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Rescaling the Governance of Renewable Energy: Lessons from the UK Devolution Experience

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ABSTRACT *Efforts to rescale governance arrangements to foster sustainable development are rarely simple in their consequences, an out-turn examined in this paper through an analysis of how the governance of renewable energy in the UK has been impacted by the devolution of power to Northern Ireland, Scotland and Wales. Theoretically, attention is given to the ways in which multiple modes of governing renewable energy, and the interactions between modes and objects of governance, together configure the scalar organization of renewable energy governance. Our findings show how the devolved governments have created new, sub-national renewable energy strategies and targets, yet their effectiveness largely depends on UK-wide systems of subsidy. Moreover, shared support for particular objects of governance—large-scale, commercial electricity generation facilities—has driven all the devolved government to centralize and expedite the issuing of consents. This leads to a wider conclusion. While the level at which environmental problems are addressed can affect how they are governed, what key actors believe about the objects of governance can mediate the effects of any rescaling processes.*

KEY WORDS: Scale, governance, renewable energy, UK, devolution

1. Introduction

A persistent theme in the analysis of environmental governance is that institutional arrangements are a poor 'fit' to the scale of the problems concerned (Benson & Jordan, 2010; Moss & Newig, 2010; Sovacool & Brown, 2009). This is often attributed to the governmental level at which problems are addressed

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('too localized', 'too centralized'), or the governance unit is criticized for not matching the spatial scale of the problem (Butler & Macey, 1996). Not surprisingly therefore, the rescaling of governance arrangements has been a key theme in environmental policy, with much faith that rescaling the locus of action—to 'communities', 'city-region', 'bio-region', 'watershed', etc.—will better serve sustainable development.

However, if calls for rescaling are common-place, the practical outcomes can be inconclusive or disappointing (Marvin & Guy, 1997), and it is a goal of this paper to help explain why this might be so. In particular, we suggest that there are often unrealistic expectations of the impacts of specific acts of rescaling because the broader governance implications are commonly overlooked. One factor is that moves to rescale governance arrangements are often partial in their effects because the promotion of sustainable development invariably affects heterogeneous actors, operating in multiple arenas (Watson, Bulkeley, & Hudson, 2008). While rescaling may appear to enhance the agency of actors operating at the new scale, other actors and their agendas may be left unchanged (Degeling, 1995). Therefore, there are always questions of whether rescaling improves the alignment of actions across these multiple arenas (Sovacool & Brown, 2009). A second and related issue is whether rescaling affects the conceptions of sustainable development around which any new alignment might take place (Cowell & Owens, 1998).

Questions about rescaling in environmental governance have typically been asked of environmental resource management, including water (Moss & Newig, 2010), hazards (such as coastal flooding, May et al., 1996) or waste management (Bulkeley, Watson, & Hudson, 2007; Bulkeley, Watson, Hudson, & Weaver, 2005; Watson et al., 2008; Wilson, McDougall, & Willmore, 2001), but rarely for a key domain for promoting sustainability: renewable energy. Renewable energy (wind, hydro, solar, wave/tidal and biofuels) is widely seen as central to sustainable development, especially for mitigating climate change (Inter-Governmental Panel on Climate Change, 2014). Yet in scalar terms, research to date on transitions to more sustainable forms of energy has exhibited a strong methodological nationalism (Späth & Rohracher, 2014), with relatively little attention to how systems of energy provision unfold across multiple governance levels and how this in turn affects the scope for change (Bridge, Bouzarovski, Bradshaw, & Eyre, 2013, Coenen, Benneworth, & Truffer, 2012, p. 969). This is an important deficit, as promoting renewable energy is a complex governance challenge, requiring an alignment of actions—regulatory, market and social—with different socio-spatial dynamics (Wüstenhagen, Wolsink, & Bürer, 2007).

Our specific focus here is the intersections between the governance of renewable energy and processes of devolution within the UK initiated in 1998. Devolution is an insightful but unusual context in which to examine the governance effects of rescaling. It is certainly significant within the UK, as elected governments at sub-national[1] level for Northern Ireland, Scotland and Wales acquired competencies previously exercised by central government. What makes it analytically unusual is that devolution was never an attempt to create a better institutional 'fit' (Moss & Newig, 2010) for the governance of energy[2] in order to address key policy objectives such as the (then) emergent issues of decarbonization or energy security. British devolution thus exemplifies an important reality of environmental governance, in that the pursuit of functionally preferable scalar arrangements for addressing environmental problems unfolds alongside constant spatial churning in governance arrangements (levels and boundaries)

driven by other political and economic agendas, in which environment is a subsidiary concern (Cowell & Owens, 2006). Moreover, sub-national government remains an under-researched sphere for analysing the pursuit of sustainability (Van den Brande, Bruyninckx, Happaerts, 2012).

Our core questions are as follows. How far has devolution facilitated a rescaling of governance arrangements for renewable energy in the UK and what have been the consequences, both for the ways in which renewable energy is governed and for the patterns of renewable energy delivered? We make our task more tractable by focusing on renewably generated *electricity* rather than heat or transport fuels and we also focus on capacity from larger-scale generating facilities rather than 'micro-renewables'. We acknowledge that this gives a partial window on the scalar governance challenges of promoting renewable energy but our aim is to understand how rescaling has affected the provision of *actual* renewable energy in the period 1998–2013, during which time new large-scale electricity generation capacity has predominated. Because of the analytical emphasis on actual renewable energy capacity being installed, onshore wind often features prominently in our account. This is because onshore wind was the fastest growing but most controversial technology during this period, which often therefore had greatest influence on the governance changes we observed.

To understand the governing processes at work and their intersection with rescaling, we utilize two sets of concepts. From Jessop (1997a, 1997b, 2005), we take the observation that modes of governance are fundamentally bound up with particular 'objects' and that this relationship shapes how states seek to orchestrate development across their territory. From Bulkeley et al. (2005, 2007; Watson et al., 2008), we take seriously the need to follow the multiple modes of governing at play within a given policy area because—as noted above—not all of the modes may rescale in concert as the level of governance activity seems to shift, with sometimes awkward and contradictory effects. These perspectives inform our definitions of 'scale'. When talking of devolution rescaling the governance of renewable energy, scale refers primarily to the 'levels' of government and the distribution of powers between them (Moss & Newig 2010). So, in our analysis we pay close attention to the rescaling of powers between the UK government and the devolved governments, but also the degree of centralization or decentralization within the devolved areas. Inevitably, though, devolving (or centralizing) powers also affects scale in the sense of the territorial reach of institutional arrangements, i.e. whether certain powers apply across the UK or purely within the devolved areas. In line with Jessop's observations, we are also attentive to the physical scaling of the objects being governed, their material size and areal extent, as this can have consequences for the scalar structure of governance (see discussion in Bridge et al., 2013).

