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Fair fracking? Ethics and environmental justice in UK shale gas policy and planning

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Abstract

The exploitation of shale gas resources is a significant issue of environmental justice. Uneven distributions of risks and social impacts to local site communities must be balanced against the economic benefits to gas users and developers; and unequal decision-making powers must be negotiated between local and central government, communities and fracking site developers. These distributive and procedural elements are addressed in relation to UK policy, planning, regulatory and industry development. I adopt an explicitly normative framework of policy evaluation; addressing a research gap on the ethics of shale gas by operationalising Shrader-Frechette's Principle of Prima Facie Political Equality (PPFPE). I conclude that UK fracking policy reveals inherent contradictions of environmental justice in relation to the Conservative Government's localist and planning reform agendas. Early fracking policy protected communities from harm in the wake of seismic risk events, but these were quickly replaced with pro-industry economic stimulation and planning legislation that curtailed community empowerment in fracking decision-making, increased environmental risks to communities, transferred powers from local to central government, and created the conditions of distributive injustices in the management of community benefit provisions. I argue that only by 're-localising' the scale of fracking governance can political equality be ensured and the distributive and procedural environmental injustices be ameliorated.

Key words

Shale gas, environmental justice, UK energy policy, Principle of Prima Facie Political Equality

Introduction

The extraction of natural gas and oil from unconventional sources such as shale, sandstone or coal seams with high porosity but low permeability is an area of global energy and environmental policy significance. Following technological innovation in the USA towards horizontal slickwater hydraulic fracturing in the late 1990s (a technique commonly referred to as 'fraccing' in industry sources, and 'fracking' in activist and media sources Grubert 2016), the costs of unconventional fossil fuel extraction in North America dropped dramatically (Trembath et al. 2012). This led other advanced economies (particularly within the European Union, Australia and China) to seek to emulate the economic successes of the USA.

In Europe, in February 2011, the European Council declared that "in order to further enhance its security of [energy] supply, Europe's potential for sustainable extraction and use of conventional and unconventional fossil fuel resources should be assessed". Gas was recognised in the Roadmap to Renewables strategy as "a critical fuel for the transformation of energy systems" (Pearson et al. 2012); providing potential benefits such as increased security

of supply from more diverse and readily available gas supplies in European markets, mitigation of global price shocks, cheaper gas prices for consumers (McGowan 2012, Schulz, Horsfield, and Sachsenhofer 2010).

However, gaps in the geological knowledge of onshore unconventional reservoirs, relatively low levels of drilling investment, long lead times for construction, higher population densities/land prices, greater levels of state ownership of mineral rights in Europe (compared to the USA), and stronger environmental regulation have slowed a European shale boom (Moore 2012). Moreover, there is significant political divergence in the socio-political acceptability of shale gas at the European Member State-level, alongside hesitancy within the European Commission, significant expressions of opposition within the European Parliament and divergent positions in the Council on the issue (McGowan 2012). At the Member State-level no consensus exists: France, Netherlands, Bulgaria and Germany have imposed *de facto* moratoria on shale gas developments, whereas Poland, the United Kingdom and Denmark have granted exploration licenses.

In the UK, the Climate Change Act 2008 sets legally binding targets for greenhouse gas emissions reductions, with commitments for low carbon texhnology integration in energy systems. However, low carbon sources such as renewables and new nuclear are difficult to implement: their relative immaturity, capital intensity and low operational costs do not readily fit with existing electricity markets and investment templates which were designed for fossil fuel based energy (Bolton, Foxon, and Hall 2015). Thus, one of the primary motivating factors for UK Government support of fracking is the discursive construction of shale gas as a 'clean' (lower carbon than coal), 'transition' or 'bridge' fuel (Cotton, Rattle, and Van Alstine 2014) – in essence a means to achieve short term CO_2 reduction during the nuclear/renewables transition pathway. In practice, Government pro-shale policy measures include tax incentives, a new regulatory framework and community benefits package for shale gas host communities in order to stimulate investment and social acceptance (HM Treasury 2013a) - issues discussed in detail throughout this paper. Conservative. However, site specific public opposition against exploration companies, widespread criticism from environmental NGOs (see for example Friends of the Earth 2014) and declining public support (O'Hara et al. 2014), based in part upon the contentious environmental crededentials of the fracking process, provide a counter discourse to the pro-shale 'transition fuel' discourse favoured by Government (Cotton, Rattle, and Van Alstine 2014).

Environmental impacts of hydraulic fracturing

In fracking-intensive regions (particularly visible in parts of the USA and Australia), significant environmental and health risks have been documented, alongside growing political concern over inadequate regulatory mechanisms to protect public health (Centner and Eberhart 2015). Reported impacts include ground and surface water contamination with thermogenic methane, heavy metals and naturally occurring radioactive materials (NORM) (Myers 2012, Konkel 2015), drought and other forms of water stress (Rahm and Riha 2012), seismic activity and subsidence (Ellsworth 2013), habitat disruption (Gillen and Kiviat 2012), (and although restricted to the drilling phase) air, noise and light pollution related to flaring of gas and associated traffic-related impacts from gas pad construction and drilling (Jenner and Lamadrid 2013, Howarth, Santoro, and Ingraffea 2011), with associated loss of amenity value (Meng and Ashby 2014).

Perhaps more significantly from an anthropogenic climate change perspective is concern over atmospheric fugitive methane emissions (Howarth, Santoro, and Ingraffea 2011, Wigley 2011) and total carbon dioxide increases relative to renewables development (Schrag 2012). In the UK, the Committee on Climate Change concluded that "'shale gas, like other forms of gas, cannot be regarded as a low-carbon fuel source" (CCC 2013, 10). However, a recent DECC report suggested that the total carbon footprint of shale gas extraction to be "relatively small" (MacKay and Stone 2013), thus supporting the aforementioned transition or bridge fuel framing in policy (Cotton, Rattle, and Van Alstine 2014).

