



7

Briefing: Anti-'fracking' Activism and Local Democracy

November 2020
Damien Short, Paul Stretesky, Anna Szolucha



Overview

Many UK citizens have expressed significant reservations about the local and global impacts of shale gas development. Locally, concerns about hydraulic fracturing or 'fracking' for shale gas have led to direct action protests. While scientific knowledge and public education about the hydraulic fracturing process may be viewed as a solution to local resistance, research suggests that more attention should be focused on the coalescence of resistance rooted in the context of climate change and local democracy. Thus, this report explores how democracy and environmental activism have influenced the development of UK shale gas through local resistance.

1 Introduction

In recent years hydraulic fracturing or 'fracking' for shale gas and oil has emerged as one of the most contentious energy production issues in Europe and North America (Jones et al. 2015). Hydraulic fracturing works by pumping a mixture of water, chemicals and sand into the ground under high pressure to produce cracks in the rocks so that oil and gas can be released. The economic potential of hydraulic fracturing has increased as oil and gas drilling technology has advanced. For instance, horizontal wells can now be drilled long distances to enable more effective access to shale and therefore boost shale gas production.

In this environmentally conscious era, the use of hydraulic fracturing is scrutinised closely (Thomas et al. 2017). And, O'Neill and Schneider (2020:1) suggest, 'opposition to fracking has risen in recent years.' Public attitudes toward hydraulic fracturing for shale gas are believed to vary by geographic areas and to be correlated with attitudes about the environment and economic development. Additional research has confirmed that well distance, media use, political affiliation, education and gender all influence support for shale gas development (O'Neill and Schneider, 2020; Thomas et al. 2017). There has also been much scientific debate around the harm that hydraulic fracturing may cause because of fugitive emissions, seismic activity, climate change and adverse health (Bamberger and Oswald 2012; Hou et al. 2012; Jackson 2014; O'Sullivan and Paltsev 2012; Stamford 2020). While social scientists have examined perceptions of risk and opportunity (Devine-Wright and Evensen 2020) and the wider economic and geo-political dimensions of issues such as energy security (e.g. Kruyt et al. 2009) the literature examining anti-fracking activism and local democracy in the UK still remains under-developed. In the UK there is considerable tension between local communities, the central government and the interests of the oil and gas industry when it comes to the use of hydraulic fracturing for shale gas (Cotton 2017). As Jones et al. (2015:379) observe, 'a battle has certainly been underway within the UK to win the public's hearts, minds and confidence [especially] within communities where exploration fracking for shale is underway.'

This review briefly summarises some of the key points on anti-fracking advocacy to describe and explain the local context for its existence as well as its relationship to local democracy. In the present context, local democracy is considered in relation to representative governance that reflects community diversity, autonomy and freedom from excessive government uniformity (Pratchett 2004). Within this context we focus our efforts on local knowledge that lends itself to anti-fracking activism. Finally, we supplement these ideas with some initial observations based on preliminary interviews as well as initial data on select community perceptions about shale gas development to draw some general conclusions and help direct future research.

2 Knowledge Production: Local Communities and 'Fracking'

The local context is a pivotal arena within which the social, regulatory and technical dimensions of fracking are being contested and scrutinized (Beebeejaun 2017). However, there is a difference between expert/professional and local forms of knowledge that inform dimensions of shale gas development in the UK. Professional knowledge is often generated by university scholars, industry scientists, governmental agencies, and large non-governmental organisations (Jaspal and Nerlich 2014; Metze 2017). Community residents often believe this professional knowledge is given policy priority over their local knowledge or lived experiences. Local knowledge is often 'geographically located and contextual to specific identity groups' (Corburn 2007). Corburn (2007) warns that local knowledge is diminished when community diversity is overlooked. In particular, the failure to consider that the constellation of community experiences has implications for local democracy and may create the perception of environmental injustice among some groups that disproportionately suffer from the negative impacts of hydraulic fracturing (see also Raymond et al. 2010). While there are many examples of the benefits of incorporating local knowledge in environmental policy through a 'co-production' of knowledge approach, there are no published examples of this co-production in the UK when it comes to shale gas development. Corburn (2007),

however, details what such a collaboration may look like by demonstrating how local knowledge draws on community heterogeneity, life experiences and cultural diversity in a New York community that aided the United States Environmental Protection Agency in identifying important chemical exposure pathways through fish consumption for a unique group of disadvantaged residents (see also Bach et al. 2017).

Beebeejaun (2017) also notes that when professional knowledge is prioritized over local knowledge it creates the appearance that policy decisions are 'technical rather than political' (Corburn 2003; Haughton et al. 2015). This emphasis can also threaten local democracy when the community believes it decreases local autonomy. That is, community members perceive that professionals see their proposals as irrational and believe that their concerns are unfounded (Szolucha 2018a). We find that some residents living near proposed shale gas development believe their communities are being sacrificed for global industry profits, national economic growth, energy security and/or energy efficiency.

Research on local and professional knowledge suggests that within local planning systems and structures, the shortcomings of professional knowledge are often underemphasized, if mentioned at all, despite the fact that such knowledge is often assumed to possess an inherent capacity to somehow accurately describe and anticipate localized impacts and/or guide future policy deliberations (Beebeejaun 2017; Feenberg 2010; Keller 2009).