The paper first describes our conceptual stance in more detail, then sketches how devolution within the British state redistributed formal energy-related powers. We then outline the research methodology. In presenting our findings, we trace the intersections between devolution and three modes of governing renewable energy: targets, market support and land-use planning/project consenting. This reveals more clearly how far and why the different devolved governments have been able to shape renewable energy within their territories, but also how the objects of governance have influenced governance changes at all levels. The final, concluding section considers the wider implications for sustainability and governance rescaling.

2.   Conceptual and Institutional Context

2.1.   *Understanding Scalar Issues in Governance*

A key challenge for interpreting the effects of governance rescaling is deciphering its effects from within the often fragmented institutional settings in which it takes place, and thereby understanding how, where and to what extent power is being redistributed. To address this, we draw on two conceptual perspectives.

Our first uses Jessop's strategic-relational approach to space and state power and his observation that there are mutually constituting relationships between 'modes of governance' (the processes by which governance takes place) and the 'objects of governance' (those entities or goals which are the subject of governance) (Jessop, 1997a, 1997b, 2003, 2005). For Jessop (1997a, p. 105), it is difficult to theorize about tendencies in governance since there is no governance 'in general'; there are only 'definite objects of governance that are shaped in and through definite modes of governance'. One inference from this is that the state—seeking functional improvements or political advantage—may take different views of the modes of governance that are appropriate for different objects. For some, the state may be prepared to allow diversity and divergence across its territory (innovation or local adaptation) but for others may attempt to align the actors that shape activity in that area (Cowell & Murdoch, 1999). In such situations, state activity may take the form of a 'dominant strategic line' in which national objectives are translated into effective sub-national and local action through institutional arrangements that 'allocate specific roles and complementary competences across different spatial scales' (Jessop, 1997b, p. 13).

Jessop's perspective helps us to understand how particular sectors are governed and explore the implications of rescaling governance arrangements. As Degeling (1995) points out, the effects of any efforts to re-focus governance activity at a different level are likely to be limited unless they also alter the institutional biases held in place by sectors, constituted by particular discourses of expertise, policy territories and patterns of resource allocation and commitment. One can see how the operation of dominant strategic lines within particular sectors may run up against efforts to reformulate certain objects, through the rescaling of governance, to better integrate them with other goals, in particular territorial arenas (Degeling, 1995; Murdoch & Marsden, 1995).

Previous studies of the energy sector illustrate the potential for modes and objects of governance to be mutually configuring. Lovins (1977) famously counterposed 'soft energy paths' (i.e. diverse, small-scale, renewable energy technologies which can be governed in a decentralized way with high levels of citizen engagement) with 'hard energy paths' dominated by the constant expansion of supply through large, technologically complex facilities, which entail high levels of corporate and bureaucratic control and marginalize citizens. Obviously, one should beware of the risk of deterministic explanations (Martin, 1978), but various empirically informed analyses have traced connections between governance modes and objects. Research has shown how the particular risks associated with nuclear energy give it a proclivity towards centralized control and secrecy (Blowers & Pepper, 1987), as indeed do energy mega-projects generally (see Sovacool & Cooper, 2013). Szarka (2007) examined the inter-relations between social and technological dimensions of governance choices for wind power in Europe. He noted how provision in some countries was incorporated within a 'bulk power' energy pathway (2007, p. 6), based on large, industrial-scale facilities,

delivered through an 'international utility' mode of development (2007, p. 183) in which multi-national firms controlled much development, thus limiting the scope for citizen engagement.

Bulkeley et al. (2005, 2007; Watson et al., 2008) share Jessop's concern with the mutually shaping effects of modes and objects of governance, but argue that his account is overly state-centred, underplaying 'the multiple sites through which state power is exercised' and 'the relationship between developments at multiple spatial scales' (2007, p. 2736). Bulkeley et al. argue that a more effective grasp of the relationship between the distribution of authority and the institutional arrangements of governing is achieved by tracing the 'means through which governing power is exercised and orchestrated in particular contexts' (Bulkeley et al., 2005, pp. 16–17). To do this, they develop an analytical framework that stresses the multiple 'modes of governing' through which policy is constructed and [potentially] contested (2005, p. 2). Multiple modes may be operating simultaneously within a sector. Each is constituted by particular goals, rationalities, instruments (regulation, markets and benchmarking) and infrastructure, and shapes the 'social, political and material relations' at work (Bulkeley et al., 2005, p. 2).[3]

Attention to multiple modes of governing at work might better capture the fragmented, multi-layered institutional landscape in which moves to rescale governance systems unfold. States may seek to construct a dominant strategic line through some modes of governance, around certain objects but not for others, and the multi-centred nature of governance can be complicit in these effects (Bulkeley et al., 2007). Equally, the power *in actu* (Latour, 1986) of different modes is revealed by the extent to which they encounter resistance as they move between levels, or unfold across territory.

To summarize our position, we argue that the scope for any rescaling to affect the governance of a sphere of activity—perhaps to achieve a more effective 'meshing' of arrangements for a given territory—is shaped by the scalar structures of the multiple modes of governing at work and their inter-relations with particular objects. This draws attention to how different modes orchestrate change across space, either allowing local deviation or seeking to assert control over different arenas. The scale and reach of the modes of governance we observe, and their meshing, could also be viewed as constituted by networks of actors, with policy networks analysis providing an alternative theoretical framework (see Marsh & Rhodes, 1992; Toke, 2010). However, as we show in discussing the findings below, the relationship between modes and objects of governance—the particular material-institutional forms of renewable energy coming forward—can shape network formation, and why it is that certain network configurations come to matter.

These issues are well illustrated by devolution within the UK—being both an output of scalar politics and also a rescaled institutional setting for the struggle to construct effective governance arrangements for renewable energy.

2.2.   *Devolution and Renewable Energy*

The inception of new elected assemblies and governments for Northern Ireland, Scotland and Wales in 1998 was a significant response to the long-running challenge of managing the union that constitutes the UK (Bradbury & Mawson, 1997). The prime motives were political: to give greater democratic representation

to important territorial identities within the UK. Although this period coincided with high-level political attention to sustainable development, energy issues were marginal to devolution debates (except for the Scottish National Party (SNP), see below). Nevertheless, the arrangements for governing energy were still impacted by devolution.

