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The Erasmus logo, featuring a stylized, handwritten-style script of the word "Erasmus" in a dark blue color.

**Political Ecology of Shale Gas Development  
Challenges and opportunities for the anti-fracking  
movement**

A Research Paper presented by:

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This document represents part of the author's study programme while at the Institute of Social Studies. The views stated therein are those of the author and not necessarily those of the Institute.

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## List of Acronyms

FAO	Food and Agriculture Organization
ISS	Institute of Social Studies
UNDP	United Nations Development Programme

## Acknowledgements

If this life is one act  
Why do we lay all these traps?  
We put them right in our path  
When we just wanna be free

I will not waste my days  
Making up all kinds of ways  
To worry about all the things  
That will not happen to me

So I just let go of what I know I don't  
know

And I know I'll only do this by

Living in the moment

Living our life

Easy and breezy

With peace in my mind

With peace in my heart

Peace in my soul

Wherever I'm going, I'm already home

(‘Living in the moment’, a song by Jason Mraz)

Minding this beautiful song, I would like to thank my family, for joining me in this one-and-a-half-year journey. I come from a big family, and despite all encouraging support I received from them (for I will always be thankful), I was meaning another layer, the smaller circle of me, my wife and the kids. Somehow, we found ourselves home, and through this process of living abroad we yielded positive collective outcomes, a common sense of belonging and trust in each other. For this I am deeply honoured to live among them, and to be part of this family.

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## **Abstract**

Shale gas development has increased its share on energy markets not only in the US but expanding globally, regardless of the controversial debate on the environmental and social impacts. A strong transnational social movement, uncertain about the risks, and concerned for its impacts on climate change, has risen to oppose what is framed by them as “fracking”. This research uses political ecology to understand those tensions, with a case study on the Bowland Shale, county of Lancashire, UK, to capture how the movement is performing on the quest. The analysis was conducted comparing a classic approach derived from social sciences framework, employing concepts such as organizational capacity, strategic framing, lifecycle analysis and political opportunity structures. The findings reveal that, the social movement is in an advanced stage and close to its decline in England, where resistance has increased for about 7 years and the context seems favourable, hence the ongoing exploratory activity that is already shaking the ground, literally. It further concludes that relying only in social science framework was not satisfactory to explain why the anti-fracking was not able to halt shale gas development, even when similar conditions were observed in different spatial contexts, revealing the relevant contribution given by political ecology perspective.

## **Relevance to Development Studies**

For a long time ‘development’ was seen as a matter of economic progress, and this was reflected in scholars’ vision, public policies and general perception. Recently the realization that within the same development there were plural embedded components, like social justice and sustainability, has reset the way we understand what development should be. Those realignments materialize differently, considering time and space contexts, and the dynamic cycle of social structure and collective agency are the scenario for this ontology evolution of modern development.

Using this panorama, the present research focus on social movements and activism as a way to make changes happen in the political realm. From the practical phenomenon of anti-fracking movement, studied in this research, we draw that society is sending a message to the government, and despite the direct claims, this message underlies the reflections about the meaning of development, in the first place.

Regardless of where those tensions are being felt (governments, society, or academia) scholars must be sensitive to capture those insights as genuine opportunity for knowledge generation, contributing to Development Studies as a science field.

## **Keywords**

Shale gas development, energy, anti-fracking, political ecology, transnational social movement, environmental risks, environmental justice.

# Chapter 1

## Introduction

### Background

Shale gas development is the term used for extraction of rock-trapped fossil fuels such as natural gas or oil, and the former is known as shale gas. This type of extraction usually employs one technique called hydraulic fracturing. Whereas familiar for the Oil & Gas industry as ‘fracing’, less supportive parcels of our society had given the popular name of ‘fracking’ – notably environmentalists (Stoutenborough et al., 2016: 52). It is a non-conventional form of extraction, applied when traditional extraction is not possible, and consists in pumping large quantities of water mixed with sand and chemicals, at high-pressure, into deep rock formation, to open fractures and release the trapped shale gas (Meng and Ashby, 2014: 124). Despite not being a new technology (known for more than 40 years), only in the last decade it has being widely used, mostly within United States, after the combination of hydraulic fracturing with horizontal drilling. Recently, the Oil & Gas industry is increasingly looking to expand its application overseas (Meng, 2018: 10) for the development new shale gas projects.

Within European Union perspective, there is no specific regulation for the activity, as it is treated under general Oil & Gas extraction, despite the publication of the 2014/70/EU: Commission Recommendation (European Commission, 2014), scholars critique the regulation for its weak “social dimension” (Bradshaw and Waite, 2017: 30). Estimates in geological surveys points out for the availability of significant reserves of shale gas within several EU countries. Despite the promising positive economic results that shale gas could produce for the resource-rich country members, the environmental and social risks associated with the method used to extract the trapped natural gas causes concern and commotion on general public. To mention some of the problems related to the practice of hydraulic fracturing, one of the concerns is the demand for large amounts of fresh water supply in the fracking phases, where the fracking fluid needs to be injected underground – for example, it takes around 22 million liters of fluid for each well (Hill, 2014: 2212). This creates a potential contesting scenario, especially in places where water availability for public consumption and agriculture is limited. Other factor of concern is the population density, which is significantly higher in most of EU shale gas rich countries when compared with the density in the United States countryside. This fact could increase dramatically the effect of shale gas extraction on local impacts such as noise and increase of heavy road traffic due to the intense flow of supply trucks (Prpich and Coulon, 2018: 48). Other concerns are related to the risk of contamination. Once the clean water is mixed with sand and the chemicals to create the fracking fluid, it becomes a potential source of pollution, able to contaminate soil and water reserves (superficial sources and groundwater). Not to mention the risks of earthquakes, air pollution, landscape degradation, and health problems (for more information about risks and impacts related to fracking, see: Finkel and Hays, 2013; Ladd, 2013; Hill, 2014; Meng, 2017; and Prpich et al., 2016).

The anti-fracking movement arises in consequence of the mobilization against the development of shale gas as a potential source of energy, offering



strong resistance within the broader environmental movement. Common feature of this emerging movement is the participation of different layers of society, united in a coalition around the cause against fracking – in the flipside of some typical environmental justice movements, which target minorities, vulnerable or traditional communities. Following basically the same strategy, the anti-fracking movement has successfully risen public awareness, and contributed for a warm political discussion and policy making, by combining efforts from local, regional and national level non-governmental organizations (mostly environmentalist, but not exclusive), international NGOs, and famous public figures to enhance support and increase visibility. This strategy has worked out in several location and has led to a total ban on fracking in some States in the US, France, Bulgaria and the Republic of Ireland, and temporary halts imposed by Germany and The Netherlands' governments. On the other hand, shale gas is still possible elsewhere and exploratory prospections are on the way in Poland, Australia, US and China.

A slightly different and heterogenic situation happens within the United Kingdom, where in Scotland, Wales and Northern Ireland, onshore hydraulic fracturing is under moratorium, and England has lifted its temporary halt from 2011 to 2014, leaving the permit for the development of onshore fracking under strict renewed regulation. This new regulatory regime attempts to minimize environmental and social risks to enable the recovery of 23 to 64 trillion of cubic meters of shale gas, according to the British Geological Survey, as the government's position clearly indicates the support for shale gas development in England (Prpich et al., 2016: 732). This geological survey, pointed out for promising quantities of shale gas in the Bowland Formation, located in the Northern England (Andrews, 2013), as the Figure 01 illustrates. Within this region, the company Cuadrilla Bowland Limited (or Cuadrilla Resources, as it is commonly known) was granted concessions to develop natural gas projects and has undertaken, since 2011, seismologic surveys and other prospection studies. The company has recently applied for the first round of environmental permits in the place know as Preston New Road site, in order to install up to four exploratory wells and run flow tests for fracking extraction feasibility, according to their Environmental Statement (Cuadrilla Bowland Ltd., 2014: 24). Cuadrilla's exploratory and prospection activities begun in 2008 – before the moratorium and the changes in the regulation – and performed some fracking tests under the former regulation, after receiving the Petroleum Exploration and Development License 165 (PEDL 165) (Cuadrilla Bowland Ltd., 2014: 01). At that time, other shale formations were also identified as potential for shale gas development and different companies initiated their pretensions to explore this natural resource, facing strong resistance from local residents.

After the first attempts from Cuadrilla in the Preston New Road site, some minor earthquakes were observed, and the case received national attention, contributing for the temporary halt in 2011. Conflicts related to shale gas development were observed not only in Lancashire, but also in Balcombe, West Sussex, and in Kirby Misperton, North Yorkshire. Despite all the efforts to halt the project development, the company managed to grant the environmental permit to start the fracking tests and assess the feasibility of the exploration. Therefore, the focus of the research is on the perspective of the social movement, its achievements, drivers and motivations, objectives, and challenges to change the social structure they are embedded on.

**Figure 1** – Bowland Shale gas area and location of the Preston New Road site (highlighted in red).



Source: Extracted from Andrews (2013: 11), highlighted by the author

## Research question and objectives of the research

Social movement is a very studied field among social science scholars, and with environmental movements is no different. However, since the outcomes of environmental movements are hard to evaluate, the results in terms of influencing power has not received proper attention from researchers (Rootes and Nulman, 2017: 729). According to those scholars, despite the existent literature on environmental movements has reported positive impacts since the 1970's, it is hard to attribute that the political result is a direct consequence of the actions of the

social movement (2017: 729). They argue that there is no common feature of environmental movements and consider those movements as a broader category because they do not reveal trends for any specific organization form, and have a wide array of features – from more radical, action-oriented or confrontational aspects; to more policy-oriented, awareness-creation, or dialog-building strategy (2017: 730). Considering the European context, they point out for the strong relevance and popularity of the debate on environmental issues, and for the fact that several environmental NGO relies on robust sources of scientific evidence to support their arguments and influence policy-making, employing positive impacts. On the other hand, when there is no consistent and well-known scientific baselines, the pathway becomes less favourable, and that's when local activism plays an important role (2017:731). Therefore, the present paper will follow this research gap and the main research question aims to assess the impacts of the anti-fracking movement in the European context, mainly focusing on England, because it is where the dispute about shale gas development is ongoing.

As an empirical research, the objective of this paper is to analyse the outcomes of the anti-fracking movement in Lancashire county, in the place know as Preston New Road site (England) and understand how effective the social movement is to challenge the social structure it is embedded in, considering positive or negative, and direct or indirect impacts. Also, the research will focus on the consequences of shale gas development for this community and for the United Kingdom and International contexts. In this scenario, the research assessed the way engagement has occurred, the mobilization and social action aspects, activism features, and the results obtained over the decision-making process, considering the context.

Therefore, the main **research question** is: Why do some anti-fracking movement have failed to achieve the ban on shale gas in some places, when at the same time have succeed in other locations?

Some relevant sub-questions complement the understanding about the practical role of this social movement, such as:

- (a) What are the influencing factors determining the impacts of the anti-fracking movement in the case of Lancashire, England?
- (b) How the anti-fracking movement has framed the issues for collective action to drive changes?
- (c) How do the technical and legal integrity and of the permit process is limiting social action?

Due to the hypothesis generating nature of the research questions, the expected result will be descriptive, and illustrate the political context of a typical case of a shale gas development project (Preston New Road site, from Cuadrilla Bowland Ltd.) and the conflicts resulted from this tension, in the county of Lancashire, England. As for the last research sub-question, it has a of a more hypothesis-testing feature, for it relates to the extent to which technical and legal integrity, meaning diligently following the rules and regulations regarding the permit process, leaving no or limit space for opportunity exploration on eventual technical failures or inconsistencies on the documents used to obtain the permit.

## Scope and justification

While studying critical political ecology, Neumann (2005) reflects on the dominance of research in developing countries and points out for the importance of going “beyond dualism of North-South and urban-rural” (2005:114) to amplify what development is meant to be. According to the author, we need to move from the restrict meaning of development as:

An international programme composed of a set of economic policies and interventions and intended to improve the lives of Third World people through a fuller integration of their national economies into a world capitalist system. (Neumann, 2005: 115)

The key to expand the application and meaning of the modern development need to encompass the interrelations and interdependency of those post-war polarities. In fact, despite more studied within the global south, a similar political ecology understanding is observed in more developed economies (Neumann, 2005: 115). That is the foundation for this research paper, as it focus on one of the main colonizer (former British Empire) and cradle of the first industrial revolution, where the anti-fracking movement – a part of a broader environmental movement – attempts to challenge and change the social structures, addressing concerns of environmental justice through a multi-layered transnational social movement.

Therefore, the focus of this research is on the anti-fracking movement in England and the relevance relies on the fact that they are (together with Poland) the only countries where fracking for shale gas development is actually happening within the European Union. Well documented protests and conflicts are still ongoing while the population resists unconventional oil & gas development projects, and the political debate is contemporary and active. Also, the selection of researching in England is justified due to the heterogeneity of the struggle against fracking within the United Kingdom, who led to halts in Scotland, Northern Ireland and Wales, but is still facing support by the English government.

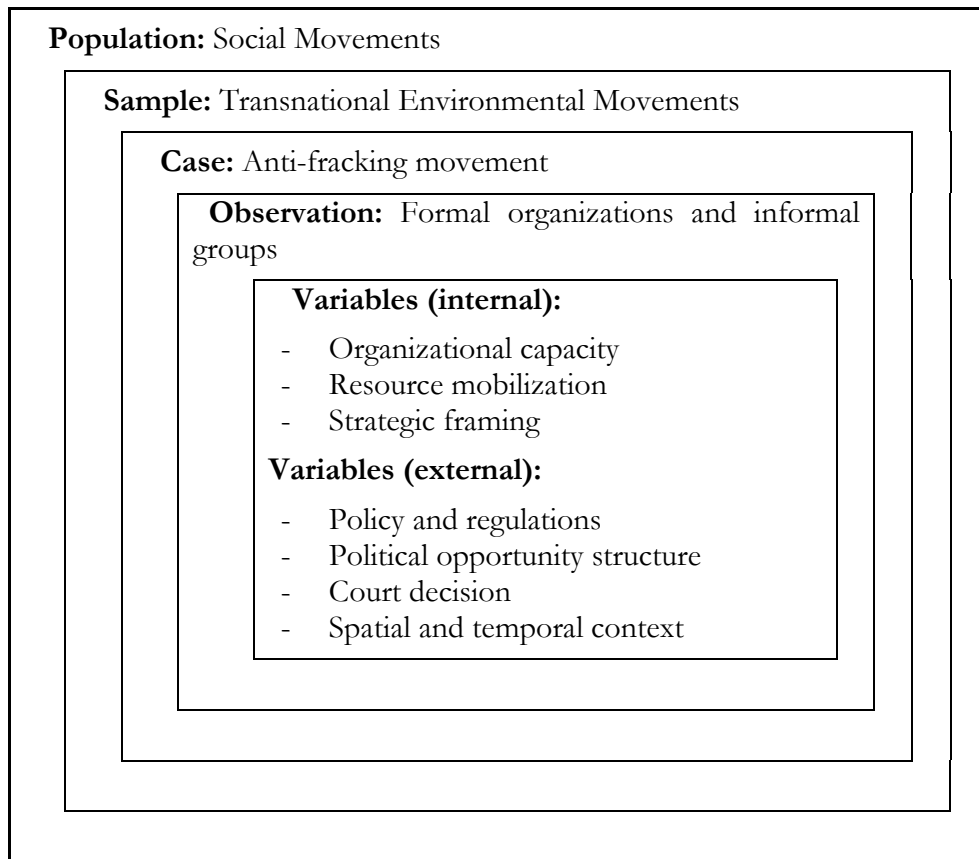
The development of the research follows two approaches to address the topic, and despite the peculiarities of each of those angles, it is worth to mention that they will be addressed with different intensity and focus. The core of the research is the **social movement perspective**, concentrating the attention in the drivers and motivations of participants, their objectives and claims, how the movement strategically frame the issues, key achievements accomplished, and challenges to change the social structure. This is be based on press news and NGO/activists statements, and available information related to the permit process from the Environmental Agency, like the Environmental Statement. The secondary underlying approach is conceptualizing the anti-fracking struggle within **political ecology and environmental justice perspective**, in order to capture how the distribution of social and environmental costs is balanced (or not) by the benefits (concentrated risks and local negative impacts against unwell distribution of the economic benefits), and some ethical discussion on the shale gas development within the mainstream pathway towards a green economy.