In response to local environmental concerns communities around the globe have embraced so-called citizen science initiatives to directly challenge professional knowledge (Kinchy 2017). The aim of citizen science is to produce social change by challenging and confronting the mainstream scientific knowledge used in support of developments by extractive industries. Thus, some anti-fracking activists closely monitor activities such as deliveries of chemicals at fracking sites in their community and examine seismic data produced by agencies such as the British Geological Survey. Kinchy's (2017) research into citizen science associations in the United States, which were focussed on water quality monitoring, for example, found that their actions and democratic sensibilities were affected by the ways that organizers and other volunteers projected the future uses of the environmental data they gathered in response to the fracking boom in the Northeast. Kinchy found that most of these efforts emphasize the collection of 'baseline' data, which is seen as essential to future efforts to hold polluters accountable for the harms they cause. To be sure, collecting data to challenge and contribute to existing professional knowledge has its drawbacks. For instance, Ottinger (2010) suggests that while many people believe that environmental monitoring data collected by local groups via 'surveillance from below' can be used to challenge expert data used or produced by industry and government agencies, this is not always the case. The extent to which this knowledge can be used to counter what residents may view as 'corporate deceit and regulatory inadequacy' depends on the context in which that information is interpreted. As Ottinger (2010) makes clear, community produced data may be dismissed out of hand by the government and industry as being 'non-neutral.' Such treatment of community-based evidence can simply intensify perceptions of environmental injustice by providing 'one more example of the dis-empowering tendencies' of the government and industry (Ottinger 2010:232). Thus, it should not be surprising that much of the research suggests that grass roots monitoring of environmental and social problems can, under the right conditions, increase feelings of environmental injustice and channel public concern about fracking toward future 'scientific' controversies, instead of political action in the present to prevent pollution before it becomes just another corporate externality (Kinchy 2017). We observe this belief among anti-fracking activists who often suggest that their observations about local noise, traffic and seismic activity were dismissed by regulators and planners in both formal planning hearings and informal meetings. As a result, conflicts between sources of knowledge produced by local communities and shale gas experts in industry and academia can elevate feelings of environmental injustice by deepening feelings of distrust among some members of UK communities facing shale gas development (Mrozowska et al. 2016). Moreover, the idea that all communities face minimal impact from shale gas development is based on the belief that communities are largely homogenous when it comes to concerns about the risks associated with hydraulic fracturing.

Table 1. Local Residents' Beliefs About Company Concern and Support (n=149)

Statement	% Agree	% Disagree	% Neither agree nor disagree
The company understood my concerns	20.9	54.7	24.3
The company resolved my concerns	21.7	43.6	34.9
The company answered my questions	20.3	48.2	41.5
The company treated me fairly	13.4	46.5	40.1

Source: Aryee (2020)

As previously noted, this is not likely to be the case and concerns may vary within and across communities. For instance, a substantive portion of residents living within 3 miles of the Preston New Road hydraulic fracturing well in Lancashire in 2017 report that the company constructing the fracking well near their homes did not understand, resolve or answer their concerns about the likely impacts of the future well in their community, nor treat them fairly during the siting process (Table 1). Such residential concerns cannot be generalised to all UK communities, but are symptomatic of the gap between local and expert forms of knowledge. Table 1 also has implications for procedural injustice because some residents believe that they are not treated fairly (Shrader-Frechette 2002 & 2010).

Evidence of perceptions of procedural injustice can also be observed in qualitative interviews with residents living near Preston New Road. In particular, some residents felt that the company did not offer them the chance to speak, that government planners did not adequately explain the process and how decisions about hydraulic fracturing would be made or that there were not forums to equally express their views about hydraulic fracturing and shale gas development. Some residents felt that the company behaved disrespectfully, or it did not attempt to seek views from all members of the community. Together these perceptions influenced feelings of procedural injustice—or the perception that the processes for making decisions in the community was not just and/or fair.

3 Energy Citizenship

Research on attempts to develop a shale industry in Europe may also provide some insight into the UK experience with the anti-fracking movement (Materka 2012a & 2012b; Lis and Stasik 2017; Szolucha 2018a). These studies investigate local level issues and community resistance within a largely pro-development national political context and demonstrate that local communities invoke innovative methods and tactics for devising new public initiatives to increase their participation in democratic decision-making (Stankiewicz 2013; Stankiewicz et al. 2015; Lis and Stankiewicz 2017). This research further bolstered established critiques of simplistic NIMBY-ism or knowledge deficit models (Freudenberg and Pastor 1992; Burningham 2000; Wolsink 2006). For instance, Cantoni et al. (2017) have shown how community resistance to unwanted energy projects allows a more complex understanding of citizens who see themselves as more than consumers of socio-technical systems (Ritzer and Jurgenson 2010). Instead, many local citizens engaged in resistance often understand how their actions contribute to the energy system itself – which the authors term ‘energy citizenship’. Our research has also discovered that local residents are often able to debate energy as a socio-technical system where they identify important values such as their immediate responsibility to other humans and to future generations. Anti-fracking grassroots community groups do challenge the way governmental regulations and policies are created and administered by mobilizing collectively. Our research suggests that while hydraulic fracturing wells fall under the same environmental, health and safety regulations as conventional oil and gas wells, the level of inspections and audits represent the influence of a grassroots response and public pressure to ensure that the industry follows UK regulations. In particular, the hydraulic fracturing well in Lancashire is repeatedly identified as the ‘most closely scrutinized oil and gas well in the UK’ because of the number of inspections by the Environment Agency and Health and Safety Executive. Thus, the uptake in energy citizenship and concerns for local democracy are likely having a direct influence on regulatory behaviour in the case of shale gas development in the UK.