Prior to devolution, the UK Government operated decentralized administrative functions in the three countries, each overseen by their respective minister.[4] Thus, the main allocative principle of devolution was to transfer already decentralized competencies into the hands of the newly created elected governments: the Northern Ireland Executive, Scottish Government and Welsh Government. As a result, the devolved governments tended to inherit as many (or as few) energy-related powers as were exercised by their preceding minister. Such path dependencies produced a rescaling exercise that was asymmetric (varying between the devolved governments: Bogdanor, 1999) and partial.

The partiality reflects the fact that key modes of governing electricity provision have long placed the UK Government ('Westminster'[5]) and its agencies at the centre, with sub-national government playing a smaller role than in many parts of Europe or North America. Devolution did not affect the fact that, formally, central government retained overall responsibility for key energy policy agendas: security of supply, competitiveness/liberalization and the main policy mechanisms by which these are delivered (see below). The Department of Energy and Climate Change (DECC) is the main Westminster ministry with energy responsibilities, but the Treasury is also a very powerful actor, especially for its role in limiting the budget available for market support for renewable and other low-carbon energies. Detailed regulation of electricity markets is undertaken by arms-length bodies, such as the Office for Gas and Electricity Markets (Ofgem), which operates under guidelines and legislation set in Westminster, and the National Grid, which has the role of balancing the transmission system across England, Scotland and Wales. Northern Ireland has a full range of energy competencies, apart from those governing nuclear (of which it has none), and therefore its governance institutions sit outside these arrangements. UK energy policy is also shaped by policy developments at wider scales, notably European Union (EU) agendas of liberalization, market integration and decarbonization. Westminster retains lead responsibility for ensuring national compliance with these.

The effects of devolution are summarized in Table 1, which shows the asymmetric nature of the settlement, the reach of any dominant strategic lines emanating from Westminster and the modes of governing to which they particularly apply. All devolved governments acquired control over discretionary economic spending, available *inter alia* for renewable energy projects, and powers over land-use planning. These are the main electricity-related powers of the Welsh Government, although its planning powers are more limited than the other jurisdictions. The Scottish Government has more powers: to issue consent for major grid lines and generating stations (50 MW or over), and some operational control over systems of market support for renewable energy. As noted above, energy is fully devolved to the Northern Ireland Executive, including regulation of its grid network.

Focussing on these formal powers suggests that devolution marks a modest rescaling of energy governance in the UK, but has impacted unevenly across multiple modes of governing. For renewable energy outcomes, much depends on how the various modes are exercised across and within the new governmental arenas,

Table 1. Devolution of energy-related powers in the UK

Country	Energy policy is …	Provision of market support for renewable energy	Planning and consents (onshore)	Planning and consents[a] (offshore)	Economic development spending
Northern Ireland	Fully devolved	Fully devolved	Fully devolved	Fully devolved	Fully devolved
Scotland	Executively devolved	Scope to shape delivery of some schemes	Fully devolved	Fully devolved	Fully devolved
Wales	Not devolved	No powers	Partial powers over planning policy and consent for smaller schemes (below 50MW)	Power to determine applications up to 1MW (exception under Transport and Works Act 1992)	Fully devolved
UK & England	Full competence	Full competence	Full policy competence for England, partial for Wales; full competence over major projects (50 MW plus)	Full competence for English and Welsh Waters (subject to Welsh exceptions, above)	Fully devolved

[a]We set aside the issue of marine licensing powers, and consenting for onshore connections, for simplicity. The offshore regime applies principally to applications in UK territorial waters (i.e. up to 12 nautical miles and designated renewable energy zones).

and whether dominant strategic lines emerge to align the actors involved. These are issues addressed below, where we assess the effects of devolution on three modes of governing renewable energy; targets and strategy-making, market support and planning/consenting.

2.3. *The Research*

Most of the data used in this analysis were collected during 2011/2012, utilizing a comparative case study design encompassing Northern Ireland, Scotland, Wales and England/UK. The prime goal was to understand governance processes at work by tracing the emergence and utilization of powers to steer renewable energy development at the devolved government level, the intersections between actions by devolved government and those 'above' (UK, EU) and 'below' (in local government), and the effects on renewable energy development. We were keen to understand where actors felt compelled to tie in with Westminster arrangements, where deviation was possible and/or desirable, and how that was rationalized.

The main data sources were: 80 semi-structured interviews with senior figures in government (officials and ministers, working at all levels of government), business (energy developers, grid companies, trade associations) and

environmental bodies (governmental and non-governmental); analysis of govern-ment documents; correspondence and parliamentary debates; and published energy statistics. We have treated interviewees anonymously in this research.[6]

3.   Modes of Governing Renewable Energy

3.1.   *Governance by Targets?*

An emphasis on formal 'energy policy' might lead to the conclusion that renew-able energy governance in the UK is directed by a dominant strategic line cascad-ing, top-down, from EU commitments. The UK was set targets under the EU Renewable Energy Directive (2009/28/EC) to meet 15% of energy consumption from renewable sources by 2020; a target calculated to entail that 30% of *electricity* comes from renewables (HM Government, 2009). UK government Ministers placed Europe in a nodal position:

> Tony Blair[7] took (a decision) at an EU summit to sign up to the legally binding renewable energy targets for 2020 and that determines everything else really. And so this is actually one of those areas where the overall objective of policy is effectively in Government, a given. (EngGOV8)

One would appear to have ingredients for a governmentality of targets for renewable energy, paralleling modes of carbon governance deemed to be pulling the decision-making calculus of governmental actors at all levels into cen-tralized accounting arrangements (Eadham, 2012; Hodson & Marvin, 2013). What the experience of renewable energy shows, however, is that one should not leap to assume that the existence of machineries of measurement means tight regulatory direction (Bulkeley et al., 2005, 2007).

Although 'energy policy' is not formally devolved to all sub-national govern-ments, each has produced energy strategies, including setting their own renew-able energy targets.[8] Although non-statutory in themselves, the devolved governments have used these numbers to forge internal, institutional coherence around renewable energy delivery within their territory (ScotGov2). In Northern Ireland, the targets have provided *the* key rationality for cross-departmental working in an Executive where political power-sharing structures tend to hamper more integrated approaches. In each government, targets have been used to construct dominant strategic lines to align the decisions of other actors, most notably in planning (see below). The strategies produced by the devolved governments all acknowledge targets set at UK and EU levels, but target settings reflect mainly 'domestic' processes: political agenda setting, along with assess-ments of the renewable energy resources available within each territory and projects in the pipeline. Indeed in the case of Northern Ireland, as it shares an elec-tricity market with the Republic of Ireland, its targets tend to follow those adopted by the Dublin government.

