



How to conceptualise energy law and policy for an interdisciplinary audience: The case of post-Brexit UK



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ABSTRACT

Interdisciplinary energy research is essential. It advances our understanding of potential transitions from high to low carbon energy systems. However, it is easier to propose than deliver. It requires translation into a simpler language, to aid communication, but not at the expense of the conceptual language that drives our understanding of complex energy systems. We combine legal, political science, and policy studies to show how to balance the need to communicate accessibly and recognise legal and policymaking complexity. We begin with a statement so accepted in legal studies that it has become a truism: the law in the books is not the same as the law in action. The allocation of legal competences is only one influence on policymaking in a complex system. We describe three key ways to conceptualise this relationship between law, policy, and energy systems, focusing on the: (1) 'on paper' legal separation of powers between different governments, (2) interaction between law and policy in practice, including blurry boundaries between formal responsibility and informal influence, and (3) role of law as one of many contributors to policymaking. We use these approaches to explain the implications of Brexit for UK energy policy.

1. Introduction

It is a truism that law in action is not the same as the law in the books. Energy lawyers ought to be more aware of this than most. Energy law has always been a practical discipline, driven by the real world problems thrown up by changes in energy technologies or, above all, by developments in political, social and economic beliefs, producing changes in energy policies (Daintith, 2012). As such, it is an inherently interdisciplinary subject (Bradbrook, 1996: 206; Heffron et al., 2018: 480). Energy lawyers have sought to learn from other disciplines to better understand the nature of the legal problems to be addressed in the energy system and to find creative, practical solutions. In recent years, however, energy law scholarship has been changing. Energy law academics have been concerned to strengthen the disciplinary core of the subject (eg Heffron and Talus, 2016; Heffron et al., 2018), motivated in part by the desire to highlight the important contribution that legal analysis can make to interdisciplinary energy research. Energy systems are themselves increasingly understood as multi-disciplinary in nature, thus requiring interdisciplinary collaboration to address major energy policy problems, such as how to transition from high to low carbon energy systems. Energy law is thus to be understood not merely

as the provider of technical solutions to problems framed and resolved through other disciplinary lenses, but as a central element in the successful societal management of energy resources. Nevertheless, it is important not to forget the key insights of energy law as an applied rather than pure discipline, and of the need to understand how the law in the books may differ from the law in practice.

Bearing in mind the importance of energy policy as a driver for changes in energy law, one major – but hitherto somewhat neglected – focus for interdisciplinary energy law scholarship is to work with policy scientists to understand the production of energy policy and the way in which the law interacts with and shapes – or fails to shape – the energy policy process, and how this process affects the energy system. In this article, we seek to address this gap in the literature by showing how energy lawyers and policy scientists can learn from one another to better understand and seek to solve major policy problems.

To actually deliver meaningful interdisciplinary collaboration is easier said than done. Each discipline has its own reference points – to a foundational literature, set of key concepts, and language to communicate research – and they are often not accessible to scholars and practitioners from other backgrounds. A simple process of translation into plain English will not solve this problem completely, because a

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Table 1
Distribution of Energy Decision-Making Competences.

<i>Level</i>	<i>Direct Competences</i>	<i>Indirect Competences</i>
European Union	Internal energy market (gas and electricity) Security of energy supply Promotion of renewable energy Regulation of biofuels Promotion of energy efficiency/energy efficiency standards Energy networks Trade in and safety of nuclear materials (Euratom)	State aid regulation Competition law Free movement law Greenhouse gas emissions trading Other atmospheric emissions Water quality Environmental Impact Assessment Offshore carbon storage Trans-European networks Innovation/R&D funding Structural funding & strategic funding (e.g. in transport and energy infrastructure)
EU Agencies	Cross-border market integration and network harmonisation (ACER)	
United Kingdom/Great Britain	Ownership of energy resources (coal, gas, oil, gas storage rights vested in the Crown) Regulation of energy markets Licensing of energy producers, suppliers and network operators Security of energy supply Energy taxation Renewable energy subsidies/grants Energy efficiency subsidies/grants Nuclear energy Golden Shares Nuclear licensing and nuclear safety	Competition law Financial services regulation Intellectual property and commercial law Climate change laws Social security (winter fuel payments; energy debt payments) Workplace health and safety Emergency powers Treaty-making powers R&D funding
UK/GB Agencies	Gas and electricity market regulation (Ofgem) Coal mining licensing (Coal Authority) Regulation of oil and gas exploration (Oil and Gas Authority) Nuclear safety (Office for Nuclear Regulation) Nuclear decommissioning (Nuclear Decommissioning Authority)	Competition law (Competition and Markets Authority) Financial services regulation (Financial Conduct Authority) Health and safety (Health and Safety Executive)
Devolved	Promotion of renewable energy Promotion of energy efficiency Fuel poverty support systems Electricity and gas installations consents Onshore oil and gas licensing Nuclear waste storage	Crown estate (seabed use/storage rights) Marine licensing and planning Property law (access to land/subsoil; nuisance; servitudes and wayleaves) Environmental emissions & water quality Climate change law Environmental Impact Assessment Housing law/building regulations Economic development Social security law Transport policies (including Air Passenger Duty from 2016) Environmental emissions and water quality (SEPA) Seabed leasing (Crown Estate Scotland) Land-use planning
Devolved Agencies		
Local		

