The British Anti-Windfarm and Anti-Fracking Movements: A Comparative Analysis

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Introduction

Motivated by concerns for clean, secure energy and economic growth, many governments around the world are increasingly trying to develop domestic energy sources within their own territories. Among others, renewable energy and unconventional fossil fuels are two key resource categories that are high on political agendas. Though perhaps pointing towards different energy futures, efforts to develop these industries have led to significant levels of public resistance in many countries. In Britain, the anti-windfarm and anti-fracking movements have been the two most notable manifestations of such resistance.

The anti-windfarm and anti-fracking movements are direct responses to different aspects of UK government energy policy. Emerging some twenty years apart, each has given rise to significant levels of grassroots mobilisation and a number of nationally focused organisations, and each has involved concerted efforts to resist the development of energy infrastructure. Notably, the potential of such opposition to impact on the implementation of energy policy has stimulated initiatives among elite political and economic actors to improve levels of public acceptance of developments and thus improve policy outcomes.

In order to provide a comparative analysis of the anti-windfarm and anti-fracking movements against the backdrop of renewable and unconventional energy policy in the

UK, we begin with a brief overview of the context and character of both movements, and seek to explain their predominantly grassroots character. The focus then shifts to an analysis of similarities and difference in terms of grievances, alliances and tactics. Finally, we consider the consequences of both movements and responses by elite political and economic actors to secure policy outcomes in the context of public opposition.

Context, mobilisation, opportunities

The emergence of anti-wind farm activism in Britain began in the early-1990s in response to a tentative government push towards developing renewable energy under the Non-Fossil Fuel Obligation (NFFO). Instituted in 1990, the NFFO was primarily a means of subsidising nuclear energy (Mitchell and Connor 2004), but a small percentage of available funds (e.g. 5% from 1990-94) was allocated to support renewables (Douglas and Saluja 1995: 702). Involving a competitive bidding process for contracts among developers, the NFFO stimulated the growth of a modest wind energy sector, which saw some 46 operational windfarms across the UK by the end of the decade (Danby and Gore 1999). However, precisely because this growth was limited, the NFFO came under increasing criticism (Mitchell and Connor 2004: 1937) and the incumbent Labour administration in 2002 replaced it with the Renewables Obligation (RO), a market based-instrument that required electricity suppliers to purchase increasing percentages of renewable electricity from renewable energy developers. Under the RO, "applications for planning permission…soared" (Mitchell and Connor 2004: 1939) and wind energy deployment substantially increased, from 552MW in 2002 to just over 10,000MWs by early-2014 (GWEC 2012; RenewableUK 2014b).

In the 1990s, in response to the increasing development of windfarms across the country, an anti-windfarm movement - primarily grassroots and constituted by numerous local campaign groups fighting against (proposed) wind energy developments – emerged and began to gain support. The first of these groups formed in the early

1990s (Elliott 2003: chapter 12) and, as the Renewables Obligation took effect at the beginning of the new century, they multiplied in number. Over the last 25 years, an estimated 300 such organisations came into being (Country Guardian 2015b), although groups would come and go in the course of time. In addition to grassroots mobilisation, the movement has also included groups concerned with research, lobbying national government, and supporting local campaigns (Szarka and Blühdorn 2006: 31).

The most significant of these, the Country Guardian, began in 1990 as a local campaign group in Cumbria, but developed into an umbrella organisation that "acts as a clearing house for information and advice, servicing…[local] action groups" (Country Guardian 2015a). Given this role, the Country Guardian became the central connecting node of the movement and additionally serves to provide local groups with a sense of collective identity. Other national organisations include single issue groups (e.g. the Windfarm Action Group, Artists Against Windfarms, and Scotland Against Spin) and the Renewable Energy Foundation (REF), which expanded its initial remit beyond wind energy "to promote renewables – albeit over and against wind power" (Szarka and Blühdorn 2006: 31).