## Methodology, data collection and analysis

To assess these questions, the research paper will be based on a case study research method, designed as a single, typical case, and was drawn considering the definition of Gerring (2007) for it “connotes a spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time” (2007: 19). The sample was purposely selected based on the shale gas project who was at the most advanced phase in terms of fracking initiatives and permit process and represents not a future or distant threat for locals, but truly a contemporaneous activity that is happening while this research was developed.

Based on the hypothesis-generating aspect of the main research question, the objective is to assess the influencing variables that contributed to the observed results for the Lancashire anti-fracking social movement. Examples of variables or influencing factors that could contribute to the result of the social movement are: the organizational capacity of the social movement; resource mobilization ability; the way they frame their message; court decisions from lawsuits filled by activists or the energy company; federal regulation and other related policies regarding this type of natural resource extraction; the level of centralization in the decision-making process; or political support backing shale gas development. The case is therefore a case of the anti-fracking phenomenon, within the broader social movement as the context. This design is aligned with what Yin (2014) describes as single case with embedded units of analysis (2014: 50), for it assesses the behaviour of each organization or informal group engaged in the social movement (units of analysis), and it does this considering a stratified, multi-layer structure, with three engagement levels: local and regional; national; and international. The following table illustrates both the relational aspects of the case study and the sampling distribution of the observations (unit of analysis):

**Table 1 – Case study framing: relational aspects.**



Source: Developed by the author

**Table 2 – Sampling distribution of the units of analysis.**

Engagement level	Number of organizations	Distribution (%)
Local and regional	9	50%
National	5	28%
International	4	22%
<b>Total</b>	<b>18</b>	<b>100%</b>

Source: Developed by the author

The main analytical approach focus on the social movement perspective and the framing discourses are evaluated assessing the motivation statements on the website of the organizations involved, and on social media activity. Further,

a collection of several press and newspaper reports, with extracts of interviews and statements from activists, were analysed employing coding techniques in order to capture the focus of the discourse against fracking. The research will rely on secondary data, and the data collection will be based on an extensive literature review, combined with documents from the selected case as the main source of evidence. First, the analysis targets documents related to the shale gas development project (environmental impact assessment, maps, etc.), and to the decision-making process (public hearing reports, environmental statement, license conditions, etc.), as important context-specific issues. From the social movement perspective, the analysis focus on documents, report news documenting key activism events and conflicts (blockades, manifestation letters, camping, videos, campaign extracts, etc.), and motivation statements made public from anti-fracking formal and informal organisations, political parties, governmental officers, and so forth.

## **Limitations, ethics and reflexivity**

In the original conception of the research design, the original intention was a multiple-case design, comparing the three most relevant shale gas development in England - using a holistic approach, since each case (unit of analysis) would have its own specific context. The goal was to use primary data collection to set a baseline of information using ethnographic research methods, combining participatory observation with qualitative interviews with activists within the permanent action camp in Maple Farm, Lancashire (local level), trying to capture insights from people engaged on different levels of the social movement (regional, national and international). Participatory observation would have open possibilities to assess the daily routine of the action camp, providing useful information of the resource mobilization needed to supply minimum livelihood conditions for the activists, that are mobilized for a long period of time, and seem to stay like this for an undetermined future.

To complement the perspective of the political scenario, the original conception was also to collect primary data from other stakeholders that are either neutral (the Environmental Agency), or either supporting the social movement within the government (at least one representative from political parties or other politicians). Finally, from the other side of the dispute, important complimentary standpoints would have been collected among who supports unconventional oil & gas development, notably interviewing representatives of the government (conservative party) and from the companies (Cuadrilla Resources or Third Energy). Due to resource limitation and time constraint, the research focus had to be narrowed down, remaining the Lancashire case, as the more emblematic one. This decision was originally thought as a negative contribution for the external validity of the case-study research, but surprisingly a plentiful and rich database of secondary sources was assessed, including scientific articles, public documents, and a vast amount of press material and social media, combined with a well-structured analytical framework based on a comparative case of a successful anti-fracking campaign, in the United States of America.

As for ethical standpoints and reflexivity concerns, it is worth to mention that at first, despite considering myself an environmentalist, I had never engaged

on activism, and the social movement focus of this present academic effort was a result of a series of choices while selecting the topic for the research paper, that begun right after setting my feet back into the University. As the course went by, the critical thought progressively become an incorporated skill, and the previous ideas for the final assignment suddenly turned unattractive. The ultimate starting point of this journey was the broad political ecology field, and even without knowing at that time, I was influenced by this recent knowledge and asking reflexive questions similar to the recommendations of Ben Wisner (2015), on his personal essay. I hold a strong identification with his recommendations such as “People matter: (...) Will your research benefit them?”, or “Context matters: (...) one needs to be aware that economic and social life (some call it ‘development’) is not harmonising as modernisation theory assumes, but conflictual” (Wisner, 2015: 60). The urgency of climate change issues and the controversies related to the (not so) new shale gas development have steered the course to the anti-fracking movement.

## **Overview of the research paper**

The research paper is divided into four sections, as it follows. On the introduction section, the problems and social tensions around shale gas development projects are presented, alongside with an outline of the research paper, disclosing the research questions, methodological implications, scope and limitations of the research. The second section presents an overview of anti-fracking as a broader environmental movement and context-specific information on the case of Preston New Road, Lancashire. The following chapter, the largest one, traces back the theoretical construction of relevant concepts further used on the analysis to comprehend the case and tackle the raised questions. In the fourth section, the conclusions are displayed alongside with recommendations for future research.



## Chapter 2

### The anti-fracking movement

#### Anti-fracking on the broader global environmental movement

The philosophical reasons why people care about the environment, can be grouped into two main axis, being anthropocentric or nature-centric bases. In one hand, concerns related with the carrying capacity of our planet and the existence of limits to use natural resources; conflicts related to the access and distribution of natural resources; health concerns and the legacy our generation will leave to the next one, are all reasons connected to the anthropocentric axis, while more altruistic concerns like the care for other animal and plant species, or the beauty of nature and its intrinsic value, are closed to the nature-centric axis. The way society has addressed those concerns illustrates the organization within three main complimentary strategies: **(a)** the oldest approach (yet still controversial), rooted in the Greek's ideas of democracy, is centred on the wellbeing of the citizens of a given state, minding an ideal society, and gave birth to the modern concept of the Welfare economics; **(b)** the second, 'maximize utility' approach, focus on prosperity and the conjugation of the equation: maximize gain (or wealth) vs minimize damage, when decision-making are based on measuring the consequences; the core ideas are the basis of cost-benefit analysis and the cradle of the neoclassical economic thoughts, with its assumptions of rationalities in the central idea of capital and exchange value; this approach can be summarized in the ideas of the Nobel Laureate Gary Becker; and **(c)** the third approach is the 'rights and freedom' – a more positivist way to address those issues based on the rights of nature, or nature as subject or entitled to certain set of rights, very well captured by the freedom and capabilities works of Amartya San.

From this abstract and timeless philosophical starting point, the social claims for better environmental quality begun in the 60's, at the time when the scientific community had adopted a global ecosystem approach to illustrate that environmental impacts and other negative externalities of the 'development-as-growth' legacy were not restricted to any political boundary, and therefore, had to be taken into account (Sachs, 2010: 25) <sup>1</sup>. As Rootes and Nulman (2017) points out, despite the common association of environmental struggle with successful enhancement of protection instruments, environmental movements were not the only driver to promote those conquests (2017: 729). It is difficult to determine which results were linked with direct action of the environmental movements, and it is even more challenging to find a common definition or characteristics to illustrate what constitutes an environmental movement. There is a broad spectrum of organisation forms and social action types related to environmental movements: on the one hand more radical and combative approaches, as on the other side discrete groups use advocacy to influence governments, defined as "often publicly invisible actions of bureaucratized formal organizations" – sometimes classified as simple coalitions and not proper social

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<sup>1</sup> This text is based on a graded Essay submitted for the course "2101 - The Making of Development"

movements (Rootes and Nulman, 2017: 730). Nevertheless the lack of unit, the very essence of the environmental movement is, according to the authors, “generally inclusive and recognizes commonalities among groups and organizations that are rooted in the shared concern to protect the natural environment” (2017: 730).

Therefore, it is natural to assume that the anti-fracking movement is embedded in the broader environmental movement, as a part of this large network of people, formal and informal organizations, who shares a common environmental concern. Starting in the United States in 2010, the rise of the anti-fracking movement can be connected to the release of the award-winning documentary movie *GasLand* (2010), and the mass media coverage of the Gulf of Mexico oil spill and explosion of the Deepwater Horizon offshore platform, owned by the British Petroleum (BP) company, and from those events, by 2012, the concern for unconventional oil and gas exploration had spread to other countries (Mazur, 2014). Despite specific, local anti-fracking examples are connected and adjoined into a part of a single, broader movement against unconventional oil and gas, sharing more than just the same concerns, but also using similar frames to address the discourse of the global anti fracking movement (Steger and Milicevic, 2014).

## **The case of Preston New Road, Lancashire**

Local anti-fracking movements usually appear after the revelation on the existence of significant quantities of shale gas or shale oil (Metze and Dodge, 2016: 368). Despite this common trend be confirmed within several United States and European examples, it was slightly different from what happened in England. Considering the Lancashire case, the emergence of the resistance begun with the first attempts to use hydraulic fracturing by the company Cuadrilla Bowland Limited, especially after a 2.3 Richter scale earthquake hit the Blackpool region, in April 2011, followed by a second and smaller tremor in May (1.5 scale). The company admitted the high probability of the tremors were caused by hydraulic fracturing activities, according to a technical report called *Geomechanical Study of Bowland Shale Seismicity* (Marshall, 2011). The study was turned public on Cuadrilla's webpage for some time, but it was then removed from their website and is no longer available for general public. In order to check the veracity of the declarations connecting the first fracking activities to both earthquake events, a copy of this report was retrieved from the portal [web.archive.org](http://web.archive.org)<sup>2</sup>, and indicates that the digital copy was available between November 10 to December 09, 2011.

From the report, it is known that the ‘Two events reported by BGS (magnitudes 2.3 and 1.5) and 48 much weaker events have been detected, and it is therefore hard to dismiss them as an isolated incident’, and the objective was to understand how ‘the probable mechanism of the events is described based on a careful technical analysis of all available data’ (de Pater and Baisch, 2011). In the conclusions, it is stated:

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<sup>2</sup>[http://web.archive.org/web/20111110150601/http://www.cuadrillaresources.com/cms/wp-content/uploads/2011/11/Final\\_Report\\_Bowland\\_Seismicity\\_02-11-11.pdf](http://web.archive.org/web/20111110150601/http://www.cuadrillaresources.com/cms/wp-content/uploads/2011/11/Final_Report_Bowland_Seismicity_02-11-11.pdf)

With the fluid volume injected during the hydraulic treatments, the area where in situ stresses are perturbed due to hydraulic overpressure is limited and is of similar size as required for a magnitude  $M_L=2.3$  earthquake. Therefore it can be concluded that direct injection into the fault must have induced the seismicity. Direct injection into a fault can be regarded as a worst case scenario, since stress perturbation caused by hydraulic overpressure is the dominating force. (de Pater and Baisch, 2011: 49)

Most likely, the repeated seismicity was induced by direct injection of fluid into the same fault zone. (de Pater and Baisch, 2011: 52)

After strong public concern about the consequences and adversities of the activity, and due to the diligent conduct from the company by admitting the causal relation between the injection of fracturing fluid and the occurrence of earthquake events, the Government established a temporary halt on hydraulic fracturing in 2011, that lasted until December 2013 (Hilson, 2015: 180). During that period, the shale gas industry had three development projects under evaluation, this one in Lancashire, another in Balcombe (West Sussex) – both operated by Cuadrilla Resources, and one in Kirby Misperton (North Yorkshire) operated by Third Energy company.

By the time the government has lifted the moratorium the movement against fracking was booming in UK, with around 160 local anti-fracking organisations across the country, according to Olofsson (2014: 1). Combining efforts with localised, sometimes informal grassroots organisations, some prominent regional and national level NGO emerged or engaged on the anti-fracking movement, such as Frack OFF; Frack Free Lancashire; and Reclaim the Power. One of the first protest on the Preston New Road site was undertaken on August 7<sup>th</sup>, 2014, by the informal group called ‘The Nanas’, composed by several grandmothers, their family members and friends (in a self-called *Operation Mothers and Grandmothers – OMG*), who got increased support from locals and activists, and managed to keep a three weeks occupation of a field close to where Cuadrilla’s installations and a blockade. The protest was combined with an Action Camp promoted by the NGO Reclaim the Power, that took place from 14 to 20 August 2014, with several lectures and workshops to train activists and articulate strategies for social action (Reclaim the Power, 2014).

After numerous protests, in June 2015, the Lancashire County Council has decided to reject the Cuadrilla application to initiate the drilling and exploratory phase in the site (Vaughan, 2015). This decision was very welcomed and celebrated by the activists, who had mobilized hundreds of supporters in front of the city hall. After the company’s appeal of the decision, in October 2016, the Secretary of State for Housing, Communities and Local Government, Sajid Javid, accepted the appellation and overturned the county council decision, leading to a green-light for the company to obtain the environmental permit (Vaughan, 2016a). Since then, several peaceful protests have been happening frequently and so far, around 350 activists have been arrested, as their main social action is road blockade through slow walking protest. Finally, regardless of the long struggle, the company begun fracking at the Preston New Road site in October 2018, as the protests show no signs of decline, and a series of increasingly strong earthquakes, with 37 occurrences in three weeks of activity (Vaughan, 2018; The British Geological Survey, 2018), is now part of the daily

routine for the local community, as the prospects of the first England's shale gas development project is literally 'shaking the ground'.

## Chapter 3

### Analyses and literature review

#### Theoretical and conceptual frames

##### *Political ecology perspectives*

The objective of this section is to shed light on the engagement against fracking in the case of Lancashire within an expansive manner, connecting it to broader political ecology and environmental justice concerns. The starting point of this theoretical apparatus is to recognise that conflicts related to environmental distresses are encompassed in the larger political ecology literature. First, what connects both fields are, in Ryan Holifield's words "environmental marginalization and inequality" (Holifield, 2015: 585). But the natural attraction of both scholarships had different backgrounds, as on the one hand, environmental justice emerged among United States scholars, to shed light in conflicts caused by the unbalances of concentration of benefits and bad distribution of environmental and social costs (2015: 585). On the other hand, inspired by remarkable publications like *The limits to Growth* (Meadows et al, 1972) and with exponent influence from the works of Michael J. Watts, Piers Blaikie and Harold C. Brookfield, political ecology evolved from the critics of what constitutes apolitical ecologies and the "environmentalism of the 1960s and 1970s", and the merge of natural sciences and social sciences (Bridge et al, 2015: 04), that paved the way to the works of anthropologist and other geographers in the global south (Holifield, 2015: 586). The inevitable crossover has put together the foundations of both fields, and interesting outcomes were yielded, such as environmental justice scholars studying in the global south and vice-versa (2015: 585). An example of this interconnections is the "environmentalism of the poor" approach used by Martinez-Allier (2014), that addresses the causes of environmental conflicts in marginalized groups, usually in less developed countries.

So, if environmental relegation and unfairness are central for both political ecology and environmental justice schools of thought, to study social movements through a political ecology lens requires understanding of how those fields differ from each other. An idiosyncratic aspect of political ecology is its practice as a transdisciplinary applied environmental science. This was described in detail by Karl S. Zimmerer, revealing how the combination of traditional scientific methods, typical from the 'ecological' aspect, were exercised to study 'political' issues related with human-environment interactions (Zimmerer, 2015). He points out for the wide employment of this cross-cutting methodologies, describing it as three basic "connective conceptual modalities" (2015: 156), with emphasis on (i) the features of natural resources, its interactions and energy flows, and social implications (distribution, resilience, access, use, and so forth); (ii) discourse plurality and comparative analysis (decision-making, regulation, commodification, production, etc.); and (iii) knowledge framing and application of ecological scientific models and technologies (2015: 157). Regardless of the valuable contribution for studying phenomenon such as land change and urban expansion, deforestation, land grabs; health implications of environmental hazards; gender and generational concerns; use of and access to natural resources;

and generous other possibilities – the focus of the present research is clearly not among those interactions. Still, doing political ecology without relying on ‘hard sciences’ methods is not imperative, as he recognises (2015: 163) and does not weaken the validity of the application. From the initial conceptualization made by Blaikie and Brookfield that “combines the concerns of ecology and a broadly defined political economy” (as quoted in Robbins, 2015: 90), the political ecology approach for this research paper tries to capture the way natural systems, their inter-relations and interactions (in this case relative to natural resource extraction) shapes and are shaped by political systems and social structures (policy regulation of the extractive activity and the exercise of agency by the resisting community). Therefore, the study of social movements through the lenses of political ecology is aligned with the foundations of the scholarship, connecting back to Marxist class struggle or Chaynovian dynamics of agrarian transformation (Wolford and Keene, 2015: 575), and focusing more on the political economy aspect, rather than in the environmental sciences one. Furthermore, the environmental justice aspect is also present among the research outline.