Note: each of the three devolved administrations has differing levels of energy competence. E.g. energy/gas regulation has a GB-wide basis because it is a devolved matter for NI, not Scotland and Wales.

conceptual and technical language refers to a body of knowledge (about a complex topic) that cannot be picked up so easily. Therefore, we need ways to translate our knowledge across disciplines in a way that simplifies initial discussions before highlighting the best ways to invest further time to generate a more in-depth understanding.

We demonstrate this argument conceptually by highlighting the contribution of legal analysis as part of a wider interdisciplinary contribution from law, political science, and policy studies to the study of energy policy. We then use the case study of multi-level policymaking in the UK - as it prepares for Brexit - to show how to apply such analysis. Our discussion highlights the benefit of many levels of conceptual understanding of the same issue, from a face value identification of the powers of different governments, to a conceptually-informed discussion of the use of powers in practice, and a more technical discussion of policy in a complex policymaking system.

The first approach is the easiest to pick up and understand: we can study multi-level policymaking, and the impact of Brexit on UK energy policymaking, by identifying who is responsible for policy. Therefore, our first aim is to identify which levels of government, and government agencies, control the policy instruments which relate to energy policy directly (such as the regulation of the electricity market) and indirectly (such as policy for land use or transport).

However, the allocation of energy decision-making competences

across levels of government is only one factor in determining how policy is actually made. Legal and policy studies suggest that many actors draw on other sources of political and decision-making authority to make and influence policy. Consequently, our second aim is to analyse how governments make sense of the division of legal powers in practice, when they make decisions individually or cooperate via inter-governmental relations (IGR) to produce a more coordinated strategy. Such analysis highlights the need to define policy in considerable detail and account for the contingent nature of policymaking in which, for example, some levels have primary responsibility but a limited willingness or ability to enforce policy.

This uncertain relationship between the law and policy is starkest when we engage in ‘whole systems’ thinking and consider the wider relationship between legal authority, policy, and the context in which policymaking takes place. Consequently, our third aim is describe policymaking as a complex system from which outcomes often appear to ‘emerge’ without central government control. This approach helps to account for the fact that law and policy are among many influences on energy outcomes, as well as address a tendency in energy studies to identify an often-limited role for law and policymaking as part of a larger dynamic relationship between ‘the set of technologies, physical infrastructure, institutions, policies and practices located in and associated with the UK which enable energy services to be delivered to UK

consumers' (Chaudry et al., 2009: iv). As such, it is crucial to our understanding of the role of government in a sustainable energy transition (Chilvers et al., 2017).

This approach helps demonstrate that (a) major constitutional changes – such as the process of Brexit – will have a significant impact on UK energy policymaking, but (b) the effect of any change in the allocation of legal and policymaking competences is difficult to anticipate. We need useful models and theories to help us better understand (a) how to define policy and policy change, from signal of intent to actual outcomes, and (b) the complex interaction between formal decision-making competences and other factors influencing the energy policymaking process, to appreciate fully (c) the effect of constitutional change on the policy process.

We identify the new opportunities and constraints that Brexit may create for old and new policy communities. We accentuate new forms of multi-level policymaking, in which the UK is repatriating some competences from the EU but also coordinating a delegated governance model in which devolved and local government (and government agencies) have a significant role in policy to influence energy demand and supply. We focus on government in Scotland to provide a concrete example of delegated governance under a wider UK framework.

2. Approach one: many governments share energy policy responsibilities

At face value, the division of legal competences and policymaking responsibilities is relatively clear, allowing us to map out the respective roles of governments, at each level, for energy policy and non-energy policies with a major impact such as transport and planning. In Table 1 we divide energy policy competences according to levels of government, note the extent to which governments delegate responsibility to agencies (who operate with some operational autonomy from ministers), and note the types of non-energy policy responsibilities with an effect on energy demand and supply (see also Fredriksson et al., 2017; Pollitt, 2017). We recognise that energy systems are also subject to (direct and indirect) international level regulation (Heffron and Talus, 2016: 194–6; Redgwell, 2016), and that this is likely to become more significant for UK energy policy post-Brexit. Nevertheless, we exclude the international level from Table 1, as international policymaking in the energy sphere is still (atomic energy apart) primarily under the control of national governments.