As previously noted, local knowledge combined with community organising can open up important avenues of interpretation that can shape alternatives to professional knowledge generated by the government, industry and scientists (Corburn 2007; Short and Szolucha 2019). The value of community-based scientific evidence (see for example: Haggerty and McBride 2016; Kinchy 2017) would not have been useful if it were not for the political push for more democratic engagement in the decision-making process, where newly acquired knowledge could be used to formulate precise demands for greater participation in energy decision-making when it comes to environmental policy, regulation and administration (Cantoni et al. 2017). Through their active engagement, residents learn in detail about the environmental and social characteristics of their localities as well as discovering the particulars of political processes and dynamics involved in shale gas development. Therefore, the combination of protest and knowledge creation has the potential to expose energy systems’ ‘inconsistencies, complexities and inequities’ (Szolucha 2018b:8) and can be used by citizens to explore possible alternatives. These alternative visions of energy often call into question the continued role of the fossil fuels as an energy source (Staddon and Depledge 2015). Consider, for instance, the position that shale gas development can help the UK meet its climate change obligations (Burns et al. 2016; Cowell 2013; House of Commons Environmental Audit Committee 2015). The UK’s Committee on Climate Change proposes that shale gas development may aid in climate change mitigation if it can serve as a low carbon alternative to other fossil fuels (Members of the Committee on Climate Change 2014: Para 1.4). While some research suggests that there may be a rush to judgement about the utility of shale gas to serve as a clean or transitional fuel (Staddon and Depledge 2015; Stamford 2020), local

anti-fracking advocates often argue that the use of shale gas is a form of 'greenwashing' by government and industry (see also Stephenson et al. 2012). In particular, some of the anti-fracking residents we spoke with suggest that the development of shale gas at the local level in their community was a problem for the global environment. That is, shale gas is 'one more fossil fuel' that contributes to climate change now and threatens the existence of future generations.

In the midst of this debate about the role of shale gas in climate mitigation, there is an increasing global movement against shale gas development 'in whatever form, that maintains that it is irreconcilable with commitments to reducing anthropogenic greenhouse gas emissions' (Somerville 2020; Staddon and Depledge 2015:8270). This push for alternatives to fossil fuel is becoming synonymous with social and environmental justice throughout communities in the UK (Flynn et al. 2008; Griffiths 2019). In short, energy citizenship draws heavily on ideas of inter-generational equity through notions about what is fair to future generations (Irwin 2001). Importantly, local opposition to fracking is often rooted in environmental justice concerns and have been linked to larger concerns about the global environment (Griffiths 2019). Finally, the contested nature of what needs to be done about shale gas development is increasingly bound up in current climate change discourse throughout the UK at the local level (Cotton and Stevens 2019; Hawkins 2020). Importantly, environmental discourse that contributes to the local anti-fracking activism is not unique and can also be observed in other contexts. For instance, the Extinction Rebellion movement which also targets climate change was established in the UK and has gained considerable global support (Healy 2019). Moreover, those who most strongly support climate mitigation policies tend to have strong commitments to democratic values (Bomberg 2017; Lewis et al. 2019; Yamin 2019). These wider global concerns about climate change can shape local beliefs about shale gas development (Larsen et al. 2011; Pellow and Brulle 2005).

We suggest that energy citizenship may influence local anti-fracking activism in two ways. First, many non-local protesters often join locals in resisting shale gas development (Griffiths 2019). Thus, the global framing of the hydraulic fracturing aids anti-fracking activism in local communities by helping to disrupt industrial practices and frame anti-fracking discourse at the local level.

Second, there is an observed contemporary emphasis on local solutions for global environmental problems. As Schlosberg (2019) suggests, 'the point is that the disconnect between political and environmental values and everyday life, and the lack of authentic and efficacious democratic process and output, has fed the growth of practice-based movements.' These practice-based movements emphasise autonomy – a concept closely linked to local democracy – to solve local problems and advocate for alternative sources of energy (Schlosberg and Coles 2016). These local values can also help provide space for anti-fracking activism at the local level while simultaneously advocating for alternative sources of energy—i.e., engaging in energy citizenship.

4 Democratic Deficit: the UK case

Given rising concerns about climate change and the increasing local/professional divide, it is not surprising that there is considerable frustration with local decision-making practices that are based on uniform central policy (see also Elcock 2013 for general discussion of local autonomy). Short and Szolucha's (2019) research into the planning process in the Lancashire fracking cases showed a strong sense of community level dissatisfaction with the planning (and regulation) process that is divided across multiple organisations such as the Oil and Gas Authority, the Environment Agency and the Health and Safety Executive. Short and Szolucha (2019) found that residents reported serious concerns about central government interference in local affairs and 'riding roughshod over local opposition' with changes to planning rules, perceived bias on the part of planning officers towards the applicant, lack of procedural fairness, such as negative treatment of expert testimony when invoked in opposition to the application, and a perception that the company was 'always given the last word' in the hearings (Short and Szolucha 2019). From the perspective of local communities engaged in protest or the planning process, this perception of bias in the planning process undermines local democracy and intensifies feelings of procedural injustice (Szolucha 2016 & 2018a). Moreover, they find that while the industry and planners often suggest that there is a misunderstanding about what issues can be resolved through the planning system (see Hawkins 2018) some members of the community feel that industry tries to take over the planning process by narrowing down the way policies are understood, so that their concerns cannot be resolved through the planning process (Szolucha 2016).

Some of the residents living in Lancashire thought that the publicised potential impacts of fracking were inadequately assessed during public consultations with the company as well as during the planning and appeal process. Short and Szolucha's (2019) research demonstrated a wide range of social impacts that residents in Lancashire experienced during the planning process, before any production began (see also Aryee et al. 2020). The research highlighted a form

of local community 'collective trauma' where residents experienced increased levels of stress and anxiety. The authors argued that, by outlining social and psychological stress factors as well as the public understanding of risk, a more detailed analysis was possible and could highlight possible future impacts being experienced by the residents. Residents' concerns, however, were largely dismissed as 'uninformed.' Table 2 represents the specific local concerns expressed by residents about the impact of shale gas development in Lancashire's Preston New Road community in 2017.