The issue of fracking in Britain emerged some 20 years later than wind power, and arose in the context of the UK coalition government's push, from 2010, to develop shale gas and other unconventional sources of energy, including shale oil and coal bed methane. Buoyed by the success of the shale gas and oil industries in the US and recent estimates of significant onshore reserves in the UK (e.g. BGS 2013; BGS 2014), and believing that the exploitation of unconventional energy will contribute to energy security and economic growth, the UK government has attempted to stimulate investment in the exploration and development of these resources, by instituting a generous tax regime.[1] In recent years, industry interest in searching for unconventional fossil fuels has grown, and numerous planning applications have been submitted. However, public concern about the possible unintended consequences of onshore fossil fuel extraction, has given rise to concerted efforts to resist these developments, particularly where they involve

fracking, a technology used to extract 'unconventional' forms of oil and gas.[2]

The anti-fracking movement emerged in the spring of 2011 after fracking at Cuadrilla Resources' Preese Hall 1 well near Blackpool led to minor earthquakes in the area. In spite of an 18-month nationwide moratorium on fracking as a direct result of these earth tremors, interest in exploratory drilling stimulated the emergence of Britain's first local anti-fracking groups, including several local groups around the Blackpool area. Most probably as a result of the moratorium, the growth of local groups was initially modest, reaching around 40 by mid-2013. Yet from this point on, the number increased rapidly, according to one source by about 10 per month (Vidal 2014). By the spring of 2015, the number of local anti-fracking groups had exceeded 200.

In addition to local campaign groups, the anti-fracking movement includes a number of national organisations. The most prominent of these is Frack Off, a Brighton-based group that provides information, advice and support to community campaigners and others on 'extreme energy' and related issues[3]. In this role it serves a similar function in relation to fracking as does the Country Guardian with windpower, not least in being a central node connecting different local groups and reinforcing a sense of collective identity. Other notable national organisations in the movement include Talk Fracking, which seeks "to provide a forum for debate…so that an informed public can decide for themselves whether they support fracking" (Talk Fracking 2015), and Mothers Against Fracking, a network of mothers "concerned about the dangers unconventional oil and gas will have on their children's health and the planet in the future" (Mothers Against Fracking 2015).

As can be seen from these brief overviews, both the anti-windfarm and anti-fracking movements represent direct responses to different government energy policies involving distinct technologies, which, though initially implemented some twenty years apart, continue to make an impact. However, in spite of these differences, the two movements are structurally similar, not least in terms of the hundreds of community campaign groups that constitute them. How can we explain this shared characteristic in

light of the other apparent differences between them?

Though generating electricity from wind power and fracking for unconventional energy are very different processes, both types of energy development involve the deployment of *geographically diffuse infrastructure* to exploit geographically diffuse resources.[4] Unlike other types of energy infrastructure (e.g. coal fired or nuclear power stations), capturing significant amounts of energy from wind and fracking for unconventional fossil fuels involves hundreds (sometimes thousands) of developments spread throughout an area or territory in order to maximise exploitation. These multiple sites of energy development clearly increase the likelihood of multiple sites of localised grievance, particularly in relation to numerous communities faced with the prospect of 'hosting' developments.[5] However, if these factors help explain widespread grassroots mobilisation across both movements, then so too does the political opportunity structure faced by local communities, particularly as it relates to planning.

The British planning regime requires, in the first instance, that local government give planning consent for fracking and (most) wind energy projects before any developments can proceed. Alhough the type of authority deciding on planning applications varies according to the technology concerned and different (devolved) forms of national administration[6], the local nature of decision-making provides opportunities for local citizens to influence outcomes. The British planning system is noted for providing multiple points of access (e.g. initial consultation, planning committee meetings, public inquiries, judicial review) for citizens to voice opinions and concerns in relation to planning applications, and decision-makers are legally obliged to take local concerns into account. Anti-fracking and anti-windfarm activists are acutely aware of these avenues for redress, and see them as a realistic means of resisting locally planned developments. This interpretation of the local political opportunity structure informs the motivational frames of concerned locals and provides the necessary incentive to mobilise community resources towards resisting unpopular proposals. If local planning decisions were made nationally, we might see far fewer local campaign groups

mobilising against planned wind energy and fracking developments, and concomitantly, a stronger national focus to both movements. The combination of multiple sites of localised grievance deriving from geographically diffuse infrastructure, and an open local political opportunity structure goes some way towards explaining the extent of grassroots mobilisation in both cases.