Table 1 highlights a large and potentially complicated list of responsibilities, but suggests that we can generate a working knowledge of multi-level policymaking. For example, the EU: focuses on key aspects of trade and competition, has a major role in the harmonisation of rules – such as environmental law and state aid regulations - to foster a level playing field in trade and encourage the EU-wide security of supply, and otherwise promotes key priorities, such as to reduce energy demand and increase the proportion of energy supply from renewable sources. The UK government's role also seems quite clear, particularly when signalling the balance of power between it and devolved and local governments. The UK is responsible for energy security overall, key aspects of that security such as the production and regulation of nuclear energy and the regulation of electricity supply, and access to the minerals (coal, oil, gas) to produce energy. In that context, the devolved (and local government) role may seem relatively limited to the delivery of EU regulations and UK-driven policies, the promotion of measures influencing supply and demand, and a suite of devolved policies with a more indirect impact on energy policy.

3. Approach two: the law in the books is not the policy in action

However, the formal allocation of decision-making competences only tells a partial story about how the overall policymaking system operates. In practice, only some responsibilities are relatively clear, and we can identify many reasons why de facto decision-making powers

may operate differently from the strict legal picture. This point is crucial to our understanding of multi-level policymaking in relation to major boundary spanning initiatives. For example, there are several different ways to promote a sustainable energy transition involving 'the simultaneous delivery of low carbon, secure and affordable energy services', each of which emphasises more or less central government direction (Chilvers et al., 2017: 440). Further, ideas such as 'just transitions' (Heffron and McCauley, 2018) raise the importance of multi-level policymaking to a process of deliberation, in which governments, businesses, interest groups, and citizens discuss how to define and balance multiple energy-related aims such as sustainability and equitable access.

3.1. Some overlaps result from deep constitutional structure

The EU's key decision-making competences in relation to energy and the environment are, in formal terms, shared rather than exclusive competences. Member States retain the power to act in these areas unless and until EU legislators deem it desirable to occupy the field (subject to considerations of proportionality and subsidiarity). Similarly, in strict constitutional terms, energy is reserved to the Westminster Parliament for Scotland and Wales, except those areas listed in Table 1 as excluded from the general reservation. However, the relationship between the UK and devolved levels may be thought of as sharing rather than dividing responsibility, because there are no powers which are exclusively devolved. The UK Parliament retains the power to legislate for Scotland in devolved areas, or take back devolved powers to the UK level, subject only to a political requirement to gain the consent of the Scottish Parliament. This power has been exercised in relation to energy when the Scottish Parliament agreed to relinquish its (executively-devolved) powers over the setting of renewable energy subsidies in favour of a Great Britain-wide approach (Energy Act 2013).

3.2. Some EU powers are designed to promote, not necessarily prescribe

In the energy field, the EU has tended to act through the adoption of framework directives, rather than regulations. Regulations set broad objectives or targets to be achieved, but leave the Member States considerable freedom (within constraints) to determine how these objectives should be met. Freedom may include some internal divergence of approach between different legislatively-empowered regions within Member States (R (Horvath) v Secretary of State for Environment, Fisheries and Rural Affairs, C-428/07 [2009] 30 EG 66 (CS)). This approach arises partly as a result of the EU's relatively weak regulatory capacity, although as its capacity in the energy field has increased, so too has it become more interventionist, as in relation to the internal energy market (Talus, 2013; Vedder et al., 2016). Further, the EU needs to cater for divergent political opinion and differing energy needs and capacities between Member States, which can lead to some retreat, for instance in relation to the shift back from legally-binding to merely indicative national renewable energy targets (Revised Renewable Energy Directive 2018/2001/EU, OJ L 328/82).

3.3. Some responsibilities are devolved and Europeanised, which brings the UK back in

The division of competences between Member State and EU levels straddles the internal division between devolved and UK levels. As a matter of domestic law, competences may lie at the devolved level, yet require to be exercised in accordance with EU law (Scotland Act 1998, s29(2)(d)). Since the UK Government has the formal competence to participate in EU decision-making, EU law may act as a significantly centralising force, depriving the devolved government of policymaking autonomy. Key examples - agricultural, fishing, and environmental policy - highlight the relevance of EU regulations, in areas such as water quality, which are implemented by bodies such as SEPA (Scottish

Environmental Protection Agency) on behalf of the UK. On the other hand, the EU energy policy framework, despite being an area of mainly reserved competence in the UK, has allowed the Scottish Government to contribute disproportionately to UK's EU obligations in renewable energy.

