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Conceptualising the Energy Constitution: Lessons from Northern Ireland

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ABSTRACT

In order to elucidate key aspects of the relationship between energy and constitutionality, Muinzer and Ellis (2017) have mapped the full spectrum of UK reserved/devolved constitutional powers and thrown into relief the complex form and nature of low carbon energy powers within that nexus. This low carbon-specific framework, and an understanding of its complex, contingent qualities and interconnected constitutional principles provides insight into the extent to which constitutional arrangements reify the territoriality of energy governance and policy capacity, structuring the policy and governance relationships between national and substate multi-level decarbonisation processes. This study develops this 'Energy Constitution' framework with reference to fuel poverty, honing in on the UK and according particular attention to Northern Ireland, a UK jurisdiction that often receives little attention in energy policy studies, but that has had notably high levels of fuel poverty, in addition to the weakest substate economy and the most energy insecure circumstances in the UK.

1. Introduction

This study develops and applies an 'Energy Constitution' conceptual framework in order to elucidate certain new dimensions of fuel poverty governance. The general assumptions underpinning this framework extrapolate across diverse national constitutional settings, and thus have an inherent facility to contribute importantly to emergent bodies of governance and policy knowledge from an international perspective in this area. This includes, but is not limited to, an emergent 'constitutionalisation' of energy policy studies within diverse national settings (Lyster and Bradbrook (2006), p.80; Geri and McNabb (2011), Ch.3; Alpizar-Castro and Rodríguez-Monroy (2016); etc.). The analyst is prompted to examine prominent multi-level dimensions of a given country's constitutional setting, interconnecting an emergent vista of multi-level constitutional capacities and constraints with investigation of the extent to which the state's constitutional regime structures and moderates a facility to govern in the sphere of energy (see further below). A specific energy policy issue can then be located and interpreted within the context of these findings (here, fuel poverty). This permits contributions to be made to a new body of knowledge pertaining to international energy studies and aspects of constitutionality, see, e.g., Lesage and Van de Graff (2010); Van de Graaf, Sovacool, Ghosh, Kern, and Klare (2016); Stacey (2018).

The Energy Constitution framework has a capacity to sit usefully alongside other existing ideas in energy studies, including the *energy trilemma*. It has been noted that there are "many variations to what the

trilemma entails but they all have the same problems at its core" (Hefron et al., 2015, p.168). The World Energy Council outlines these problems as follows: "Energy transition is a connected policy challenge – success involves managing the three core dimensions; Energy Security, Energy Equity and the Environmental Sustainability of Energy Systems throughout the transition process. Together, they constitute a 'Trilemma'" (World Energy Trilemma Index, 2019, p.11). Realising successful results across all three aspects provides complex challenges, given that these dimensions have an inherent tendency to conflict. Gunningham's work emphasises that very hard problems arise in instances where it appears to be the case that: (i) the trilemma "is capable of being resolved, but only by overcoming deep seated practical obstacles", or; (ii) where "the trilemma can never be resolved, but only managed." (Gunningham, 2013, p.185). The Energy Constitution can contribute to an understanding of issues underpinning the energy trilemma with reference to particular energy problems, including in relation to either or both of these categories, due to its facility to integrate enhanced legal-constitutional insights into explorations of choice and balance in the context of the trilemma's three policy goals.

The trilemma in turn usefully informs notions of *energy justice*. It has been shown that the trilemma's concerns can be engaged through the themes of availability, accessibility and sustainability to strong effect, with energy justice itself having been defined in this setting as "the application of rights (both social and environmental) at each component part of the energy system." (McCauley, 2018, p.1–2) It is envisaged that this type of conception of energy justice can compel the realisation of a

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more just global energy system by more effectively moderating the energy trilemma, a process driven in part by a rebalancing of that system so that systemic energy benefits and burdens are more equitably shared across societies, and decisional procedures are fairer (Sovacool and Dworkin, 2014, p.5–17). Energy justice tends to place a key conceptual and analytical focus on the “three tenets” of *distributional*, *recognition* and *procedural* justice (Jenkins et al., 2016), and is “rooted to whole energy systems of production and consumption. In this way, it aims to provide all individuals, across all areas, with safe, affordable and sustainable energy” (McCauley, 2018, p.11). This focus and agenda overlaps with components of the Energy Constitution framework, in particular with elements that compel the analyst to address the role and presence of constitutionalised *rights* and *equity* in relation to a given energy matter (see further below); constitutions normally grant equitable *rights* to individual citizens, and this rights-based framing of protections and entitlements is identified and factored into the Energy Constitution’s design.

Indeed, the jurisprudential branch of the legal tradition has made notable contributions to energy justice itself. For instance, McCauley (2018, p.11–13) emphasises in his overview account of energy justice that, like environmental and global justice, the field has been significantly informed by the work of John Rawls, most particularly his “theory of justice” (Rawls, 1971), and thus energy justice has substantial roots in Rawlsian liberalism. It has also incorporated elements of Nancy Fraser’s recognition justice to significant effect (McCauley, 2018, p.13), whose work has been influential in legal studies (Leonard, 1995). Sovacool and Dworkin have also integrated substantial recognition of Bentham, Coke, and other prominent legal theorists and scholars (Sovacool and Dworkin, 2015, p.142). This incorporation of the work of thinkers who have either emerged from within the field of legal-jurisprudential theory or who have exerted a profound shaping force on that field from a partially external interdisciplinary position serves to emphasise the scholarly value that can accrue where law-oriented perspectives are integrated increasingly into energy studies. This points to an overall agenda that is presently under-represented in energy scholarship (Muinzer and Ellis, 2017), and one that the Energy Constitution seeks to partially redress.

Methodologically, is notable that the scholarly value that may be derived from law-oriented means is not limited to the cumulative jurisprudential, conceptual and theoretical legal traditions, but might also arise through a simpler increase in the integration of legal sources and forms of law into scholarly energy investigations, combined with more careful “doctrinal” reflection (Aarnio, 2011, p.19–26) on the content of those sources in order to enrich analysis. Aalto’s assessment of the International Energy Charter Treaty, for example, is conducted via a qualitative content analysis of the Charter’s provisions, which is contextualised against the broader structure of key international energy governance institutions (Aalto, 2016). This sensitivity to the legal content of the Charter assists Aalto in interpreting the Charter “as representing the soft law end of formal regulation in this area It is yet another non-binding political declaration with limited precision, regulatory authority and power to issue obligations” (Aalto, 2016, p.92). A similar approach might be applied in order to develop insightful work undertaken by Oppenheim on the notion of the “regulatory compact” in the United States (Oppenheim, 2016). The regulatory compact applies sophisticated regulatory regimes in an attempt to balance appropriate consumer protection with investor security and opportunity in the context of complex energy markets (Oppenheim, 2016). A targeted emphasis on the legal form and content of pertinent regulations themselves, interpreted in concert with important judicial decisions¹ underpinning the regulatory compact, might elucidate this notion further, not least as the regulatory compact is subject to novel complexities in the

express context of American constitutional law (Chen, 2006).

