWF-UK*. Retrieved from [http://www.wwf.org.uk/what\\_we\\_do/press\\_centre/?unewsid=4953](http://www.wwf.org.uk/what_we_do/press_centre/?unewsid=4953)
- WWF-UK. (2013a). What we do – and why. *WWF-UK*. Retrieved from [http://www.wwf.org.uk/what\\_we\\_do/](http://www.wwf.org.uk/what_we_do/)
- WWF-UK. (2013b). No justification for tax breaks for shale gas. *WWF-UK*. Retrieved from [http://www.wwf.org.uk/what\\_we\\_do/press\\_centre/?unewsid=6750](http://www.wwf.org.uk/what_we_do/press_centre/?unewsid=6750)
- WWF-UK, ., Friends of the EarthUK, ., & RSPB. (2012). “Take foot off the pedal on shale gas”, charities warn Government. *RSPB*. Retrieved from <http://www.rspb.org.uk/news/324050-take-foot-off-the-pedal-on-shale-gas-charities-warn-government->
- Yeo, T. (2013). Shale gas and fracking. <http://www.timyeo.org.uk>. Retrieved from <http://www.timyeo.org.uk/news/shale-gas-and-fracking>
- Yin, R. K. (2009). *Case Study Research: Design and Methods*. (L. Bickman & D. J. Rog, Eds.) *Essential guide to qualitative methods in organizational research* (Vol. 5, p. 219). Sage Publications. doi:10.1097/FCH.0b013e31822dda9e
- Zennou, A. (2012, November 6). Gaz de schiste : les écolos dictent leur loi. *Le Figaro*. Retrieved from <http://www.lefigaro.fr/politique/2012/11/05/01002-20121105ARTFIG00647-gaz-de-schiste-les-ecolos-dictent-leur-loi.php>