Table 2. Resident perception about the impact of shale gas development (n=179)

Community Benefits	% Agree	% Disagree	% Stayed the same
Availability of jobs	25.3	6.9	67.7
Local business activity	17.7	22.7	59.6
Wealth of residents	6	41.6	52.4
Property values	3.1	77.4	19.5
Government services	6	16.4	77.6
Affordable housing	6.4	12.9	80.7
Scenic Beauty	6.7	69.3	23.5
Community Burdens	% Agree	% Disagree	% Stayed the same
Road damage	57.3	7.2	35.5
Noise	55.4	2.4	42.2
Decreased quality of life	57.5	3.5	39.1
Crime	16.9	30.8	52.3
Water pollution	61.1	8.6	30.3

Source Aryee (2020)

As Table 2 suggests, in 2017, residents living near Preston New Road tended to believe that shale gas development would lead to a *decrease* or *no change* in most community benefits, including government services, affordable housing, property values, local business activity, scenic beauty and wealth and an *increase* in community burdens such as road damage, noise, water pollution and quality of life (see also Short and Szolucha 2019). The exception to these beliefs related to jobs and crime. In particular, residents living near Preston New Road believed that shale gas development would increase jobs and decrease crime (see also Stretesky and Grimmer 2020). These benefits, however, were not enough to offset the perceptions of the negative externalities associated with the well for many residents. For instance, of the 179 residents surveyed in Table 2, 61.9% were against shale gas development in Lancashire while 21.5% percent supported shale gas development and 16.6% were somewhere in between supporting and opposing shale gas or had no opinion either way. Qualitative interviews with UK residents living near shale gas development also suggests they are concerned about seismic activity (Bradshaw and Waite 2017; Szolucha 2018c). In particular, Szolucha (2018, para 4) notes that while 'government officials and those in the industry suggest that tremors are inconsequential...residents are concerned the earthquakes may cause cracks in the fracking well's casing, which could potentially lead to contamination.'

Most research suggests that there are strong levels of community dissatisfaction with the hydraulic fracturing planning process (Bradshaw and Waite 2017; Hawkins 2019). Perceptions of a lack of procedural fairness and the negative treatment of expert testimony and who qualifies as experts are all issues raised in our qualitative observations. While it is difficult to know whether this local dissatisfaction was simply a function of planning approval (or other more complex factors) it is clear that it exists and that members of the community believe their concerns about hydraulic fracturing are not adequately addressed. Moreover, preliminary findings suggest that even when shale gas development does not go forward, some residents still report that they feel their community was not treated fairly. For instance, in the town of Kirby Misperton in North Yorkshire planning permission for hydraulic fracturing was granted, but the oil and gas company dropped its plans to develop shale gas. Despite this decision to abandon shale gas development some residents in Kirby Misperton report that they have lost trust in government representatives.

5 Local Protest and Policing

Anti-fracking activism began to build shortly after the exploration of shale gas commenced. As noted, local resistance is a response to concerns about local impacts of shale gas development and sits 'alongside more established national climate and social justice groups' and ideals about energy citizenship (Bomberg 2017; Jackson & Monk 2014:82). Anti-fracking organisations have grown rapidly and Hawkins (2019) reports that by 2018, over 300 anti-fracking groups were established in the UK, in anticipation of hydraulic fracturing in their locales. These anti-fracking groups often held direct-action protests in a highly visible form of activism. These protests sometimes resulted in a non-local police response. Police tactics are often viewed by anti-fracking activists as anti-democratic as they are highly physical and often described as 'violent' and in some cases 'out of control' (Jackson et al. 2016). At the same time, however, direct-action events are often viewed as successful in that they challenge the industry's 'social license to operate' - or the acceptance of the shale gas industry to operate in the area by local stakeholders. In particular, 'protests represent a veto by a hostile public seeking to assert democratic pressure into local energy development' (Bradshaw and Waite 2017:28).

As noted, anti-fracking protests have sometimes met with a substantial show of force by local police. The extent to which this show of force is deemed as legitimate by locals and the wider public is also an issue that impacts perceptions of democracy (Della Porta 1995). In one show of force, the police arrested 126 protesters during initial drilling tests at Balcombe in Sussex (Hawkins 2019). These arrests were followed by more than 200 arrests over a five-month period at Barton Moss Protection Camp near Manchester. Arrests at Barton Moss were heavily scrutinized for including 'children, elderly and women' (Jackson and Monk 2014:12). In North Yorkshire, police arrested approximately 80 protesters at a well near the town of Kirby Misperton. The largest number of arrests (over 300) have occurred in Lancashire and scholars such as Bradshaw and Waite (2017:28) point out that the well at Preston New Road represents 'ground zero' for the 'shale gas conflict.' Three of the protesters arrested during the Lancashire protests were found guilty and sentenced to just over 1 year in prison for causing a public nuisance. This captured public attention as it was the first such sentence to environmental activists engaged in peaceful protest since 1932 (Perraudin 2018). These sentences were eventually overturned for being, according to the courts, 'manifestly excessive' (Gayle et al. 2018).