In this normative school of thought, environmental justice examines tensions around natural resources through a three-fold “distributive, procedural and recognition-based” types of environmental justice (Clough, 2018). On her article, Emily Clough assessed some ethical considerations of those three categories applied over hydraulic fracturing practices. Regarding the distributive component, meaning the balances between who endures the social and environmental risks of living close to wells and who yields the paybacks, the research found injustices in the US contexts (2018: 15). As for procedural aspect, that encompasses the level of participation in the decision-making process, injustices were even more evident, as the author points out for two main concerns among scholars: the governmental degree responsible for approving unconventional shale gas projects and “ownership of mineral rights” (2018: 16). The diffuse regulatory system in the US creates more contact surface for engagement in permit decisions, though it is more arduous for fresh players with no previous background; whereas in the UK, despite the well-defined system, the injustice relies in how to challenge this centralized and nationally dependent decision-making process (2018:16). The final aspect, environmental justice as recognition, derives from the last component, but comprehends the acknowledgement of the legitimacy of stakeholders (2018: 17).

### *Social movement perspectives*

This section aims to understand the anti-fracking initiative as a social movement and in order to do that, an overview of concepts and theories is presented, to situate the struggle against hydraulic fracturing into the broader social movement perspective, and this passage would not be fruitful without some relevant definitions.

There is no consensus of what constitutes a social movement. But scholars agree on some common features such as to be “(...) involved in conflictual relations with clearly identified opponents; are linked by dense informal networks; share a distinct collective identity.” (Della Porta and Diani, 2006: 20). A complementary conceptualization is brought by Christiansen (2009), referring to social movements “as organized yet informal social entities that are engaged in extra-

institutional conflict that is oriented towards a goal.” (2009: 2). As described, one important feature of social movements is the sense of belonging called by scholars as the affiliation among identity and collective action, and it was explained by Della Porta and Diani (2006) as “the intersection of collective involvement and personal engagement” and individual shifts that occur because of activism, generating “new sense of empowerment, and to the strengthening of the self, which originate form collective action” (2006: 91). Therefore, identity is a socially constructed feature of social movements and a vital element of collective action, important to enable participation and to stablish connection among participants around shared concerns, ideals, and principles. When analysing social movements, Della Porta and Diani (2006: 05), point out for some key questions to be asked, concentrated into four aspects: structural changes and social conflicts’ transformative ways; identification of social concerns and representation of agents in collective action; how collective action is carried out from worrying about problems into taking initiative; and how movements are shaped by the political, social and cultural contexts in terms of form, intensity and possibilities to succeed (2006: 5-19). Identity is one of the core elements of social movement studied by scholars, as the social cement not only holding activists around a shared cause but shaping the ways in which social movement operates (McCarthy, 1997: 248).

Furthermore, when taking collective action, protest is amid the foremost apparatus of social movements. Protesting is, thus, an important part of social movement activity, and De la Porta and Diani (2006) captures the purpose of protest as an alternative way to address dissatisfaction and challenge institutional power relations, when compared to traditional political opposition within parliamentary activity from representatives, or directly through elections (2006: 166). They refer to Taylor and van Dyke (2004) definition as “sites of contestation in which bodies, symbols, identities, practices, and discourses are used to pursue or prevent changes in institutionalized power relations” (as quoted in Della Porta and Diani, 2006: 165). According to the authors, protests follow peculiar logics and strategies to take practical action in a wide range of forms, some more radical than others. They illustrate three aspects within the logics of protest, and the first is that numbers count. Numeric performance is relevant, in terms of the quantity of supporters and as so, social movements tend to gather the largest possible support for their cause (2006: 171), either for petitions, marches, summits, blockades, netstrikes (virtual attack to knock down online servers), and so forth. Likewise, other observed strategy is the logic of damage, as the authors points out for “inflicting material damage, in a *modus operandi* analogous to war” (2006: 173). Despite the well documented use of violence among social movements, peaceful protest is equally present, however commonly with some level of disruption in terms of creating economic impairments. Within this outlet are strikes, boycotts and industrial sabotage (2006: 175). At last, the authors present the complimentary logics of “bearing witness”, referring to the level of commitment of activism, understood “in the first instance, through participation in actions which involve serious personal risks or cost” and resolve that in “such actions, the risk of arrest testifies to the conviction that something had to be done about a decision considered profoundly unjust, even if this involved serious costs indeed” (2006: 177). Within this outline of protesting as means of collective action, the theoretical outline of social movements categorised this under mobilizing structures branch, as the capacity to mobilize and co-opt the existing

social structures to facilitate activism action on a daily basis (McCarthy, 1997: 249).

Another common theoretical component of social movements is the strategic framing process, and it is grounded over cognitive psychology science (Benford and Snow, 2000: 611). McAdam et al. defined framing as “the conscious strategic efforts by groups of people to fashion shared understandings of the world and of themselves that legitimate and motivate collective action” (as quoted in McCarthy, 1997: 244), whereas Schön and Rein focus on the interpret aspect, as “symbolic contests over the social meaning of an issue domain, where meaning implies not only what is at issue but also what is to be done” (as quoted in Hilson, 2015: 181). Lakoff (2010), illustrates how framing works in blocks, or a system of words that triggers cognitive activity and enhances emotional linkages to support rational judgement, as he puts it:

(...) many frame-circuits have direct connections to the emotional regions of the brain. Emotions are an inescapable part of normal thought. Indeed, you cannot be rational without emotions. Without emotion, you would not know what to want, since like and not-like would be meaningless to you. When there is neither like or not-like, nor any judgment of the emotional reactions of others, you cannot make rational decisions. (2010: 72)

The movement against shale gas development has successfully appropriated and strategically used as the core framing the word ‘fracking’ and attributed a negative connotation to its meaning. This effort can be considered a smart move from the social movement, and when opportunity to introduce new language is available, it should connect with one previous emotional background in the individual level, but scalable, as the author indicates:

There are limited possibilities for changing frames. Introducing new language is not always possible. The new language must make sense in terms of the existing system of frames. It must work emotionally. And it must be introduced in a communication system that allows for sufficient spread over the population, sufficient repetition, and sufficient trust in the messengers. (Lakoff, 2010: 72)

Following the delineations offered in this section, it is thus to assume that the anti-fracking initiative is a social movement, ideologically connected with the broader environmental movement, for it gather supporters associated by a common identity, engaged in a dispute against defined adversaries and connected by substantial social linkages and networks. Furthermore, they employ protest as the basic instrument for collective action, finding support by mobilizing social structures, and strategically frame their concerns around a crafted discourse. The circumstances in which the anti-fracking initiative is organised, will be explained further, but basically adopts a transnational feature, for it is composed by several local, regional and national entities, some formalized into non-governmental organizations (NGO), and some remaining informal grassroot groups. Clearly, they have been and still are engaged in several conflicts where energy companies propose to explore shale gas projects. Finally, they advocate against the use of the hydraulic fracturing technology and, therefore, can be analysed within the social movement perspective.



### ***Transnational social movements***

The world is changing in ways that foster the growth of transnational social movement organizations (TSMO) and increase their significance. TSMO's, in turn, contribute to these global changes by directly influencing particular policies and by affecting the context in which they are made. (Kriesberg, 1997: 03)

This strong forecast made by Kriesberg (1997) reflects assertiveness and contemporaneity on the globalized social movement dynamics, and with the environmental movement – and the embedded anti-fracking particularities – is no different. The author presented historically the main contributing context that created the background for this transnational feature. He points out for the increase in democratization, as consolidation of individual and collective freedoms through positivist legitimacy (1997: 04), enhanced communication processes that facilitates participation and collective action (1997: 06), and improvements in global living standards, defined as “increasing material surplus” that sponsors group formation and enables engagement (1997: 07). Other trends are also considered, such as the modern social integration and economic interdependency – that compromises governmental credibility to tackle global concerns beyond state capabilities (1997: 09); and the dissemination of shared concerns, interests and values, exemplified by the Universal Declaration of Human Rights (1997: 09). As a result, Smith (1997a) refers to a widespread resource support focused on “addressing interdependent global problems” (1997a: 42). The application of those concepts into the broad environmental movement connects TSMO contributions from the Rio 1992 Earth Summit (United Nations Conference on Environment and Development) onwards, raising awareness in global society and setting environmental agenda within governments (Smith, 1997b: 190).

### ***Political opportunity structures***

Due to its external properties, the conceptual aspect of the political opportunity structure as a core topic was put aside from the social movement perspective section – in which internal and interdependence dynamics such as identity, framing and mobilizing structures were studied. The concept has been evolving alongside with social movement knowledge itself, and according to Benford and Snow (2000), is “the relationship between changes in the structure of political opportunities (...) and movement mobilization” (2000: 628). Despite not consensual, this research paper draws upon the summary work on the evolutionary aspect of the concept, as it was proficiently crafted by Giugni (2011):

(...) Lipsky (1968) paved the way to an analysis of “protest as a political resource” and Eisinger (1973) probably introduced the concept (...) in the field, the first comprehensive treatment of opportunities was offered by Tilly (...) (1978). For this author, opportunities are but one aspect of a more general model made up of five components: interests, organization, mobilization, collective action, and opportunity. In this context, opportunity “describes the relationship between the population’s interests and the current state of the world around it” (Tilly 1978, p. 55) and refers to the extent to which power, repression (and facilitation), and opportunity (and threat) provides options for collective action. (2011: 272)

The flipside is that, by relying heavily on the assumption that “exogenous factors enhance or inhibit prospects for mobilization, for particular sorts of claims to be advanced rather than others” (Meyer and Minkoff, 2004: 1458) the concept risks of becoming such an umbrella factor, capable of embracing and undermining internal factors of social movements, hence it must be carefully applied. From this starting point, Giugni (2011) points out the contemporary relevance of the concept, nevertheless reinforcing the calls for a careful application that takes into account “the dependent variable under study, and the underlying assumptions about the mechanisms” (2011: 280), whether focusing more on the dynamic ‘windows opportunities’ aspect or on the cold and static ‘structures’. Considering the research question of the present paper, the emphasis is on the search of causal mechanisms influencing the outcomes of the English anti-fracking struggle, more aligned with the window of opportunity side (or perhaps the lack of), rather than to diagnose how the political system works.

## Analytical framework

Considering the potential power of stakeholder engagement, either through participative governance or by social movements, the Social License to Operate (SLO) would be a natural analytical tool. Originally conceived for development projects in the mining sector, SLO gained broader acceptance, and is well known to be applied when intense impacts affect local communities, demanding a resolute relationship management from the company in charge of the operation (Bradshaw and Waite, 2017: 30). It is characterized for being a voluntary, non-transferable, and context-specific socially constructed bond; when applied to the Lancashire case by Bradshaw and Waite (2017), the lack of social license to operate was clearly evident (2017: 34). The authors proposed an alternative analytical framework to assess the contours of Lancashire shale gas conflict, by applying the SAP model, or social-actuarial-political risk and licensing model, employing it as “a heuristic device, a general concept that we use to organise our analysis of the evidence from the public enquiry in Lancashire” (2017: 30).

Therefore, considering the nature of the research question, to assess the outcomes and influencing factors of the anti-fracking movement – minding how the English ongoing fracking example compares to the halted situation in Wales, Scotland and Northern Ireland – the analytical framework used on this Research Paper is based on Brian K. Obach (2015), who wrote about the successful ban promoted by New York anti-fracking campaigners, compared with failures in other US states, like Pennsylvania, North Dakota or Texas. He points out for some key factors observed in New York State to overcome the quest and beat the shale gas development: **(a)** pre-installed capacity to mobilize resources and a certain level of organization; **(b)** a good and clear message to frame the issue; and **(c)** support from influencing public figures and strong economic and political players (Obach, 2015: 72).

According to this author, organizational capacity and resource mobilization have reflected the fast response that the State of New York offered, as hundreds of environmentalist organizations were already working in the theme. Several of

them has turned shale gas development into their key interest and joined the anti-fracking cause. They quickly offered powerful resources, such as extensive mailing lists, uncountable members already signing their newsletters, and local field support from volunteers with flexible schedules – factors that made the responsiveness level of the movement much more robust, compared with regions where this support had to be developed from scratch to fight against the shale development (2015: 73).

Regarding framing the issue, the baseline is around the term ‘fracking’ – as a catch phrase in the first place, for it is easier to work with compared to the technical noun ‘hydraulic fracturing’ – has a natural negative sound and demonstrated effective persuasive power. On the other hand, the oil & gas industry has tried to show the economic benefits like job generation and royalties’ distribution, and also framed fracking as a safe and alternative source of cleaner fuel (compared to coal), able to provide energy security by becoming less relying on foreign oil (2015: 73). Despite the fact that activists had framed their messages strongly based on scientific evidence and demonstrated cases of contamination of water sources, air pollution and health implications (effectively showing a consistent distant from the ‘clean energy source’ proclaimed by the supporters of shale gas development) one of the turning points to enhance support and increase public awareness was the release of the Josh Fox’s documentary *Gas-Land* (2010), which showed strong and appealing demonstrations of what happens when fracking does not work well, simplified in a tap running water on fire (2015: 73).

Finally, he points out for the benefit of having powerful supporters for the social movement – not only famous people who came openly as a spokesperson backing the ban on fracking, such as the actors Mark Ruffalo and Matt Damon, not to mention the now-famous ‘celebrity-status’ director of the documentary, Josh Fox – but also from political and economic influencers, who did not share the same ambitions of the oil & gas industry (2015: 74). He attributes this support to the fact that, different than normal environmental justice movements (who affects predominantly the vulnerable), the environmental and social risks of shale gas development could negatively affect a wide range of strong economic and political actors, as he puts:

The primary area suitable for natural gas development (...) happens to be part of the New York City watershed. The down state region of New York includes much of the state’s population and New York City is home to some of the world’s biggest corporations and wealthiest citizens. (2015: 75)

The set of analytical components employed by Obach (2015), is used to assess how the social movement of the Lancashire anti-fracking initiative is taking place, but the paper is also taking into consideration another axis, as the temporal perspective, to include another dimension to the analysis. Considering this lifecycle approach, the assessment is constructed over a progressive segmentation outline, based on Christiansen (2009). He points out for a congruence among scholars regarding the lifecycle analysis of social movements, and even though those stages are being polished overtime, albeit conserving the same connotation, they naturally follow a four-stage sequence as he describes as: “Emergence, Coalescence, Bureaucratization, and Decline” (2009: 02).

Each stage represents important milestones throughout the existence of a social movement, starting with the ‘emergence’, when forthcoming members demonstrate their dissatisfaction for key concerns independently, and even when some sort of engagement is undertaken, this materializes without any kind of strategic, premeditated, or intentional social mobilization. This feature does not underestimate the relevance of this appearance phase – on the contrary, it is fundamental to raise widespread perception of disappointment (2009: 02). From the emergence, the movement progresses to the coalescence step, characterized by the merging of individual interests into a collective concern. Strategies are born, reflexions over causes and consequences arise, liabilities and resources are considered, and risks and opportunities are pondered. The movement starts to develop tactics and to take collective action, crafting claims and mandates (2009: 03). The following stage is portrayed when greater rank of coordination turns to be crucial, after a set of effective actions and practices comes about. A certain degree of professionalization is observed in this step, alongside with increase in the level of power and openness within political structures (2009: 03). Finally, the last progressive step is the decline of the social movement, appropriating meanings beyond its decay, but also for its “institutionalization” (2009: 03). Within this understanding are embedded different possibilities for movements to develop: “Repression, Co-optation, Success, and Failure” (2009: 03). Worth to mention that those stages are dynamic enough to move back and forth, or to uphold a steady state in any given phase.