At the community level, concern has been raised about wastewater disposal: specifically the capacity to treat large wastewater volumes given available infrastructure within the region of development, the socio-economic and environmental costs of wastewater transportation to treatment sites, treatment quality for downstream use (including drinking water and industrial water uses), and treatment quality to protect ecological systems (such as for example reducing toxicity in fish and other freshwater species from surface release of wastewater) (Rahm and Riha 2012). Wastewater disposal by reinjection into a fractured seam is a low-cost solution to deal with wastewater flowback. However, it is associated with environmental contamination due to leaks caused by poor borehole construction and the reinjection into deep wells is associated with several of the largest earthquakes in the U.S. midcontinent in 2011 and 2012 (Ellsworth 2013). Wastewater reinjection in the UK was initially banned under Environment Agency permitting guidelines (Environment Agency 2013), though more recent draft guidance *does* permit wastewater re-injection for hydrocarbon extraction (Environment Agency 2015, 37-38). O'Donnell et al. (2016) therefore caution that there is a paucity of empirical evidence into the seismic hazard posed by reinjection of wastewater in the UK, and recommend that an industry-accepted code of best practice from which regulators can reduce the risk of environmental contamination should be established before any flowback fluid re-injection permits are granted.

The controversy over wastewater reinjection is related to concerns over the chemical content of hydraulic fracturing fluids. Though used in dilute quantities, evidence shows that fracking fluid additives, including biocides and surfactants, contain a range of known carcinogens and potentially carcinogenic materials. Ingestion of such additives can affect respiratory, gastro-intestinal, endocrine and central nervous systems (Colborn et al. 2011). The disclosure of hydraulic fracturing fluid chemical contents and their subsequent regulation has therefore remained a key issue of public concern in fracking politics in the USA (Maule et al. 2013, Fisk 2013). The UK response has been to publish industry best practice guidelines for operators: ensuring that they must disclose the chemical additives of fracturing fluids on a well-by-well basis, and this information must be made publicly available online (with information published here: UKOOG 2015).

The environmental justice concept

Adverse environmental and public health impacts operate alongside complex social and cultural effects and uneven distributions of regional and national socio-economic gains. Together these facets are a significant matter for environmental equity and justice analysis. It is necessary to examine fracking governance beyond the narrow definitions of national supply and demand for fossil fuels as a public good, to focus upon attendant positive and negative socio-economic and environment effects to local communities and to the involvement of community actors in environmental decision-making. The concept of

environmental justice and the related notion of *energy justice* (see for example Sovacool 2013) connotes both grassroots political activism and academic analysis of environmental rights, racism and classism, the fair distribution of risks weighed against socio-economic benefits, and the protection of community voice, political, socio-cultural and place identities (Schlosberg 2007, Agyeman and Evans 2004, Agyeman 2005).

Environmental justice is "intensely geographical" (Walker and Bulkeley 2006), yet also a matter of philosophical concern: relating to fairness in both the distribution of outcomes and the processes by which outcomes are decided. As a problem of *distributional* fairness it is important to evaluate the geographical and scalar dimensions of impacts, for example when the aforementioned environmental risks from extraction activities become concentrated within particular localities (such as marginalised post-industrial or rural regions) whilst broader benefits from fuel extraction and energy use (such as fuel profits, tax revenues and energy security) are spread to those outside of affected communities. Furthermore, fracking-affected communities at risk of economic marginalisation and industrial decline, become subject to rapid skilled labour migration from outside the community, which can have negative social and cultural repercussions (the so called 'boomtown' effect, see for example: Mercer, de Rijke, and Dressler 2014, Jacobsen and Parker 2014).

Environmental justice also concerns issues of *procedure*. It is not solely outcomes-based (who is affected and how), but also process-based. It concerns how decisions are made, who is involved, what responsibilities they hold, what power they wield, and what institutional structures influence the context in which decisions are made. Achieving fair fracking involves assessing the dualistic relationship between distributive and procedural elements. Procedural concerns link directly to distributive concerns because central and local government institutional apparatus and political context influence the just allocation of environmental harms and economic benefits within society (Schlosberg 2007, Kaswan 2002). Fair outcomes are dependent upon establishing fairness, honesty, accountability and transparency in the processes that resolve disputes, distribute environmental risks and allocate resources (Lawrence, Daniels, and Stankey 1997).

Normative environmental justice: The Principle of Prima Facie Political Equality

In this paper I examine the policy, planning and regulatory instruments relevant to fracking development in the United Kingdom. As Evans (forthcoming) notes in a recent review paper, that despite a rapid expansion in the literatures on the societal dimensions of shale gas, there remains a paucity of studies into the *normative ethical* dimensions of fracking policy and practice. In response to this research gap, I adapt an ethical framework for policy evaluation based upon Shrader-Frechette's (2002) Principle of Prima Facie Political Equality (hereafter PPFPE); one that directly addresses the interrelationship between distributive and procedural elements of environmental justice.

Shrader-Frechette's central concern is that threats to equality and informed consent commonly underlie violations of environmental justice. The PPFPE is a response to this concern – it is an ethical position grounded in Rawls's (1999) philosophy of justice-as-fairness, and Dworkin's (1978, 1988) notion of political equality, whereby all citizens are given equal consideration and concern with respect to decisions over distributive outcomes. In the PPFPE "equality is defensible and that only different or unequal treatment requires justification", in the sense that the onus for justifying environmental risks rests with those proposing potentially environmentally damaging developments, not those opposing them.

"Equality of treatment under the law" is a key component, and it is "proportional to the strength of one's claims to it"; i.e. in practice this may vary according to individual circumstances, compensation due to one's individual needs, or society's general interest in providing incentives for certain kinds of actions. Distributive justice is defined as "morally proper apportionment of benefits and burdens" (if environmental harm occurs equality is therefore ensured through economic redistribution or else by providing equality of economic opportunity in return). This then relates to a concurrent need for *participative* justice (a form of procedural justice) involving "institutional and procedural norms that guarantee all people equal opportunity for consideration in decision-making". This second facet requires that "stakeholder and expert deliberation [be] given equal weight" and that heterogeneous stakeholders including affected citizens be given "the same rights to consent, due process, and compensation that medical patients have": it is unethical to expose people to environmental risks without first obtaining autonomous free, informed, competent and autonomous consent, free of coercion, with access to relevant information concerning the risks/harms, capability to understand the relevant information and use it individual decision-making (all of the above from Shrader-Frechette 2002, 24-29, 77).