Research on fracking protests in the UK shows that police often report that they must remain neutral arbitrators between protesters and oil and gas operators (Jackson and Monk 2014; Gilmore et al. 2019; Szolucha 2016). This position is largely rejected by many local protesters who see the police as siding with oil and gas interests by preventing peaceful opposition to hydraulic fracturing by using force, if necessary (Szolucha 2016). A recent national study demonstrated that such views of the police 'facilitating' the development of the industry, rather than peaceful protest, were widespread amongst anti-fracking protestors (Gilmore et al. 2019). Moreover, protesters reported experiences of violence, intimidation, and aggression from police officers at multiple potential fracking sites across the country. This was most prevalent during intense and extended protest situations and has exacerbated the breakdown in trust between anti-fracking protesters and police (Gilmore et al. 2019:7).

Protest scholars such as Jackson and Monk (2014) suggest that police, in their pursuit to establish order, can serve to diminish local democracy by creating a situation where local communities are unable to express the diversity of existing views and exercise any local autonomy when more formal and orderly mechanisms of resistance are believed to be blocked. One area where this is most apparent is the surveillance of residents. For instance, Short and Szolucha (2019) point out that local residents were often unhappy when they discovered that they were being 'filmed and photographed' by the police when they simply sought to obtain information about oil and gas development in their area. This surveillance often took place when curious residents merely visited the well site to see the development and read posted information notices. Such incidents may further undermine community trust that the police are operating as independent arbitrators between protesters and the community (Gilmore et al. 2019).

As a result of community experiences with protesters and police, as well as policing activities meant to ensure order, the gap between local communities, shale gas experts, government regulators and the industry has decreased trust and increased feelings of environmental injustice (Szolucha 2016). Moreover, because legitimacy and trust are important concepts in the social license to operate (see Bradshaw and Waite 2017) it is likely that a variety of policing activities undermine shale gas development at the local level. This is especially true among communities where hydraulic fracturing is planned. The massive amount of public resources devoted to policing protesters is viewed by those who resist shale gas development as anything but neutral. This perceived anti-democratic behaviour has likely enhanced movement grievances. As Jackson et al. (2016:88) suggest 'the policing response [in Balcombe in 2013] did dissuade many from attending the camp [but] also served to galvanise the protest and widen its focus beyond fracking.' As Szolucha (2016:68) found, one of the most striking community impacts was the changing perceptions of police by residents and protesters

during protest events. That is, perceptions of police mistrust appear to have intensified over time in communities near Preston New Road, Balcombe and Barton Moss.

6 Summary

Issues of local democracy are tied to shale gas development and hydraulic fracturing through the concepts of local knowledge, community diversity, autonomy and freedom from government uniformity. In the UK there are citizens who oppose shale gas development using hydraulic fracturing in their local communities. This report suggests that at the local level, movements focused on sustainability have combined with growing national concern about climate change and increasing engagement in energy citizenship. This unique combination of events has set the stage for direct action to stop fracking at the local level in a variety of communities. While significant resources have been spent to counter this resistance by educating residents through increased professional evidence and by maintaining order around drilling sites through a strong police presence, such efforts appear to be largely unsuccessful in changing local community levels of support for shale gas development or even national public support for shale gas. Future research will continue to explore the reasons for anti-fracking activism in greater detail to better understand why some communities have drawn a line in the sand when it comes to this particular type of fossil fuel production.

7 Conclusions: Wider Policy Implications

The UK Governments have sought to develop a 'localism' agenda (Tait and Inch 2016). The Localism Act 2011 purported to give effect to the Government's ambitions to decentralise power away from Whitehall, back into the hands of local councils, communities and individuals to increase their agency on local issues and priorities. Our research, into the specific set of circumstances in England, echoing Tait and Inch's (2016) study on 'localism', has highlighted a significant contradiction. On the one hand the government, with a particular view about the benefits of shale gas, favours 'localism', but on the other hand uses central control to override local democracy in order to push through shale gas production. Added to this, in 2019 the government legislated a new greenhouse gas emissions target requiring the UK to bring all such emissions to 'net zero by 2050'. The question then arises, what role, if any, could shale gas play in the 'net zero' scenario? If government deems shale gas production compatible with the legal requirements of net zero, what would it take to gain a social licence for shale gas in such circumstances? The shale gas industry and pro-shale gas governments have been touting shale gas as a 'bridge fuel' to a carbon free future for some time and yet this has had little traction with the communities in our research. It is now commonplace in the UK for objections to planning applications, from residents, interested NGOs, politicians and other stakeholders, to argue that shale gas development is incompatible with the urgent need to decarbonise the economy. If shale gas production is to gain a 'social license' to operate in these circumstances, the industry and government will have to somehow win the 'contribution to climate change' argument alongside the more local issues.

One factor which may assist with such an endeavour is the need for jobs and investment in the face of the economic downturn post-Covid-19. It may well be that the need for quick economic recovery ultimately trumps environmental concerns. Even so, many will argue (e.g. the main UK opposition parties) that such investment stimulus should focus on a 'green recovery' or 'Green New Deal' which may well dismiss shale gas as a bad idea. It is also equally possible that in current low-price environment the economics won't work, and investment will be hard to find. In such a scenario smaller gas companies will surely face hard economic times and potentially go out of business.

In the end, and as noted, the future of shale gas in the UK will be shaped by larger political and economic outcomes. However, our research suggests that local democracy and anti-fracking activism will continue to interact with these larger forces and play a significant role in UK shale gas development for the foreseeable future.

About the Authors

Dr Damien Short is a Professor of Human Rights and Environmental Justice at the University of London in the School of Advanced Study. His research and teaching is focused on indigenous peoples' rights, genocide studies, reconciliation projects and environmental human rights and is the Editor in Chief of the *International Journal of Human Rights*.

Dr Paul Stretesky is a Professor of Sociology in the Department of Social Science at Northumbria University. He researches and teaches in the areas of food insecurity, environmental justice and quantitative methods.