Therefore, the present paper relies on the set of analytical tools provided by Obach (2015) in combination with the lifecycle approach used by Chistiansen (2009), outlined by the assessment of the following key factors, in order to determine their influence on the outcomes of the anti-fracking movement in England: **(a)** Resource mobilization and organizational capacity; **(b)** Multi-layer framings; **(c)** Support from influencers (public opinion, economic power and political capacity); **(d)** Lifecycle analysis; and **(e)** Other relevant considerations Shifting scales and strategic linkage mechanisms.

### ***Resource mobilization and organizational capacity***

Comparing with the New York example, in the case of Lancashire anti-fracking movement, there was also a pre-installed organizational capacity, with some environmental NGO already in operation, that despite not focusing specifically on the struggle against the shale gas extraction, had their broader umbrella interests receptive with the cause, such as:

- **Campaign Against Climate Change:** In existence since 2001, the NGO joined the anti-fracking campaign since 2011, following a public meeting held in the Conway Hall, Red Lion Square, in London, in 19/07/2011 (Campaign Against Climate Change, 2011) and specifically supported the beginning of Lancashire’s social actions through a 3-day camp called Frack Camp, from 16 to 18 of September, 2011 (Blackpool Gazette, 2011). They mobilized volunteers to take direct social action in Lancashire during several occasions.
- **Friends of the Earth:** In exercise since 1971 (Friends of the Earth, 2018a), is one of the first environmental organizations in the United

Kingdom and has been also supporting the anti-fracking campaign since 2011, in the same action camp listed above. They have a local chapter called “Central Lancashire friends of the earth”, situated in Preston that concentrates the support for the anti-fracking cause in Lancashire (Friends of the Earth, 2018b).

- **Greenpeace:** Born in Canada in 1971, Greenpeace started its operations in the United Kingdom in 1977, followed by the creation of Greenpeace International, in 1979 (Greenpeace UK, 2018a). It is not clear since when the Lancashire support commenced, but the first posts within the UK website reports from August 2013 (Greenpeace UK, 2013), and the indirect support raises awareness and provides visibility to the large network of supporters and donors that Greenpeace has.
- **350.org:** Focusing on climate change, the organization was born in the United States in 2008 with an international digital mobilization approach, to connect hundreds of formal and informal organizations worldwide (350.org, 2018a). Specifically, in the United Kingdom, they operate through a subsidiary organization called Fossil Free UK, with a campaign focus on divestment – or the cut of financial support for the fossil fuel industry (Fossil Free UK, 2018a). The support for Lancashire is limited to a collection of signatures to express solidarity of the local cause and the access to the subsequent mailing list of supportive subscribers to promote events and gather digital support for mobilization initiatives (350.org, 2018b).
- **Global Frackdown:** According to Hopke (2016) who studied network structure of this organization, Global Frackdown is a transnational campaign connecting hundreds of affiliate societies (2016: 384). In activity since 2012, the objective of the group – who evolved its name to the actual Global Gasdown Frackdown – is to raise awareness through the coordination of collective action in the form of a “Global Day of Action”, reproducing symbolic protests worldwide – the last one occurred on 13 of October 2018 (Global Gasdown Frackdown, 2018).

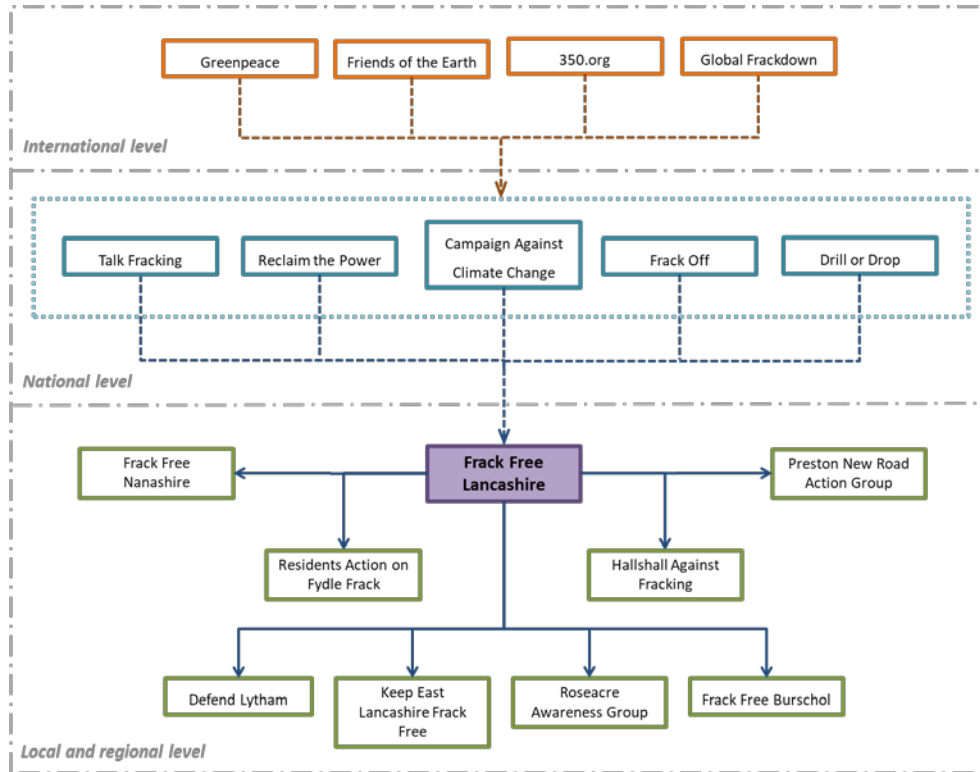
Other organizations were created after the first attempts of Cuadrilla company to frack in Lancashire, and have been actively working in support of the movement ever since, such as:

- **Talk Fracking:** Created in 2014, Talk Fracking is a dedicated communication gateway that publishes technical surveys, open letter signed by experts, and organizes national level debates. They are proud to highlight a collection of over 1300 scientific articles related to the topic displayed in a section called ‘Frackademics’ (Talk Fracking, 2018).
- **Frack Off:** Launched in 2011 after a banner drop in the Blackpool Tower (Independent, 2011), the collective action group was behind the first assault on Cuadrilla’s well pad, by scaling the rig and dropping a banner in November, 2011 (Wainwright, 2011), and have been promoting protests and reporting updates over the company’s activity ever since.

- **Reclaim the Power:** In activity since 2003 the group organizes direct social action like action camps, slow-walks and road blockades, cycling rides, etc. (Reclaim the Power, 2018). The organization’s activity was studied by Olofsson (2014), in an ethnographic study following the preparation of an Action Camp activities during three weeks in August, 2014 (2014: 03).
- **Frack Free Lancashire:** Umbrella organization who holds network connections with several local grassroots groups, created in 2014, whose political strategy aims to “influence the decision makers”, (...) “bring about a change in Energy Policy – to stop fossil fuel production and to promote Renewables”, and “empower people and ensure the voice of grass roots democracy is heard and heeded” (Frack Free Lancashire, 2018).

Those organizations are presented in the following figure, and structured according to their level of engagement, of which the description and explanation of each layer is further explained.

**Figure 2** – The multi-layer structure of the anti-fracking movement in Lancashire. The observed organizations are not an exhausting list but were the ones with the highest relevance within online research.



Source: Developed by the Author

### *Support from influencers*

As for this topic, the findings report a list of more than three hundred business companies, mostly local and regional, that formalized their support for the anti-fracking movement (Refraktion, 2018). Some celebrities, artist and famous public figures who opposes fracking were also observed, and remarks are for the expressive engagement of the British actress Emma Thompson (Thompson, 2018), who posted several videos for online streaming in social media and actively participated in numerous protests – she almost got arrested for disrespecting a court injunction in one protest (Schiavi, 2016)<sup>3</sup>. Furthermore, the American actor Mark Ruffalo is another active voice against the shale gas development (Vaughan, 2016b). He wrote a newspaper article that was published in 'The Guardian', stating among other arguments, that the lesson from his home country should be taken into account, he also pointed out for the first attempts of fracking that led to seismic activities, connecting this to rock failures and risks of water contamination, and also showed his concern about the democratic process that was ignoring local decisions from Lancashire County Council, addressing himself directly to the then Prime Minister David Cameron (Rufalo, 2016). Other artists who engaged on the cause are Vivienne Westwood, a British fash-

<sup>3</sup> <https://www.lifegate.com/people/news/bake-off-anti-fracking-emma-thompson>

ion icon and environmentalist who is also vigorously attending protests in Lancashire and other protesting location (Day, 2018), Harry Styles (singer of the British band One Direction), Jerry Hall (actress and model), Jarvis Cocker (actor and musician), Bobby Gillespie (musician), and the singer/actress Olivia-Newton John (Powell, 2015).

The Foundation for Art and Creative Technology (FACT) – a media and arts facility based in Liverpool – held a thematic fracking exposition between 13 June to 23 September 2013, with a “selection of provocative international artists tackle some of the most pressing, controversial and literally ground-breaking political issues of today”, and as an interactive exhibition, “including recreating an indoor fracking site complete with earth tremors and flames” (FACT, 2013). Beyond artists, other supporters also paid commitment to the cause, such as the Merseyside Pensioners Association (MPA), supporting The Nanas and the anti-fracking cause, stating “The MPA is pleased to announce it is now part of the growing movement against fracking. We will be taking action soon!” (MPA, 2018).

The research went further to assess for support among political parties. In the UK political system, several political parties are in activity, and a keyword search was undertaken in the website of all the ruling parties, according to their representation in the House of Commons. The intention was to assess the institutionalized position of the party related with the topic, and the keywords used were ‘shale’ and ‘frack’, and when available, the keyword search was also undertaken on the party’s manifesto, governmental plan, or other political statement. The list of political parties, in decrescent order of representativeness, is presented in the Table 03. The search showed no results on the webpage of the Conservative Party<sup>4</sup>, the Co-operative Party<sup>5</sup>, the Democratic Unionist Party<sup>6</sup>, and the Plaid Cymru<sup>7</sup> (Party of Wales).

The Green Party is the leading the anti-fracking campaigner in the political realm and is calling the Prime Minister for a vote in the Parliament to ban fracking (The Green Party, 2018), however the intimate ideological connection with the struggle is inversely proportional to the number of seats as the greens hold a single Member of the Parliament (MP). The Labour Party, on the other hand, holds the largest account of MPs (220) among supportive parties, and some recent statements illustrate their position: “It’s a scandal that the Government has been allowed to force through fracking at any cost”, and their future plans “The next Labour government will ban fracking” (Bailey, 2018). The political back up also counts on the **Liberal** Democrats, that included a supportive statement in the 2017 Manifesto positioning to “Oppose ‘fracking’ because of its adverse impact on climate change, the energy mix, and the local environment” (The Liberal Democrats, 2017: 49). The Sinn Féin Party resulted only references to the Northern Ireland national fracking ban bill that passed in 2017, but the terms of the declarations demonstrate the positionality of the party: “It is a win for rural communities and for common sense” (Kenny, 2017). Lastly, the Scottish National Party showed a comparison study demonstrating how innovative measures adopted first in Scotland were then followed by the UK government afterwards,

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<sup>4</sup> <https://www.conservatives.com/>

<sup>5</sup> <https://party.coop/>

<sup>6</sup> <http://www.mydup.com/>

<sup>7</sup> <https://www.partyof.wales/>



but with a negative reference on the misleading pathway adopted by UK while not adhering to the Scottish leading ban on fracking:

The UK government has a track record of supporting and encouraging the use of fracking to extract oil and gas. In England, companies are actively exploring potential onshore oil and gas resources. (Furby, 2018)

**Table 3** – List of political parties in UK according to the number of seats in the House of Commons

Political party	Number of seats	%	Institutional positionality
Conservative Party	315	48.5%	No results
Labour Party	220	33.8%	Anti-fracking
Co-operative Party	37	5.7%	No results
Scottish National Party	35	5.4%	Anti-fracking
Liberal Democrats	12	1.8%	Anti-fracking
Democratic Union Party	10	1.5%	No results
Independent (no party affiliation)	8	1.2%	Not applicable
Sinn Féin	7	1.1%	Anti-fracking
Plaid Cymru	4	0.6%	No results
Green Party	1	0.2%	Anti-fracking
Speaker	1	0.2%	Not applicable
<b>Total</b>	<b>650</b>	<b>100.0%</b>	<b>-</b>

Source: Developed by the author, based on official data (The United Kingdom Parliament, 2018)

The results show a balanced scenario where manifested institutional support for anti-fracking was found among five political parties and considering their proportion of seats<sup>8</sup> in the House of Commons it corresponds to 48%, against 52% of indefinite positionality. Naturally that it is not guaranteed that all Members of Parliament affiliated with those political parties would vote in favour of a ban on fracking, nor that the members of those parties whose results were absent would vote against, but it demonstrates certain trends. Furthermore, despite the majority in the House of Commons and the ruling alignment with the government of the Prime Minister Theresa May, some Conservative members

<sup>8</sup> This result was obtained combining the number of MPs of each party, plus the share from the Co-operative Party, who currently runs in a coalition with the Labour Party, and despite not showing results on its webpage, it is assumed to follow the lead of its main associate.

have indicated that the political call for shale gas development is not uncontested, as this quote from MP Lee Benjamin Rowley defines:

It could change the outcome of any election – local and national – the reality is that people don't like fracking and are demonstrating (...) it through the planning system, and they may start demonstrating their dislike of it through the voting system. (Gabbatiss, 2018)

### ***Multi-layer strategic framing***

Considering the differences on how the social movement frames and addresses the problems related to hydraulic fracturing, the analysis fragments this assessment on a three-level consideration, comparing the local and regional perspectives, national level, and the international angle. As the previous figure has illustrated, it demonstrates a combination of those three layers and groups of organizations performing collective actions in each of them. Despite the common and general identity of anti-fracking movement, the findings capture some peculiarities in terms of objectives, interests, concerns and achievements on what it means a successful campaign for each of those social layers engaged on the broader struggle against fracking.

#### **Local and regional level**

The first layer presents both local and regional level of engagement, and it is justified by scale factors related to the social and environmental impacts, and due to the shared concerns – well captured by the notion of “expanded backyards” as pointed out by Neville and Weinthal (2016: 581). Within this notion of grouping confined and regional interests, local perspectives are amplified to a larger context, yet that still maintaining and reproducing communal relevance. This layer is marked by the presence of informal groups. Within this category, eight groups were identified, organized within the umbrella NGO Frack Free Lancashire:

- Frack Free Nanashire (FFN) – Composed by The Nanas;
- Preston New Road Action Group (PNRAG);
- Roseacre Awareness Group (RAG);
- Residents Action on Fyde Fracking (RAFF);
- Keep East Lancashire Frack Free (KELFF);
- Defend Lytham (DL);
- Halsall Against Fracking (HAF);
- Frack Free Burscough (FFB);

Common point of those neighbouring level arrangements is the focus on direct and concrete impacts of the fracking activity on livelihoods of residents, as it is exemplified by the informal group 'The Nanas' statement on the headline description of their Twitter® page: “Compassionate individuals fighting to protect our young from harms of fracking” (Frack Free Nanashire, 2018). The Nanas is an informal group present since the beginning of Cuadrilla's activities, and is composed by local residents, with no previous engagement history, whose

drivers illustrate several other local groups, as it is shown in the following interview extracts:

I first heard about fracking when Cuadrilla started shale gas exploration at Preese Hall and triggered earthquakes across the Fylde. For me, Nana's signify safe protest. To someone who has never been involved in activism or protest, the Nana's are accessible, friendly and fun, while sending an important message about the harm caused by fracking and the need to preserve our environment for our children and grandchildren. The Nanas are just ordinary people who want what is best for our families and our communities. We have done the research and concluded that fracking is a very real threat to our air, our water and our health. I see educating others about the threats from fracking as a responsibility, and I am proud to be a Lancashire Nana. (Katharine Styles, 55 years, from Lytham Saint Annes, as quoted in Talk Fracking, 2016).