3.4. *There is a general lack of clarity about overlaps in responsibility*

On paper, the Scottish Parliament has some relatively clearly defined policy responsibilities, defined as those not reserved to the UK (Cairney and McGarvey, 2013: 197). Reserved areas include international relations, fiscal and monetary policy, immigration, employment, social security, and energy (Scotland Act 1998, Sch 5). Devolved areas include health, housing, emergency services, and social work. Scotland also had a separate education, local government, and legal system before devolution in 1999. Yet, there is less clarity when these responsibilities intersect in practice.

Broad examples in energy include a mix of transport responsibilities, all of which influence energy demand (e.g. for air travel) and supply (e.g. to foster a new 'hydrogen economy'), and the energy policy infrastructure, in which the Scottish government oversees planning consent for electricity generation, power lines, and onshore drilling applications, while the UK remains responsible for the electricity market, nuclear power, and renewable energy support (commercial fracking licensing was devolved in 2018).

Specific examples highlight problems in defining decision-making powers. For instance, under the Scotland Act 1998 (Sch 5, Pt 2, Head D5), energy conservation is reserved, but there is an exception for 'the encouragement of energy efficiency other than by prohibition or regulation.' It is unclear in this context what 'regulation' means: does it refer simply to the imposition of energy efficiency obligations on energy companies, or extend to obligations on consumers? A consensus can emerge amongst policy actors as to the scope of each decision-making competence, and it may turn out to be more or less expansive than a court would decide were the issue to be litigated. A breach in the policy consensus may result in an expansion or contraction of decision-making competence without any formal change to the underlying powers.

3.5. *Some powers are increasingly shared in complicated ways, in practice and by design*

The reserved powers model employed in the Scotland Act 1998 means that unless a policy area is expressly reserved to the UK level, it will fall to the devolved level. New policy areas accrue to the devolved institutions even if they are closely intertwined with other policy areas which are reserved. Climate change is a good example. At the time of enactment of the Scotland Act, it was not a high profile policy area, nor was it anticipated how significantly the climate change agenda would come to affect energy policy. Climate change policy competence therefore lies at both devolved and UK levels (as well as the EU level), notwithstanding the general reservation of energy policy. Further, the Scotland Act 2016 (following the Scotland Act 2012) extends the scope of Scottish ministerial action in relation to energy efficiency and fuel poverty. In other cases, we find the practice of making detailed reservations in areas which are otherwise generally devolved (onshore oil and gas licensing is devolved, but without devolving the power to tax oil and gas), or making detailed exceptions in areas which are otherwise generally reserved (nuclear energy is reserved, but nuclear waste disposal is devolved).

3.6. *Some UK powers are devolved to Scottish ministers ('executive devolution')*

Overlaps may arise from the devolution of executive competences in areas that are otherwise legislatively reserved. This is a particularly prominent feature of the division of competences between the UK and

Scottish levels in energy. Scottish ministers have been responsible for key aspects of UK-controlled policies before and after 1999, although before 1999 there was more emphasis on ministers with some administrative discretion to further UK policy (Cairney, 2011: 99).

3.7. *Incomplete powers and political vetoes*

'Incomplete' powers at one level provide some discretion at another. For instance, the EU's energy policy competence is stated not to 'affect a Member State's right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply' (Art 192(2) TFEU). In practice, Member State discretion in these respects is significantly constrained by other aspects of EU law, particularly environmental and competition law. In the UK, therefore, the shift from (highly polluting) coal-fired power generation to gas and later renewable generation has been significantly (albeit not exclusively) influenced by EU environmental policy. Similarly, other Member States have been forced to liberalise their energy supplies under pressure from EU competition law and EU policy on completion of the internal energy market (Cameron, 2007).

In some domestic cases, UK ministers have stated or implied that Scottish ministers are – to all intents and purposes – veto players in some areas (Cairney, 2011: 99). This longstanding position reflects high levels of popular support for Scottish political autonomy and a historical tendency for the UK Government to respond accordingly (Cairney and McGarvey, 2013). If so, the reservation/ devolution of policy responsibilities tends to result as much from political negotiation as any regard for the coherence of policymaking responsibilities.

At the domestic level, executive devolution of the power to consent to the construction of new electricity generating stations has given the Scottish Government a de facto veto over the construction of new nuclear capacity in Scotland, notwithstanding that nuclear power is de jure a reserved matter. The UK Parliament could choose to override this de facto veto but this would come at very considerable political cost which few UK ministers seem willing to incur. Conversely, the devolution of responsibility for licensing onshore oil and gas production (fracking) to the Scottish Government, but without corresponding devolution of the accompanying revenues, affects the policy incentives governing the exercise of the licensing power.

Some of this delegation of powers extends to devolved and local government levels in relation to land-use planning, whereby the exercise of powers of local authorities to grant consent to (usually small-scale) energy installations is subject to extensive guidance by the Scottish government, as well as call-in or appeal powers for the Scottish Ministers in particular cases.