Significantly, we found no evidence that these processes of target setting had been directed in any way by Westminster, which had certainly not compelled the devolved governments to deliver any specific share of the national commitments. The leaders of the devolved governments were co-signatories to the *UK Renewable Energy Roadmap* for meeting EU targets, which incorporated the actions of the devolved governments (DECC, 2011a) and adopted a language of 'our shared approach' (DECC, 2011a, p. 3). This flexible relationship is revealing of the

modes and objects of governance at play. One explanation is that central government officers regarded the targets of the devolved governments as more 'aspirational' (EngGOV6) and politically driven ('an ambition more than say a target', EngGOV5) and by inference less meaningful or rigorous than the strategies Westminster produced. Westminster's accommodating attitude is also facilitated by the fact that all three devolved governments have set targets for renewable energy that exceed the UK requirement (see Table 2),[9] motivated by the desire to demonstrate leadership (especially in Scotland) and capture investment in a sector seen as offering 'green growth'. These ambitious, expansionist agendas obviated any incentive on Westminster to impose a dominant strategic line on the devolved governments.

There is an important further point: the very scale of the targets helps to constitute the objects to be governed. The ambitions of Welsh and Scottish Governments to generate more renewable energy than is required to meet domestic demand (i.e., for 'export') inevitably require significant investment in large-scale generation projects, coupled with major grid reinforcement. Since 1998, renewable energy expansion in the devolved areas has occurred mainly through large-scale onshore wind[10] which, given its potential for landscape impacts and public opposition (Wüstenhagen et al., 2007), places a premium on the capacities of states to render land available for development and manage social responses (see discussion in Wolsink, 2004). This in turn has implications for other modes of governing, particularly planning as we discuss further on.

Of course, targets do not describe 'reality' (Eadham, 2012) but their achievement, or failure to achieve them, can affect the credibility of the government that institutes them. By 2013, the share of electricity generated by renewables in the UK had reached 15% (DECC, 2014). Figure 1 shows the volumes of renewable energy capacity installed in each part of the UK, and Table 3, below, a breakdown by technology. Scotland has seen significant renewable energy growth, enabling the Scot-

Table 2. Renewable energy targets and aims of the devolved governments

|	Target (at November 2014) (a)	Example of previous target (year set) (b)	Key sources
UK level	15% of energy from renewable sources by 2020	10% of electricity generated from renewables by 2010 (2000)	(a) DECC (2011a) (b) Department of Trade and Industry (2000)
Northern Ireland	40% of electricity consumption sourced from renewables by 2020	Ensuring that 12% of electricity is generated from indigenous sources by 2012 (2008)	(a) DETI (2010) (b) Nigel Dodds, Energy Minister, Northern Ireland Executive, 10 January 2008
Scotland	Matching 100% of Scottish electricity consumption with renewables by 2020	18% of electricity generated from renewable sources by 2010, rising to 40% by 2020	(a) Scottish Government (2011) (b) Scottish Executive (2003)
Wales	Meeting the equivalent of twice 2010 Welsh electricity consumption from renewables by 2025 (see note 8)	Renewable electricity production targets for Wales of 4TWh per annum for 2010 and 7TWh for 2020 (2005)	(a) WAG (2010) (b) WAG (2005)
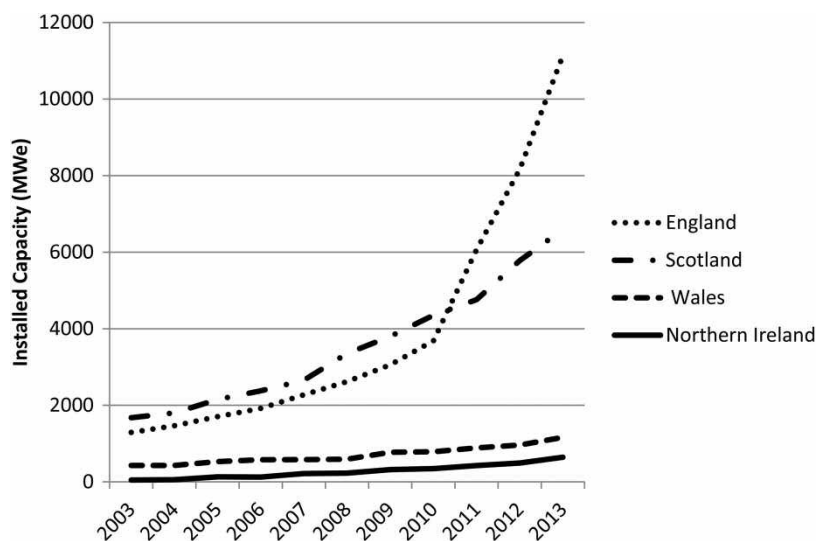
Figure 1. Installed renewable energy capacity 2003–2013 (MW). *Source*: DECC, 2014b.

Table 3. Installed capacity of renewable electricity sites, 2013

	Hydro	Wind	Wave and tidal	Landfill gas	Sewage gas	Other bioenergy	Solar PV	MWe total
England	31.7	5154.6	0.1	869.5	179.1	2565.9	2336.7	11137.7
Wales	151.3	771.0	–	45.5	13.1	38.1	143.6	1162.9
Scotland	1501.0	4701.2	5.9	114.3	5.6	143.1	119.1	6590.1
Northern Ireland	8.5	579.3	1.2	12.4	0.2	14.5	28.2	644.3
Other sites	–	2.9	–	–	–	–	*152.3*	155.2
UK total	1692.6	11209.0	7.2	1041.7	198.0	2761.9	2779.8	19690.2

Source: DECC (2014b, p. 50).

tish Government to meet a succession of its own renewable energy targets, an out-turn which has fed back into the credibility that Scottish Governments have enjoyed with DECC officials and ministers, as well as the energy industry. By contrast, Wales has seen sluggish development rates since devolution, contributing to a wider perception that Welsh Governments are 'good at setting visions … but they are not really delivering' (WalesTRA1, WalesGOV4).

3.2.   *Follow the Money*

If the production of new strategies suggests that there is an emerging territorial integration around renewable energy at devolved government level (Hodson & Marvin, 2013), other modes of governing show how national (UK) action continues to frame the effects of governance rescaling. This is apparent from systems of market support, designed to give additional incentives to renewable energy investment and which has been critical in enabling these technologies to expand and compete (Szarka, 2007). In the UK, national government retains prime responsibility for designing systems of market support, which then work

by acting on the incentive structures of potential renewable energy developers. However, simply describing market support as 'centralized' obscures the multiple practices and relations which hold it together across the UK.