The sensitivity to matters of constitutional law and jurisprudential constitutional thinking that undergirds the Energy Constitution also speaks to the broader theme of the “constitutionalisation” of energy studies, which is represented in the literature, albeit in both an underutilised and cumulatively underdeveloped form. This constitutionalisation of elements of the field within diverse national and international settings tends towards placing a significant degree of thematic and analytical focus on issues associated with constitutional law or/and “constitutionalism” (or “constitutionality”) as broadly construed (Barber, 2011, 2018). Thus, in relation to the investigation of aspects of a *specific* energy-related issue or policy area, Lyster and Bradbrook (2006) engage with “constitutional responsibility” to useful effect in order to elucidate elements of Australia’s energy and climate change initiatives, and Stacey draws on constitutional insights in order to explore aspects of pipelines and wind turbines (Stacey, 2010, chapters 6 and 7). The *evolution* of constitutional arrangements can also be addressed in order to track and interpret background constitutional influences exerting a shaping force on a particular issue or energy policy area over time, as where Alpizar–Castro and Rodríguez–Monroy (2016, p.725–736) critique the significance of changes applied to the Mexican constitution in order to open the hydrocarbon and power sectors to broader investment through special licences and contracts.

Alternatively, and more broadly, a primary focus might inquire into pervasive *systemic structures and forces* that impact and moderate energy governance systems on a deeper level. A relatively rare and insightful example that proceeds on this type of basis is provided by Geri and McNabb (2011, chapter 3), who in “The Art and Science of Crafting Public Policy” elaborate the role and influence of constitutional forces in framing the US energy governance setting. The Energy Constitution frames things in the spirit of this broader, systemic category of constitutional critique, and then situates a specific issue within its systemic analysis – fuel poverty in this case – in order to elaborate additional outcomes (see further below).

As noted, in order to concretise the development and application of the framework, the UK is taken as a case-study state. Within the UK, primary investigative attention is accorded to Northern Ireland due to the unprecedented levels of fuel poverty that have predominated in the jurisdiction over recent years and the particular technical challenges that arise there. In order to get a detailed view of the condition of UK fuel poverty at the present time, the *Annual Fuel Poverty Statistics Report* (hereafter AFPSR) is a key point of reference (the report is updated on an annual basis). The report is England-focused; however, it also includes consideration of the UK’s devolved jurisdictions (AFPSR, 2019, p. 63–65; AFPSR, 2018, p.84–85; AFPSR, 2017, p.72; AFPSR, 2016, p.23–24). An understanding of this important document in turn necessitates the reading of the *Fuel Poverty Methodology Handbook* (hereafter FPMH), also updated annually.

Fuel poverty arises where households cannot achieve adequate levels of heat and electricity at reasonable cost. Discussing the English context within the UK, the FPMH (2019, p.2) elaborates that in terms of ‘energy’ itself, fuel poverty modelling is concerned to “capture four areas of energy requirements”, as follows:

- Space heating;
- Water heating;
- Lights and appliances; and
- Cooking.

UK Government’s AFPSR states that “Fuel poverty is a devolved issue” (AFPSR, 2019, p.63; AFPSR, 2018, p.84; and AFPSR, 2017, p.72). Application of the Energy Constitution framework, which generates a high degree of accuracy in relation to the interpretation of a given state’s

¹ See e.g., *FPC v. Hope Nat. Gas Co.*, 320 U.S. 591 (1944), on the “just and reasonable” element of appropriate rates.

multi-level national-devolved allocation of energy powers, reveals that this statement is technically incorrect (see further below).² The FPMH reiterates and reinforces the AFPSR's technical inaccuracy ("Fuel poverty is a devolved matter", FPMH, 2018, p.4 and FPMH, 2019, p.4). It will be seen that the identification and isolation of governance powers pertaining to fuel poverty is a complex endeavour, and that the issue naturally cross-cuts a range of multi-level national/devolved governance competences. These matters will be more sharply clarified and deeply explored through the lens of the Energy Constitution below.

2. Conceptual framework: The 'Energy Constitution'

The Energy Constitution is influenced by assumptions deriving from legal constitutional theory (Masterman and Schütze, 2019). Constitutional theory suggests that well-developed contemporary state constitutions will typically divide the organs of the state into three major "branches": the executive (governments), legislative (parliaments, assemblies) and judicial (courts, tribunals) branches (Möllers, 2013). It is generally assumed that an adequate balance of power, frequently described as the "separation of powers" doctrine, should be applied to these branches in order to achieve a necessary system of checks and balances, ensuring that no single branch can exercise excessive authority. The theoretical assumptions underpinning this framing in the context of contemporary democracies are typically traced back to Montesquieu (1689–1755), who in *The Spirit of the Laws* held that a separation of powers was required in order to preserve liberty and prevent the abuse of power (de Secondat (known as Montesquieu), 1750). It is also typically maintained that all citizens are to be subject to the law of the land in order to achieve a healthily functioning constitutional democracy, a position espoused by Enlightenment philosopher Voltaire (1694–1778), whose position was summarised succinctly by constitutional theorist Dicey (2013, p.98) as "men ruled by law and not by caprice." Constitutions will also tend to involve the application of "principles", which incline towards being abstract normative guides that tend not to be present in core constitutional texts themselves (with significant implications for lawyers, who are used to applying legal "text"). Principles of this sort are commonly differentiated from more concrete constitutional standards and rules, which are also typically in operation (see, e.g., Dworkin (1985)).

Constitutionally, the UK is unusual, resembling Israel and New Zealand in that it "does not have a written constitution, i.e. a documentary or codified constitution" (Parpworth, 2014, p.11). Rather than being grounded in a key codified document, its constitution is instead manifest across a range of sources, including (but not limited to) Acts of UK Parliament, certain key court decisions, and various constitutional principles and conventions (Parpworth, 2014, p.12; Gallagher, 2017). The introduction of devolution in the UK in the late 1990s by Tony Blair's Labour Government resulted in the creation of three new substate legislatures in this setting: the Northern Ireland Assembly; the Scottish Parliament; the National Assembly for Wales (Burrows, 2000). These major constitutional developments were accompanied by the creation of devolved Northern Irish and Scottish executive governments, and a

roughly equivalent Welsh Executive Committee for Wales.³ These substate legislative and executive institutions, and the broader cumulative constitutional arrangements attaching to them (including partially differentiated substate court systems), structure key capacities for action and agency amongst and between crucial actors in the sphere of energy governance, exerting in turn a powerful shaping influence on the relationships between national and substate multi-level decarbonisation processes (Cowell et al., 2017a).