3.8. *Legal powers and political reality go hand in hand*

Even in the absence of political veto, policymakers may try to exercise power to address the limits to competence or other resources. This may include the ability of government to steer relevant actors through the creation of policy networks or the provision of advice or assistance, or to exercise policy influence even where decision-making power lies elsewhere, gaining first mover advantage. For instance, the status of the UK as a pioneer in the creation of liberalised energy markets and independent regulatory agencies has given it an influence in decision-making in relation to the internal energy market far outstripping its formal power as one of 28 EU Member States.

Alternatively, a policymaker may be able to over-reach its formal decision-making competences in circumstances where others have weak incentives to contest its actions. The offering of grants or other financial incentives (where this has no clear distorting effects on a market and therefore does not raise state aid issues) is one example – something that the Scottish Government has done extensively in relation to renewable energy, especially at the community scale or to incentivise technological innovation. Another example is where one

decision-maker may rely on another to fulfil its own responsibilities. The UK government has largely acquiesced in the Scottish Government's carving out of a larger policy role in relation to renewable energy than its legal capacity would indicate because this has been helpful to it in fulfilling its own (demanding) obligations to increase UK renewable energy consumption under the 2009 Renewable Energy Directive (Directive 2009/28/EC, OJ L 140/16).

Conversely, de facto decision-making power may be less than de jure competence where a particular decision-maker has weak resources (such as financial or policy capacity). This may turn it from a policy-maker to a policy-taker, constrained to accept the decisions of more powerful or better-resourced agencies. Such constraints are magnified by a wider range of constraints on central government capacity, including dependence on industry players, interest groups or political constituencies, or opposition by independent regulators or advisory bodies. In these circumstances, a policymaker may acquiesce in the de facto transfer of decision-making power to another organisation to overcome its own constraints, or play up the legal constraints imposed upon it (e.g. by EU law or UK statute) to justify unpopular decisions.

Overall, there are many reasons to suggest that the law in the books differs from policy in practice, and their combination reminds us to analyse who is actually, rather than simply formally, responsible.

3.9. The law is one of many contributors to multi-level energy policy

These problems of unclear and variable responsibilities grow when we try to identify how actors interact to produce what commentators call 'policy' only for the sake of simplicity (Colebatch, 2006). 'Policy' can range from statements of intent to actual decisions and their final (intended and unintended) outcomes, and include what governments choose not to do (Cairney, 2012a). In some cases, policy is the product of many decisions by many actors in different venues. We can track it primarily with reference to key categories, such as the types of 'tools' available to each government, or the policy 'instruments' they select. For example, Hood and Margetts (2007) describe four categories of tools:

1. Nodality describes being at the centre of the information network that underpins policy.
2. Authority refers to the power of policymakers provided by the constitution or country's laws.
3. Treasure describes the money available to support their policy decisions.
4. Organisation describes the resources – such as staff, buildings, and technology – at their disposal (and the capacity and willingness to use it for specific purposes).

Policy scholars also focus on key differences between areas such as regulation, exhortation, the direct provision of services, and tax and spending measures (Bardach, 2009; Birkland, 2005; Howlett et al., 2009; John, 2012; Lowi, 1988; McCool, 1995; Sabatier and Jenkins-Smith, 1993). Examples of specific instruments include:

- Public expenditure. How to tax, on which policy areas to spend, and the balance between current and capital spending.
- Economic penalties, such as taxation on products, or charges to use services.
- Direct economic incentives, such as subsidies or tax expenditure.
- 'Nudges' towards behavioural change.
- Linking government benefits to behaviour or a means test.
- The use of formal regulations or legislation and legal penalties to control behaviour.
- Voluntary regulations, agreed between governments and actors such as unions and business.
- Public education and advertising to highlight the risks or benefits to behaviour.

- Providing services and resources to help change behaviour.
- Funding scientific research or advisory committee work.
- Organizational change, such as the establishment of a new unit within a government department or a reform of local government structures.
- Providing services directly, via non-governmental organizations, or through networks and quasi-markets.

In multi-level systems, we can measure policy change with reference to separate responsibilities and the sum total of their individual contributions of policy instruments. However, this is difficult because 'energy policy' is such an amorphous term (particularly when we include non-energy policies with an impact on energy demand and supply - Cox et al., 2016), and separate governments are often defining policy problems in different ways and producing new instruments with little reference to other levels and types of government.

Further, studies of politics and policymaking also need to account for some form of coordinated action, such as in the development of a common regulatory framework and maintenance of a forum for interaction between key actors, including the measures associated with intergovernmental relations (IGR). For present purposes, the latter is particularly important because IGR in the UK is relatively informal compared to federal systems in which there is a more routine role for legal resolution (McEwen et al., 2012).