Dr. Anna Szolucha is a Research Fellow at Northumbria University in the department of social sciences. Her research focuses on democracy, energy, natural resources and social movements. She is particularly interested in investigating the social and environmental impacts of energy developments.

Acknowledgement

The authors would like to thank the Natural Environment Research Council and the Economic Social Research Council for funding the research that underpins many of the observations in this review under project number R018146. We would also like to thank Professor Mike Bradshaw and an external reviewer for their helpful comments and suggestions. Any errors, interpretations, or omissions in this review are solely the responsibility of the authors.

References

- Aryee, F. (2020) *Psychosocial Impacts of Hydraulic Fracturing in Lancashire*. Unpublished Doctoral Dissertation Thesis. Newcastle: Northumbria University.
- Aryee, F. Szolucha, A. Stretesky, P.B. Short, D. Long, D.M. Ritchie, L.A. & Gill, D.A (2020) Shale Gas Development and Community Distress: Evidence from England. *International Journal of Environmental Research and Public Health* 17(14), e5069.
- Bach, M. Jordan, S. Hartung, S. Santos-Hövenner, C. & Wright, M. T. (2017) Participatory Epidemiology: The Contribution of Participatory Research to Epidemiology. *Emerging Themes in Epidemiology*, 14(1), e2.
- Bamberger, M. & Oswald, R.E. (2012) Impacts of Gas Drilling on Human and Animal Health. *New Solutions: A Journal of Environmental and Occupational Health Policy*, 22(1), 51–77.
- Beebeejaun, Y. (2017) Exploring the Intersections Between Local Knowledge and Environmental Regulation: A study of Shale Gas Extraction in Texas and Lancashire. *Environment and Planning C: Politics and Space*, 35(3), 417–433.
- Bomberg, E. (2017) Shale We Drill? Discourse Dynamics in UK Fracking Debates. *Journal of Environmental Policy & Planning*, 19(1), 72–88.
- Bradshaw, M. & Waite, C. (2017) Learning from Lancashire: Exploring the Contours of the Shale Gas Conflict in England. *Global Environmental Change*, 47, 28–36.
- Burningham, K. (2000) Using the Language of NIMBY: A Topic for Research, Not an Activity for Researchers. *Local Environment*, 5(1), 55–67.
- Burns, M. Reid, C. and Bremen, J. (2016) UK Shale Gas – a Policy Tug of War. *Journal of Energy & Natural Resources Law* 34(2), 247–60.
- Cantoni, R. Lis, A. & Stasik, A. (2017) Creating and Debating Energy Citizenship: The Case of Shale gas in Poland. In: Szolucha, A. (Ed). *Energy, Resource, Extraction and Society*. Routledge, pp. 53–69.
- Corburn, J. (2003) Bringing Local Knowledge into Environmental Decision Making: Improving Urban Planning for Communities at Risk. *Journal of Planning Education and Research*, 22(4), 420–433.
- Corburn, J. (2007) Community Knowledge in Environmental Health Science: Co-producing Policy Expertise. *Environmental Science & Policy*, 10(2), 150–161.
- Cotton, M. (2017) Fair Fracking? Ethics and Environmental Justice in United Kingdom Shale Gas Policy and Planning. *Local Environment*, 22(2), 185–202.
- Cotton, M. & Stevens, E. (2019) Mapping Discourses of Climate Change Adaptation in the United Kingdom. *Weather, Climate, and Society*, 11(1), 17–32.
- Cowell, R. (2013) The Greenest Government Ever? Planning and Sustainability in England after the May 2010 Elections. *Planning Practice & Research* 28(1), 27–44.
- Della Porta, D. (1995) Social Movements and the State: Thoughts on the Policing of Protest. *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures, and Cultural Framings*, edited by Doug McAdam, John D. McCarthy, and Mayer N. Zald. New York: Cambridge University Press. Pp. 62–92.
- Elcock, H. (2013) *Local Government: Policy and Management in Local Authorities*. New York: Routledge.
- Feenberg, A. (2010) *Between Reason and Experience: Essays on Technology and Modernity*. Cambridge, MA: The MIT Press.
- Flynn, R. Bellaby, P. & Ricci, M. (2008) Environmental Citizenship and Public Attitudes to Hydrogen Energy Technologies. *Environmental Politics*, 17(5), 766–783.
- Freudenberg, W.R. & Pastor, S.K. (1992) NIMBYs and LULUs: Stalking the Syndromes. *Social Issues*, 48(4), 39–61.
- Gayle, D. Perraudin, F. & Bowcott, O. (2018) *Fracking Protesters Walk Free After Court Quashes 'Excessive Sentences'*. The Guardian, 17 October. Available <https://www.theguardian.com/environment/2018/oct/17/court-quashes-excessive-sentences-of-fracking-protesters>.