In their 'Mapping the Energy Constitution' paper, Muinzer and Ellis (2017) have explored the UK setting in order to generate an eponymous framework that provides "a detailed exploration of [the state's] 'Energy Constitution' as a means of examining the way in which the complex legal framework of devolution shapes the spatial organisation of the UK's low carbon transition" (Muinzer and Ellis, 2017, p.1176). In doing so, the authors have pointed out that:

The UK has a 'national' strategy to decarbonise its energy sector, yet the transfer of key responsibilities to its Devolved Administrations has meant that they control many of the powers that determine the rate and extent of the decarbonisation process. This reflects an asymmetrical distribution of legal responsibilities that has cast a complex range of powers 'downward' from the national sphere to subnational scales (Muinzer and Ellis, 2017, p.1176).

Integrating work from Cowell et al. (2017b, 2013), the authors have also stressed that:

the UK's Devolved Administrations (Scotland, Wales, Northern Ireland) have played significant, and varied, roles in the development of renewable energy, although they have tended to adopt certain modes of governance shaped by working within – and sometimes despite – processes, targets and policies defined at the UK level (Muinzer and Ellis, 2017, p.1177).⁴

The Energy Constitution framework emphasises how fundamental national/substate multi-level decarbonisation relationships "are shaped by the UK's constitutional arrangements, which have resulted in a patchwork of subnational jurisdictions imbued with a complex series of asymmetric energy controls that frequently exhibit nuanced policy intentions" (Muinzer and Ellis, 2017, p.1177; drawing on Palmer, 2008).

It is further emphasised that "[d]espite the fact that these controls are determined by a range of formal legal instruments, debates over both the scale and (re-)territorialisation of decarbonisation processes in the UK have remained largely 'lawless'" (Muinzer and Ellis, 2017, p.1177; drawing on Delaney, 2015, p.97). Moreover, they have "typically ignored the way" that "detailed constitutional ... arrangements have defined the scope for agency and action" (Muinzer and Ellis, 2017, p.1177; drawing on Turner, 2013a, 2013b). Thus, the form and influence of the underlying 'Energy Constitution', which has been left largely unexplored in the UK, can be drawn out by "examining the spatial and scalar distribution of powers related to" energy; this is achieved most particularly through a 'Mapping of Powers' element of Muinzer and

² It is notable that, in applying the Energy Constitution framework in order to summarise the overall distribution of energy powers under the UK's multi-level state/substate (devolved) power arrangements, Muinzer and Ellis (2017, p.1181) have found that: "Northern Ireland actually has the greatest extent of devolved powers, despite the fact that it is the smallest administration; Scotland has the largest share of renewable resources and has aspired to greater autonomy in the field of energy, yet it acts on a narrower formal legal basis; and Wales has a much more limited range of devolved energy powers."

³ The Welsh Executive was a Committee of the Welsh Assembly until 2007, where it was separated out from the Assembly into a substate Welsh government that is roughly equivalent to the Northern Irish and Scottish executive governments.

⁴ Note that the devolved powers have been adjusted somewhat over time. In the case of Scotland, for example, see the revisions to the devolution arrangements under the Scotland Act 2016. The fairly minor energy-specific consequences of these developments have been discussed by Little (2016). The general principles behind the mapping of powers exercise should be understood to generate a "snapshot" of the contemporary constitution when employed at a given time, due to the fact that constitutions are always subject to the possibility of future change.

Ellis's study via "doctrinal legal analysis"⁵ of how the law has defined the energy-related responsibilities of the Devolved Administrations and the impact this has on ... energy governance" (Muinzer and Ellis, 2017, p.1177).

First, the framework 'maps' the UK's constitutional distribution of multi-level national and substate legislative powers that define and limit the scope for action and agency across the UK's major tiers of governance: these can be found set out in Appendices to that paper (Muinzer and Ellis, 2017). Next, the technique exposes and critiques the energy-specific powers and controls that can be identified amongst this overall power nexus, thereby throwing into relief the primary powers underpinning the 'Energy Constitution' in the UK (Muinzer and Ellis, 2017, p.1180–1186). The findings demonstrate how "debates about 'the right scale' of action tend to overlook the underlying complexities of energy governance and often project a level of sovereignty and agency that cannot be sustained under detailed examination, with legal responsibilities rarely being able to be isolated to a single scale or having clear boundaries" (Muinzer and Ellis, 2017, p.1180; building on insights raised in Benda-Beckmann et al., 2013, p.1–29).

In addition to identifying and mapping the legal-political fields of competence apportioned across these multi-levels by the state's latent uncoded constitutional arrangements in the manner just mentioned, the conceptual framework also asserts that these multi-level governance capacities and restrictions are impacted and moderated by a series of active and inextricable *principles* and *technical constraints*. Taking the *principles* first, these can be divided into two key principles as follows:

- *Principle 1 = The recognition and qualification that identifiable substate/national powers tend to appear to be relatively clear-cut and rigid, e.g., the (correct) assertion that 'energy' competence is devolved to Northern Ireland (see below); however, the powers are in actuality fuzzy and somewhat indeterminate, and as such a particular competence will not only be difficult to isolate in precise terms, but will likely overlap with other competences to some extent.*⁶

Muinzer and Ellis (2017, p.1188) have generated three key assumptions from these circumstances:

firstly, it is often difficult to gauge in legal terms where precisely the fuzzy dividing lines between particular national-substate powers are to begin and end;
secondly, and as with other areas of law, core legislative provisions can be dynamically interpreted by the courts;
*and thirdly, given that the UK's 'Energy Constitution' is geographically differentiated, such case law will inevitably reflect the wider socio-spatial context of devolution*⁷

- *Principle 2 = Notwithstanding the fuzzy or semi-indeterminate nature of a given national or devolved power (per the previous principle), the additional assertion that identifiable national/substate powers are subject to particular special conditions/qualifications applicable within the broader framework of those powers.*

These conditions are active where powers may be *hollowed out* to varying degrees, or *cut into/cut away* by associated powers.

As an example of the '*hollowing out*' of a power, it is the case that 'energy' competence is devolved to Northern Ireland (discussed below); however, within that devolved competence, 'nuclear energy' is excepted, that is to say, it is *not devolved* under the terms of the pertinent constitutional legislation, such that Northern Ireland's devolved 'energy' competence is partially *hollowed out* as a consequence of these restrictions on nuclear energy control.