The main system of market support in place since 2002 (2005 in Northern Ireland) has involved the trading of Renewables Obligation Certificates (ROCs).[11] This requires electricity suppliers to achieve increasing targets of renewable energy (the 'Obligation'). Suppliers do this by purchasing ROCs, which are issued to renewable generators in respect of production of units of electricity generated, or otherwise suffer financial penalties for every unit of energy they fall short. The penalty payments are recycled to the holders of ROCs. Because the task of funding the purchase of ROCs falls to electricity suppliers, the cost is passed on to consumers' bills. The Renewable Obligation (RO) has two key spatial dimensions. The first dimension is cross-UK integration. ROCs can be transferred between the different parts of the UK, making the RO operate effectively as a single market within the UK. The second dimension is that, in operational terms, the RO was formally broken up into separate mechanisms for England/Wales, Scotland and Northern Ireland. This gave the Scottish Government operational powers to vary the levels of ROC support for different renewable energy technologies, enjoying comparable powers in this sphere to the Northern Ireland Executive.

The governments of Scotland and Northern Ireland have exploited this flexibility. Scottish Governments led the UK in setting bands that awarded more ROCs per megawatt to wave and tidal stream power, to incentivize the extra costs of those emergent technologies in which the Scottish Government located great potential. The Northern Ireland Renewable Obligation (NIRO) has a special banding for small-scale renewables (<500 kW) and farm-scale anaerobic digestion. These actions may yet precipitate distinctive technological pathways in renewable energy development between these parts of the UK. To date, however, the vast majority of renewable energy capacity installed in Scotland and Northern Ireland has been from the well-developed technology of onshore wind, the volume of which reflects cross-UK integration of ROC markets. The cost of complying with the RO is ultimately paid for by all UK electricity consumers, 85% of which live in England, the most populous part of the UK. Thus, the devolved governments have seen rapid expansion of onshore wind within their territories because developers exploit the UK-wide pool of financial support.

The factors reinforcing the national (UK) reach of market support as a mode of governing are revealed further by the programme of Electricity Market Reform started in 2010, and the limited extent to which the devolved governments have offered resistance. Westminster began working towards replacing the RO with a new system of market support for low-carbon generation; Contracts for Difference (CfD). The creation of CfD reflected the desire to securitize investment in particular objects—large, risky low-carbon energy technologies like nuclear power—and also to reduce costs compared to the RO. On the face of it, the devolved governments had good reasons to be opposed. The new system of market support will be more centralized in its operation than the RO, as CfD will be drawn up treating the UK as a single market, thus removing what little operational control Scotland previously possessed. There is also widespread concern that the new support system favours nuclear development, and will disadvantage new renewable energy capacity (Friends of the Earth, 2014; Harvey, 2012), both antithetical to

the goals of the post-2007 Scottish Governments, led by the SNP, keen to expand renewables but opposed to nuclear new build in Scotland (SNP, 2011).

   In practice, the Scottish Government was initially critical of the reform proposals[12] but did not sustain its opposition. One factor is that, as indicated above, Scottish politicians realize that their ambitions to become a major European producer of renewable energy depends on being able to tap a UK-wide pool of market support, as CfD like the RO that preceded it is paid for by all UK electricity consumers via their bills (Toke, Sherry-Brennan, Cowell, Ellis, & Strachan, 2013). The situation for the Northern Ireland Executive is similar. In principle, it has the autonomy to design its own systems of market support but has agreed to join the CfD system while retaining the right to negotiate a different strike rate to reflect local conditions. The Welsh Government has never had powers in this sphere and has little officer capacity to engage in detailed discussions, but its main negotiating position has been to press for parity of treatment across the devolved governments to prevent Wales from 'losing out' (Welsh Assembly Government [WAG], 2012).

   By tracing the operation of systems of market support, we can see how financial dependencies serve to maintain the centralized nature of market support, even where the devolved governments might have had an interest in attuning arrangements to local conditions (and, in Northern Ireland, the powers to do so). We consider further how the particular form of financial support has, when coupled with ambitious renewable energy goals, shaped the objects of renewable energy provision. The consequences of devolution for the operation of planning are addressed next.

3.3. *Planning and Consenting*

Planning (by which we mean land-use or spatial planning) is a more visibly multi-scale process, which incorporates opportunities for publics and interest groups to engage in decision-making at a variety of levels. It is also a mode of governing in which there is more explicit attention to how renewable energy might be reconciled with other environmental, social and economic goals bound up with the use of land. Since these goals may potentially limit the realization of renewable energy ambitions (Ellis, Cowell, Warren, Strachan, & Szarka, 2009), it is within planning that dominant strategic lines are often clearest as governments act to align the decisions of developers, local planning authorities and other actors around the delivery of particular objects (Cowell & Owens, 2006; Murdoch & Marsden, 1995; Wolsink, 2004). This alignment work is particularly apparent around the most controversial objects, onshore wind and major new grid reinforcement.

   Electricity infrastructure in the UK has long been treated by the state as an object of strategic significance. From the days of nationalization through into the privatized era, consent for larger electricity-generating stations and major grid lines has been issued by central government, rather than local government as with most planning applications. Over time, this centralization has been overlain with measures to accelerate the delivery of 'nationally important infrastructure', culminating in the 2008 Planning Act and subsequent amendments (Owens & Cowell, 2010). Under these reforms, National Policy Statements were drawn up by central government to specify the 'need' for certain categories of major infrastructure, including energy. Consent processes were still to be

managed by specialized, central units but under strict time-frames, in which the need for infrastructure cannot normally be questioned as individual projects come forward. As noted above, under devolution the governments for Northern Ireland and Scotland acquired responsibility for exercising these planning powers, confining the direct reach of recent reforms to England and Wales. Yet all of the devolved governments have adjusted consenting as a mode of governance in line with discourses of streamlining delivery (Ellis, Cowell, Sherry-Brennan, Strachan, & Toke, 2013), with local conditions—especially beliefs about the likelihood of local resistance—shaping how far each government has intervened to steer project decisions.

Northern Ireland has maintained very high approval rates for renewable energy applications—often exceeding 90%. One factor is that all planning applications for renewable energy in Northern Ireland are currently determined centrally by the Department of the Environment (DoE) and not by local government. Another is that Northern Ireland sees generally low levels of political involvement in planning and few local objections compared to other parts of the UK. In this setting a positive, pro-development stance towards renewables has been achieved with planning policies (DoE, 2009) that take a more liberal criteria-based approach than seen elsewhere in the UK.