To summarise, I distill four component elements (or sub-principles) that underpin the PPFPE:

1. That the onus for justifying the impositions of environmental health burdens on individuals, rests with the polluter/developer/proponent, not with the opponent of development.
2. That equal rights are asserted under that law and that unequal treatment must therefore be compensated for (primarily through economic means of wealth redistribution or increased community economic opportunity).
3. That stakeholders including heterogeneous publics must have access to information about environmental impacts and harms.
4. The affected communities, and other stakeholder groups including heterogeneous 'publics' must have access to participatory processes over environmental decision-making free from coercion and that affected individuals must give free, informed and autonomous consent to environmental degradation given all of the aforementioned criteria.

The PPFPE is valuable to the evaluation of the ethical dimensions of environmental justice, given the integrative nature of the principle – it allows the articulation of participative and distributive dimensions in concert with one another. The model I propose here, uses the four aforementioned elements of the principle as an 'evaluative yardstick' that facilitates discussion of the normative ethical implications of UK fracking policy, planning and industry development.

Element 1 - Justifying environmental harm - from moratorium to "all out for shale gas"

In the UK, the shale gas industry is primarily at the exploratory stage rather than commercially profitable extraction. In 2011 a nationwide moratorium was imposed due to seismic tremors experienced near to Blackpool in Lancashire, Northwest England. At this point, Government implicitly upheld this first element of the PPFPE. Development was halted nation-wide based upon a concern for potential localised harm, and it was then up to the industry to prove that fracking could be done with sufficient safeguards in place. An influential Royal Society and Academy of Engineering report followed shortly after (Bickle et al. 2012); alongside an industry investigation of seismic risk factors (Green, Styles, and

Baptie 2012). Government concluded form this evidence that shale gas could be managed safely in the UK if best practice regulatory safeguards were strictly adhered to. Critics have since argued that this technical approach to managing fracking risk is favoured by policy makers, though lacks broader public and stakeholder support (Williams et al. 2015). Given the lack of epidemiological evidence over long term health risks, it behoves Governments to avoid 'false negatives' – essentially to take a precautionary approach in response to a lack of evidence, as protecting the public from serious harm from potential environmental risks from fracking takes precedence over enhancing its welfare through economic regeneration (de Melo-Martín, Hays, and Finkel 2014). Nonetheless, in December 2013 the moratorium was lifted and the Government quickly moved to promote industry expansion through a policy platform described by Prime Minister David Cameron as 'going all out for shale' (Watt 2014): implying that shale gas was a public good for energy security and job growth, thus presenting a normative political argument for Government support of the industry.

The 'all out for shale' strategy began under the former Conservative and Liberal Democrat Coalition Government that introduced specific policy mechanisms to stimulate development through tax breaks for industry and local councils, to benefit local communities through compensation and profit sharing measures and the promise of local employment, and to streamline applications for consent by pushing for fracking-related planning reform. What we see from a PPFPE perspective is that since the reversal of the moratorium in 2013 Government has sought to provide community assurances that environmental harm would not match that experienced in other countries (notably the USA). Prime Minister David Cameron went on record stating:

> *"What I would say is recovering unconventional gas will only go ahead with stringent environmental safeguards… I hope that reassures people there is no danger of some dash into technology without the safeguards in place and real payback for local people, in terms of the Community Payback scheme."* (Blackpool Gazette 2015).

The stringency of environmental regulation is a politically contentious point. In practice, both conventional onshore and unconventional onshore extraction are regulated under the Petroleum Act 1998, with a regulatory model involving independently owned operators bidding for exclusive drilling rights directly from the Department of Energy & Climate Change (DECC) through a Petroleum Exploration and Development License (PEDL). The license doesn't grant rights of access, nor rights for commercial extraction of hydrocarbons. Licensees must also obtain any consent under current legislation, including necessary planning permissions from local authorities under the Town and Country Planning Act 1990/The Town and Country Planning (Scotland) Act 1997 (as appropriate). Licensees wishing to enter or drill through coal seams for coalbed methane and coal mine gas must also seek the permission of the Coal Authority. Until recently, local authority planning permission was required, though licensees must still ensure receipt of necessary environmental permits (obtained from the Environment Agency in England, Department of Environment in Northern Ireland, Natural Resources Wales in Wales, or the Scottish Environment Protection Agency in Scotland) which include additional permits where hydraulic fracturing is used, when compared to conventional onshore extraction (DECC 2013b). Regulations provide specific safeguards for groundwater protection, the assessment and approval of hydraulic fracturing fluid chemicals, the treatment and disposal of mining waste and NORM and the disposal of waste gases through flaring. Operators must also notify the Health and Safety Executive (HSE) of the well design and operation plans in advance of drilling (all detail from DECC 2013b). These regulatory instruments cover individual developer applications, though

financial regulation of the industry sits within The Office of Unconventional Gas and Oil (OUGO): a part of DECC's Energy Development Unit.