As an example of powers being '*cut into*'/'*cut away*' by associated competences, it has just been noted that 'energy' is devolved to Northern Ireland; however, 'taxes' are reserved to national Parliament, that is to say, they are *not devolved* (discussed below). Given that tax powers are frequently used to create economic mechanisms that will incentivise energy decarbonisation, it is the case that aspects of the facility to act in the area of energy at the Northern Irish level are *cut into* or *cut away* by the tax reservation. In other words, although on the face of things this tax reservation concerns a distinct non-energy competence, nevertheless it removes some agency to act in the sphere of energy subnationally, in spite of the fact that 'energy' itself as a competence is devolved to Northern Ireland.

Coming now to the *technical constraints* noted above, these are mostly of a technical legal nature. They are the primary forces that serve to moderate the operation of the multi-level governance capacities and restrictions that are identified when legal-political competences are 'mapped' across the national and substate levels. Their presence is dictated by the reality that the operation of constitutional machinery is governed by constitutional law, and as such they must be calculated from applicable constitutional law. In order to apply the conceptual framework to useful ends, it is enough that these major technical constraints are recognised and acknowledged, such that they contribute to and qualify the overall picture provided by the Energy Constitution. Although the following list is not exhaustive (e.g., see the points below regarding constitutional 'rights'), the major technical constraints operating within the UK's Energy Constitution framework paradigm are as follows:

- **The function of executive devolution.** It is *legislative* devolution that is directly engaged in the 'mapping of powers' exercise itself, because executive devolution cannot be mapped in the same coherent way from the fundamental constitutional legislation. Yet executive devolution is a pertinent, active feature of the UK constitution that is in operation and that therefore should be understood to impact and qualify the overall picture provided by the Energy Constitution.

Parpworth (2014, p.161–162) clarifies the distinction between 'legislative' and 'executive' devolution as follows:

'devolution' taken in a broad conceptual sense 'may involve the transfer of functions from central government to a subordinate executive in addition to or as an alternative to the transfer of legislative power from one Parliament to another. In other words, devolution may be "executive", "legislative", or both"'. [Muinzer and Ellis, 2017, p.1188; drawing on Parpworth).

- **The operation of legislative consent motions (also known in the UK as the 'Sewel convention').**

Muinzer and Ellis (2017, p.1180) summarise this feature of the UK's Energy Constitution as follows:

[A] legislative consent motion ... dictates that a provision of a Westminster Act that intrudes upon an area of devolved competence will extend to the pertinent devolved jurisdiction only where the Devolved Assembly has passed a motion consenting to the arrangement[.]

Importantly, the authors also stress that: "these consent motions embody an *agreement* between national Parliament and the devolved institutions" (Muinzer and Ellis, 2017, p.1180–1181). This means that although legislative consent motions are an applied constitutional practice, national Parliament can technically over-ride a

⁵ On doctrinal legal analysis, see further McConville and Chui (2007, p.19–26) and Aarnio (2011).

⁶ Consequently, the Energy Constitution framework accords a particular degree of significance to courts of law, insofar as courts can be called upon to establish more precise parameters around particular devolved/national competences when called on to do so. See, e.g., *Imperial Tobacco Limited v The Lord Advocate (Scotland)* [2012] UKSC 61, a case involving boundaries between Scottish reserved/devolved powers.

⁷ Of course, this third point must be adjusted to fit the constitutional framework of the state in question. For example, the case study country at issue in this paper employs devolution, whereas, e.g., the United States of America employs a federalist system, meaning that federalism would replace (UK) devolution in that case.

substate Parliament in an instance where that substate Parliament will not consent to national Parliament's intrusion on its devolved energy (or other) powers.

- **Special arrangements or agreements arising from the structure of national/devolved UK governance that Rawlings (2000) has summarily described as 'new style pseudo-contracts'/'a raft of inter-institutional administrative agreements'.**

In the UK these include things like the important *Memorandum of Understanding on Devolution* (2013). Muinzer and Ellis (2017, p.1181) summarise that this *Memorandum*, and other agreements like it, are formal agreements that "provide a basis for how the Devolved Administrations and UK Government conduct relations with one another (in areas including communication, consultation, information exchange, etc.)". More broadly, this field of 'special arrangements or agreements' can be widened out to include any form of *soft law* that directly compliments the body of *hard law* containing the powers that are 'mapped out' under the Energy Constitution (and any equivalent examples of pertinent hard law, such as the Human Rights Act, 1998 mentioned in the following paragraph) (Muinzer and Ellis, 2017, p.1181).

The Energy Constitution also encourages the analyst to acknowledge and consider the role and presence of *rights* and *equity* in relation to a given energy issue. This is chiefly due to the fact that constitutions normally grant equitable *rights* to individual citizens, namely, human rights and associated protections and entitlements. The UK's Human Rights Act 1998 is the major explicit source in law of codified individual rights in the UK. The Energy Constitution invites the question as to how or to what extent such constitutional rights may/may not impact or moderate particular aspects of multi-level energy entitlements within the broader context of the state's framing of public and private powers.

3. Northern Ireland, fuel poverty and UK substate divergence

Subnational regional differences have a substantial ability to affect and influence fuel poverty. For much of this study's preparation period, Northern Ireland was on record as having the highest rates of fuel poverty in the UK according to the latest available statistics.⁸ These had not been updated since 2011, sitting at an alarming 42% of Northern Irish households in fuel poverty for 2011 (AFPSR, 2014, p.62). An update finally occurred with the release on 31 May 2018 of the Northern Ireland House Condition Survey Main Report 2016 (2018) (the "NIHCSMP, 2016"). According to the new figures the 42% level for 2011 has improved to 22% for 2016.

Northern Ireland is presently undergoing an unstable 'post-Troubles transition' after years of civil unrest and violence, and it is also the least developed region of the UK, with the weakest economy. It has been emphasised that home-improvements to an energy inefficient home in Northern Ireland, such as the installation of central heating, will not necessarily be enough to remedy fuel poverty in certain individual cases, given that a sustained low income may cause fuel poverty to persist regardless (Shortt and Rugkåsa, 2007). Northern Ireland has a proportionately high rural community, and gas grid connection is frequently less developed than elsewhere in the UK. The jurisdiction has been troubled in particular by a heavy reliance on oil, usually much higher in price than gas. Liddell, Morris, McKenzie and Rae (2011, p.6) have noted that "Whilst there are three classic causes of fuel poverty (energy efficiency of building fabric, income, and price of domestic fuels), fuel poverty in Northern Ireland has been driven prominently by the price of heating oil, and more recently by volatility in the price of gas." It has

remained the case that "excessively high fuel prices in Northern Ireland have meant that a very large number of households are still in fuel poverty" (Davidson et al., 2012, p.1). Research has also detected a problem in Northern Ireland where households suffering the worst fuel poverty rates may not necessarily fit the criteria for energy efficiency upgrades (Walker et al., 2014).