Approval rates in Scotland are second only to Northern Ireland, and one can see components of a dominant strategic line operating. The Scottish Government has drawn up National Planning Frameworks, which map the broad location of key infrastructure projects (Scottish Government, 2009), designates them as 'national developments' and sets out why they are needed. This proved helpful to the delivery of an upgraded grid line from Beauly to Denny through the heart of the Scottish Highlands, designed to allow more renewable energy to be supplied from northern sites. Although the proposal was affected by protracted conflict, its strategic endorsement by the Scottish Government (by listing it in National Planning Frameworks) helped potential investors retain confidence that it would be built. Their confidence was also helped by the fact that consents for larger projects (generating stations of 50 MW or over, major grid projects) are determined by the Scottish Government. The Scottish Governments have also been prepared to use their powers of national-to-local coordination to assist or occasionally discipline local planning authorities into taking stances that support the Scottish Government's ambitious renewable energy targets; for example local authorities contemplating restrictive planning policies for new wind farms have been politely but firmly dissuaded[13] (ScotQGO1 and ScotNGO3).

The Welsh Government has taken the most explicit steps to use planning to construct a dominant strategic line, tying renewable energy targets to particular spaces and it has done so for a particular object, onshore wind. In 2005, it instigated a national zoning framework to create a supportive policy context for large-scale wind energy development (25 MW or above), demarcating seven zones of upland Wales where there would be a presumption in favour of such developments (WAG, 2005). This strategy reflects political judgements that it would be desirable to take an 'all Wales view' of the most environmentally appropriate sites of wind power development rather than simply reacting to developers' choices, and that local planning authorities would be too sensitive to local protests without such direction (Cowell, 2007).

The zones certainly stimulated developer interest, attracting applications for more than 2000 MW of onshore wind capacity, much more than was originally envisaged, including a significant increase in the size of wind energy projects. However, this unintended co-evolution of modes of governing and objects has had problematic effects. One issue was that the resulting concentration of development and environmental impacts intensified resistance from the public, local councils and countryside protection organizations, especially to the new high voltage grid connections the wind energy investment would need. Second, this upscaling of wind farm applications means that many exceed 50 MW in capacity, for which consents are issued by Westminster not by the Welsh Government and, moreover, Westminster is not bound to determine applications in line with the spatial guidance or targets of Welsh planning policy (DECC, 2011b, para 2.2.1). This has blurred the Welsh Government's capacity to steer the development of wind farms in its territory.

Arguably it is in England that planning, as a mode of governing for renewable energy, has come under greatest pressure; especially so for onshore wind, such that the polarity of previous dominant strategic lines has started to reverse. Prior to 2010, English planning policy sought to ensure that renewable energy applications were treated positively by local planning authorities, supported—albeit rather timidly—by targets and spatial guidance (Power & Cowell, 2012).[14] However, in 2010 the election of a Conservative Party-dominated coalition government, more sceptical about renewables, enabled the localized opposition to wind farms that had grown since the 1990s to more effectively upscale its influence (Rootes, 2013) through Westminster politicians. The planning ministry responded by removing much of the strategic governance architecture created by its predecessors, and issuing instead policies that supported local councils wishing to zone for wind (Department of Communities and Local Government [DCLG], 2012), and requiring greater pre-application consultation by developers with local communities (DECC and DCLG, 2013), alongside loose but assertive talk of allowing local communities a 'veto' over onshore wind proposals in their area.[15]

Brief mention should be made of offshore wind, a growing component of renewable energy capacity in England. Although individual schemes have become controversial with the wider public, generally speaking, governance processes are dominated by organized stakeholders. DECC and the Crown Estates play pivotal roles across the UK, in organizing the licensing of areas of the sea that can be exploited (Jay, 2010). The Scottish Government is viewed favourably for constructing a simpler framework for managing project consents than other parts of the UK (EngCOM1), but consent rates generally have been high, with development costs and (cross-UK) market support rates being clearer determinants of development rates than the precise form of planning and consenting processes (Inglethorpe, 2014).

Planning reveals important but divergent developments in the governance rescaling of renewable energy, in which the objects of governance matter. For renewable energy generally, all the UK governments—national and devolved—frame the role of planning primarily as one of delivery, but distinctive modes of governing have arisen around onshore wind. Scotland and Wales have responded to the potential for opposition by reinforcing hierarchical modes of governing, to align local decision-makers with national objectives. In England, modes of governing are shifting towards a position in which locally defined environmental and

community 'capacities' to accommodate wind energy are becoming more impor- tant governance objects, to which the delivery of wind energy is subservient. As a former Minister put it, 'the public will decide what the balance is'[16] between onshore wind and other energy technologies.

4.   Discussion—the Effects of Rescaling Energy Governance?

The analysis above has traced the effects of devolution in the UK, as a particular set of rescaling processes, on the governance of renewable energy. Sensitivity to the different modes of governing at work and the variable scope they offer for flexibility has helped understand the capacity of the devolved governments to construct new arrangements to support this sector. Nevertheless, one may legiti- mately question how far outcomes can be explained by reference to governance scale without attention to the actors engaged at each government level, and how they shape policy-making processes. To explore this perspective, we reflect briefly on the policy networks surrounding renewable energy in each devolved government (Marsh & Rhodes, 1992).

   The particular experience of Scotland undoubtedly warrants closer examin- ation, as in the years following devolution it witnessed rapid expansion of renew- able energy despite possessing fewer formal powers over key modes of governing than Northern Ireland or England/Westminster. The constellation of actors around the energy sector in Scotland does show distinctively conducive qualities. Party politics is clearly a factor, in that devolution facilitated the growing power of the Scottish Nationalist Party (SNP), which has long seen the energy economy as central to Scotland's future independence, and positions renewable energy expan- sion prominently within this agenda (WalesTRA, ScotCOM1, ScotQGO1 and ScotGOV3, 4 and 6). The SNP formed a minority Scottish Government in 2007 and a majority in 2011. However, the ability of Scottish Governments to act has also been helped by the fact that renewable energy has enjoyed cross-party support across successive Scottish administrations, bolstered by the presence of major energy businesses within Scotland and the success with which Scottish Governments have brought them into the policy-making process (ScotADV1, ScotQGO1, ScotNGO3 and ScotGOV4). This sustained elite coherence around renewable energy has helped stabilize a consistently supportive policy environ- ment, to legitimize Scottish Governments in making assertive use of the powers available, and marginalize those voices critical of renewables expansion. The posi- tive renewable energy outcomes in turn gave Scottish Governments a more powerful status in UK-wide policy networks, notably with DECC in Westminster (EngCOM1, EngGOV6 and EngGOV8). One consequence of this is that Scotland secured a revised system of grid transmission charges that would cheapen the cost of 'exporting' Scottish renewables outputs to England (Toke et al., 2013).