From this policy guidance the market for extractive activities is developer-led, but within a framework of permits tailored to regulate air, land and water contamination, disposal of waste, and drilling safety. Government argues that this sufficiently justifies the development of fracking industries, as risks are reduced along 'as low as reasonably practicable (ALARP)' principles. However, on a broader level of policy, a number of problems remain. Turney (2013), for example, notes that under the over-arching National Planning Policy Framework (NPPF) there are complex and contradictory environmental protection elements within the policy guidance, given the nested levels of consents involved: national licences for extraction, local authority planning permission, environmental permits, health and safety checks, and landowner permission for access. Furthermore, there is little clarity on the different types of regulatory authority involved at different stages of development (what industry classifies as exploration, appraisal and production – notably there is no mention of remediation/restoration within the sateges of development used by industry, see: United Kingdom Onshore Oil and Gas 2013). Such gaps in the guidance, and potential conflicts mean that accountability and scrutiny of regulatory authorities is curtailed, and environmental organisations including Friends of the Earth have questioned whether the Government's assurances of safety through environmental regulation are sufficient. They call for a bespoke regulatory regime to overcome institutional complexity and the potential risks of regulatory capture (see for example Friends of the Earth 2014); thus ensuring that industry governance is coordinated and sufficiently robust to ensure public confidence in environmental protection measures, and hence trust in industry operations and the broader public justification of fracking activities. This issue remains currently unresolved, and from a PPFPE perspective, undermines the need for the amelioration and public justification of harm, and for autonomous community consent in the face of such harms given the ambiguity of environmental protection regimes that surround industry development.

Element 2 – Equality through economic redistribution – The Community Payback Scheme

The 'all out for shale' policy platform began with the Spending Round ("The Budget") of 2013 (HM Treasury 2013b). Economic measures included 100% business rate recovery from fracking operations for local authorities (double the existing 50% rate), resulting in an estimated £1.7 million per annum to local authorities for a typical shale gas site (effectively subsidised by central government) (Prime Minister's Office 2014b); alongside promises to use tax revenues generated from fracking to create a Sovereign Wealth Fund for investment in the North of England (though the exact details on this latter point do not appear in current Government policy documentation). They simultaneously emphasised the employment benefits, specifically an estimated 16,000–32,000 new full time equivalent positions (including direct, indirect and induced jobs), creating an increase of up to 7% in the level of employment supported by the UK oil and gas industry sector (Rural Community Policy Unit 2014). Furthermore, MP Amber Rudd, Secretary of State for Energy and Climate Change states that Government will sponsor a "National College for Onshore Oil and Gas, headquartered in Blackpool, to make sure we get the maximum benefit from the resource and young people have the skills they need to benefit from the new jobs created" (Rudd 2015). Government's aim is to improve local skill development within areas most likely affected by future fracking industry, and potentially alleviating the potential for "boom-town" threats of

social decline resulting from rapid external labour migration into an existing economically depressed region (see for example Jacobsen and Parker 2014), and thus providing a policy mechanism to ensure greater economic equality of opportunity for affected communities.

As DECC (2014) note, the benefit provisions to local communities are ensured through The United Kingdom Onshore Operators Group's (UKOOG) voluntary charter. The charter emphasises the redistributive community benefits from the different stages fracking development, and all onshore oil and gas company member organisations of the industry group (including conventional and unconventional onshore oil and gas exploration) must adhere to the guidance in the charter. The charter ensures that each well pad should be accompanied by a £100,000 payment to "the local community", plus 1% of future revenues split between the local community and the local authority (DECC 2013a). UKOOG state in their community engagement charter that this will be split 2/3rd to the local community and 1/3rd at the county level; in total equivalent to payments of between £3 million and £12 million. A further £2.4-£4.8 million per site (or nearly £0.6 billion in total) could be generated in a production phase (thus accounting for the 1% contribution from revenue over the lifetime of each well). Former Energy and Climate Change Minister Michael Fallon declared that:

> *"We already knew that the development of shale gas could bring growth, jobs and energy security to the country, and now local councils and people will benefit from millions of pounds of additional investment."* (Prime Minister's Office 2014a).

There are a number of factors to consider in the evaluation of these economic redistributive claims. Firstly, the benefits payments are not a universal aspect of all exploration activities, as some companies such as Ineos have not pledged community ompensation (Gosden 2015). Thus, although Government are keen to stress the role of the community payback scheme, this is a voluntary scheme as fracking companies are not required to become members of UKOOG (it is an industry body not a regulator). Secondly, the figures over the lifetime of each well (with approximate 20 year operating lives) are ambiguous, given the geographical differences in production rates, and the continuing volatility of gas resource values within international energy markets. Thirdly, under this charter and associated policy guidance from DECC there remains a lack of detail on the mechanisms through which payments are made, or how they will be assured over the longer term. Fourthly, it is unclear if landowners would receive direct payments in a manner akin to federally protected royalty payments in the USA, nor whether these sums would be provided in cash or partly as benefits in kind (e.g. upgrading local infrastructure). The 1% figure would also affect communities differently based upon population density, as individuals within rural communities would likely receive much higher per capita benefits than those in urban/peri-urban communities (if the figures are capped at £100,000 + 1% revenue). It is also noteworthy to compare these amounts distributed to a community (however that is defined) to those found in the USA (Pennsylvania sets a minimum royalty payment at 12.5%, with the US national average at 18.5%, see Schreiber 2013), calling fracking's detractors to question the value for money to local communities given the potential profitability of the industry.

In some respects, the redistributive dimensions go some way towards fulfilling the second dimension of the PPFPE: by dividing the revenues as a *community* rather than *private individual* benefit this potentially redresses economic injustice inherent to split estate mineral regimes, whereby land owners providing access gain cash benefits and those directly or indirectly affected by horizontal drilling tend to disproportionately suffer the burdens. However, without a clear mechanism for distributing such revenues fairly amongst affected communities, distributive injustices may still occur. This is in part a problem of failure to

effectively define “community”. Injustices may occur when a community is defined by spatial proximity (homeowners situated closest to the well pad for example), or role involvement (such as payments given to members of social movements of opposition) (see for example Cass, Walker, and Devine-Wright 2010).

Similarly, clearer guidelines on the format of payments is needed: specifically identifying what types of “infrastructure” might be built from the proceeds. Community payback is potentially divisive where decision-making over expenditure is not independently facilitated. Much clearer mandates to industry and local councils are needed in order to prevent potential social conflict within development-affected communities. Moreover, as with any risk-bearing industry providing benefits-in-kind, the type, scale and timing of payments is of considerable ethical concern. Providing upfront incentives for economically marginalised communities raises the possibility of community bribery (Cotton 2013, Cass, Walker, and Devine-Wright 2010), particularly as economic austerity measures under the Conservative Government shrink revenues for local authorities and create pressure for public sector organisations to seek new and alternative sources of income. Local authority support for the industry then becomes increasingly framed as a solution to existing economic deprivation (Walker et al. 2005) and hence is a potentially *coercive* factor, undermining the autonomous of affected communities under the PPFPE.