These sorts of challenges are indicative of the entrenched type of problems confronting fuel poverty mitigation efforts in Northern Ireland, which may require bespoke innovative solutions (see e.g., the 'boundary spanner' approach recommended by Rugkåsa et al. (2007) in the rural Northern Irish context). The impact of the UK's diverse regional climatic features is also relevant. Thus, Liddell et al. (2012, p.30) have found that greater heating costs arising from Northern Ireland's colder climate in comparison to the rest of the UK are a contributor to fuel poverty, in addition to the greater regional cost of electricity for lighting.

As noted above, reporting released in 2018 in the NIHCSMP 2016, which used a 10% fuel poverty measurement indicator (discussed below), found that in 2016 "approximately 22% (160,000) of households in Northern Ireland were in fuel poverty", meaning that this "represents a significant improvement in fuel poverty levels since 2011 when the figure was 42% (294,000)" (NIHCSMP, 2016, 2018, p.15).⁹ The 20 percentage points decrease is attributable to a number of factors, most importantly "lower average fuel prices, lower modelled household energy use (mainly due to improved energy efficiency of the stock, particularly dwelling fabric and heating systems) and increased income" (NIHCSMP, 2016, 2018, p.15). Further, as the AFPSR (2018, p.85) points out, a reason for the improvement that is directly attributable to Northern Ireland's Devolved Administration itself is that "[t]he [Northern Ireland] Executive focused on removing poor energy efficiency as one of the causes of fuel poverty 2011–2016." Thus, the NIHCSMP 2016 (2018, p.15) emphasises that targeted strategic "investment by government in domestic energy efficiency schemes of over £117 million in the private sector and £181 million in Housing Executive stock" has taken place over 2011–2016, which has "made a contribution to reducing domestic energy consumption and thus fuel poverty levels."

Given the 'asymmetric' nature of devolution, that is, where devolved powers and capacities frequently differ across Northern Ireland, Scotland and Wales, this creates an inherent capacity for substantial differentiation between the energy-related powers allocated to each devolved region under the terms of the Energy Constitution (see Section 4 below). (Note that England is governed from national Parliament; see further Hazell and Rawlings (2015) on the UK's constitutional arrangements.) Thus, it is unsurprising to find that the policy experience across these jurisdictions has diverged somewhat. Unlike Northern Ireland, the UK's other substate jurisdictions have tended toward adopting statutory targets for fuel poverty; a sense of Northern Ireland's overall strategic approach to fuel poverty is provided in Warmer Healthier Homes: A New Fuel Poverty Strategy for Northern Ireland (2011). The AFPSR (2016, p.23) has noted that "Scotland and Wales have targets and set policies to tackle the issue" of fuel poverty that differ from the Northern Irish policy approach (see further AFPSR, 2018, p.84).

What is perhaps more unusual, however, is that the devolved divergences have also resulted in different definitional and methodological approaches to the actual measurement of fuel poverty. In particular, and as the AFPSR (2017, p.72, 2018, p.84 and 20019, p.63) has pointed out, "each nation in the UK ha[s] its own fuel poverty definition". In

⁸ The Northern Ireland Assembly and its Executive government were suspended from 9 January 2017 for three years, precipitated by a Renewable Heat Incentive scandal. The devolved institutions were restored on 11 January 2020 and are operational at the date of writing. See further Muinzer, 2017, p.18–21.

⁹ However, note also that at the recent time of writing estimated fuel poverty figures for 2017–2018 based on modelling have been published by the Northern Ireland Housing Executive in the report 'Estimates of Fuel Poverty in Northern Ireland (2017), 2018' (2019). While the outcomes are only indicative estimates, it is reported that the 2018 estimate shows that "a small rise in the level of fuel poverty in Northern Ireland relative to 2016" has since been occurring due to electricity price rises (p.8).

Fig. 1. Fuel poverty under the Low Income High Costs indicator. Source: FPMH, 2019, p.2.

practice, one substantial effect of the definitional divergence arising across the UK nations is that one cannot conveniently and directly aggregate Northern Irish, Scottish, Welsh and English fuel poverty measures in order to produce an overall 'whole picture' of the UK experience, due to the unstandardized definitional and methodological approach to measurement across the jurisdictions.

As outlined in Table 1 (appended to this paper), Scotland and Wales use unstandardized percentage indicators¹⁰ to gauge fuel poverty levels set at 10%. Reduced to its essentials, a household is fuel poor if it must spend more than 10% of income on adequate home energy: see further Table 1. After an independent review published in 2012 (Hills, 2012), England moved from this more traditional type of approach to a Low Income High Costs ('LIHC') indicator, see further: AFPSR (2019: 3); FPMH (2019: 1). Northern Ireland uses a Scotland/Wales style 10% indicator (Fuel Poverty in Northern Ireland, 2009, p.1). It has also integrated the English LIHC into its reporting for the first time recently (NIHCSMP, 2016, 2018) (see Fig. 1).

The unstandardized Northern Irish, English, Scottish and Welsh definitional and methodological approaches to fuel poverty no doubt offer a diverse array of useful merits. They also, however, generate cumulative problems insofar as they heavily distort a capacity to generalise across the UK's substate vista due to the lack of similitude between the approaches adopted.

4. Application of the energy constitution to fuel poverty in Northern Ireland

In terms of 'mapping' key pin-pointed legislative energy powers onto the UK's conceptual national and substate levels, Cowell et al. have calculated for Northern Ireland at the substate level as follows: 'energy

policy' is 'fully devolved'; 'planning and consents (onshore)' are 'fully devolved'; 'planning and consents (offshore)' are mostly 'fully devolved'; and the associated field of 'economic development spending' is 'fully devolved': see the Table entitled 'Table 1. Devolution of energy-related powers in the UK' in Cowell et al. (2017a). Application of the Energy Constitution framework makes it possible to sharpen and develop these useful findings with greater accuracy. Northern Ireland's governance powers are articulated most directly in law in a constitutional statute entitled the Northern Ireland Act 1998 (hereafter NIA, 1998). The NIA 1998 establishes the key arrangements for devolving particular 'matters' to Northern Ireland, and recognises that the Northern Ireland Assembly has 'legislative competence' to legislate on these matters (NIA, 1998, s.6). The matters are construed in the legislation as 'transferred' matters (NIA 1998, s.4(1)), which are devolved, 'reserved' matters, where the Assembly can only legislate in these areas if it has received the permission of the Secretary of State, and 'excepted' matters, which are withheld to the national level.