   Devolution has not led to the formation of such cohesive policy communities around renewable energy expansion in the other devolved territories of the UK. In Northern Ireland, the prolonged negotiation of the peace settlement and the ongoing dominance of sectarian politics cast a shadow over other roles of govern- ment, including that of energy. Consequently, renewable energy has been empha- sized less by the Northern Ireland Executive, and power-sharing arrangements have created significant problems for cross-departmental working on energy issues. In Wales, onshore wind development has become the subject of party pol- itical competition and relations between Welsh Governments and the renewables

industry were weak for much of the period 1999–2011 (WalesGOV4, WalesGOV7 and WalesNGO2).

If attention to policy networks helps to enhance our understanding of how modes of governing emerge and evolve, attention to the objects of governance can explain why it is that the presence or absence of the kind of coherent policy communities seen in Scotland actually matters. By 2014, devolution had done little to challenge or displace the dominance of the bulk power/international utility model of renewable energy development in the UK (Szarka, 2007), in which most capacity is developed in large projects by major companies. Indeed, the dominance of such objects has been reinforced by three of the modes of governing that we analysed. Through their strategies and target setting, all of the devolved governments position renewable energy primarily as a major source of inward investment and—in the cases of Scotland and Wales–production for 'export', rather than a component of agendas of energy autonomy, resilience and eco-efficiency. This assumes large-scale provision of new supply. The systems of market support (first the RO, then CfD), in their complexity and emphasis on competition, favour large, incumbent businesses such as international utilities better able to raise finance and accommodate the risk, over smaller, independent operators (Lauber, 2012; Woodman & Mitchell, 2011). As noted above, the devolved governments were unable or unwilling to challenge Westminster proposals in this field.

The Achilles Heel of this form of development is social acceptability. The size of the plant, the environmental impacts and the limited extent to which they generate benefits for 'host' communities encourage the perception that projects are exploitative and undesirable, enflaming public opposition. This has been especially true of onshore wind, but public opposition has also arisen with some offshore wind projects and large field-scale solar and various biofuel schemes. Given that the devolved governments operate at a level 'closer' to the publics they serve, one might have expected them to be more sensitive (than Westminster) to public disquiet over renewable energy development (Dahl, 1994). However, as our analysis has shown, any sensitivity to public reaction has not been translated by the devolved governments into serious questioning of the objects to be governed. (The only exception to this is the long-standing opposition of the SNP to new nuclear generation in Scotland (Cairney, 2012; Hamilton, 2002).) The governance effects of this lack of questioning is most apparent in planning— the mode of governing most open to modification by the devolved governments. As we showed above, the devolved governments have given more attention to reinforcing dominant strategic lines around the delivery of large-scale energy projects within their territories[17] than to enhancing public engagement in renewable energy development.

So, it is because of the potential for social conflict created around the dominant objects of renewable energy governance that tight policy communities became important, to maintain a consistent framework for support in the face of resistance, and this a characteristic exhibited best in Scotland. Yet we can see how the efforts of the devolved governments to deliver renewable energy remain vulnerable to faltering social and political acceptability around renewable energy at England/UK level since 2010. As we noted above, England has seen mounting public disquiet over the expansion of onshore wind in rural areas. Although much opposition was expressed in the planning system, where Westminster writ applies mostly to England, opposition has crossed into other

modes of governing which operate across the UK. Political pressure accelerated moves to shift the balance of financial support from renewable towards nuclear power and from onshore to offshore wind. It also galvanized UK government opposition to the EU setting binding national renewable energy targets post-2020, in favour of broader carbon-reduction targets in which 'the market determines the energy mix'.[18] What we have seen, in effect, is the gradual erosion of renewable energy as a distinctive object of governance at Westminster level, as reflected in the recasting and dismantling of key modes of governing—targets, planning and finance. In so doing, of course, it threatens to remove key components that the devolved governments had been using to construct a dominant strategic line behind renewables within their territories. In the longer term, this may make some of their ambitious goals harder to achieve (Toke et al., 2013).

Before turning to our conclusions, we add a few modest caveats to this account. Emerging alongside the growth in large-scale renewable energy capacity, the UK has seen a proliferation of small-scale sustainable energy initiatives (Rydin, Turcu, Guy, & Austin, 2013). Westminster, Welsh and Scottish Governments have all also been interested in ensuring that communities benefit from energy investment, including promoting community ownership of renewable energy, and have developed various initiatives to do so, often with much learning between territories. Arguably Scotland has gone furthest of the UK governments by creating a target of securing 500 MW of local and community-owned renewable energy by 2020 (Scottish Government, 2011). Nevertheless, across all parts of the UK, the micro-scale, community renewable sector has been positioned mainly as an adjunct of the dominant bulk power/international utility model (Szarka, 2007). With the exception of solar photovoltaics, it has struggled to expand in the face of modes of governing attuned more closely, as noted above, to the delivery of larger-scale projects.

5.   Conclusions

Renewable energy has proven to be an insightful context for examining the effects of devolution within the British state. During the period 1998–2013, a significant amount of the renewable energy development in the UK took place in the territories of the devolved governments. Even though energy policy is not formally fully devolved in all these areas, renewables have been made the subject of a succession of strategies by the devolved governments, who have altered other governance arrangements to support the delivery of ambitious goals: in the settings of market support (Northern Ireland and Scotland) and in the orchestration of planning processes (all). The institutional changes are modest in extent; an outcome attributable in large part to obdurate features of the governing arrangements for renewable energy, which remain dominated by the actions of Westminster and its pre-devolution handling of energy in 'the regions'. In some respects interconnections between the levels has been supportive of renewable energy expansion, notably in allowing a UK-wide pool of financial support to be channelled to projects in the devolved areas, and the way that planning regimes have been tailored to different territorial circumstances. In others, as in the consequences of faltering support for onshore wind in England, the vulnerabilities built into these interconnections are also apparent.

Our analytical approach to rescaling has proven useful in tracing and explaining what has happened in the renewable energy sector. The relevance of consider-

ing multiple modes of governing is clear. For example, our analysis showed that while new strategies can form a visible product of governance activity at a newly empowered level, the ability to deliver on these strategies depends on the interplay with other, more impactive modes of governing—in this case financial support and planning. Although our analysis is retrospective, the entanglements of multiple modes of governing can also be used to interpret debates about the scope for further devolution (or decentralization) in the energy sphere, and the fragmentary, partial effects of rescaling more widely. Thus, in Scotland, both those in favour of and those against independence in the autumn 2014 referendum supported modes of governance in energy markets, transmission pricing and financial support for renewable energy that retain a high degree of integration between Scottish and UK levels (Davey, 2012; Scottish Government, 2013).