Having provided an overview of both movements and explained their predominantly grassroots character, it remains to consider other aspects of these movements. The immediate focus here will be on grievances, alliances and tactics, before moving on to a discussion of developments and consequences.

Grievances, alliances, tactics

Though the diffuse nature of both types of infrastructure helps explain the multiple sites of grievance, the different natures of the two technologies help us understand the *content* of the objections that permeate both movements. An examination of the grievances of the anti-fracking and anti-windfarm movements demonstrates considerable differences and some similarities in terms of the concerns expressed. It is notable that key differences in these grievances have had an impact on the character of alliance formation across the two movements, which in turn has shaped tactical orientations.

For anti-windfarm activists, the impact on the landscape is typically the most prominent grievance (Haggett 2011), with windfarms consistently seen as an industrialisation of the countryside causing great damage to a treasured rural aesthetic. Other prominent grievances emphasise the human health impacts of noise and shadow-flicker upon those living in close proximity to developments, concerns for local ecology, and impact on the value of local heritage. Worries over falling property prices also feature highly on the agenda, particularly among local groups. The local nature of many grievances has left anti-windfarm campaigners open to the charge that they are Nimbys: self-interested local organisations with little concern for the common good.[7] However, critiques of

policy and technology, and concern for the landscape *in general*, are present within protestors' discourse, thus providing evidence of framing that transcends the local. Though the anti-windfarm movement emphasises a number of environmental concerns in its frames, its green status is problematic because of the link between wind energy and climate change mitigation. On the one hand, landscape and ecology are clearly environmental issues; on the other, the desire to fight windfarms can be seen as anti-environmental because it hinders the climate change cause. This tension has been characterised as a 'green on green' conflict within the heart of the broader environmental movement (Warren et al. 2005), and has constrained possible alliances between anti-windfarm groups and environmental organisations, particularly those, such as Greenpeace, Friends of the Earth (FoE) and the Green Party, that place climate change near the top of their agendas. However, this lack of resonance between anti-windfarm campaigners' and the discourse of climate change has not completely prevented alliance formation between them and green groups. Indeed, "long-established landscape protection groups such as the Campaign to Protect Rural England (CPRE) and the Campaign for the Protection of Rural Wales (CPRW) have sometimes made common cause with anti-wind protestors" (Szarka and Bludhorn 2006: 31), as has the Association for the Protection of Rural Scotland. Other groups that share concerns over the deployment of windfarms on the landscape or ecology include the RSPB, the Ramblers Association, the Open Spaces Society and the National Trust.

If resonance with the discourse of climate change has proven problematic for anti-windfarm activists, that has not been the case for the anti-fracking movement; anti-fracking protestors have been keen to emphasise the climate change impacts of unconventional energy and fracking, both in terms of additional CO2 emissions from the burning of unconventional fossil fuels[8], and the fugitive emissions (e.g. methane) associated with the extraction of some resources (e.g. shale gas and coal bed methane). In addition to climate change, the anti-fracking movement voices a number of other concerns over unconventional energy and fracking. These include contamination of

groundwater, local air pollution, negative impacts on the landscape and human health, seismic events caused by the fracking process, and concern for the impact of fracking developments on house prices.

The concern about climate change among anti-fracking campaigners has facilitated their networking with a different coalition of groups not readily available to the anti-windfarm movement.[9] Among others, these include established environmental groups such as the Green Party, Greenpeace and FoE, as well as newer, more radical groups and networks such as No Dash for Gas and Reclaim the Power. There is a clear contrast between these groups and the more conservative landscape protection organisations that ally with the anti-windfarm movement. The variable alliances that have formed have had direct implications for the tactics employed within the different movements. However, tactics have also been shaped by the political opportunity structures facing activists. We will focus on the latter of these factors first.