After researching fracking and attending local anti-fracking meetings, I helped set up our local group in Fleetwood. I didn't decide to become a nana, but evolved into a nana. I feel I was in a cocoon, wrapped up in my life, being a mother a nana and wife. The more I learned about the dangers of fracking, the more resolved I was that I needed to fight this danger and protect my children and grandchildren. This was the point at which I became a "Nana", no longer just nana. My favourite Nana memory has[*sic*] to be taking the field and setting up camp at Preston New Road. Within hours, locals were turning up thanking us, offering support and bringing supplies. It was then I realised that I was absolutely doing the right thing. (Ginette Evans 57 years, from Fleetwood, as quoted in Talk Fracking, 2016).

The next couple quotes illustrate the originality of their approach, channeling local support from individuals who showed no previous engagement history and protesting experience.

(...) we took and occupied the proposed fracking site at Preston New Road, right under the noses of Cuadrilla's hired goons. At 5am in the morning, in full Nana gear, we were armed with a feather duster, a teapot and a cake stand. The majority of us had never done anything like that before and it showed. At 5.30pm the night before, we had no transport to even get us to the proposed site. Undeterred, we carefully planned our direct action on an old beer mat using salt and pepper pots as markers, and we ordered a taxi! Clearly, we were not criminal masterminds. (...) Everyone was running around and we did it, put the kettle on and enjoyed a well-earned cup of tea as we watched the sun come up. (Anjie Mosher 45 years, from Blackpool, as quoted in Talk Fracking, 2016).

Another example of local concern is the declaration of Max Walton, during one of the second action camp that took place from 10 to 13 of May, 2013: "Fracking will not bring gas bills down, will damage our countryside, and will not provide long term jobs to help counter unemployment" (The Blackpool Gazette, 2013), that focuses on socio-economic impacts, such as energy cost or job creation.

Based on the statements made by general audience during public hearings within the permit process, Bradshaw and Waite (2017) summarized most frequent concerns from locals as "air pollution caused by flaring of methane and increased industrial traffic; water pollution from flowback fluid from drilling and

hydraulic fracturing operations; the possibility of groundwater contamination; and light and noise pollution from industrial activity” (2017: 33). According to the authors, who assessed the recordings of 127 people who opposed fracking during the open inquiries “It was these local issues that compounded the public’s fear for the loss of the peace, tranquillity and the idyllic nature of the affected area of the Fylde coast” (2017: 33). Overall, in this first level of engagement, the frames of the issue are addressed focusing on direct environmental and social impacts of the activity, naturally because they are the ones more closed to the fracking site and represent the worries of those who would potentially perceive and be subject to those impacts. Questions related with earthquakes, water privation as consequence of intensive fluid consumption for well drilling and fracking, health risks from pollution and contamination, compromising their freedom to move due to increase in road traffic by heavy supply trucks, decrease in property values when close to fracking site.

### **National Level**

The second social stratum, of national level of engagement, encompasses mostly formalized NGO, and as previously shown some of them were created specifically for the anti-fracking campaign, whereas some were pre-existent, and took the anti-fracking struggle as embedded in their broader interests or strategic actions. One of their basic strategic framing is harnessing and local engagement, and they do this by stimulating participation, arranging mobilization instructions, providing communication resources and organizational knowledge, and so forth. They explicitly explain to concerned individuals how to take action, either by participating in future protest events, signing petitions and public consultations, getting in contact with representatives or councillors and so forth. Fossil Free UK, for example, has a “Guide to engaging MPs and Councillors”, that illustrates how to approach and arrange meetings with Members of the Parliament (MP), based on internal regulations to ensure participation of concerned constituents or delegation of local councillors (Fossil Free UK, 2018b). Other remark is the support for local groups present in the website of Frack Off, with standardized orientation kit for starting up new local-level group organization, with general tips and resourceful materials (Frack Off, 2018b). But enlarging the base of grassroots support is not the only outfit of national level engagement, as they invest considerable efforts to reach general audience and raise awareness about the threats imposed by shale gas development.

The purpose of spreading the word related to fracking is the mandate of some organizations, dealing primarily with generating content for communication, fuelling not only the first layer of local and regional level engagement, but also providing resources for political debate and advocacy strategies. Clear examples of restrict communication focus are Drill or Drop – a self-entitled “publisher of independent, evidence-based journalism about the onshore oil and gas business in the UK and the campaign against it” (Drill or Drop, 2018) and Talk Fracking – a web portal that claims to be “a passionate group who want to tell the world about the pitfalls of fracking. We’ve been openly discussing everything fracking since 2014 and we’ve highlighted the many impacts that surround this extreme extraction technique through some brilliant creative ideas to draw public attention” (Talk Fracking, 2018). The communication aspect is complimented with direct collective action, and this approach is what characterizes Reclaim the

Power, an organization that focus their frame into sponsoring protests and promoting their outcomes. According to their online statement, they are “a UK based direct action network fighting for social, environmental and economic justice. We aim to build a broad-based movement, working in solidarity with front-line communities to effectively confront environmentally destructive industries and the social and economic forces driving climate change” (Reclaim the Power, 2018). Subsequently the strategic framing on the national level can be summarised in raising public awareness through collective action, enlarging the base of grassroots activism, strategic communication and knowledge management.

### **International level**

The international layer also supports the expansion of local networks and individual engagement. Friends of the Earth, for example, displays how to approach future members using social media, and what would be the agenda for the first three meetings (Friends of the Earth, 2018c). They also provide a wide array of resources, from legal documentation templates, art materials for protest, networking advices, and grants and funding possibilities (Friends of the Earth, 2018d). Not to mention a dedicated guide for strategic social media communication (Friends of the Earth, 2018e). On the other hand, 350.org offers beyond the pre-set of publicity material, a learning platform, for training facilitators in target workshops, such as action, base-building, media, organising, strategy, and team building (350.org, 2018c). Furthermore, organizations within this engagement level are additionally framing broader environmental impacts, connecting shale gas development with climate change. For example, Friends of the Earth UK labels in their frontpage “Fracking and Climate Change” as the very title of the anti-fracking campaign (Friends of the Earth, 2018f), whereas Greenpeace positions as the number one consequence of unconventional oil and gas exploration is worsening the climate, according to a UK webpage entitled “The problem with fracking” (Greenpeace UK, 2018b):

The world already has far more gas and oil than we can burn if we are to avoid the most catastrophic impacts of global climate change. Finding more will only make it worse.

In fact, analysts like the International Energy Agency warn that most of the gas we’ve already found should stay in the ground. The last thing we need is new discoveries of expensive, hard to extract gas.

Fracking fans say gas is better than coal but it turns out simply replacing coal with shale gas may do little good over the next few decades – especially if the gas leaks out, sending super-warming methane into the atmosphere.

Frankly we’re well past the point of swapping between dirty fuels. Not only should we stop using coal – right now – we should be cutting down on our gas habit too. (Greenpeace UK, 2018b)

But the core frame is far more abstract than climate change, and international organizations are concerned about the way in which oil & gas companies obtain their license to develop shale extraction projects. Within this strategy, the anti-fracking movement in Lancashire is concentrating efforts to connect the governmental intentions in centralizing the decision-making process of fracking

permits to a broader issue beyond the original environmental concerns – transformed into a democracy threat flagship. The campaign ‘Let Communities Decide’ is the main vehicle for this frame, created in the branch of Fossil Free UK (a part of 350.org) in collaboration with Friends of the Earth UK, and supported by Frack Free Northwest and several other national level organizations. The focus is to confront the governmental plans to skip local planning permissions for the activity (Friends of the Earth, 2018g). On the other hand, the official page of the governmental consultation (held from July to October this year) positions that only some preparation activities would be exempt of the planning permission, and therefore under the Permitted developed policy, within the National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government of the United Kingdom, 2018). Unfortunately, the final result of the consultation was not disclosed until the development of this research, according to the official inquire webpage (United Kingdom of Great Britain and Northern Ireland, 2018).

### *Lifecycle analysis*

Considering the four-stage analysis presented by Christiansen (2009:02), the findings situate that the anti-fracking movement had its emergence in roughly in Lancashire from 2008 onwards, in consequence of the 13<sup>th</sup> Landward Licensing Round, that processed a batch of oil and gas development license applications. In May, 2008, after Cuadrilla Resources was granted the Petroleum Exploration and Development License number 165 (PEDL), the company initiated its activities in the region, and by that time, they had five fronts of operations where planning permissions were required during 2009 and 2010, as it is illustrated in Figure 03. This stage remarks are not very well covered by media and group formations were not track-recorded. Thereafter, the coalescence phase happened after the first significant earthquake, in April/2011. This phase was characterized by the occurrence of the first collective action known as the Frack Camp and took part from 16 to 18 of September, 2011 and from then several protests evolved and local groups begun their activities, not only in Little Plumptre community – where the fracking site is located – but within the Lancashire county as well, since the PEDL 165 covers a vast amount of surface. This coalescence stage continued carrying out well documented social mobilization but the precise moment of progression to the bureaucratization step is blurred, as the social movement conquered a preliminary victory with the temporary halt on the activity. During the moratorium period, important achievements were observed elsewhere, and due to the transnational nature of this social movement, by the time the government lifted the halt, the bureaucratic aspect was evident. A network of grassroot organizations was working simultaneously in at least the main fracking sites in England (Preston New Road, Balcombe and Kirby Misperton), coordinated and supported by high professionalized organizations, with mature level of social power, and a diverse operational strategy, covering from blockades to advocacy, general knowledge to scientific research. A clear example of the professionalization level and resource power achieved by the movement is the intervention of Friends of the Earth’s practitioner lawyer into the case of three activists who were sentenced to custody in September 26, 2018 (Friends of the Earth, 2018h). The jail sentence was fired in consequence of a massive protest that occurred on July 25, 2018 (the convicted activists climbed the lorries

of supply trucks and stayed there for three days) one week after a court injunction that prohibited certain obstacles for Cuadrilla's licensed activities, issued on 18 of July (High Court of Justice, Business and Property Courts of England and Wales, 2018).

**Figure 3** – Cuadrilla's permissions under the PEDL 196 as from September 2011.

<b>Consents issued to Cuadrilla Resources by Lancashire County Council</b>				
<u>Location</u>	<u>LCC ref.</u>	<u>App. Date</u>	<u>Postcode<sup>‡</sup></u>	<u>Development status<sup>*</sup></u>
Preese Hall, Weeton	05/09/0572	31/07/09	PR4 3HT	Well drilled and fracked
Grange Road, Singleton	05/10/0091	05/02/10	FY6 8LP	Well drilled, not yet fracked
Marsh Road, Banks	08/10/0973	26/07/10	PR9 8HB	Drilling started
Anna's Road, Westby	05/10/0634	01/09/10	FY8 4NH	Construction of pad completed
Inskip Road, Wharles	05/09/0813	03/12/09	PR4 3SN	No work started

<sup>‡</sup> post code estimated from nearest property      <sup>\*</sup> as at September 2011

Source: Mobbs: 2012

After this widespread support from regional, national and international level organizations, the very attempt to block on site protests correspond to a clear effort from opposing forces to push the Lancashire anti-fracking movement into the decline stage, by repression forces. So far, more than 350 arrests have fell on engaged activists. Paradoxically, the same efforts are being addressed by the activist as a measure of success, another way towards the decline of the movement, according to Christiansen (2009: 03), that could be an indication of the upcoming shift on the movement's final stage. This 'victorious spirit' can be illustrated with a declaration of the activist Henry Ownen:

(...) but the only joke here is Cuadrilla and the government thinking that fracking at Preston New Road is a win for the industry. (...) There's no way that these companies will reach their requirements of thousands of wells when a single site has been met by this much local and national resistance. Fracking at Preston New Road is just a desperate attempt to snatch profit and save face as the industry dies. Local people have been leading the resistance for years. We know we're winning and across the UK more people are still saying no to fracking. (Hayhurst, 2018)

Nevertheless the positive nature of the declaration, the fact is that the company has started fracking in Preston New Road site, despite all the long-lasting protests and vigorously opposition. An interview with Simon Roscoe Blevins, 26 years, one of the three activists whose jail sentence was defeated by the Court of Appeal, illustrates this controversial double-sided success/failure aspect, reflecting the discourse-over-reality dilemma:

Prison is shit (...) but compare that to the threat of fracking and climate change – if me being in there for three weeks draws attention to that threat or galvanises support, it's a no brainer that's worth it.

(...) This is so important (...) What's happened has only made me more determined to try and bring about meaningful change.

(...) There were mixed feelings (...) Elation to be out and seeing people but at the same time, seeing the drill rigs in the field – it made me feel sick actually. We haven't won. They've started fracking. (as quoted in Drury, 2018)

### *Complimentary analytical resources*

With the objective to get a deeper look into Obach's analytical framework, the paper went further to apply some approaches used by Neville and Weinthal (2016), who studied the way anti-fracking movement embedded and sponsored one particular local cause in northern Canada, initially not linked to the shale gas development (replacement of outdated diesel-based backup generators). Despite having different objectives and research questions, this approach is complimentary to Obach's and reflects some of the influencing factors illustrated by the theoretical and conceptual literature review and this interactive feature is aligned with the broader political ecology scholarship. They started the analysis over 'siting disputes' or site struggles, and zoomed out applying concepts as "scale shifts" and "strategic linkages", illustrating how do local and concrete concerns become more distant and abstracts – from the political ecology concept of 'not in my backyard' (NIMBY) to 'not in anyone backyard' (NIABY) (2016: 574).

A common ground of both analytical tools is the strategic framing, but Neville and Weinthal went deeper by using the concept of "harnessing local concerns" to deal with the transference of message focus from different levels throughout the multi-layered transnational anti-fracking movement (2016: 581). They found that local activism organized a message shift from focusing on immediate issues to more indirect regional-level concerns, in what they called "frame expansion and certifications strategies" (2016: 578), and by doing so, they moved from NIMBY to NIABY using linkages in order to expand the backyards (2016: 581). Also, they considered the sequence of those linkage mechanisms, and if how a given collective action in a specific timeframe influenced the result obtained by the social movement. On this perspective, they pointed out:

Without the actions of anti-fracking activists, the issue might have garnered limited interest. If this were only a siting dispute or narrow fight against the LNG backup generators, we would not expect to see ongoing activism. Once permits were in place and construction already underway, we would anticipate flagging enthusiasm for an apparently unsuccessful campaign. (2016: 582).

By enhancing local struggle support by a wider movement, the regional and national-level anti-fracking activists in the Canadian case yielded the benefit of creating identity among local residents and activists "claiming insider status" and achieving "social legitimacy"; this mechanism undermined the pre-arranged responsive strategy from shale gas supportive stakeholders, to label environmentalists from elsewhere as 'outsiders' (2016: 583). Finally, their analytical approach dealt with a multi-layer relation trend, among the linkage mechanisms, as they shed light on the familiarity of local worries with concrete risks against the abstraction of global and distant realities of the broader environmental concerns, by "appealing to a sense of belonging in a larger landscape" (2015: 586). In the case presented by the authors, the environmental movement was fighting against



the replacement of old diesel backup generators, to be substituted by ‘modern’ generator fuelled by liquid natural gas, the situation showed much more social complexity than a simple siting dispute, as revealed by the research. As revealed in the Lancashire case, the findings demonstrate the presence of scale shifts within the multi-layer framing, from local and concrete to international and abstract, and these processes are aligned with other scholars, as illustrated by Hilson (2015):

In the UK, anti-fracking protestors and campaigners have adopted two key types of scalar frames which correspond to the concerns they have with fracking and shale gas development. First, there are ‘local’ frames which emphasise the local, principally environmental harms which may be caused by fracking. (...) With the above then, fracking is constructed as a local environmental problem which carries risks rather than benefits. (...) Next, there are ‘global’ frames which rather than focusing on local environmental harm, focus on global climate risks posed by shale and other unconventional oil and gas development. (Hilson, 2015: 184/185)

Those linkages are also aligned with cutting-edge political opportunity structure academics, as Marco Giugni (2011) refers to three aspects of modern society that should be considered. First, the “multilayered political opportunity structure” relies in both spatial dimensions of scale and thematic dimension of targeted policies (2011: 281) – a result of the cross-cutting nature of fracking that goes way beyond narrow environmental concerns (energy security, health implications, employment, infrastructure, economy, and so forth). Second, the blurred role of stakeholder engagement, where “institutional actors such as parties sometimes behave as social movements, and movement activists become part of state institutions” (2011: 281), evidenced in the English anti-fracking case by both the advocacy contributions of the international level component of anti-fracking and the presence of politicians in the “front” of protests, exemplified by the iconic arrest of the Green Party MP Caroline Lucas in a road blockade in Balcombe, on August 2013 (McSmith, 2013; Goldhill and Marsden, 2013; and Harvey and Walker, 2013). And third, the polarity disassemble of social structure and agency portrays political opportunities as “both a cause and a consequence of protest activities, thus rediscovering the place of agency in their analyses” (Giugni, 2011: 281).