Schedule 2 to the NIA 1998 specifies excepted matters (NIA, 1998, Sch. 2) and Schedule 3 specifies reserved matters (NIA, 1998, Sch. 3), doing so in a technical legal way, and the legislation creates a rule that if matters do not appear as being expressly excepted or reserved then they are to be interpreted as being devolved (NIA, 1998, s.4). 'Energy' is excluded from Schedules 2 and 3; as such, it does not appear as an expressly excepted or reserved matter, and in accordance with the rule just stated, 'energy' is therefore to be interpreted as a transferred/devolved competence. Bearing in mind both the 'fuzzy'/potentially overlapping edges of powers and the capacity for powers to 'cut into' one another under the Energy Constitution (outlined above), Muinzer and Ellis have flagged up additional competences that are absent from the Schedules (ie., they are devolved to Northern Ireland) that have a particularly notable impact on energy competence. These include planning powers, aspects of utility regulation and housing (Muinzer and Ellis, 2017). The fact that these powers can be mapped to Northern Ireland at the substate level bolsters Northern Ireland's capacity to engage in energy governance.

¹⁰ The indicators are 'unstandardized' in the sense that the devolved jurisdictions do not use identical means to calculate their percentages; see 'Table, with Key', below.

Table 1

Appears, entitled “table, with key” – please refer to the document containing Figures/Tables provided with this submission, per house style requirements.

Substate Region	Northern Ireland	Scotland	Wales	England
Fuel Poverty Indicator	10% ^a (i.e., household is fuel poor if required to spend more than 10% of income on adequate home energy)	10% ^b	10% ^b	‘Low Income High Costs’ method/LIHC
Statutory Target	None	Fuel Poverty (Target, Definition and Strategy) (Scotland) Act 2019 contains a statutory target that as far as reasonably possible no household in Scotland is in fuel poverty by 2040 and in any event per Section 1(2) (a) no more than 5% of Scottish households are in fuel poverty by 2040	Fuel poverty to be eradicated as far as reasonably practicable by end of 2018	As many fuel poor households as reasonably practicable are to achieve minimum Fuel Poverty Energy Efficiency Ratings (specifically, a minimum FPEER rating of Band C by 2030, with interim targets of Band E by 2020, and Band D by 2025 (see further AFPSR, 2018, p.11–15 and AFPSR, 2019, p.3).
Last Reporting Year	2016	2017	2018	2017
Last % Of Households In Fuel Poverty Reported ^c	22%	24.9%	12%	10.9%

^a In the NIHCSP 2016, for the first time, Northern Ireland also reported on the ‘Low Income High Costs’/LIHC fuel poverty indicator used in England. The findings show that 7% of households were in fuel poverty under this definition and this compared with 10.9% in England (2017). The average fuel poverty gap for all Northern Ireland households was estimated at £436 (£321 in England, 2017). This indicates that while the extent of fuel poverty under LIHC is less in Northern Ireland, the depth or severity is greater than in England (AFPSR, 2019, p. 85).

^b Note that Wales’ “methodology differs from Scotland in relation to the heating assumptions used”, such that the Scottish and Welsh indicators are non-additive: quoting AFPSR, 2016, p.24; reiterated at AFPSR, 2017, p.72, AFPSR, 2018, p.84 and AFPSR, 2019, p.65.

^c Calculation of fuel poverty levels is an inaccurate science, albeit a useful one. For example, in discussing the English fuel poverty modelling outputs, the FPMH notes that it amounts to a ‘point estimate’ of the number of households affected, which involves certain ‘approximations’. Thus: “the modelling process requires numerous assumptions. For example, there is no information on the energy supplier and the tariff that a household uses. Instead, households are assigned an average price depending on the region that they live in and the way in which they pay for their energy (e.g. standard credit, direct debit, etc.).” Quoting FPMH, 2018, p.63. Source: author’s Table and Key

Certain other significant powers, however, must be mapped to the national level rather than to Northern Ireland at the substate level, because they can be identified explicitly as being under national control. Firstly, in terms of the concepts of the *hollowing out* and *cutting into* of competences under the Energy Constitution framework (outlined above), the *hollowing out* phenomenon is detectable: most particularly, Northern Ireland’s devolved energy competence is hollowed out to a partial degree through competence pertaining to ‘nuclear energy’ and nuclear power stations being withheld to the national level (NIA, 1998, Sch. 2.18). Secondly, a degree of *cutting into* Northern Ireland’s energy competence by competences located at the national level is also detectable, which further limits Northern Ireland’s substate governance space under the Energy Constitution. Thus, ‘taxes’ and ‘duties’ are withheld from Northern Ireland (NIA, 1998, Sch. 2.9), and therefore must be mapped to the national level. Given that taxes and duties have a capacity to be applied to the energy sector in order to steer the energy market or affect consumer behavioural change (taxes), and to moderate fuel import/export costs (duties), these powers cut into Northern Ireland’s substate capacity for energy agency. Similarly, ‘international relations’ are excepted (NIA, 1998, Sch. 2.3), further cutting into Northern Irish competence by restricting the Northern Ireland Assembly from legislating autonomously in areas engaging international climate and energy agreements, etc. The detectable *cutting in* effect also incorporates restrictions on Northern Ireland’s direct relations with the EU/supranational institutions, which are similarly scaled to the national level and include energy-specific EU matters (NIA, 1998, Sch. 2.3).

These findings expose key elements of the essential ‘backdrop’ of agency and constraint acting on the issue of fuel poverty in Northern Ireland under the terms of the Energy Constitution, however in order to apply the framework more acutely it is necessary to embed the issue of fuel poverty within the Energy Constitution’s power nexus in a narrower way. Where one does situate fuel poverty within the framework of these powers, it becomes evident that Northern Ireland enjoys at least some degree of broad competence to act in the area of fuel poverty, insofar as fuel poverty is an energy-oriented issue and ‘energy’ competence is devolved. As noted above, Cowell et al. (2017a) have emphasised that

‘economic development spending’ is also devolved, providing, e.g., some facility for Northern Ireland to target monies funnelled down from the EU towards fuel poverty problems; see for instance De Laurentis et al. (2017, p.1167) on how “[a]ccessing European resources has ... been important to the evolution of Arbed”, a Welsh domestic housing retrofit programme intended to reduce fuel poverty in Wales.¹¹ Similarly, there is scope to alleviate fuel poverty by channelling relief monies or associated spending from Northern Ireland’s block grant into fuel poverty solutions, possibly relating (but not necessarily restricted) to the improvement of energy efficiency in building stock.¹²

Such efforts can only be complimented by Northern Ireland’s devolved housing powers (identified as being scaled to Northern Ireland in the mapping above). If housing powers were retained to the national level, a lack of competence in this area could *cut into* the devolved capacity for energy action in this sphere, including energy efficiency improvements and retrofitting, and thus act as a governance obstacle. Northern Ireland’s devolved planning powers (identified above) can also be interpreted as creating constitutional space in the sphere of fuel poverty: e.g., they can be leveraged conceivably to shape outcomes geared towards securing greater energy efficiency in building stock and associated obligations as part of the planning consents procedure. Here it is notable that, in spite of certain tensions between energy efficiency obligations and targeted fuel poverty alleviation policies, UK Government has tended to favour energy efficiency obligations as a main policy for reducing fuel poverty (Rosenow et al., 2013).