Energy policy IGR in the UK has been broadly cooperative, informal and mainly conducted through officials. Energy has rarely been the focus of discussions within formal intergovernmental forums like the Joint Ministerial Committees, except in its European format when discussed as an agenda item of upcoming European Council meetings. The Scottish and UK Governments jointly lead the energy work stream within the British-Irish Council, an intergovernmental forum involving the UK and devolved governments, alongside the Irish government and the Crown dependencies, but this is a forum for sharing ideas, objectives and progress, not for co-decision. Intergovernmental relations tend to be most intense when they revolve around financial policy instruments, and the Scottish and UK governments were involved in a long-running dispute about how to allocate revenues collected from the Fossil Fuel Levy in Scotland. Deft diplomacy between officials eventually resolved that dispute, releasing funds for renewables and green investment in Scotland. On day-to-day energy matters, policy officials in the Scottish Government and in Whitehall have developed positive relations, despite the party political differences in government composition and some divergent policy preferences.

Intergovernmental cooperation is facilitated by mutual dependence. For example, the Scottish Government's renewables ambitions support the UK's EU obligations, but are dependent upon a benevolent UK regulatory framework that incentivises renewables. Tensions have emerged in relation to areas regarded as frustrating Scottish energy ambitions and over which they have no formal control (for example, the transmission charging regime).

The fact that governments are not the only actors within the policymaking system may also facilitate cooperative working. This has been most evident - and most coordinated - in relation to the Scottish islands, where renewables potential is often frustrated by infrastructure challenges, grid capacity and connection charges. The Scottish Islands Renewables Delivery Forum brought together the UK and Scottish governments, the three island authorities, SSE, National Grid and Ofgem, Highlands and Islands Enterprise, developers and community representatives, while governments at every level engaged in sustained cooperation (and lobbying by sub-state governments) to secure the European Commission's consent for a state aid exemption for Remote Island Wind.

By encouraging *and* potentially frustrating policy ambition, EU regulatory frameworks can incentivise intergovernmental cooperation. The extent to which Brexit will alter such incentives will depend on the nature of the UK-EU relationship, and the extent to which it implies

continued regulatory compliance. In exploring the impact of Brexit on those areas where EU law related to energy has hitherto intersected with devolved competence - including energy performance of buildings (Directive 2010/31/EU, OJ L 153/13; 2018/844/EU OJ L 156/75), renewable energy (Directive 2009/28/EU, OJ L 140/16; 2018/2001/EU, OJ L 328/82), combined heat and power and energy efficiency (Directive 2012/27/EU, OJ L 315/1; 2018/2002/EU, OJ L 328/210) - the UK and devolved governments agreed to proceed without a common UK regulatory framework, paving the way for further policy divergence after Brexit.

4. Approach three: analysing energy policymaking in a complex system

These problems of clarity reach their peak when we identify and conceptualise an energy policy process or policymaking environment. To do so, policy scholars generally draw on particular policy theories to identify key venues, such as ‘subsystems’ within political systems, and specific collections of actors, such as ‘advocacy coalitions’, operating within them. Further, each theory seeks to conceptualise five key factors or concepts to identify the constituent parts of policymaking environments (Heikkilä and Cairney, 2017; Cairney and Weible, 2017; Cairney, 2016; John, 2003):

1. *Actors.* There are many actors – policymakers and influencers - operating in many ‘venues’ (arenas in which authoritative decisions are made) across many levels and types of government.
2. *Institutions.* Each venue has developed its own rules, from the formal rules which are often written down and well understood, to the informal rules which are often not well known and communicated in ways that are difficult to identify from the outside.
3. *Networks.* Such rules can relate to the ways in which policymakers interact with other actors, based for example on levels of trust built through regular contact and exchanges of information.
4. *Ideas.* One way of thinking about the world, or a policy problem, can be taken for granted or dominate discussion. Such dominance – described with reference to terms such as paradigms, hegemony, or core beliefs – provides the context for discussion of potential policy solutions.
5. *Context and events.* Policymakers face socioeconomic conditions and events over which they have limited control, but can interpret and respond to them in different ways.

Complexity theory is particularly relevant, because it provides an interdisciplinary way to describe such dynamics within policymaking environments (Cairney, 2012b). Key elements of a complex system include:

1. A complex system is greater than the sum of its parts; those parts are interdependent; elements interact with each other, share information and combine to produce systemic behaviour.
2. Some attempts to influence complex systems are dampened (negative feedback), and others are amplified (positive feedback). Small actions can have large effects and large actions small effects.
3. Systems are sensitive to initial conditions that produce long-term momentum or ‘path dependence’.
4. They exhibit ‘emergence’, or behaviour that results from the interaction between elements at a local level.
5. They contain ‘strange attractors’ or demonstrate extended regularities of behaviour which may be interrupted by short bursts of change (Geyer and Cairney, 2015; Cairney, 2012b; Geyer and Rihani, 2010: 12; Mitchell, 2009; Mitleton-Kelly, 2003: 26; 35–6; Sanderson, 2006: 117; Room, 2011: 6–7; Klijn, 2008: 314).