Economic injustices are exacerbated by the *scale* and geographical distributive justice dimensions of fracking site-selection. Due to the geological distribution of unconventional sources Lancashire, Cheshire, South and North Yorkshire, South and Central Scotland the Midlands and South Wales will be most affected (for further interest the Oil & Gas Authority maintains an interactive GIS map of PEDL licenses for consultation on the spatial distribution of potential fracking sites)[i]. The geographic distribution of fossil fuel reserves has created path-dependent effects on urban industrial development. Shale and coal bed resources are primarily situated in regions that previously extracted conventional fossil fuel resources (such as coal during the industrial revolution), with primary regions under consideration being the Bowland-Hadder gas play runs across central England from Cheshire to Yorkshire, and the Jurassic shales in the Weald basin in southeast England (Smith, Turner, and Williams 2010, Schulz, Horsfield, and Sachsenhofer 2010).

Though fracking is determined primarily by the geographic pattern of shale resources, the prioritisation of certain places as extraction sites involves an element of normative political judgement. Notable in this regard was Conservative peer and former Energy Secretary Lord Howell’s comments in the House of Lords in August 2013, whereby he construed shale gas as suitable for “desolate” regions that he described as "unloved places that are not environmentally sensitive", mentioning Lancashire specifically. This is a clear example of what Schlosberg (2007) terms *recognition*-related environmental injustice: regional place-related inequity based around social constructions of fracking as suitable for the aforementioned industrial/northern/Scottish/Welsh regions rather than affluent (southern constituencies) such as Balcombe in Sussex – a site of significant protest against onshore oil and gas exploration from anti-fracking social movements, even when no hydraulic fracturing was proposed (for further details of the Balcombe case and its impact see: O'Hara et al. 2013). Such discourse potentially prioritises the needs of citizens with affluent southeastern or rural identities over economically marginalised northern or urban identities.

Where recognition injustices occur, Community Payback can become a proxy instrument for enacting distributive injustice between regions. The local authority business rate increases, profit sharing and investment in skill development (such as the Blackpool college) strategies are consistent with Conservative localist politics under the “Big Society”

agenda. Economic incentives act as proxies for traditional redistributive approaches to community infrastructure development, essentially replacing state subsidisation of community assets with a neoliberal investment approach to local socio-economic development (Bentley and Pugalis 2013). Areas of existing socio-economic marginalisation then become at risk of being disproportionately targeted by developers that assume weaker political opposition to site selection. If successful the degraded environmental quality and associated technological stigma (see Castán Broto et al. 2010) form fracking worsens the socio-economic conditions for affected communities, creating a vicious cycle as communities then become further dependent upon the gas revenue stream and associated benefits payments – a process referred to as *peripheralisation* (Blowers and Leroy 1994).

A related concern is that where inequalities exist within socio-economically heterogeneous communities, the affluent, socially-mobile and politically active citizens will frequently have more power within local negotiation processes over economic benefit distribution. Individuals with high levels of social and political capital may ostensibly welcome fracking into their *community* (but only within areas populated by economically and politically marginalised community groups) under the banner of good citizenship. Privately, they then deploy political capital to lobby for a disproportionately higher share of the benefits within a community payback scheme. If their influence on negotiation is unsuccessful, then they have greater resource capacity to move away from affected areas whilst those in less socially advantageous positions are less able to do so. An ethically acceptable fracking community payback scheme under the PPFPE must therefore ensure political safeguards for communities suffering multiple indicators of socio-economic deprivation. This is important first, so that they do not become economically coerced into accepting environmental risks in exchange for local infrastructure development in absence of other forms of local and central government funding; and second, so that they do not lose out in negotiation processes to those with greater political capital. At present no such mechanism exists within the community benefits provision espoused by UKOOG's charter or DECC/BIS policy guidance, as both unequivocally construe community benefits positively, without detailing mechanisms to protect against potentially adverse rebound effects.

Element 3 – Access to information - Localism and the community engagement charter

The 'all out for shale' policy platform has been a significant driver of UK planning reform. Like the Planning Act 2008 and Localism Act 2011, recent changes to planning guidance aim to streamline development control. They transfer decision-making to the relevant Secretary of State transferring powers from local to central government, whilst mandating developer-led community consultation programmes prior to planning consent. Hilson (2015) notes that under current Planning Practice Guidance (PPG), fracking developers are 'encouraged' to carry out pre-application engagement with local communities, though this is only mandatory for onshore wind developers. UKOOG's community engagement charter does make reference to engagement at different stages of fracking development (exploration, appraisal and production), and UKOOG affiliated developers must abide by it in order to maintain their affiliation. The charter has the principal aim of generating: "Greater understanding and involvement by communities in unlocking the UK's energy potential". They promise to "Engage with local communities, residents and other stakeholders at each of the three stages of operations". The engagement charter is, however, based around information provision and limited consultation; whereby developer must agree to:

> *"Ensure there is a continued point of contact for local communities and that they provide sufficient opportunity for comment and feedback on initial plans, listen to concerns and respond appropriately and promptly… [and]… Explain openly and honestly drilling, hydraulic fracturing, operational practices including any environmental, safety, or health risks and how they are addressed to ensure that the local community gains a clear understanding of the process including benefits and risks associated with the proposed operations"* (United Kingdom Onshore Oil and Gas 2013)

Though the charter adopts the language of *engagement*, the practices espoused within the charter are more akin to information provision and limited site-related community feedback, which under Arnstein's (1969) ladder of participation framework, would appear to suggest a tokenistic response to community empowerment in the decision process. The early engagement rhetoric is therefore indicative of 'deliberative speak' (Hindmarsh and Matthews 2008): the charter uses language of active, early stage community engagement, though the positive attitude is not backed up participation mechanisms that provide community empowerment or decisional influence. Notably absent is the opportunity for locally affected communities to question the 'need case' for fracking activities, and thus cannot actively provide or withhold informed consent, hence violating the third element of the PPFPE.