In spite, then, of the *hollowing out* and *cutting in* concepts operationalised under the terms of the Energy Constitution, which

¹¹ The UK exited from the EU on 31 January 2020 (“Brexit”). At the time of writing it is negotiating its future relationship with the EU.

¹² Northern Ireland operates an Affordable Warmth Scheme along these lines, see: <<https://www.nihe.gov.uk/Housing-Help/Affordable-Warmth-Boiler-Replacement>> accessed 28 January 2019 Issues, problems and solutions pertaining to energy efficiency and housing stock in the context of fuel poverty are treated in detail in Chapter 6 of Boardman (2010 p.125–166).

significantly constrain Northern Ireland's overall capacity for substate agency, Northern Ireland is far from an ineffectual jurisdiction in the sphere of fuel poverty. The distribution of power capacities under the terms of the Energy Constitution indicate that it is by no means compelled to passively follow an agenda set from 'above' at the national level. Given this broad power remit, it is advisable that the Northern Irish governance institutions fully recognise their extensive capacities for agency in this area, with a view to engaging in progressive governance that is robustly driven by the Northern Irish administration in the interest of mitigating regional fuel poverty. This will require a significant change of approach on the part of Northern Ireland's administrative institutions, given that research has found that they have a tendency towards passively following nationally-led energy policy programmes, and are subject to a detectible culture of energy policy "inertia" (Ellis et al., 2013; Muinzer, 2016). This is all the more pressing where one recognises that research has demonstrated that the energy vulnerable have limited agency to reduce their vulnerability in their own right (Middlemiss and Gillard, 2015).

On the other hand, the Energy Constitution conceptualisation also crystallizes additional recognitions and qualifications. 'Fuel poverty' ranges beyond reasonably clear-cut issues of energy/fuel: see e.g., Lidell and Morris (2010) on health impacts and O'Neill et al. (2006) on age and vulnerability issues. Most particularly, however, given the nature of the constitutional powers discussed above, it is notable that (fuel) poverty connects with extensive additional complexities. These include issues involving levels of income, household expenditure, taxation, and, in sum, fundamental macro and micro market and income conditions and challenges that are both bound up with and that underpin the workings of the state's broader national economy. With the main economic levers in the UK being scaled to the national level, including tax control (mapped to the national level above), Northern Ireland's ability to deal autonomously with fuel poverty's broader underlying economic challenges and contributing influences seems relatively weak. Christman (2017) has pointed out that a facility to shape the law in the area of social security is devolved to Northern Ireland; given that income inequality is a substantial driver of fuel poverty, this could afford Northern Ireland significant room to provide some relief to the fuel poor through this channel. However, substantial *cutting in* and *hollowing out* is at play here. Thus, Christman (2017, p.234) describes the devolved capacity for agency in this area as 'notional competence' that is 'subject to the "parity principle"', that is, the principle that parity between social security in Northern Ireland and the rest of the UK is to be encouraged, and where the UK-level Secretary of State is given a formal role in balancing the system with the appropriate Northern Ireland Minister. Christman (2017, p.234–235) also notes that Northern Ireland is constrained by substantial budgetary considerations in terms of how it administers its social security system, with the overall budget for Northern Ireland being set at Westminster. Thus, he characterises these powers as a very narrow basis on which Northern Ireland might seek to act in the sphere of fuel poverty.

The Energy Constitution paradigm also invites consideration of *rights* and *equity*. Roberts (2008, p.4471) notes that:

A warm and adequately-lit home is considered a basic need, together with access to energy-consuming appliances ranging from a fridge to a TV. An underlying tenet of sustainable energy is that such basic needs should be affordably met.

Where one locates the conditions of the fuel poor in the context of equity, this is certainly an appropriate normative observation and conclusion (such basic needs *should* be affordably met). The Energy Constitution framework, however, indicates that one could perhaps go further here. Constitutions normally accord the citizen with *rights*, and in the context of the UK's uncodified constitution one turns to the Human Rights Act 1998 (hereafter HRA, 1998) to find the major list of rights set out. One finds here a *right to life*, a *right to freedom from forced labour*, a *right to a fair trial*, and so on (HRA, 1998, Sch. 1). The rights do not include a *right to energy/right to affordable sustainable energy*, or

equivalent. If Roberts is correct in construing sustainable energy as a basic need that should be affordably met – as he surely is¹³ – then a *right to energy*, however it might best be phrased, should arguably be implied into/read into the UK's Energy Constitution.

Bearing this in mind, it is notable that the practice of identifying and crystallising implied rights is a mechanism that can be operable under the general terms of constitutional law. For example, recently in 2017 *Friends of the Irish Environment* brought a case before the Republic of Ireland's High Court where it was determined for the first time by the court that although the written Irish Constitution does not set out an explicit *environmental* right, such a right can be said to exist.¹⁴ Although the technical form and nature of the constitutions of the Republic of Ireland and the UK differ somewhat, it is arguable along the same lines of general principle that a *right to affordable energy* or equivalent should be read into the UK's constitutional rights framework in a similar fashion. In practice, this would likely involve the UK courts construing the right as an implied right within the parameters of the UK's HRA 1998, whereas the Irish case involved Ireland's written constitution.

This issue is something that the UK courts could begin to explicitly clarify (or reject), as and when an appropriate court case begging the question arises. If it were to be accepted that such an implied right *does* exist, then a *right to (affordable) energy* must be interpreted as an operative feature of the Energy Constitution where the framework is applied to the UK. This would mean that the state has an overt rights-based constitutional duty to create conditions where fuel poverty will not prevent households from achieving adequate levels of affordable heat and electricity. This line of reasoning finds support in the work of Bradbrook and Gardam (2006), who have noted that suitable access to modern energy services is necessary if people are to realise their human rights entitlements of living in a sustainable and poverty-free way. Logically, therefore, if other human rights are contingent on appropriate access to energy services, it follows that an energy-specific human right should exist if a rights system is to be adequately just (Bradbrook and Gardam, 2010).