When applied to policymaking, this approach suggests that we focus less on the role of individuals and more on the ways in which they

interact to produce system-wide behaviour. At this system level, we can identify the limited extent to which any central government can control the policy process and its outcomes (Cairney, 2012b). For example, positive and negative feedback can be linked to ‘disproportionate information processing’, in which policymakers can receive the same amount of information over time, but ignore it for long periods (negative feedback) before paying disproportionate attention (positive feedback) (Jones and Baumgartner, 2005; Baumgartner and Jones, 2009; Baumgartner et al., 2014). This dynamic highlights key limits to the controlling capacity of the state given the tendency of policymakers to have to pay attention to a small proportion of their responsibilities in a sequential manner (Cairney et al., 2019). Major and sudden change is possible, but so too are long periods of unchanging behaviour.

Or, the same governmental intervention can have a minimal or maximal effect, depending on how it is dampened or magnified within a complex system. Indeed, complex systems often seem to have ‘self-organising capacities’, which suggests that ‘law-like behaviour is difficult to identify ... A policy that was successful in one context may not have the same effect in another’ (Cairney, 2012b: 349). Systems exhibit path dependence, or the tendency for events and decisions made in the past to contribute to the formation of institutions that influence current practices (Pierson, 2000; Mettler and SoRelle, 2018). This wider context is a ‘fitness landscape’ that only some actors can understand and respond to effectively, and over which policymakers have limited control (Room, 2011, 2016).

Further, interdisciplinary studies of complex systems focus particularly on ‘emergence’. When applied to policymaking, a key assumption is that policy outcomes ‘emerge’ from the interactions between many actors, based on the rules communicated locally, often with limited reference to the ‘centre’. Indeed, this idea resonates with the literature on policy implementation and governance, in which local actors are unable or unwilling to deliver all central government aims, and central governments can only oversee the implementation of some (Lipsky, 1980; Hjern and Porter, 1981; Bevir and Rhodes, 2003: 6).

4.1. A complex energy policymaking system or complex energy system?

Overall, the story generally told by complexity theorists is of a system with many actors, interacting with each other in different parts of a system which are not easily subject to central control, reproducing rules which produce long periods of policymaking regularity, and communicating rules prompting emergent and often unpredictable behaviour with profound consequences. Governments would struggle to understand far less control such a system, and the law in the books makes an important but highly unclear contribution.

This focus on complex policymaking systems is useful, but incomplete until it fosters further interdisciplinary dialogue about the application of complexity thinking to energy. When energy scholars take a ‘whole systems’ approach, their research relates generally to ‘socio-technical systems’ in which the main relationship is between (a) technology/infrastructure, and (b) social and industry behaviour. There is much attention to the concept of ‘sustainability transitions research’ (Köhler et al., 2019), but only infrequent attempts to explore the role of government and policymaking in the transition to a low carbon energy system (Chilvers et al., 2017; Markard et al., 2016). Understanding the connection between complex systems and whole systems thinking is vital to interdisciplinary research, but that agenda has only just begun.

5. Conclusion and policy implications: the law will influence key issues in energy supply and demand, but how?

Our study of energy law and policy shows how to communicate disciplinary insights to an interdisciplinary audience. It also presents a dilemma for that audience, since it is relatively simple to pick up and use a description of the division of responsibilities between different governments, but in the knowledge that it will tell us comparatively

little about policy responsibilities in practice. Further, although one could stop at the next level, to investigate the ways in which governments make policy individually and in cooperation with each other, it would be difficult to do so, because such a large part of the interdisciplinary study of energy is devoted to thinking about how everything connects in a system. To make a difference to interdisciplinary energy studies, we need to compare the ways in which each discipline describes complexity and whole systems approaches.

Energy law scholarship has begun to draw upon interdisciplinary insights to understand the complex aims of energy law, the multiple sites in which energy law is produced, and the contextually-specific conditions under which energy law interventions are likely to be effective. For instance, [Heffron and Talus \(2016\)](#) acknowledge the complexities arising from the interaction of different energy sources, the intertwining of the energy sector and the wider economy, the patchwork of legal rules and concepts brought to bear upon energy regulation, the interaction of international, national and local decision-makers, and the various influences operating upon them, as well as from the multiple goals of energy policy (the ‘energy trilemma’). Such analysis underlines the importance of interdisciplinary collaboration to understand how policy actors draw upon their legal resources to produce successful interventions in the energy system.