This broader political opportunity structure theory combined with a political ecology perspective comprehends a useful framework to help understand the research question. Despite the captured peculiarities of what constitutes success for this multi-layered movement, minding the achievements means to comprehend the ultimate desired outcome of the anti-fracking movement: a long-lasting halt based on the uncertainties of hydraulic fracturing or a complete prohibition of shale gas development activity. Some insights from political ecologists enlarges the search for causal mechanisms contributing to activism and resistance, in general. Wolford and Keene (2015), point out four key provisions derived from political ecology approach to social movements – that could be addressed either as single inputs or in combination. Starting from appropriating objective and subjective significance of the conflictual relation at stake (2015: 576), the contribution relies on how relations were created and reproduced, and what the struggle means for the stakeholders. In the Lancashire example, the previous regulation system (before the temporary halt) was not aligned with a participative

decision-making process and reflected in the unannounced feeling of revolt observed in the spark of the struggle, happening only after the first seismic events caused by the fracking activity. The second spinoff is the understanding of social movements as a socially constructed phenomenon established within context-specificity, notably regarding time and space (2015: 576). Applying this aspect for the case of Little Plumpton shows, initially, how challenging it is to make comparison with other anti-fracking initiatives that led to a ban in other scenarios. Likewise, it helps to better understand aspects like identity creation and singularities in the movement itself, like the subtleness icon of a bunch of Nanas having cake & tea while blocking a heavy-load supply convoy of fracking equipment - nevertheless belonging to the broader transnational anti-fracking movement. Another utility of political ecology, according to the authors, is on amplifying strategic framings beyond discourses and into larger social structures, like power relations, multi-scale framings, transnational approach and so on (2015: 578) – already covered on this essay. Lastly, they consider that “political ecology’s concern with power, marginalization and contestations over resources has generated a perspective on state-society relations”, and this systemic and relational attention “helps to de-center the state (...) focusing on the ways in which political power is constituted, experienced and (re)produced at multiple levels” (2015: 580). Another example crafted due to the blending of those contributions is reflected on how unpopular the Lancashire long-lasting resistance is, to the extent that, considering the temporal context, is going to affect the electoral pledges and able to influence next election results, as already noticed by members of the conservative party, fearing losing political terrain if supporting shale gas enterprises<sup>9</sup>.

Considering the environmental justice perceptions as an underlying frame, Cotton et al. (2014) pointed out for injustices among the distributional aspect involving “complex scale and scalar dimensions”, and despite the technical reasons for site selection are not evident, the political drivers reveals that the Preston New Road site “may become targets based upon the relative economic marginalisation of citizens and hence the peripherality” drawing a north-south polarity where one bears the costs of generating this controversial energy while the other concentrates the consumption (2014: 434). They also shed light on regulatory environmental injustices of Cuadrilla’s tricky obtention of the permit, using obtuse ways (such as limiting the site to 0.99 hectares to skip a 1-hectare threshold) they avoided the requirement for a typical Environmental Impact Assessment (EIA) (2014: 433). On this sense:

Although national level peculiarities, there is a common sense on the central importance of EIA as the main instrument to support the decision-making processes within permit applications. The baseline behind EIA as a public policy resides on ‘command and control’ logics that determine, for approving a potentially impactful development project, numerous environmental and socio-economic impacts must be assessed, in order to predict their nature (positive

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<sup>9</sup> In this sense, see also the essay of Ashley Dodsworth (2018) on the “wider electoral advantages of the Green Party’s opposition to fracking”.

or negative), magnitude, reversibility, mitigation measures and so forth. (Viecili, 2018)<sup>10</sup>

In order to assess the flipside frames used by shale gas supporters, the research also brought some statements from different stakeholders to enlarge the understanding of the broader tensions behind the anti-fracking struggle. According to Francis Egan, representative of Cuadrilla Resources, shale gas “displace costly imported gas, with lower emissions, significant economic benefit and better security of energy supply for the UK” (as quoted in Ambrose, 2018). The government support for this new energy source is evident, and the official discourse justifies that, due to uncertainties of geological prediction studies on the shale gas availability, “government is encouraging safe and environmentally sound exploration to determine the potential”, and believes the running regulations are capable to “ensure on-site safety, prevent environmental contamination, mitigate seismic activity, and to monitor and minimise greenhouse gas emissions” (Department for Business, Energy & Industrial Strategy, 2018). Within the Parliament, a recent report from the Housing, Communities and Local Government Committee, concluded on the importance of local level decision-making for fracking planning permissions, and according to Clive Betts – Member of the Parliament and chair of the committee:

Taking decision making powers away from local planning authorities would be a backward step. It would remove the important link between fracking applications and Local Plans and be hugely harmful to local democracy and the principles and spirit of localism. (as quoted in the Housing, Communities and Local Government Committee, 2018)

Based on a discourse analysis approach, Cotton et al. (2014) mapped the underlying narratives and connected stakeholders, classifying them according to the storyline, values and coalitions regarding shale gas development tensions (2014: 435), and were also sensitive with the shifting scale issue, pointing out for its importance as enables the participation “in practices that signal how politics are spatialised across multiple geographic and political governance scales that are enacted as means for dominant organisations to disempower Northern English communities, and for activists to become empowered in national discourse” (2014: 434). They further conclude that “the rapid policy response to shale gas (...) shows that Government prioritises the economic development potential of shale gas over the potential climate change impacts” (2014: 436). Those assumptions are aligned with de Melo-Martín et al. (2014), when studying ethics in shale gas policies. According to the study, the quest for decision makers is to balance the ambiguities of choices, by either “avoid false positives” that means rejecting what in the future might be revealed as a inoffensive energy source, or “minimise false negatives” that can be interpreted as accepting the risks of a potentially

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<sup>10</sup> Unpublished: This paragraph is based on the graded assignment submitted for the Course 4334 – ‘Politics and Economics of Natural Resources Management’ – Literature Review Assignment. The instructions were given for students to pick a topic of their choice, and Research Paper topics were allowed by the course leader, as long as they were relevant to the concepts discussed throughout the course.

belligerent technology (2014: 1115), and despite all the ethical reasons presented on their study, in the defence of the later position rather than the former, based on the findings it is clear that the actual governmental positionality is of fragile ethical considerations<sup>11</sup>, and partially explains the drivers for this combative social movement.

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<sup>11</sup> If not by ethical concerns, the political call on such unclear scenario could address likewise sustainability criteria for decisions in this shaking ground of shale gas development. It is worth mentioning, thereafter, the recent comparative study conducted by Cooper et al. (2018) that revealed the poor performance of shale gas when similar weights on environmental, social and economic indicators (their components for the sustainability tanking) were set equally, when compared with alternative energy sources, such as wind power, solar photovoltaic, hydropower, nuclear, biomass and coal (2018: 813).

## Chapter 4

### Conclusions

Shale gas development has proved to be controversial, and in the core of this misalignment are environmental and social injustices derived from an “inaccessible governance experience” that frustrates public participation and nourishes resistance from social movement (Whitton et al., 2017: 21). Amplifying traditional social sciences perspectives in combination with political ecology is, therefore, an attractive approach to study environmental movements when analysed with the dynamic lenses of natural processes, because the very reason behind those social phenomena are, at large, unbalances resulting from neoliberal stage of capitalism and its unsustainable nature of shifting costs to enable exploitative surplus accumulation. Underlying the discussion of neoliberalism as the cause of environmental crisis, lies historical Marxist lessons about how the (re)productive capitalist mentality works, as interpreted by Martin O’Connor (1994):

crisis is the occasion that capital attempts to seize and to turn to its own ends, that is, to restructure and rationalize itself in order to restore its capacity to exploit labor and nature, and thereby accumulate surplus value to itself. (O’Connor, 1994: 127)

Consequently, the simplicity of the model adopted by Obach (2015) to assess the variables affecting the performance of anti-fracking movements is at the same time an advantage and a limitation. On the one hand, the objectivity and robustness of the categorised factors provide a rapid and effective reading of all consecrated conceptual aspects covered on the vast literature of social movements: organizational capacity; mobilizing resources and structures, strategic framing, and political opportunity structure, leaving no milestones apart. Even though no conceptual aspect was really missing, the framework was not able to explain why, in the Lancashire example, the outcome was different than in the New York case, nonetheless the result showing close similarities among them. Both cases showed pre-availability of organizational capacity and resources, have framed the concerns based on scientific evidence while creatively using the appealing ‘fracking’ term, and were backed by powerful supporters. The main differences in the cases can be attributed, at first, to a real enterprise in the case of Lancashire, against a potential threat in New York, and the internal timing of each one: in the American case, by the time the pretensions from the Oil & Gas industry knocked on New York State door, there were already several installations pumping out shale gas in other States, and a history of misadventures and sound evidence about environmental and social risks. Whereas in the British example, Cuadrilla’s first attempts to frack were obtained on a loophole previous regulation (Cotton et al., 2014: 433), hence the response may have lost precious time to stand up against the practice. That being said, one of the supporting research questions reveals that the technical and administrative integrity on the permit process truly matters, and for a company interested in landing a shale gas project, an intimacy knowledge about the regulation and all its meanders can surely be the turning point, or at least give them a large advantage on the race. Those discriminations, nevertheless, did not constrained the evolution of the social movement, who grew strong in the Lancashire case.

The point here is the misstep between a picture and a movie, and the framework could be improved by adding the political ecology layer into the equation. Wisely, the complimentary aspects extracted from Neville and Weinthal (2016) consider this more dynamic dimension of the transnational anti-fracking movement, and employ concepts such shifting scales and strategic linkage mechanisms, connecting the local anti-fracking discourse with broader global concerns – and by doing so, enlarges the notion of identity, yielding support from upper scales while enabling outsiders to engage side by side with truly local activists. Not by accident, those concerns receive far more interest by powerful political stakeholders, while tackling concerns like democracy threat due to lack of political influence of local decisions. This aspect was evidenced not only by participation flaws within the regulatory and the permitting process (which compromise legitimacy and leads to the lack of a social license to operate), but also in the repression forces trying to undermine collective action and to push the social movement to a decline stage, based on court injunctions and the criminalization of peaceful protesting – disclosing the relevant contribution of lifecycle analysis to the framework.

Finally, considering this political ecology mindset my argument is that, connecting back to Welford and Keene's (2015) second contribution for social movements studies, the space and time contexts do matter (2015: 575). In the case of Lancashire, the temporal boundary reveals that the struggle is still ongoing, and the social power is increasing overtime – meaning that they have favourable conditions to overturn the permits and lead to the ultimate ban. Naturally only time will tell the final aftermath of this struggle but, based on the body of literature and the evidences collected throughout this research paper, my forecast is that England will follow the New York example and join the list of governments who have ban hydraulic fracturing. If not, based on the knowledge acquired from other contexts where shale gas has developed, changes in the social dynamics are inevitable, either by splitting out previous “cohesive communities”, or by strengthening fragmented societies (Willow and Wylie, 2014: 227). And even though the reality points that success has plural meanings in a proven diverse and multiple-layered transnational social movement, the recurrent impediments caused by efficient activism generates significant delays and major losses for the company, which increases production costs and certainly discourages investments in the sector.

And in the meanwhile, since fracking has just started while this research was being conducted, I draw recommendations for further research and long-term environmental justice studies focusing on the evolution of social dynamics after the implementation and start-up of Cuadrillas' operations in Preston New Road site. A good outline considering the framework proposed by Meng (2018), a spatial justice analysis, combining inputs from social and environmental components (benefit distribution vs impact bearing) could be used to assess changes in landscape, seismologic resilience, and the environmental and socio-economic impacts. Relevant contributions could likewise be made adopting a positivist approach and investigating how participation is effectively happening in the permit process – to address how, even with strong conflict and resistance, the company is succeeding to get the green light for fracking. Is it a flaw on the process? Is participation just a “tick-a-box” feature of permit proceedings?

## References

- 350.org (Last updated 2018a) '350.Org is Building the Global Grassroots Climate Movement that can Hold our Leaders Accountable to Science and Justice.' (a webpage of 350.org). Accessed October 31 2018 <<https://350.org/about/>>.
- 350.org (Last updated 2018b) 'Stand with Lancashire' (a webpage of 350.org). Accessed October 28 2018 <<http://act.350.org/sign/stand-with-lancs/?fbclid=IwAR3sUb72OlaMa-kaoZGGHvgpMrhjuN0TRpazzvtnRQWqYLm6bYHVnAPeS11M>>.
- 350.org (Last updated 2018c) 'Trainings - Audience - Organisers: Tools and Handouts to Build Long-Term Capacity and Power' (a webpage of 350.org). Accessed October 31 2018 <<https://trainings.350.org/for/organisers/>>.
- Ambrose, J. (2018) 'Shale Gas Fracking to Get Going in the UK this Weekend' *The Telegraph*, October 12, <<https://www.telegraph.co.uk/news/2018/10/12/shale-gas-fracking-get-going-uk-weekend/>>.
- Andersson-Hudson, J., W. Knight, M. Humphrey and S. O'Hara (2016) 'Exploring Support for Shale Gas Extraction in the United Kingdom', *Energy Policy* 98: 582-589 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0301421516305092>>.
- Andrews, I.J. (2013) 'The Carboniferous Bowland Shale Gas Study: Geology and Resource Estimation', pp. i-56. London, UK: British Geological Survey for Department of Energy and Climate Change. <<https://www.bgs.ac.uk/research/energy/shaleGas/bowlandShaleGas.html>>.
- Bailey, R.L. (Last updated 2018) 'It's a Scandal that the Government has been Allowed to Force through Fracking at any Cost' (a webpage of The Labour Party). Accessed November 08 2018 <<https://labour.org.uk/press/scandal-government-allowed-force-fracking-cost-long-bailey/>>.
- Barrow, C.J. (2010) 'How is Environmental Conflict Addressed by SIA?', *Environmental Impact Assessment Review* 30(5): 293-301 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0195925510000600>>.
- Benford, R.D. and D.A. Snow (2000) 'Framing Processes and Social Movements: An Overview and Assessment', *Annual Review of Sociology* 26: 611-639 <<http://www.jstor.org/stable/223459>>.
- Bond, R., J. Curran, C. Kirkpatrick, N. Lee and P. Francis (2001) 'Integrated Impact Assessment for Sustainable Development: A Case Study Approach', *World Development* 29(6): 1011-1024 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0305750X01000237>>.
- Bradshaw, M. and C. Waite (2017) 'Learning from Lancashire: Exploring the Contours of the Shale Gas Conflict in England', *Global Environmental Change* 47: 28-36 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0959378016306446>>.

Bridge, G., J. McCarty and T. Perreault (2015) 'Editor's Introduction', in T. Perreault, G. Bridge and J. McCarty (eds) *The Routledge Handbook of Political Ecology*, pp. 3-18. New York: Routledge.

Burdge, R.J. (2002) 'Why is Social Impact Assessment the Orphan of the Assessment Process?', *Impact Assessment and Project Appraisal* 20(1): 3-9  
<<https://doi.org/10.3152/147154602781766799>>.

Campaign Against Climate Change (Last updated 2011) 'Fracking Hell? what Will Shale Gas Mean for the UK?' (a webpage of Campaign Against Climate Change). Accessed October 31 2018 <<https://www.campaigncc.org/frackingmeeting>>.

Chadwick, A. (2002) 'Socio-Economic Impacts: Are they Still the Poor Relations in UK Environmental Statements?', *Journal of Environmental Planning and Management* 45(1): 3-24 <<https://doi.org/10.1080/09640560120100169>>.

Christiansen, J. (2009) 'Four Stages of Social Movements', *EBSCO Research Starter*: 1-7  
<<https://www.ebscohost.com/uploads/imported/thisTopic-dbTopic-1248.pdf>>.

Clough, E. (2018) 'Environmental Justice and Fracking: A Review', *Current Opinion in Environmental Science & Health* 3: 14-18  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S2468584417300478>>.

Cooper, J., L. Stamford and A. Azapagic (2018) 'Sustainability of UK Shale Gas in Comparison with Other Electricity Options: Current Situation and Future Scenarios', *Science of The Total Environment* 619-620: 804-814  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0048969717331984>>.