5. Conclusions and implications

This study has developed and applied an 'Energy Constitution' analytical framework in the context of fuel poverty, taking the UK as a case study in order to concretise the inquiry and honing in most particularly on Northern Ireland. The Energy Constitution model recognises the following:

This perspective ... emphasises the need to appreciate the way in which law must be viewed within wider contexts, and instead of simple 'doctrines' we should think of the 'Energy Constitution' as being composed of a complicated spectrum of legal spatialities where jurisdictional boundaries are pluralistic, fuzzy and fluid. These circumstances are inextricably bound up with the multi-scalar complexities underlying the decarbonisation challenge, which in turn cannot be effectively isolated from pertinent legal frameworks (Muinzer and Ellis, 2017, p.1190).

The analysis has clarified that Northern Ireland's devolved institutions are possessed of a pronounced capacity to act in the sphere of fuel poverty within the setting of the Energy Constitution's fluid, multi-scalar conditions.

The UK's particular Energy Constitution has imbued the state's devolved regions with divergent asymmetric powers, which interact in turn with inherent socio-spatial regional differences, and substate variation arises both in terms of practical governance approaches and in

¹³ For more on the ethical assumptions pertaining to (in)justice underpinning a designation of 'fuel poverty', see Walker and Day (2012).

¹⁴ *Merriman & Ors v Fingal County Council & Ors; Friends of the Irish Environment Clg v Fingal County Council & Ors* [2017] IEHC 695 (see Mr Justice Max Barrett at Paragraph 264).

terms of fuel poverty mitigation outcomes. The fuel poverty prognosis for the future in Northern Ireland had seemed bleak (Lidell et al., 2012, p.31), but the recent reduction in levels from 42% to 22% of households in fuel poverty, while still not acceptable, is encouraging. The changes have been driven by a lowering in average fuel prices and a general increase in income, combined with efforts from the Devolved Administration to improve energy efficiency in housing stock. This research, however, has exposed and clarified the nature and extent of Northern Ireland's constitutional reach in the complex cross-cutting area of fuel poverty for the first time. It has been seen that Northern Ireland enjoys relatively extensive powers in this sphere, and this facility for agency brings with it in turn an obligation to leverage the jurisdiction's substantial capacities under the Energy Constitution to drive fuel poverty solutions.

More broadly, this study highlights opportunities for further targeted research employing the Energy Constitution model in wider international settings beyond the UK in order to elucidate aspects of fuel poverty policy or other energy policy issues in countries elsewhere. It has been seen that the conceptual method of identifying core governance levels and competences in the context of the major constitutional branches of the state enables one to map competences to appropriate positions on those governance levels. This picture can be moderated with the integration of pertinent constitutional principles and constraints, and with reference to the equitable rights-based relationship between citizen and state. Energy-specific competences can then be identified within the cumulative competence nexus and thrown into relief to create a snapshot of the state's Energy Constitution. A specific energy issue can thus be located within the emergent power nexus, with the result that latent capacities and constraints operating on the issue under examination can be analysed and interpreted. The outline above has employed fuel poverty by way of example, chosen because it amounts to an important social problem that raises difficult issues that cross-cut levels of governance and multiple competences in challenging ways.

This approach can be usefully employed for the purposes of analysis across the world. Naturally, the Energy Constitution model must necessarily retain a logical degree of in-built flexibility for the undertaking. All national constitutions (Robbers, 2007) and constitutional settings (Maddex, 1995, p.x) are by their nature somewhat distinct, and therefore the constitutional environment crystallised by the UK case study analysis undertaken in this paper will be partially distinct to that state. In some cases, the snapshot of a particular state's Energy Constitution will yield a picture that is quite similar to the UK's above. New Zealand, for instance, is very much in the tradition of the UK in certain regards, being a common-law system with a Parliamentary democracy that has an uncoded constitution (Harris, 2018). Thus, its outcome Energy Constitution snapshot will display notable similarities to certain aspects of the UK's.

Where major legal-constitutional elements or components differ, logical flexibility must to be incorporated into the application of the Energy Constitution. For example, taking the element of "governance levels", it has been seen that the UK is a parliamentary democracy that operates a devolution framework requiring a minimum of two major governance levels to be conceptualised and examined (as above). In an alternative system that does not employ devolution, the framing of the major levels will be required to differ on logical grounds. The USA, for instance, is a presidential democracy that operates a federalist rather than a devolved system, with the federal (national) level and the State (subnational) levels of governance equating to the UK's state and substate levels discussed above (Tushnet et al., 2015). The 50 US States have their own legislatures and executives, and while this framework resembles the national-devolved level framing in the UK in many ways, there are differing constitutional federalist capacities and constraints that should be factored in; federalist and devolved systems differ in character (Choudhry and Hume, 2011, p.357–358). Furthermore, depending on the energy issue under investigation, given the vast scale

of the USA, it may be useful for analytical purposes within a particular study to factor in a further major level beneath the State level, namely, the Local Government level. Here, counties and municipalities within the 50 States have their own subsidiary governance apparatus, which tend to be complex and diverse (Kemp, 2007).

Additionally, this paper seeks to point to a broader potential for the richer integration into energy policy studies of insights derived from legal scholarship and constitutionality. It has been underscored at the outset of this study that there exists a slowly emergent sphere of "constitutionalised" energy analysis composed of excellent individual works but that, where this sphere is taken as a whole, scholarly legal and constitutional contributions in energy studies are underdeveloped and underrepresented. In this respect, it is noteworthy that this relatively fledgling sphere of analysis has some tendency to import studies in "environmental constitutionalism" into energy policy studies, as in May and Daly's "Ten Good Practices in Environmental Constitutionalism that can Contribute to Sustainable Shale Gas Development" (May and Daly, 2016). See also Kerns on fracking from this type of perspective (Daly et al., 2017, p.48–61). This sphere of work is highly valuable, however it originates from the environmental studies tradition and has its primary roots there; see further, e.g., Kotzé (2016). In the author's view, energy analysts should feel encouraged to press on with developing a rich, more directly energy-oriented form of "energy constitutionalism" in its own right suitable to the sophisticated internal demands of the energy studies field. The Energy Constitution model put forward in this paper endeavours to contribute to momentum in this direction.

The limited existing literature already demonstrates from a range of positions that legally-informed constitutionalised inquiry is a fruitful course of analysis. Thus, in addition to points raised above, work from Cepparulo et al. (2019) suggests that analysis targeted at assessing the role and impact of latent constitutional arrangements with reference to a given energy issue can also allow normative governance improvements to be developed – where "constitutions bring about revolutions", as the authors put it (Cepparulo et al., 2019 p.200). It is hoped that the Energy Constitution model outlined in this paper might assist in pointing a direction towards the richer integration of legal-constitutional inquiry into energy policy studies, and that this type of thinking, and other thinking in a similar vein, might go some way towards contributing to the development of a branch of "energy constitutionalism" suitable to the contemporary needs of the field.

Declaration of competing interests

The author declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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