The charter provides no codified set of engagement practices, nor methods that fracking developers are obligated to use. This means that the actual methods utilised by developers will tend to allow them to nominally meet their statutory requirements for public involvement whilst effectively continuing to dispense predetermined management decisions. (Johnstone 2014). This has been seen in practice in other energy-related projects where developers use mechanisms such as public exhibitions, online/telephone surveys and comment periods (Cotton and Devine-Wright 2012a) whilst foregoing deliberative mechanisms of community decision-making input to provide community consent.

Element 4 - Public participation and informed consent – the planning reform agenda

Moving from industry practice to national policy, of great significance to planning reform for fracking is The Infrastructure Bill (which received Royal Assent to become the Infrastructure Act 2015 on 12 February 2015). The legislative aim continues a planning policy legislative agenda that began under the former Labour Government with The Planning Act 2008, and continued under the Conservative-Liberal Democrat Coalition Government with Localism Act 2011. These policy instruments were developed against a background of long-running and antagonistic public inquiries which delayed the construction of major infrastructure projects; notable examples include the Sizewell B nuclear power station (O'Riordan, Kemp, and Purdue 1988), the Lackenby-Picton-Shipton and Beualy-Denny electricity transmission lines, and Heathrow Terminal 5 (Cotton 2011), and a seemingly urgent requirement to ensure new nuclear build to meet carbon emissions reduction targets (Johnstone 2010) – thus planning powers were rescaled to the level of state control over site-specific planning development for infrastructure plans deemed to be of national significance (Cotton 2014, Marshall 2013). Although dressed in the rhetoric of *localism*, in practice critics suggest such systems serve to reinforce a hierarchically organised political-administrative structures to create a top-down planning system (Johnstone 2014).

The Infrastructure Act 2015 is a continuation of this policy agenda. The principal aim was to 'get Britain building' (particularly in relation to house building and high speed rail

networks). It alters the Town and Country Planning Act 1990 in a way that further streamlines elements of current planning procedure, with the intention of accelerating development by ending excessive delays on projects that already have planning permission. With regards to fracking, the act makes significant and specific changes to planning consent regimes. Since Royal Assent, it provides an automatic right of access for exploration companies to deep level land (300m or lower below the surface) for the purposes of exploiting fossil fuels or geothermal energy. This includes conventional and unconventional resources.

Surface landowners including private householders and businesses will no longer be able to unduly object to fracking operations that drill horizontally under homes of the basis of legal infringement due to trespass (in sections 43-48 of the Act), counter to the 2010 Bocardo SA v Star Energy [2010] UKSC 35 case, where The Supreme Court upheld the decision that *prima facie* a landowner owns everything below the surface, is deemed to be in possession of it, and can sue for damages for subterranean trespasses. The Infrastructure Act overturns this decision in case law; fundamentally changing the land rights of citizens in a manner that benefits industry interests over private citizen interests. Developers are given the right to leave the deep level land in a different condition than before the right for extraction was exercised, which includes leaving any substance (such as fracking fluids) or infrastructure (such as wellbore casings to maintain the structural integrity of the well) in the land itself, though liability for any loss or damage attributable to the exercise of these rights by another person is expressly removed from resting with the landowner.

Given the controversial nature of these planning changes, the original bill's passage through the House of Commons and the House of Lords was stymied by political opposition both inside Parliament and from outside protestors. It began passage in the House of Lords on 5th June 2014, taking a total of 13 sessions in the Lords and 16 in the Commons. Labour MPs, and Green MP Caroline Lucas in particular, asserted that not enough time was allowed to debate or vote on the sections related to fracking, raising concerns that post-political decision-making as a form of democratic deficit was at work, whereby business interests are not subject to sufficient public scrutiny before laws are passed (see Swyngedouw 2007 in particular for discussion of this point). Anti-fracking campaigners were, of course, concerned about measures contained within and called for an Environmental Audit Committee Report and the instigation of a moratorium on fracking, principally on the basis that it undermines commitment to national climate change targets. In the UK, The Climate Act 2008 sets a duty for the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline. Opponents argued that the extraction of a significant new source of onshore oil and gas would run contrary to this goal, whilst simultaneously exposing communities to additional health and environmental exposure risks.

Of additional concern is the role of fracking under the National Planning Policy Framework (NPPF). Under the NPPF, minerals planning policy for onshore oil and gas and the determination of planning applications for conventional and unconventional onshore oil and gas activities, was to rest with the Minerals Planning Authorities (MPAs), such that decisions were to be taken in accordance with local plans (an issue that is under threat due to planning policy changes discussed below). In NPPF terms, however a tension emerges in that permitted planning must meet sustainable development goals. Given the contentious role of new fossil fuels in potentially exacerbating climate change risks, a pro-onshore unconventional fossil fuel policy platform has a contentious status within the NPPF, thus

providing further opportunities for opposition movements to rescale the spaces of engagement with fracking policy to national planning policy.

Of further concern are legislative changes to trespass laws that occurred despite overwhelming opposition. In the Queen's speech Government declared that changes to trespass laws would be subject to "[a] full consultation on this policy and the legislation is entirely dependent on the outcome of that consultation" (Prime Minister's Office 2014c). Yet of the 40,647 responses to a Department of Energy and Climate Change (DECC) consultation on the move to give oil and gas companies underground access without needing to seek landowners' permission, 99% of respondents opposed the measures. Even when DECC subtracted what they termed "campaign" responses that included freeform text opposing fracking more generally, to examine those that responded specifically to the questions posed in the consultation questionnaire, of the remaining 4,065 responses a total of 92% opposed the proposed underground access legislation (Department of Energy and Climate Change 2014). These measures remained within the bill, however, raising further criticism that the legislative changes lack demcratic legitimacy, ignoring consultation responses and creating significant democratic deficits in planning policy.