As already outlined above, local anti-fracking and anti-windfarm activists are confronted with an open planning system at the local level, which provides realistic opportunities for resisting developments. As well as providing an incentive to mobilise (see above), the open nature of this system also shapes the tactics employed by local protestors. As noted by Rootes (2006) in his research into local anti-incinerator protest, local protestors adopt a twofold tactical approach in their efforts to resist locally sited developments through the planning system. This approach is also evident across the anti-windfarm and anti-fracking movements. On the one hand, protestors seek to present rational arguments to decision-makers as to why developments should not go ahead; on the other, they mobilise local organisations (e.g. environmental groups and parish councils) and individuals (citizens and notable public figures) to make formal objections to the proposals. In terms of rational argumentation, local campaigners seek to exploit the institutional openings mentioned earlier. Here there is a general appreciation that planning decisions are (ostensibly) made using formal criteria (national policy, development plans, planning guidance etc.) relating to the local

suitability of proposed projects. In order to improve their chances, anti-windfarm and anti-fracking campaigners often make use of planning consultants and/or others with relevant expertise to develop arguments that speak directly to these criteria.

In terms of mobilisation, campaigners are focused on communicating the idea that the weight of public opinion is against the proposals. This is particularly relevant at the local authority level where decisions are made by elected councillors.[10] Working on the basis of the 'logic of numbers' (della Porta and Diani 2006), and that their concern about their re-election may influence the planning decisions of elected councillors (Rootes 2006; Toke 2005), anti-windfarm and anti-fracking activists make concerted efforts to mobilise large numbers of objections against proposed developments. The impact of such efforts will be considered below.

At the level of local planning there are clear tactical similarities between the two movements. However, notable differences can also be identified. Among these, perhaps the most salient is the greater willingness of anti-fracking protestors to adopt coordinated non-violent direct action (NVDA) (marches, demonstrations, blockages, protest camps, etc.) at the national and local level. With the exception of the odd small scale national and local demonstration, non-violent direct action is less a feature of anti-windfarm activism. As will become clear below, the organisational alliances formed by the two movements serve, at least partially, to explain this difference.

At the national level, there are numerous examples of direct action against unconventional energy and fracking. Over the last few years these include: a number of small-scale demonstrations in London; numerous media-focused publicity stunts[11]; and a mass lobby of Parliament organised by a coalition of grassroots groups. In addition to nationally focused direct action, the starkest example of non-violent direct action at the local level can be seen in the use of protest camps outside development sites, a tactic that has been deployed on at least nine occasions by the anti-fracking movement, including, most notably, at Balcombe in West Sussex (see below).

Previous research has highlighted a relationship between closed political opportunities

and protesters' use of more radical tactics (Kitschelt 1986). In the case of the anti-fracking movement, at both the local and national levels, closed opportunities structures can account in part for the use of direct action. At the local level, for example, the political opportunities afforded by the planning regime do not remain open indefinitely. Indeed, when developments receive planning permission and become operational, opportunities for objection close, and it is at such points that protest camps can emerge. At the national level, the increasingly strong support for fracking by the government, a rejection of movement concerns when opportunities to engage are afforded[12], and consistent (though at times qualified) support for unconventional energy across the main political parties are indicative of closed national opportunities, and may therefore help explain the use of non-violent direct action (NVDA). However, closed political opportunity structures are not sufficient to account for the recourse to NVDA. Such tactics have not been used by anti-windfarm activists who have faced similar conditions,[13] particularly at the local level. How then can we understand the reasons for this variation?