Some concluding examples help identify the high stakes when we shift from conceptual discussion to empirical analysis of specific case studies and events. For example, any focus on energy demand needs to account for the millions of actors who, in the context of household energy use, also constitute the electorate. There are political tensions in making policies to reduce demand where this involves cost and inconvenience for private actors who do not necessarily value the societal returns achieved, and the political dynamics often differ from policy to regulate industrial demand. There are tensions around public perceptions of whose responsibility it is to take action – including local, devolved, national, or international government agencies – and governments can look like they are trying to shift responsibility to each other or individuals and firms if they insist upon the limits of their legal competence. There are multiple ways in which energy demand could be regulated or influenced – including energy labelling and product/building standards, emissions reduction measures, promotion of efficient generation, and buildings performance measures – but it is an area of policy that is notoriously diffuse and lacking in co-ordination. In that context, simply mapping the respective responsibilities on the page will not help us understand energy demand in practice.

Further, a focus on Brexit in relation to energy supply highlights a future that remains difficult to predict, but the resolution of this difficulty relates greatly to reducing uncertainty about how multi-level policymaking is operating now. Greater certainty about current levels of Europeanisation of energy policy would help us gauge the effects of Brexit. For example, the promotion of the internal energy market has resulted in a significant degree of harmonisation of regulatory rules and structures in gas and electricity, as well as an increasing degree of physical integration between UK and other European energy systems. It is also significant, though more self-contained, in relation to nuclear energy, via Euratom, and renewable energy sources. It is least important in relation to fossil fuels, where there is limited direct EU regulation other than in relation to security of supply, and where other international legal instruments will remain a more significant constraint on domestic policymaking.

This varying impact of Brexit will be amplified by different levels of UK and EU cooperation, from the UK’s notification of withdrawal from Euratom but desire to continue to co-operate in relation to nuclear safety and non-proliferation, to trade electricity and gas over interconnectors, and to link new UK carbon pricing mechanisms with the EU Emissions Trading Scheme (see [Department for Exiting the European Union, 2018](#): Title XI). On the other hand, in practice, there is a high degree of coincidence between UK and EU energy policy driven by the UK’s key role in policy development, which suggests that Brexit itself -

understood as a set of formal constitutional and legal changes - is unlikely to lead to a major shift in UK energy policy goals. Nevertheless, if we understand Brexit in broader terms as a disruption to the expectations and assumptions that have driven and constrained the development of energy policy, then the potential for policy change is both greater and harder to predict.

One important way in which Brexit unsettles expectations relates to the internal UK distribution of policymaking competences relevant to the energy sector, and how decision-making powers being ‘repatriated’ from the EU level will be allocated as between the UK and devolved levels. For example, since environmental competences impinging on the energy sector are largely devolved, the Scottish Government will, *prima facie*, see an expansion in its policymaking freedom and/or greater leverage over the development of new British energy policies. However, the removal of EU law as an external constraint on the UK level will take out a key support for the Scottish Government in its promotion of a low-carbon energy system in Scotland and the expansion of renewable electricity generation. Some EU frameworks relevant to energy policymaking will also be replaced by new UK frameworks, including in relation to emissions trading and state aids (see European Union (Withdrawal) Act 2018, s 12; [Cabinet Office, 2018](#), Annex A), and policymaking in devolved areas will be more vulnerable to new trade agreements negotiated by the UK Government.

In this context, the lack of their own treaty-making competence, and the absence of a formal set of intergovernmental arrangements equivalent to those established in relation to EU policymaking, are likely to constrain the ability of future Scottish governments to develop a distinctive energy policy agenda. At the same time, the Scottish Government continues to develop a distinct approach to policymaking through initiatives such as a Just Transition Commission (JTC, of which Karen Turner is a member). The JTC focuses on ‘fairness’ and improved opportunities and wellbeing for all Scottish citizens while achieving commitments on climate neutrality set out in the Climate Change (Emissions Reduction Targets) (Scotland) Bill. Such new discussions of a ‘just transition’ raise important issues about interdisciplinary understanding ([Heffron and McCauley, 2018](#)) and new dilemmas regarding multi-level policymaking.

Finally, perhaps Brexit provides a ‘window of opportunity’ to change policy and policymaking by, for example, clarifying responsibilities and simplifying intergovernmental relationships. However, our discussion of complex systems suggests that the key causes of energy policy outcomes are not necessarily governmental. Delivery of energy (and climate) policy outcomes tend to be unusually reliant on action by business and private households. This focus reminds us to consider the wider economic and socio-technical systems in which energy policy takes place, and to accept that we are unable to predict what will ‘emerge’ from Brexit. We do not yet know what kind of energy relationship the UK will have with the EU in future, what the short- and medium-term economic impacts of Brexit will be, and how politicians and regulators, energy companies and investors, or energy users will respond to them. This underlines the importance of developing conceptual models that are simple enough to communicate but detailed enough to capture policymaking complexity.

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