Despite political opposition and internal policy contradiction, Government successfully defended the bill against calls for a moratorium. However, following Labour-Green rebellion, a series of amendments were inserted specifically to provide additional environmental protections in law. The Infrastructure Act 2015 amends Section 4 of the Petroleum Act 1998 to provide the Secretary of State (as the authority granting fracking licences) to impose local planning constraints including assurances that the environmental impacts of fracking (including the relevant well) have been taken into account by the local planning authority (including cumulative effects from multiple fracking operations); to confirm whether planning authorities have imposed restoration conditions after fracking operations are complete; and that the public have been given notice of the application for relevant planning permission. In addition, they must provide notice of regulatory approval, including independent inspection of well integrity. They must provide assurances that thermogenic methane in groundwater has been monitored for at least twelve months before fracking begins and that fugitive methane emissions to the atmosphere are monitored. Fracking fluids must be approved (or be subject to approval) by the relevant regulatory authorities (The Environment Agency in England, the Scottish Environmental Protection Agency in Scotland, Natural Resources Wales in Wales). Moreover, the Act provides constraints to developments in protected areas including groundwater protection zones and National Parks, though other protected areas such as Areas of Outstanding Natural Beauty (AONB) do not have the same protections. A notable example of this is the Wytch Farm region in Dorset, Southwest England (the largest onshore oil and gas field in Western Europe). Though these latter measures provide some ecological protections for National Parks, they may inadvertently produce anthropocentric environmental distributive injustices – pushing fracking operations closer to densely populated urban areas and increasing the propensity for human exposure to fracking-related risks; alongside institutional prioritisation of rural place identities in regions of high amenity, compared to those within existing industrial regions, which, as already mentioned, recognises and prioritises certain place identities over others.

It is important to note that these protections are under further political threat. In a letter from ministers to Chancellor George Osborne, leaked to the Guardian newspaper in February 2016 (cited in Vaughan 2016), it was stated that:

"One of our top priorities will be to examine what work is required to ensure that the safeguarding provisions in the [Infrastructure] Act do not inadvertently create fresh barriers to exploration and to minimise the delays that the requirements in the act have introduced."

In essence, the 'all out for shale' political strategy is prioritised, with the Infrastructure Act's existing environmental safety provisions perceived by some Conservative ministers as unduly restrictive to industry expansion. Moreover, opportunities for public involvement in decision-making are likely to be further curtailed by recent political developments. The Government will now, through Communities Minister Greg Clark, draft new guidance for planning authorities aim at fast-tracking fracking decisions, thus draw further planning powers back to central government. The principle motivating factor appears to be a successive round of rejected planning applications for shale and coal seam exploration applications on issues of noise and air pollution (notably in Lancashire, for details see Lancashire County Council 2015). This comes against a background of changing planning rules for renewables (including onshore wind farms) that ensure local communities have a greater say over project applications in affected communities. As a wider concern, these rules for enabling fracking development must be contextualised in broader changes to energy policy strategy within Government, as the Conservatives move away from Premium Feed-in Tariffs (FiTs) for renewable electricity supply (Newbery in press), alongside cuts to renewable energy subsidies and incentives for onshore wind and solar power, the withdrawal of the Climate Change Levy exemption for renewables and the scrapping of the requirement for new homes to be zero carbon from April 2016 (Persaud 2016). There is, therefore, a degree of policy inconsistency on the participative justice dimensions of decision-making control for fracking projects when compared to renewable alternatives. Government stress that the underlying rationale is that (Department of Energy & Climate Change 2015).:

"If planning applications for shale exploration developments take months or even years it can create uncertainty for communities and prevent the development of a potentially vital national industry"

In November 2015 it was announced that the Communities Minister now has the power to intervene in hearing appeals against planning decisions related to shale gas projects if it is deemed that local authorities are *taking too long* to make a decision. This intervention would specifically affect Caudrilla's recent fracking applications in Lancashire. Writing a letter in the Blackpool Gazette, Clark (cited in Berentzen 2015) announced that:

"The reason for this direction is because the drilling appeals involve proposals for exploring and developing shale gas which amount to proposals for development of major importance having more than local significance and proposals which raise important or novel issues of development control, and/or legal difficulties."

In 2016, a 10-page plan to integrate shale gas fracking activities into the 'nationally significant infrastructure planning (NSIP)' process (under The Planning Act 2008 and Localism Act 2011) was leaked to the Telegraph newspaper, described as a 'plot to foil anti-frackers' (Hope 2016). These collective measures, to dilute environmental protection provisions for national parks, and to withdraw powers from councils and to ultimately integrate shale extraction into the NSIP process, are fundamentally grounded in a planning modernisation and streamlining political agenda (Cowell and Owens 2006). In essence, Government construes planning authorities as obstacles to economic development that need to be overcome by reducing decision times and minimising opportunities for multi-

stakeholder deliberation (including input from heterogeneous publics). Planning is portrayed by Government either as a form of bureaucratic inefficiency or as a form of delaying tactic for non-decision-making. This, in turn, reinforces a *national interest* justification for removing local decision-making powers in spite of the inherent participative injustices that result. By drawing power away from local planning authorities and simultaneously reducing their income (and thus reducing their resource capacity for efficient appraisal of project proposals), this creates further potential democratic deficits if they are unable to scrutinise proposal within central government-mandated decision timeframes. I conclude that such an agenda reveals an inherent paradox within the localist politics espoused by Government, as it acts to curtail opportunities for local deliberation and decision-making control in contrast to the political promise of community control espoused in the Localism Act 2011.

Discussion and policy recommendations

The aim of this article is to examine the normative environmental justice dimensions of the UK's fracking policy, regulatory and planning developments. By applying The Principle of Prima Facie Political Equality (Shrader-Frechette 2002), I link distributive elements around the justification of harm and economic compensatory benefits with the participative elements of autonomous consent and multi-stakeholder dialogue within fracking policy processes and developer-led site selection. Shrader-Frechette argues that it behoves Governmental and industry organisations to fulfil twin distributive and participative justice requirements in order to provide ethical legitimacy to the decision-making processes and outcomes for environmentally damaging industry developments. Such analysis is vital in the normative evaluation of the fast moving and adaptive political processes surrounding the expansion of this fledgling industry.