- Gilmore, J. Jackson, W. Monk, H. & Short, D. (2019) *Protesters Experiences of Policing at Anti-Fracking Protests in England, 2016-2019: A National Study*. Centre for the Study of Crime, Criminalisation and Social Exclusion. Available at: <https://www.ljmu.ac.uk/~media/Files/LJMU/Research/Centres%20and%20institutes/CCSE/Policing%20protest%202019%20National%20Report>
- Griffiths, J. (2019) Fracking in the UK: Expanding the Application of an Environmental Justice Frame. *Local Environment*, 24(3), 295–309.
- Haggerty, J. McBride, K. (2016) Does Local Monitoring Empower Fracking Host Communities? A Case Study from the Gas Fields of Wyoming. *Journal of Rural Studies*, 43, 235–247.
- Houghton, G. Bankoff, G. & Coulthard, T. (2015) In Search of 'Lost' Knowledge and Outsourced Expertise in Flood Risk Management. *Transactions of the Institute of British Geographers*, 40(3), 375–386.
- Hawkins, J. (2018) *Fracking: What is a Legitimate Decision?* Leeds: University of Leeds, School of Law.
- Hawkins, J. (2019) 'We Want Experts': Fracking and the Case of Expert Excess. *Journal of Environmental Law*, 32(1), 1–24.
- Hawkins, J. (2020) *Briefing 2, Shale Gas Legal Landscape*. Available at: <http://www.ukuh.org/publications/benchmarkreports/>
- Healey, H. (2019) What if...We Reduced Carbon Emissions to Zero by 2025? In Extinction Rebellion's *This is Not a Drill*. London: Penguin Random House.
- Hou, D. Luo, J. & Al-Tabbaa, A. (2012) Shale Gas Can be a Double-Edged Sword for Climate Change. *Nature Climate Change*, 2(6), 385–387.
- House of Commons Environmental Audit Committee (2015) *Environmental Risks of Fracking: Eighth Report of Session 2014–15*. London: House of Commons. Available at: <https://publications.parliament.uk/pa/cm201415/cmselect/cmenvaud/856/856.pdf>
- Irwin, A. (2001) *Sociology and the Environment*. Cambridge: Polity.
- Jackson, R. (2014) The Integrity of Oil and Gas Wells. *Proceedings of the National Academy of Sciences*, 111(30), 10902–10903.
- Jackson, W. & Monk, H. (2014) Police Violence at Anti-Fracking Protests: Pacifying Disruptive Subjects. *Criminal Justice Matters*, 98(1), 12–13.
- Jackson, W. Monk, H. Gilmore, J. (2016) Pacifying Disruptive Subjects: Police Violence and Anti-Fracking Protests. *Contention* 3(2):81–93.
- Jaspal, R. & Nerlich, B. (2014) Fracking in the UK Press: Threat Dynamics in an Unfolding Debate. *Public Understandings of Science*, 23(3), 348–363.
- Jones, P. Hillier, D. & Comfort, D. (2015) The Contested Future of Fracking for Shale Gas in the UK: Risk, Reputation and Regulation. *World Review of Entrepreneurship, Management and Sustainable Development*, 11(4), 377–390.
- Keller, A. (2009) *Science in Environmental Policy Making: The Politics of Objective Advice*. Boston, MA: The MIT Press.
- Kinchy, A. (2017) Citizen Science and Democracy: Participatory Water Monitoring in the Marcellus Shale Fracking Boom. *Science as Culture*, 26(1), 88–110.
- Kruyt, B. van Vuuren, D. P. de Vries, H. J. & Groenenberg, H. (2009) Indicators for Energy Security. *Energy Policy*, 37(6), 2166–2181.
- Larsen, K. Gunnarsson-Östling, U. & Westholm, E. (2011) Environmental Scenarios and Local-Global Level of Community Engagement: Environmental Justice, Jams, Institutions and Innovation. *Futures*, 43(4), 413–423.
- Lewis, G. Palm, L. & Feng, B. (2019) Cross-National Variation in Determinants of Climate Change Concern. *Environmental Politics*, 28(5), 793–821.
- Lis, A. & Stankiewicz, P. (2017) Framing Shale gas for Policy-Making in Poland. *Journal of Environmental Policy & Planning*, 19(1), 53–71.
- Lis, A. & Stasik, A. (2017) Hybrid Forums, Knowledge Deficits and the Multiple Uncertainties of resource extraction: Negotiating the local governance of shale gas in Poland. *Energy Research & Social Science*, 28, 29–36.
- Materka, E. (2012a) End of Transition? Expropriation, Resource Nationalism, Fuzzy Research, and Corruption of Environmental Institutions in the Making of the Shale Gas Revolution in Northern Poland. *Debate: Journal of Contemporary Central and Eastern Europe*, 19(3), 1–33.
- Materka, E. (2012b) Poland's Quiet Revolution: The Unfolding of Shale Gas Exploration and its Discontents in Pomerania. *CEJISS*, 6(1), 180–211.
- Members of the Committee on Climate Change (2014) *Does the IPCC Endorse Shale Gas?* London: Committee on Climate Change. Available at: <https://www.theccc.org.uk/2014/04/17/does-the-ipcc-endorse-shale-gas/>.
- Metze, T. (2017) Fracking the Debate: Frame Shifts and Boundary Work in Dutch Decision Making on Shale Gas. *Journal of Environmental Policy and Planning*, 19, 35–52.
- Mrozowska, S. Tomasz, B. Kijewska, B. Goodwin, R. & Crone, T. (2016) Trust in the Source of Received Information as a Factor Related to Public Perception of Shale Gas Drilling. *Current Issues in Personality Psychology*, 4(4), 240–252.
- O'Neill, B.F. & Schneider, M.J. (2020) A Public Health Frame for Fracking? Predicting Public Support for Hydraulic Fracturing. *The Sociological Quarterly*, Advanced Online Publication. Available at: <https://doi.org/10.1080/00380253.2020.1773350>
- O'Sullivan, F. & Paltsev, S. (2012) Shale Gas Production: Potential Versus Actual Greenhouse Gas Emissions. *Environmental Research Letters*, 7(4), e044030.