Reflecting other expressions of protest against unconventional energy around the world (Colvin et al. 2015; Kuch and Titus 2014), the anti-fracking movement consists of a politically variegated network of groups and individuals fighting for a common cause. In the UK, these range from traditional middle-class conservatives, through centre-left environmentalists, to radical greens. The characteristics of this network, and in particular the radical green element, contrasts with the predominantly conservative bent of the anti-windfarm movement, whose activists tend to be older and disconnected from environmental activist networks (Gardner 2015). This may help to explain variation in the use of NVDA. The other significant explanatory factor here is the tried and tested tactical repertoires adopted by some groups. These two elements are not unrelated.

Though the idea of a 'tactical repertoire' is important for understanding the NVDA undertaken by established groups such as Greenpeace (which has been using direct

action media stunts in its campaigning for over 40 years) the influence of radical political identity and tactical repertoires on the use of NVDA can most readily be seen among radical green groups and networks such as Frack Off, Reclaim the Power and No Dash for Gas. Each of these groups promotes NVDA as a legitimate means of resistance, has been involved in direct action at the national and local levels, and provides advice and training on the use of NVDA to community groups and others. The ideological orientation of these groups, past experiences of protest, and concomitant tactical repertoires combine to facilitate the use of NVDA against fracking infrastructure. Importantly however, there is a strong commitment to involve local campaign groups in such activities. For instance, Reclaim the Power states that it "is a grassroots organising network for taking direct action on environmental, economic and social justice issues, working in solidarity with affected communities" (No Dash for Gas 2015).

The best-known example of such action was provided by the Balcombe protest camps in West Sussex in the summer of 2013, during which an alliance of radical green groups, local residents, and others helped sustain two months of direct action (marches and blockades) against exploratory drilling by Cuadrilla Resources. At its peak the protests involved many hundreds of people, received significant coverage in the national media, saw the deployment of hundreds of police and the arrest of 125 people. The interaction between predominantly conservative Balcombe residents (Mid Sussex District Council 2015) and radical greens helps to explain the involvement of the former in activities that their political identity would typically preclude.[15] Such 'vegan' (radical greens) and 'Volvo' (middle-England conservatives) alliances have been noted in other instances of active protest against locally sited infrastructure in the UK (Griggs and Howarth 2002).[16]

So far we have seen that the grassroots structure of the two movements has been shaped by multiple sites of localised grievance arising from the deployment of geographically diffuse infrastructures, and the opportunities afforded by an open planning system at the local level. We have also seen that different grievances shape alliances across both movements, which in turn creates variations in the commitment to

and use of direct action tactics. Having described and explained key aspects of the anti-windfarm and anti-fracking movements, the focus will now shift towards consideration of the outcomes and consequences of those movements, and policy developments that have been fashioned in response to the challenges they pose.

Developments, outcomes, consequences

Perhaps the first thing to note in relation to the consequences of these movements, is that neither wind nor unconventional energy has seen major policy U-turns in the face of public opposition: onshore wind power has remained central to successive governments' renewable and low-carbon energy strategies; and the government message on unconventional energy has, if anything, grown stronger over the last few years. Thus neither movement can be said to have impacted on the general direction of government policy. However, though central government policy has remained on course, there has been a greater willingness to diverge from this path amongst the devolved administrations in the UK, most notably in Scotland,[17] whose government, in January 2015, announced a moratorium on the granting of planning consents for fracking operations pending 'full public consultation'. Though the impact of the anti-fracking movement on this decision is unclear, the issue did, in the context of a burgeoning movement, gain a high profile in the 2014 independence referendum. Friends of the Earth Scotland claimed the announcement amounted to a "huge victory for the communities, individuals and groups who have been campaigning to stop this dirty industry" (Brooks 2015).