Cotton, M. (2017) 'Fair Fracking? Ethics and Environmental Justice in United Kingdom Shale Gas Policy and Planning', *Local Environment* 22(2): 185-202  
<<https://www.scopus.com/inward/record.uri?eid=2-s2.0-84969972537&doi=10.1080%2f13549839.2016.1186613&part-nerID=40&md5=0e09e1e147c05b79614bc09655bd95f2>>.

Cotton, M. and I. Charnley-Parry (2018) 'Beyond Opposition and Acceptance: Examining Public Perceptions of the Environmental and Health Impacts of Unconventional Oil and Gas Extraction', *Current Opinion in Environmental Science & Health* 3: 8-13  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S2468584417300375>>.

Cotton, M., I. Rattle and J. van Alstine (2014) 'Shale Gas Policy in the United Kingdom: An Argumentative Discourse Analysis', *Energy Policy* 73: 427-438  
<<http://www.sciencedirect.com/science/article/pii/S0301421514003309>>.

Cuadrilla Bowland Limited (2014) 'Environmental Statement', pp. 1-629. Bristol, UK: Environment Agency. <[https://consult.environment-agency.gov.uk/onshore-oil-and-gas/information-on-cuadrillas-preston-new-road-site/supporting\\_documents/ES%20full.pdf](https://consult.environment-agency.gov.uk/onshore-oil-and-gas/information-on-cuadrillas-preston-new-road-site/supporting_documents/ES%20full.pdf)>.

Day, A. (2018) 'Fashion Designer Dame Vivienne Westwood Performs Protest Dance at Fracking Site' *The Huffington Post*, October 17,  
<<https://www.huffingtonpost.co.uk/entry/fashion-designer-dame-vivienne->



[westwood-performs-protest-dance-at-fracking-site\\_uk\\_5bc5e3a3e4b0d38b5871b445>.](#)

de Melo-Martín, I., J. Hays and M.L. Finkel (2014) 'The Role of Ethics in Shale Gas Policies', *Science of The Total Environment* 470-471: 1114-1119  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0048969713012321>>.

de Pater, C.J. and S. Baisch (2011) 'Geomechanical Study of Bowland Shale Seismicity', pp. i-57. England, UK: Cuadrilla Resources Limited.  
<[http://web.archive.org/web/20111110150601/http://www.cuadrillaresources.com/cms/wp-content/uploads/2011/11/Final\\_Report\\_Bowland\\_Seismicity\\_02-11-11.pdf](http://web.archive.org/web/20111110150601/http://www.cuadrillaresources.com/cms/wp-content/uploads/2011/11/Final_Report_Bowland_Seismicity_02-11-11.pdf)>.

Della Porta, D. and M. Diani (2006) *Social Movements: An Introduction*. (2nd ed. edn) Malden, MA: Blackwell Publishing.

Dendena, B. and S. Corsi (2015) 'The Environmental and Social Impact Assessment: A further Step Towards an Integrated Assessment Process', *Journal of Cleaner Production* 108(Part A): 965-977 <<https://doi.org/10.1016/j.jclepro.2015.07.110>>.

Department for Business, Energy & Industrial Strategy (Last updated 2018) 'Guidance on Fracking: Developing Shale Gas in the UK' (a webpage of The Government Digital Service of the United Kingdom). Accessed November 09 2018  
<<https://www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-fracking/developing-shale-oil-and-gas-in-the-uk>>.

Dodsworth, A. (Last updated 2018) 'the Wider Electoral Advantages of the Green Party's Opposition to Fracking' (a webpage of London School of Economics and Political Science). Accessed November, 09 2018  
<<http://blogs.lse.ac.uk/politicsandpolicy/fracking-and-the-greens/>>.

Drill or Drop (Last updated 2018) 'About' (a webpage of Drill or Drop). Accessed October 22 2018 <<https://drillordrop.com/about/>>.

Drury, C. (2018) "Prison is s\*\*\*, but it's Worth it': Freed Fracking Protester Jailed for 16 Months Vows to Keep Fighting Injustice' *Independent Digital News and Media Ltd*, 04/11/2018, <<https://www.independent.co.uk/news/uk/home-news/jailed-fracking-protesters-simon-blevins-cuadrilla-richard-roberts-rich-loizou-preston-new-road-a8613681.html>>.

European Union (2014) '2014/70/eu: commission recommendation of 22 january 2014 on minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing.'. European Union  
<<http://data.europa.eu/eli/reco/2014/70/oj>> .

Evensen, D., J.B. Jacquet, C.E. Clarke and R.C. Stedman (2014) 'What's the 'fracking' Problem? One Word can't Say it all', *The Extractive Industries and Society* 1(2): 130-136  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S2214790X14000471>>.

Finkel, M.L. and J. Hays (2013) 'The Implications of Unconventional Drilling for natural Gas: A Global Public Health Concern', *Public Health* 127(10): 889-893

<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0033350613002412>>.

Fossil Free UK (Last updated 2018a) 'Divest from Fossil Fuels: Demand our Public Institutions Cut Financial Ties with the Fossil Fuel Industry.' (a webpage of Fossil Free UK). Accessed October 28 2018 <<https://gofossilfree.org/uk/divest/>>.

Fossil Free UK (Last updated 2018b) 'Guide to Engaging MPs and Councillors' (a webpage of Fossil Free UK). Accessed October 31 2018 <<https://gofossilfree.org/uk/wp-content/uploads/sites/3/2018/08/Guide-to-engaging-MPs-and-councillors-FINAL-logo.pdf>>.

Foundation for Art and Creative Technology - FAT (Last updated 2013) 'Turning FACT Inside Out' (a webpage of Foundation for Art and Creative Technology). Accessed October 31 2018 <<https://www.fact.co.uk/projects/turning-fact-inside-out.aspx>>.

GasLand (2010) Adlesic, T., Fox, J. and Gandour, M. (producer) and Fox, J. (director) United States.

Frack Free Lancashire (Last updated 2018) 'Frack Free Lancashire Political Strategy' (a webpage of Frack Free Lancashire Political Strategy). Accessed October 29 2018 <<http://frackfreelancashire.org/frack-free-lancashire-political-strategy/>>.

Frack Free Nanashire (2018) 'Compassionate Individuals Fighting to Protect our Young from Harms of Fracking.' Nanashire (@UK\_Nanas). Accessed 31/10/2018 <[https://twitter.com/uk\\_nanas?lang=en](https://twitter.com/uk_nanas?lang=en)>.

Frack Off (Last updated 2018) 'Campaign Materials' (a webpage of Frack Off). Accessed October 31 2018 <<https://frack-off.org.uk/campaign-materials/>>.

Friends of the Earth (Last updated 2018a) 'Briefing Note: History and Description of Friends of the Earth' (a webpage of Friends of the Earth). Accessed October 31 2018 <[https://friendsoftheearth.uk/sites/default/files/downloads/foe\\_history.pdf](https://friendsoftheearth.uk/sites/default/files/downloads/foe_history.pdf)>.

Friends of the Earth (Last updated 2018b) 'Central Lancashire Friends of the Earth: See Things Differently' (a webpage of Friends of the Earth). Accessed October 31 2018 <<https://friendsoftheearth.uk/groups/centrallancashire/>>.

Friends of the Earth (Last updated 2018c) 'Starting a Local Group' (a webpage of Friends of the Earth). Accessed October 31 2018 <<https://friendsoftheearth.uk/local-groups/starting-local-group>>.

Friends of the Earth (Last updated 2018d) 'Resources for Local Groups' (a webpage of Friends of the Earth). Accessed October 31 2018 <<https://friendsoftheearth.uk/local-groups/resources>>.

Friends of the Earth (Last updated 2018e) 'How to use Social Media' (a webpage of Friends of the Earth). Accessed October 31 2018 <<https://friendsoftheearth.uk/local-groups/how-use-social-media>>.

Friends of the Earth (Last updated 2018f) 'Fracking and Climate Change' (a webpage of Friends of the Earth). Accessed October 31 2018 <<https://friendsoftheearth.uk/climate-change/fracking>>.

Friends of the Earth (Last updated 2018g) 'Fracking and Permitted Development' (a webpage of Friends of the Earth). Accessed November 5 2018  
<<https://friendsoftheearth.uk/climate-change/fracking-and-permitted-development>>.

Friends of the Earth (Last updated 2018h) 'Fracking Protesters' Sentencing was Unlawful Says Friends of the Earth as Sentences Over-Turned' (a webpage of Friends of the Earth). Accessed November 2 2018 <<https://friendsoftheearth.uk/climate-change/fracking-protesters-sentencing-was-unlawful-says-friends-earth-sentences-overturned>>.

Fry, M., A. Briggles and J. Kincaid (2015) 'Fracking and Environmental (in)Justice in a Texas City', *Ecological Economics* 117: 97-107  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0921800915002438>>.

Furby, L. (Last updated 2018) 'Fact Check: The Tory Record on the Environment' (a webpage of The Scottish National Party). Accessed November/09 2018  
<<https://www.snp.org/fact-check-the-tory-record-on-the-environment/>>.

Gabbatiss, J. (2018) 'Tory MPs Express Fears that Fracking Will Lose them Next Election' *Independent Digital News and Media Ltd*, October 3,  
<<https://www.independent.co.uk/news/uk/politics/fracking-conservative-mp-lose-election-drilling-lee-rowley-james-heappey-a8567101.html>>.

Gerring, J. (2007) *Case Study Research: Principles and Practices*. New York: Cambridge University Press.

Giugni, M. (2011) 'Political Opportunity: Still a Useful Concept?', in M. Hanagan and C. Tilly (eds) *Contention and Trust in Cities and States*, pp. 271-283. Dordrecht: Springer Netherlands.

Glasson, J. and D. Heaney (1993) 'Socio-economic Impacts: The Poor Relations in British Environmental Impact Statements', *Journal of Environmental Planning and Management* 36(3): 335-343 <<https://doi.org/10.1080/09640569308711950>>.

Global Gasdown Frackdown (Last updated 2018) 'The Global Gasdown Frackdown Day of Action' (a webpage of Global Gasdown Frackdown). Accessed October 30 2018 <<https://gasdown-frackdown.org/background-3/>>.

Glucker, A.N., P.P.J. Driessen, A. Kolhoff and H.A.C. Runhaar (2013) 'Public Participation in Environmental Impact Assessment: Why, Who and how?', *Environmental Impact Assessment Review* 43: 104-111  
<<http://www.sciencedirect.com/science/article/pii/S0195925513000711>>.

Goldhill, O. and Marsden, S. (2013) 'Fracking Protests: Police Arrest Green MP Caroline Lucas' *The Telegraph*, August 19,  
<<https://www.telegraph.co.uk/news/earth/environment/10252660/Fracking-protests-police-arrest-Green-MP-Caroline-Lucas.html>>.

Greenpeace UK (Last updated 2018a) 'Greenpeace in the 1970s' (a webpage of Greenpeace UK). Accessed October 31 2018  
<<https://www.greenpeace.org.uk/about/impact/history/greenpeace-1970s/>>.

Greenpeace UK (Last updated 2018b) 'The Problem with Fracking' (a webpage of Greenpeace UK). Accessed October 31 2018 <<https://www.greenpeace.org.uk/what-we-do/climate/fracking/the-problem-with-fracking/>>.

Greenpeace UK (Last updated 2013) '4 Reasons Why we could all be Fracked by Fracking' (a webpage of Greenpeace International). Accessed October 29 2018 <<https://www.greenpeace.org.uk/3-reasons-why-we-could-all-be-fracked-fracking-20130812/>>.

Harrington, W. and R.D. Morgenstern (2006) 'Economic Incentives Versus Command and Control', in W.E. Oates (ed.) *The RFF Reader in Environmental and Resource Policy*, pp. 66-71. New York: Routledge.

Harvey, F. and Walker, P. (2013) 'Caroline Lucas among Dozens Arrested in Balcombe Anti-Fracking Protest' *The Guardian*, August 19, <<https://www.theguardian.com/environment/2013/aug/19/caroline-lucas-arrest-balcombe-anti-fracking>>.

Hayhurst, R. (Last updated 2018) 'Live News Updates: Cuadrilla Says Fracking has Started' (a webpage of Drill or Drop). Accessed October 31 2018 <<https://drillordrop.com/2018/10/15/live-news-updates-cuadrilla-due-to-frack-today/>>.

Hays, J., M.L. Finkel, M. Depledge, A. Law and S.B.C. Shonkoff (2015) 'Considerations for the Development of Shale Gas in the United Kingdom', *Science of The Total Environment* 512-513: 36-42 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0048969715000078>>.

*High Court of Justice, Business and Property Courts of England and Wales*. (2018) Claim No: E30MA at 1-10 <<https://cuadrillaresources.com/wp-content/uploads/2018/07/High-Court-Order.pdf>>.

Hill, M. (2014) 'Shale Gas Regulation in the UK and Health Implications of Fracking', *The Lancet* 383(9936): 2211-2212 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0140673614608886>>.

Hilson, C. (2015) 'Framing Fracking: Which Frames are Heard in English Planning and Environmental Policy and Practice?', *Journal of Environmental Law* 27: 177-202 <<https://academic.oup.com/jel/article-abstract/27/2/177/419148>>.

Holifield, R. (2015) 'Environmental Justice and Political Ecology', in T. Perreault, G. Bridge and J. McCarty (eds) *The Routledge Handbook of Political Ecology*, pp. 585-597. New York: Routledge.

Holling C.S. and G.K. Meffe (1996) 'Command and Control and the Pathology of Natural Resource Management', *Conservation Biology* 10(2): 328-337 <<https://doi.org/10.1046/j.1523-1739.1996.10020328.x>>.

Hopke, J.E. (2016) 'Translocal Anti-Fracking Activism: An Exploration of Network Structure and Tie Content', *Environmental Communication* 10(3): 380-394 <<https://doi.org/10.1080/17524032.2016.1147474>>.

Housing, Communities and Local Government Committee (Last updated 2018) 'Decision making on fracking planning guidance must remain at local level' (a webpage of The Parliament of the United Kingdom). Accessed November 08 2018

<<https://www.parliament.uk/business/committees/committees-a-z/commons-select/housing-communities-and-local-government-committee/news/fracking-planning-guidance-report-published-17-19/>>.

Independent (2011) 'Protesters Dressed as Builders Post Banners on Blackpool Tower' *Independent Digital News and Media Ltd.*, 07/08/2011,

<<https://www.independent.co.uk/news/uk/crime/protesters-dressed-as-builders-post-banners-on-blackpool-tower-2333280.html>>.

Kenny, M. (Last updated 2017) 'Kenny Welcomes Ban on Fracking' (a webpage of Sinn Féin). Accessed November 08 2018 <<http://www.sinnfein.ie/contents/44891>>.

Kovats, S., M. Depledge, A. Haines, L.E. Fleming, P. Wilkinson, S.B. Shonkoff et al. (2014) 'The Health Implications of Fracking', *The Lancet* 383(9919): 757-758

<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0140673613627002>>.

Kriesberg, L. (1997) 'Social Movements and Global Transformation', in J. Smith, C. Chatfield and R. Pagnucco (eds) *Transnational Social Movements and Global Politics: Solidarity Beyond the State*, pp. 3-18. New York: Syracuse University Press.

Ladd, A. (2013) 'Stakeholder Perceptions of Socioenvironmental Impacts from Unconventional Natural Gas Development and Hydraulic Fracturing in the Haynesville Shale', *Journal of Rural Social Sciences* 28: 56-89

<[https://www.researchgate.net/publication/259602227\\_Stakeholder\\_Perceptions\\_of\\_Socioenvironmental\\_Impacts\\_from\\_Unconventional\\_Natural\\_Gas\\_Development\\_and\\_Hydraulic\\_Fracturing\\_in\\_the\\_Haynesville\\_Shale](https://www.researchgate.net/publication/259602227_Stakeholder_Perceptions_of_Socioenvironmental_Impacts_from_Unconventional_Natural_Gas_Development_and_Hydraulic_Fracturing_in_the_Haynesville_Shale)>.

Lakoff, G. (2010) 'Why it Matters how we Frame the Environment', *Environmental Communication* 4(1): 70-81 <<https://doi.org/10.1080/17524030903529749>>.