- Ottinger, G. (2010) Constructing Empowerment Through Interpretations of Environmental Surveillance Data. *Surveillance & Society*, 8(2), 221–234.
- Pellow, D.N. & Brulle, R.J. (2005) *Power, Justice, and the Environment*. Boston, MA: MIT Press.
- Perraudin, F. (2018) Fracking Activists to Appeal Against Prison Sentences. 5th October. *The Guardian*. London: The Guardian. Available at: <https://www.theguardian.com/environment/2018/oct/05/fracking-activists-to-appeal-against-prison-sentences>.
- Pratchett, L. (2004) Local Autonomy, Local Democracy and the 'New Localism'. *Political Studies*, 52(2), 358–375.
- Raymond, C. Fazey, I. Reed, M. Stringer, L. Robinson, G. & Evelyn, A. (2010) Integrating Local and Scientific Knowledge for Environmental Management. *Journal of Environmental Management*, 91(8), 1766–1777.
- Ritzer, G. & Jurgenson, N. (2010) Production, Consumption, Prosumption: The Nature of Capitalism in the Age of the Digital 'Prosumer'. *Journal of Consumer Culture*, 10(1), 13–36.
- Ryder, S. Devine-Wright, P. & Evensen, D. (2020) *Public Perceptions of Shale Gas Exploration in the UK: A Summary of Research (2012–2020)*. Newcastle: UKUH. Available at: <http://www.ukuh.org/publications/benchmarkreports/>
- Schlosberg, D. (2019) From Postmaterialism to Sustainable Materialism: The Environmental Politics of Practice-Based Movements. *Environmental Politics*. Available at: <https://doi.org/10.1080/09644016.2019.1587215>
- Schlosberg, D. & Coles, R. (2016) The New Environmentalism of Everyday Life: Sustainability, Material flows and movements. *Contemporary Political Theory*, 15(2), 160–181.
- Short, D. & Szolucha, A. (2019) Fracking Lancashire: The Planning Process, Social Harm and Collective Trauma. *Geoforum*, 98, 264–276.
- Shrader-Frechette, K. (2010) Analyzing Public Participation in Risk Analysis: How the Wolves of Environmental Injustice hide in the Sheep's Clothing of Science. *Environmental Justice*, 3(4), 119–123.
- Shrader-Frechette, K. (2002) *Environmental Justice: Creating Equality, Reclaiming Democracy*. Oxford: Oxford University Press.
- Somerville, P. (2020) A Critique of Climate Change Mitigation Policy. *Policy & Politics*, 48(2), 355–378.
- Staddon, P. & Depledge, M.H. (2015) Fracking Cannot be Reconciled with Climate Change Mitigation Policies. *Environment, Science and Technology*, 49, 8269–8270.
- Stamford, L. (2020) *Briefing 4, Shale Gas and the UK's Low Carbon Transition*. Newcastle: UKUH. Available at: <http://www.ukuh.org/publications/benchmarkreports/>
- Stankiewicz, P. (2013) Razem o Lupkach: Czyli Jak Prowadzić Dialog Publiczny Przy Poszukiwaniu i Wydobywaniu Gazu z Lupków. *Przegląd Geologiczny*, 61(6), 374–380.
- Stankiewicz, P. Stasik, A. & Suchomska, J. (2015) Od Informowania do Współdecydowania i z Powrotem Prototypowanie technologicznej demokracji. *Studia Socjologiczne*, 3(218), 65–101.
- Stephenson, E. Doukas, A. & Shaw, K. (2012) Greenwashing Gas: Might a 'Transition Fuel' Label Legitimize Carbon-Intensive Natural Gas Development? *Energy Policy*, 46, 452–459.
- Stretesky, P. & Grimmer, P. (2020) Shale gas development and crime: A review of the literature. *The Extractive Industries and Society: Advanced Online Publication*. Available at: <https://doi.org/10.1016/j.exis.2020.06.008>
- Szolucha, A. (2018a) Community Understanding of Risk from Fracking in the UK and Poland: How democracy- and Justice-Based Concerns Amplify Risk Perceptions. In J. Whitton et al. (Eds.), *Governing Shale Gas: Development, Citizen Participation and Decision Making in the US, Canada, Australia and Europe*. London and New York: Routledge.
- Szolucha, A. (2018b) Introduction: Conceptualising Energy Impacts and Contested Energy Futures. In A. Szolucha (Ed.), *Energy, Resource Extraction and Society: Impacts and Contested Futures*. London and New York: Routledge.
- Szolucha, A. (2018c) Mistrust and Earthquakes: Why Lancashire Communities are so Shaken by Fracking Tremors. *The Conversation*. 14th December. Available at: <https://theconversation.com/mistrust-and-earthquakes-why-lancashire-communities-are-so-shaken-by-fracking-tremors-108108>.
- Szolucha, A. (2016) The Human Dimension of Shale Gas Developments in Lancashire, UK: Toward a Social Impact Assessment. Available at: <https://books.google.pl/books?id=vPpIDwAAQBAJ&printsec=frontcover&hl=en#v=onepage&q&f=false>.
- Tait, M. & Inch, A. (2016) Putting Localism in Place: Conservative Images of the Good Community and the Contradictions of Planning Reform in England. *Planning Practice and Research*, 31(2), 174–194.
- Thomas, M. Pidgeon, N. Evensen, D. Partridge, T. Hasell, A. Enders, C. Harthorn, B. & Bradshaw, M. (2017) Public Perceptions of Hydraulic Fracturing for Shale Gas and oil in the United States and Canada. *Wiley Interdisciplinary Reviews: Climate Change*, 8(3), e450.
- Wolsink, M. (2006) Invalid Theory Impedes our Understanding: A Critique on the Persistence of the Language of NIMBY. *Transactions of the Institute of British Geographers*, 31, 85–91.
- Yamin, F. (2019) Why I Broke the Law for Climate Change. *Nature*, 573, 337–339.

FOR FURTHER INFORMATION
damien.short@sas.ac.uk