Beyond the decisions of national governments, the place where the anti-windfarm and anti-fracking movements are likely to have the greatest impact is local authority planning, which is a key target of local campaigns. Of the two policy areas, the potential impact of local activism can be most readily seen in the case of wind, which over the last 25 years has seen significantly fluctuating local authority approval rates, which fell as low as 35% in late 2006.[18] Clearly, local authority planning decisions are influenced by

factors other than community campaigns (Szarka and Blühdorn 2006, 31)[19], and applications that are rejected by local authorities can be approved later at public inquiries. Nevertheless, a number of scholars have sought to understand such developments by pointing to the potential impact of local opposition on wind energy planning decisions (Cowell 2007; Szarka and Blühdorn 2006; Loring 2007; Toke et al. 2008). Here, the political pressure applied to elected councillors is perhaps the main means by which local groups can influence such decisions (Toke 2005; Ogilvie and Rootes 2015).

Though systematic research on the impact of anti-fracking protest in the UK has been limited, there are some signs that protest against unconventional energy might be starting to achieve results. Indeed, (anecdotal) evidence suggests that local campaigns may have had some influence on recent planning decisions, and that shifts in public attitudes might be a result of anti-fracking mobilisation. In relation to the former, for instance, after "fierce local opposition" to Celtique Energie's application to drill near Wisborough Green in 2014, West Sussex County Council rejected the bid (Gosden 2014), while in 2015 Lancashire County Council, after receiving significant local objections, refused to give Cuadrilla Resources planning permission for seismic testing (BBC 2015).[20] Attitudes towards shale gas among the general public were increasingly positive in a number of surveys leading up to the summer of 2013, but, after the well-publicised Balcombe protests, awareness of shale gas increased and positive assessments across a number of measures started to decline (O'Hara et al. 2013). O'Hara et al speculate that this might have an impact on the strategy adopted by the movement, particularly if 'the anti-fracking lobby come to believe that highly visible forms of protest at potential sites for hydraulic fracturing are the most effective means of changing the public mood" (2013, 10). However, community contention over fracking developments is in its infancy when compared to wind energy[21], so it is still too early to draw direct comparisons between the two cases. Nevertheless, consideration of recent government and industry initiatives suggests that elite political and economic actors view both movements as

potential impediments to the implementation of their policies.

The most striking similarity in elite responses can be found in government-sanctioned commitments to improve community engagement practices, and to provide community benefit packages across both industries. Though such practices are not new to wind energy planning[22], the national industry body, RenewableUK, has sought to formalise them through the publication of *Onshore Wind: Our Community Commitment* (2013), a version of a 2011 publication that was revised in the light of a government consultation exercise (RenewableUK 2011). RenewableUK is promoting a voluntary commitment among its members to meaningful early engagement and the provision of community benefits to the sum of £5,000/MW per year generated by locally sited windfarms (RenewableUK 2013b)[23]. Similarly, United Kingdom Onshore Oil and Gas (UKOOG) published its *Community Engagement Charter* in 2013 in which early community engagement and community benefits are key features of the Charter. The benefits offered amount to "£100,000 per well site where hydraulic fracturing takes place...[and] a share of proceeds at production stage of 1% of revenues, allocated approximately 2/3rd to the local community and 1/3rd at the county level" (UKOOG 2013, 2). Clearly both schemes recognise the importance of such practices for promoting community acceptance, and aim to secure adherence among their members by implementing sanctions for non-compliance. In the case of RenewableUK's Commitment, non-compliance results in removal from the scheme (RenewableUK 2011, 24), while 'failure to comply' with UKOOG's Charter carries the heavier penalty of "a loss of use of the UKOOG logo and ultimately of membership" (UKOOG 2013, 1).

Though research suggests that timely engagement and the offer of financial stakes in developments can improve levels of community acceptance of projects (Soerensen et al. 2001, 1; Cass 2006, 33; Loring 2007, 51-58), it is too early to tell whether these particular measures will be taken up across the respective industries and whether, if adopted, they will have the desired results. Nevertheless, attempts to formalise these practices by government and industry suggests that elite actors believe that they can

produce the desired outcome. However, it is worth noting here that community benefits packages are often perceived as bribes by local objectors (Aitken 2010; Cass et al. 2010 Walker et al. 2014, 51), and that the dissemination of such views by local campaigners may have the potential to neutralise the attitudinal changes that community benefits strategies try to realise.