Loomis, J. and M. Haefele (2017) 'Quantifying Market and Non-Market Benefits and Costs of Hydraulic Fracturing in the United States: A Summary of the Literature', *Ecological Economics* 138: 160-167

<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S092180091631285X>>.

Marshall, M. (Last updated 2011) 'how Fracking Caused Earthquakes in the UK' (a webpage of New Scientist Limited). Accessed October/05 2018

<<https://www.newscientist.com/article/dn21120-how-fracking-caused-earthquakes-in-the-uk/>>.

Martinez-Alier, J. (2014) 'The Environmentalism of the Poor', *Geoforum* 54: 239-241

<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0016718513000912>>.

Martinez-Alier, J. (2002) *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*. Cheltenham: Edward Elgar Publishing.

Mayer, A. (2016) 'Risk and Benefits in a Fracking Boom: Evidence from Colorado', *The Extractive Industries and Society* 3(3): 744-753

<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S2214790X16300739>>.

Mazur, A. (2016) 'How did the Fracking Controversy Emerge in the Period 2010-2012?', *Public Understanding of Science* 25(2): 207-222  
<<https://doi.org/10.1177%2F0963662514545311>>.

McCarthy, J.D. (1997) 'The Globalization of Social Movement Theory', in J. Smith, C. Chatfield and R. Pagnucco (eds) *Transnational Social Movements and Global Politics: Solidarity Beyond the State*, pp. 243-259. New York: Syracuse University Press.

McSmith, A. (2013) 'Green MP Caroline Lucas Arrested as Anti-Fracking Protests Reach Fever Pitch' *Independent Digital News and Media Ltd*, August 19,  
<<https://www.independent.co.uk/news/uk/home-news/green-mp-caroline-lucas-arrested-as-anti-fracking-protests-reach-fever-pitch-8774189.html>>.

Meng, Q. (2018) 'Fracking Equity: A Spatial Justice Analysis Prototype', *Land Use Policy* 70: 10-15  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0264837717309572>>.

Meng, Q. (2017) 'The Impacts of Fracking on the Environment: A Total Environmental Study Paradigm', *Science of The Total Environment* 580: 953-957  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0048969716327322>>.

Meng, Q. and S. Ashby (2014) 'Distance: A Critical Aspect for Environmental Impact Assessment of Hydraulic Fracking', *The Extractive Industries and Society* 1(2): 124-126  
<<https://doi.org/10.1016/j.exis.2014.07.004>>.

Merseyside Pensioners Association - MPA (2018) 'The MPA is Pleased to Announce it is Now Part of the Growing Movement Against Fracking. we Will be Taking Action Soon!' Merseyside Pensioners Association. Accessed 05/11/2018  
<<https://twitter.com/MerseyPensioner>>.

Metze, T. and J. Dodge (2016) 'Dynamic Discourse Coalitions on Hydro-Fracking in Europe and the United States', *Environmental Communication* 10(3): 365-379  
<<https://doi.org/10.1080/17524032.2015.1133437>>.

Meyer, D.S. and D.C. Minkoff (2004) 'Conceptualizing Political Opportunity', *Social Forces* 82(4): 1457-1492 <<https://doi.org/10.1353/sof.2004.0082>>.

Ministry of Housing, Communities & Local Government of the United Kingdom (2018) 'Permitted Development for Shale Gas Exploration', Consultation, No. 2018, pp. 1-17. London: The United Kingdom of Great Britain and Northern Ireland.  
<[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/726916/Consultation\\_document\\_-\\_shale\\_gas\\_permitted\\_development.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/726916/Consultation_document_-_shale_gas_permitted_development.pdf)>.

Mobbs, P. (2012) 'Shale Gas: An Analysis of UK Policy and Cuadrilla Resources Exploration Activities in Lancashire', pp. 1-23. Banbury, UK: Mobbs' Environmental Investigations.  
<[https://shalegasespana.files.wordpress.com/2012/10/shale\\_gas\\_in\\_lancashire-evidence.pdf](https://shalegasespana.files.wordpress.com/2012/10/shale_gas_in_lancashire-evidence.pdf)>.



- Neumann, R.P. (2005) *Making Political Ecology*. London; New York: Hodder Arnold; Distributed in the United States of America by Oxford University Press.
- Neville, K.J. and E. Weinthal (2016) 'Scaling Up Site Disputes: Strategies to Redefine 'local' in the Fight Against Fracking', *Environmental Politics* 25(4): 569-592  
<<https://doi.org/10.1080/09644016.2016.1154124>>.
- Obach, B.K. (2015) 'A Fracking Fracas Demonstrates Movement Potential', *Contexts* 14(4): 72-75 <<https://doi.org/10.1177%2F1536504215615060>>.
- O'Connor, M. (1994) 'On the Misadventures of Capitalist Nature', in M. O'Connor (ed.) *Is Capitalism Sustainable? Political Economy and the Politics of Ecology*, pp. 125-151. New York: The Guilford Press.
- Olofsson, M.J. (2014) 'Mobilising Movement Against Fracking: An Ethnographic Exploration of 'Reclaim the Power' Anti Fracking Action Camp', Master of Arts. The Hague, Netherlands: International Institute of Social Studies  
<<https://thesis.eur.nl/pub/17341/>>.
- Paterson, M. (2000) *Understanding Global Environmental Politics: Domination, Accumulation, Resistance*. Houndmills, Basingstoke, Hampshire; New York: Macmillan Press; St. Martin's Press.
- Powell, E. (2015) 'One Direction's Harry Styles Throws Support to Vivienne Westwood's Anti-Fracking Campaign' *Evening Standard Ltd.*, June 18,  
<<https://www.standard.co.uk/showbiz/celebrity-news/one-direction-singer-harry-styles-throws-support-to-vivienne-westwood-s-anti-fracking-campaign-10328876.html>>.
- Prenzel, P.V. and F. Vanclay (2014) 'How Social Impact Assessment can Contribute to Conflict Management', *Environmental Impact Assessment Review* 45: 30-37  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S019592551300108X>>.
- Prpich, G. and F. Coulon (2018) 'Assessing Unconventional Natural Gas Development: Understanding Risks in the Context of the EU', *Current Opinion in Environmental Science & Health* 3: 47-51  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S2468584418300035>>.
- Prpich, G., F. Coulon and E.J. Anthony (2016) 'Review of the Scientific Evidence to Support Environmental Risk Assessment of Shale Gas Development in the UK', *Science of The Total Environment* 563-564: 731-740  
<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S004896971531007X>>.
- Reclaim the Power (Last updated 2018) 'Who we are' (a webpage of Reclaim the Power). Accessed October 30 2018 <<https://reclaimthepower.org.uk/who-we-are/>>.
- Reclaim the Power (Last updated 2014) '2014 Action Camp in Blackpool' (a webpage of Reclaim the Power). Accessed October 31 2018  
<<https://reclaimthepower.org.uk/2014campblackpool/>>.

Refracktion (Last updated 2018) 'Frack Free Lancashire Businesses' (a webpage of Re-fracktion). Accessed October 29 2018

<<http://www.refraction.com/index.php/frack-free-lancashire-businesses/>>.

Robbins, P. (2015) 'The Trickster Science', in T. Perreault, G. Bridge and J. McCarty (eds) *The Routledge Handbook of Political Ecology*, pp. 89-101. New York: Routledge.

Rootes, C. and E. Nulman (2017) 'The Impacts of Environmental Movements', in D. Della Porta and M. Diani (eds) *The Oxford Handbook of Social Movements*, pp. 729-742. Oxford: Oxford University Press.

Rufalo, M. (2016) 'Fracking in Lancashire Against Locals' Wishes would be a Terrible Injustice' *The Guardian*, February 13,

<<https://www.theguardian.com/environment/2016/feb/13/fracking-lancashire-terrible-injustice-mark-ruffalo>>.

Sachs, W. (2010) 'Environment', in W. Sachs (ed.) *the Development Dictionary: A Guide to Knowledge as Power*, (2 edn). pp. 24-37. London; New York, N.Y.: Zed Books.

Sachs, W. (1993) *Global Ecology: A New Arena of Political Conflict*. London; Atlantic Highlands, N.J.: Zed Books; Fernwood Publishing.

Sachs, W., R. Loske, M. Linz and Wuppertal Institut für Klima, Umwelt und Energie. (1998) *Greening the North: A Post-Industrial Blueprint for Ecology and Equity*. London: Zed Books.

Schiavi, G. (Last updated 2016) 'Emma Thompson Holds a Bake-Off Fracking Protest' (a webpage of Life Gate). Accessed October 31 2018

<<https://www.lifegate.com/people/news/bake-off-anti-fracking-emma-thompson>>.

Selley, R.C. (2012) 'UK Shale Gas: The Story so Far', *Marine and Petroleum Geology* 31(1): 100-109

<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0264817211002030>>.

Smith, J. (1997) 'Building Political Will After UNCED: EarthAction International', in J. Smith, C. Chatfield and R. Pagnucco (eds) *Transnational Social Movements and Global Politics: Solidarity Beyond the State*, pp. 175-191. New York: Syracuse University Press.

Smith, J. (1997) 'Characteristics of the Modern Transnational Movement Sector', in J. Smith, C. Chatfield and R. Pagnucco (eds) *Transnational Social Movements and Global Politics: Solidarity Beyond the State*, pp. 42-58. New York: Syracuse University Press.

Steger, T. and M. Milicevic (2014) 'One Global Movement, Many Local Voices: Discourse(s) of the Global Anti-Fracking Movement', in L. Leonard and S.B. Kedzior (eds) *Occupy the Earth: Global Environmental Movements*, Vol. 15. pp. 1-35. Emerald Group Publishing Limited.

Stoutenborough, J.W., S.E. Robinson and A. Vedlitz (2016) 'Is “fracking” a New Dirty Word? the Influence of Word Choice on Public Views Toward Natural Gas Attitudes', *Energy Research & Social Science* 17: 52-58

<<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S2214629616300676>>.



Talk Fracking (Last updated 2018) 'About' (a webpage of Talk Fracking). Accessed October 29 2018 <<http://www.talkfracking.org/about/>>.

Talk Fracking (Last updated 2016) 'Who are the Nanans?' (a webpage of Talk Fracking). Accessed October 2 2018 <<http://www.talkfracking.org/fracking-news/who-are-the-nanas/>>.

Taylor, B.R. (1995) *Ecological Resistance Movements: The Global Emergence of Radical and Popular Environmentalism* (SUNY Series in International Environmental Policy and Theory). Albany, New York: State University of New York Press.

The Blackpool Gazette (2013) 'Campaigners at Fracking Event' *The Blackpool Gazette*, May 13, <<https://www.blackpoolgazette.co.uk/news/business/campaigners-at-fracking-event-1-5663825>>.

The Blackpool Gazette (2011) 'Gas Campaigners Plan Village Camp' *The Blackpool Gazette*, July 20, <<https://www.blackpoolgazette.co.uk/news/gas-campaigners-plan-village-camp-1-3597777>>.

The British Geological Survey (Last updated 2018) 'Earthquake Seismology' (a webpage of The British Geological Survey). Accessed November 14 2018 <[https://earthquakes.bgs.ac.uk/earthquakes/recent\\_uk\\_events.html](https://earthquakes.bgs.ac.uk/earthquakes/recent_uk_events.html)>.

The Green Party (Last updated 2018) 'Give MPs a Vote on Fracking' (a webpage of The Green Party). Accessed November 09 2018 <<https://action.greenparty.org.uk/give-mps-a-vote-on-fracking>>.

The Liberal Democrats (Last updated 2017) 'Change Britain's Future: Liberal Democrat Manifesto 2017' (a webpage of The Liberal Democrats). Accessed November 9 2018 <<https://d3n8a8pro7vhmx.cloudfront.net/themes/5b8980134764e8e59f56ec6c/attachments/original/1495020157/Manifesto-Final.pdf?1495020157>>.

The United Kingdom Parliament (Last updated 2018) 'Find Your MP and Learn More about MPs, Including Details of their Parliamentary Career and Contact Information.' (a webpage of The United Kingdom Parliament). Accessed November 3 2018 <<https://www.parliament.uk/mps-lords-and-offices/mps/>>.

Thompson, G. (Last updated 2018) 'Emma Thompson Joins Lancashire Women in Protest March to Fracking Site' (a webpage of Greenpeace International). Accessed November 2 2018 <<https://www.greenpeace.org.uk/press-releases/emma-thompson-joins-lancashire-women-protest-march-fracking-site/>>.

United Kingdom of Great Britain and Northern Ireland (Last updated 2018) 'Permitted Development for Shale Gas Exploration' (a webpage of The United Kingdom of Great Britain and Northern Ireland). Accessed November 5 2018 <<https://www.gov.uk/government/consultations/permitted-development-for-shale-gas-exploration>>.

van der Voort, N. and F. Vanclay (2015) 'Social Impacts of Earthquakes Caused by Gas Extraction in the Province of Groningen, the Netherlands', *Environmental Impact Assessment Review* 50: 1-15 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0195925514000766>>.

- Vaughan, A. (2018) 'Fracking Firm Boss Says it Didn't Expect to Cause such Serious Quakes' *The Guardian*, November 11, <<https://www.theguardian.com/environment/2018/nov/11/fracking-firm-boss-says-it-didnt-expect-to-cause-such-serious-quakes-lancashire>>.
- Vaughan, A. (2016a) 'Fracking Given UK Go-Ahead as Lancashire Council Rejection Overturned' *The Guardian*, October 16, <<https://www.theguardian.com/environment/2016/oct/06/uk-fracking-given-go-ahead-as-lancashire-council-rejection-is-overturned>>.
- Vaughan, A. (2016b) 'Mark Ruffalo Tells Cameron His UK Fracking Push is an 'Enormous Mistake'' *The Guardian*, February 8, <<https://www.theguardian.com/environment/2016/feb/08/mark-ruffalo-tells-cameron-his-uk-fracking-push-is-an-enormous-mistake>>.
- Vaughan, A. (2015) 'Fracking Application Rejected by Lancashire County Council' *The Guardian*, June 29, <<https://www.theguardian.com/environment/2015/jun/29/fracking-application-cuadrilla-rejected-lancashire-county-council>>.
- Wainwright, M. (2011) 'Fracking Protesters Occupy Lancashire Drilling Rig' *The Guardian*, 02 November, <<https://www.theguardian.com/uk/the-northerner/2011/nov/02/fracking-cuadrilla-hesketh-bank-oil-preston-lancashire>>.
- Walker, G. (2009) 'Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice', *Antipode* 41(4): 614-636 <<https://doi.org/10.1111/j.1467-8330.2009.00691.x>>.
- Whitmarsh, L., N. Nash, P. Upham, A. Lloyd, J.P. Verdon and J.-. Kendall (2015) 'UK Public Perceptions of Shale Gas Hydraulic Fracturing: The Role of Audience, Message and Contextual Factors on Risk Perceptions and Policy Support', *Applied Energy* 160: 419-430 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S0306261915010727>>.
- Whitton, J., K. Brasier, I. Charnley-Parry and M. Cotton (2017) 'Shale Gas Governance in the United Kingdom and the United States: Opportunities for Public Participation and the Implications for Social Justice', *Energy Research & Social Science* 26: 11-22 <<http://www.sciencedirect.com.eur.idm.oclc.org/science/article/pii/S2214629617300154>>.
- Willow, A. and S. Wylie (2014) 'Politics, Ecology, and the New Anthropology of Energy: Exploring the Emerging Frontiers of Hydraulic Fracking', *Journal of Political Ecology* 21: 222-236 <<http://dx.doi.org/10.2458/v21i1.21134>>.
- Wisner, B. (2015) 'Speaking Truth to Power: A Personal Account of Activist Political Ecology', in T. Perreault, G. Bridge and J. McCarty (eds) *The Routledge Handbook of Political Ecology*, pp. 53-63. New York: Routledge.
- Wolford, W. and S. Keene (2015) 'Social Movements', in T. Perreault, G. Bridge and J. McCarty (eds) *The Routledge Handbook of Political Ecology*, pp. 573-584. New York: Routledge.

Yin, R.K. (2009) *Case Study Research: Design and Methods*. (4th ed. edn) Los Angeles, CA: Sage.

Zimmerer, K. (2015) 'Methods and Environmental Science in Political Ecology', in T. Perreault, G. Bridge and J. McCarty (eds) *The Routledge Handbook of Political Ecology*, pp. 150-168. New York: Routledge.