In conclusion, I argue that there is a conflicting and contradictory picture of political equality in fracking-related environmental justice. In terms of the justification of harm element, of note are numerous early positive developments within Government: the nation-wide moratorium following early seismic activity events was a clear example of the principle at work. Government halted all fracking until developers could publicly prove that seismic risks were minimised along ALARP principles. In this sense, the duty for local community risk protection over private economic interest was upheld, and the 'burden of proof' lay with the industry to justify development activities. However, once seismic risk protection reassurance was provided to Government, they immediately reversed their position from moratorium to rapid expansion, whilst avoiding explicit consideration of *all other* identified risk factors to air, water, land use and climate change. The Government's argument was that stringent regulation (defined as 'stringent' particular through comparison with the regulatory environment seen in early USA fracking) provided public justification for rapid fracking development, though critics including environmental NGOs, cite the lack of a clear, independent regulatory framework specifically for fracking activities, and conflicting levels of consents regimes and risks of regulatory capture. Implicitly in line with the PPFPE, Government should reconsider clarification and simplification of the regulatory framework for fracking activities, with a clearer independent fracking-related regulatory body, defined penalties for developers that breach environmental regulations, and greater attention paid to post-well closure environmental restoration. Doing so would better justify the environmental risks from fracking development in public policy, and provide stronger community safeguards.

In terms of economic redistribution for the redress of environmental distributive injustices, again there is some positive enactment of policy that upholds the PPFPE.

Government aims to alleviate potential environmental injustices primarily through economic redistributive means – ensuring that councils and local communities are compensated for impacts experienced and through improving equality of economic opportunity vis-à-vis local skills development via a National College related to oil and gas industry skills in the North-West of England. The economic benefits are explicitly *local* and *community*-related both in terms of providing profits to local authorities, direct spending on community benefits and ensuring greater equality of economic opportunity. However, without clearer guidance on the forms of payment, the definition of community and mechanisms both for fair distribution of resources and an independent facilitation of decision-making over expenditure (such as what forms of infrastructure or local community benefits are constructed and where), this system is potentially open to abuse. Not only could it prove coercive to communities suffering under economic austerity measures that curtail local government public expenditure, but could also prove divisive if vocally powerful minority activists and affluent residents with high stocks of social capital negotiate a greater share of benefits and a smaller share of burdens. Like other controversial environmental management issues such as the development of onshore wind (Cass, Walker, and Devine-Wright 2010), or nuclear waste repository siting (Rawles 2002), the issue of community benefits requires a nuanced and carefully managed distributive decision-making process to ensure that negative externalities and economic rebound effects don't further marginalise communities affected by environmental degradation from fracking activities. Thus, it behoves Government to not only reinforce community benefit provision through clearer legislative instrument (such as amending the Infrastructure Act to mandate Community Payback to create a Sovereign Wealth Fund), but to also stipulate clearer guidance on the types of payments, their distribution and guidance on benefit distribution through independent facilitation of spending decisions.

In terms of information provision there are positive developments in terms of industry transparency, though in relation to public participation and consent it is clear that powers are being taken away from local communities. The UKOOG Charter on community engagement provides specific incentives for fracking companies to comply with transparent information communication to locally affected communities, though there are no mandated *engagement* practices that provide community decision-making control and hence, although information provision is nominally transparent with regard to industry openness about fracking site (Cotton and Devine-Wright 2012b)development, a number of democratic deficits in siting practices remain. Such democratic deficits are then reinforced by recent reductions to the powers of local authorities to halt fracking planning developments.

Concluding remarks

In this paper I argue that fracking-related planning policy development links to deeper problems of participative and consent-related injustice that relate to ongoing processes of planning reform (the Planning Act 2008, Localism Act 2011 and now the Infrastructure Act 2015) that shorten decision-times across multiple planning consent regimes, and remove powers from local communities for decision-making control by rescaling decisions from local to national scales. It is a continuation of the scalar dimensions of environmental injustice seen in relation to other controversial energy projects that fall under the rubric of nationally significant infrastructure such as energy-from-waste (Cotton 2014), nuclear power (Johnstone 2014), electricity and gas transmission (Cotton and Devine-Wright 2013, Groves, Munday, and Yakovleva 2013) and most recently nuclear waste management following Cumbria County Council's decision to disengage with the volunteer site selection processes

(Mackerron 2015, Blowers 2014). By making fracking an issue of national significance, an ethical justification of the *public good* is mobilised by political authorities to justify the violation of political equality in planning decisions.

When looking at the decision-making control of local communities, we see a complex and contradictory politics of localism. The localist agenda espoused by the former Coalition and current Conservative Governments, aims to empower communities to make decisions that affect them directly. On the surface, this has similarities with the consent and participative justice elements of Shrader-Frechette's Principle of Prima Facie political Equality. However, in practice the localist planning agenda produces multiple layers of contradictory injustices. Government has abolished the regional tiers of spatial planning, and have shifted decision-making away from local government authorities towards direct engagement between communities and developers. At the same time, austerity economics has reduced capital funding to local authorities and to local infrastructure, and so this both curtails the power of local authorities to block applications and incentivises councils to accept economic development through business rate returns on fracking investments. As national consultation measures actively ignore public concerns over trespass law amendments, and as local council decisions are overruled by ministerial control under the rubric of *nationally significant* infrastructure decision-making rather than locally significant environmental protection, we see the powers of communities to halt or ameliorate environmental harm and distributive injustice weakened at multiple scales of environmental governance. Only by reconfiguring planning consent regimes to ensure greater levels of community participation and decision-making control over site selection, in essence *re-localising* the scale of fracking decision-making, can such environmental injustices be overcome; and these will be key issues of environmental policy conflict as the shale gas industry continues to expand.

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