So far we have seen a number of similarities and differences in relation to policy developments, outcomes and consequences of both movements. However, before concluding, it is worth noting one final difference in terms of curtailing the potential impact of opposition to government policy. This point focuses on the issue of access rights to land. Both wind energy and fracking developers require access to land to carry out their operations, which often involves private contracts between developers and willing landowners. However, whereas windfarms involve infrastructure that is fixed in specific locations, fracking operations can involve underground horizontal drilling beyond the land where a visible development is situated. This raises the issue of access rights to drill under land belonging to a variety of people.

Until recently, the law required developers to gain the permission of property owners under whose land they intend to drill, while drilling without gaining this permission constituted trespass (DECC 2014, 19-20). Though developers could apply to the Secretary of State and the courts should permission be denied, the government believed "existing procedures for gaining … underground access [were] costly, time-consuming and disproportionate" (DECC 2014, 6). As a result, the government sought to change the law as part of the Infrastructure Bill, which began its passage through Parliament in June 2014 and which proposed the provision of "underground access to gas, oil and geothermal developers below 300 metres" (DECC 2014, 6). The Infrastructure Act gained Royal Assent on 12 February 2015 and gave developers "the right to use deep-level land to exploit petroleum … without the consent of the owner" (Hayhurst 2015)[24]. Vehemently opposed by the anti-fracking movement, the Act has "removed the ability of landowners to block fracking below their property" (Carrington 2104), thus removing

an obstacle to the implementation of unconventional energy policy.

We have noted a number of (potential) consequences of the anti-windfarm and anti-fracking movements and a number of policy developments that have taken place in the context of public opposition to government energy policy. Here we have noted that local campaigns are likely to have made an impact on wind energy planning outcomes over the last couple of decades, and that anti-fracking activism might be similarly effective in this area. We have also seen that the wind and unconventional fossil fuels industries have secured government-sponsored initiatives in an effort to achieve positive planning decisions. There are however differences between the two cases: efforts to secure moratoriums on fracking by devolved administrations, and significant statutory changes relating to underground access to private land, meant that policy developments in unconventional energy are set apart from those relating to wind energy policy.

Conclusion

The anti-windfarm and anti-fracking movements are two on-going expressions of mobilisation against different strands of government energy policy. Though emerging some twenty years apart, both movements have given rise to significant levels of grassroots activism in efforts to resist locally sited developments, and both are supported by a number of active nationally focused organisations. As we have seen, the grassroots structure of both movements is shaped by the geographically diffuse nature of the infrastructure developments associated with the two energy technologies, and a political opportunity structure that offers realistic chances of resisting developments through an open planning system, as a result of which it appears that some activists may have managed to obstruct the developments they oppose.

As well as differences in the extent and patterns of institutionally focused activism, a central difference between the two movements is in alliance formation and the use of NVDA. The use of such tactics in the anti-fracking movement was influenced by the

presence in that movement of network links with radical organisations whose activists subscribed to the use of NVDA. In contrast, any possibility of such alliances in the anti-windfarm movement was precluded by inherent tensions between the assumptions and discourses of the opponents of windfarms and those of environmental radicals. The anti-wind movement includes prominent activists who are sceptical about the threat of climate change and, especially, about claims that that threat is so great and urgent that renewable energy must be deployed even at the expense of intruding upon rural landscapes; radical environmental groups, on the other hand, start from the assumption that the urgency of climate change mitigation trumps considerations of landscape aesthetics. The shift in public attitudes after the Balcombe protest provides some evidence of the impact of widely reported direct action by anti-fracking protestors. Finally, numerous (policy) developments have been noted, including moratoriums on fracking by devolved administrations in Scotland and Wales, initiatives to improve community acceptance of locally sited developments across both industries, and changes to the law that give exploration companies deep-level access under privately owned land to facilitate exploration for and exploitation of unconventional sources of energy. Each of these developments has occurred since 2013. Contention over UK energy policy continues, and there is nothing to suggest that it will become less intense in coming years.

Notes

1. For example, the current tax rate for onshore shale gas production is 30%, which compares with a 62% rate on new North Sea oil operations (Macalister and Harvey 2013).
2. Fracking "is a process that injects a large amount of fluids (water with chemicals and sand) at high pressures into rock formations to fracture them, enabling compounds such as gas that are held tightly inside to be released" (UNEP 2012, 2).
3. 'Extreme energy' is the term deployed by activists for unconventional energy.
4. By its very nature wind is a diffuse resource that blows widely across a territory. Different types of unconventional energy (e.g. shale gas and oil, and coal seam gas) are also diffuse, widely permeating and 'tightly held' within particular strata of rock.
5. The term 'site' here refers to the (proposed) physical development of infrastructure in a

particular location in relation to which grievances and mobilisation can develop.
6. In England, wind energy developments under 50MWs are mainly decided by district councils, whereas county councils are predominantly responsible for decisions over onshore oil and gas developments. In Scotland and Wales both types of planning decisions are made by unitary councils, which combine the functions performed by district and county councils in most of England.
7. Nimby is an acronym meaning 'not in my backyard'.
8. In addition to conventional fossil fuels.
9. Many of the additional grievances just identified are also a concern of these groups.
10. This approach is less relevant at planning inquiries and judicial reviews where unelected planning inspectors and judges respectively make decisions.
11. Among others, these have included mock-fracking George Osborne's constituency offices and David Cameron's Cotswold cottage by Greenpeace, Reclaim the Power activists supergluing themselves to the doors of DEFRA, and the construction of a model fracking rig outside Parliament by the Campaign against Climate Change.
12. DECC received 40,647 responses to its public consultation on Underground Drilling Access, a proposed policy that would give developers a right to drill under people's property (see below). 99% of respondents objected to this proposal, yet the government concluded: "[w]hilst a wide range of arguments were raised and points covered, we did not identify any issues that persuaded us to change the basic form of the proposals" (DECC 2014).
13. At the national level the Labour government had limited time for anti-windfarm movement during the 2000s. However, the current Conservative administration has proven more sympathetic.
14. Cuadrilla's plans were to drill "a conventional oil well", and not 'frack' for shale gas, though fracking for oil had not been ruled out at a later date (O'Hara et al. 2013, 2).
15. It is important to note that the roles of local residents did vary during the protests, from logistical support to more active involvement in NVDA.
16. Griggs and Howarth (2002) point out the local residents are typically motivated by instrumental reasoning, while radical greens are ideologically motivated
17. The Welsh assembly also recently voted to ban fracking in Wales, though it is as yet unclear whether it has the power to impose such a ban (The Ecologist 2015; Dafydd 2015).
18. In the early-1990s roughly two-thirds of applications were approved in the UK, but by the end of the decade 'nearly 70% failed to get planning permission' (Elliot 2003, 232). Between 2003 and late-2006 approval rates fell from around 65% to 35% (RenewableUK 2007). In 2007/8 approval rates rose to 80%, but then fell to 54% in 2010/11 (RenewableUK 2011).
19. Not least the recommendations of planning officers and the views of statutory consultees.
20. The latter case is particularly notable given 'planning officers, the Health and Safety Executive and the Environment Agency recommended approval' (BBC 2015).
21. Many planning decisions for unconventional energy have yet to be made, and many more applications are likely to be submitted over the coming years, particularly after the results are announced of the recent 14th onshore Oil and Gas Licensing Round (the consultation process closed on 29 September 2015).
22. There is a history of early engagement and the provision of community benefits among

some wind energy developers, though these practices have not been consistently applied across the industry.

22.These plans mainly apply to wind energy developments in England. Similar plans have developed in other parts of the UK (see Scottish Renewables 2015; Windpower Wales no date; RenewableUK 2013a).

24. This part of the Act does not apply to Scotland.

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