Through our theoretical approach, we have identified some relationships of wider relevance to understanding the scalar structure of environmental governance. We have shown how objects of governance can mediate the relevance of rescaling to governance outcomes—in effect, to show how and when scale matters (Moss & Newig, 2010). Renewable energy in the UK, in the period up until 2010, showed that rescaling the distribution of powers matters less where key actors at different levels share the same beliefs about future energy pathways. We observed much coherence between levels around the rolling out of large-scale renewable energy facilities, with governance variation mainly in calculations around how precisely modes of governing might reinforce delivery of such objects. One might argue that renewable energy has different qualities to other sites in which governance rescaling has been examined, in that cross-border effects are not really 'spillovers' (in the sense of pollution) but issues about how cross-boundary systems of infrastructure, markets and regulation construct the scope for intervention and agency at different levels . Yet this concern with cross-boundary infrastructural and regulatory systems is also pertinent to other governance areas, where the persistence of sectoral norms affects the capacity of newly empowered territorial scales to forge distinctive, cohesive agendas.

Jessop's concept of a dominant strategic line, constructed to align diverse actors and networks around the delivery of particular objects, has conceptual value in our analysis, but needs careful interpretation in practice. Observing the ingredients of governmentality, in the form of regimes of targets, does not always entail the exercise of disciplinary power across political levels. Yet renewables also remind us of Jessop's wider point, that all modes of governing are prone to failure, to which we would add that creating dominant strategic lines becomes most relevant where objects of governance are most contested and where governments believe that other modes of governing are unlikely to deliver important goals through this conflictual terrain without additional steering. Our observations here echo those made in other sectors (Cowell & Murdoch, 1999) and warrant further investigation.

In generalizing from our findings, we recognize the ways in which our specific research focus influenced the findings. Devolution in the UK is a very particular form of rescaling, which—to the time of writing at least[19]—represents a transfer of *who exercises* powers at a given level, for a territory, rather than necessarily a redistribution of powers to or from that level. Perhaps because of this continuity, there is a strong cultural predisposition towards pragmatic relations between the devolved governments and the centre, only rarely politicizing jurisdictional issues (Cairney, 2012). Such a setting is unlikely perhaps to see rescaling

unleash dramatic policy alternatives, at least in the short term. Coupled with this, we have focused on energy objects (large-scale electricity provision) which have perhaps the greatest path dependencies, with the requirements of grid network support, markets and finance strongly reinforcing logics of spatial integration rather than deviation. Alternative, 'softer' energy pathways (Lovins, 1977) such as the pursuit of 100% Renewable Energy Regions[20] might well put a greater premium on effective urban or regional level action (Hvelplund, Möller, & Sperling, 2013), to better knit together flows of electricity, heat and transport energy. However, rather than simply imagine how rescaled institutional arrangements might better foster more radical sustainable development pathways, it is important to understand why rescaling alone can be insufficient for dislodging dominant systems of resource provision and how core modes of governing may endure after rescaling has taken place.

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Notes

1. We refer to these territories as 'sub-national' rather than regional, to avoid confusion with international relations conventions that define 'regional' as a scale immediately above the 'national' (see Van den Brande et al., 2012).
2. This limited political attention may also reflect the fact that, following years of emphasis on liberalization and privatization within the UK electricity system, by the late 1990s there was emerging consensus between the main parties that formal, state energy policy was largely unnecessary or, at least, not a priority (Helm, 2003).
3. We make greater use of the simpler formulation of 'modes of governing' from Bulkeley et al. (2005), concerned with 'the means through which governing power is exercised', rather than the more specific way in which the conjunctions of modes and objectives is developed in Bulkeley et al. (2007). In this latter paper, in the sphere of waste, they identify four main modes: waste disposal, waste diversion, eco-efficiency and waste as a resource. Our emphasis on modes of governance *within* the sphere of renewable energy may thus owe more to the formulations of Treib et al. (2005), which equate modes with policy instruments. Such simplification suits our context, in which we are seeking to pursue a four-way comparison, but our analysis does look beyond instruments narrowly construed to consider the range of processes that hold instruments in place, and the relationship between modes and objects of governance remains centre stage.
4. The Welsh Office, the Scottish Office and the Northern Ireland Office respectively.
5. We use 'Westminster' as shorthand for the political institutions and policy-making capacity of the UK government, most of which is exercised from London.

6. To preserve interviewee anonymity, we use a code system to identify specific interviews. 'Scot' means interviewee was based in Scotland, 'NI' in Northern Ireland, 'Wales' in Wales and 'Eng' in England or UK level. 'Gov' indicates that the interviewee works for the government (officer or politicians), 'Adv' that they are an advisor, 'LPA' that they work for a local planning authority; 'NGO' that they are from a non-governmental environmental group; 'Com' that they work for a company, 'Tra' for a trade association and 'QGO' that they work for a quango. The number at the end differentiates interviewees within the same category of respondent.

7. Prime Minister at the point in time referred to.

8. The language is softer in Wales where the 2020 goals are referred to as 'aims', not targets, and the 2012 update to the UK Renewable Energy Roadmap states that '(t)he Welsh Government does not have devolved renewable energy targets' (DECC, 2012, para 2.15).

9. Although the framing of the renewable energy targets in terms of 'domestic' electricity consumption obscures the fact that Wales and Scotland are significant producers and exporters of gas and coal-generated electricity.

10. The sizeable volumes of hydro-electricity generation capacity in Scotland pre-date devolution.

11. We take the RO process to be the main market support mechanism for renewable energy coincident with the period of devolution. We set aside the preceding Non-Fossil Fuel Obligation, on the grounds that by comparison with the RO it incentivised relatively little new renewable energy capacity. There is also a Feed-in Tariff (FiT), introduced in 2008, which supports small-scale renewable energy development (mostly under 5MW). The FiT is funded by the addition of a precept on the bills of electricity consumers, and is administered by Ofgem in a spatially consistent way across England, Scotland and Wales. We also set this aside, as our focus is on larger scale facilities.

12. Correspondence, Alex Salmond to Chris Huhne, 12 July 2011.

13. Letters from Derek Mackay, Minister for Local Government and Planning of the Scottish Government, to Moray Council and Fife Council, 6 August 2012.

14. Under Labour governments during the first decade of the twenty-first century, Westminster did work to construct a hierarchy of national and sub-national targets for the English regions, but this whole apparatus disappeared with the 2010 Coalition Government and the abolition of both regional government and most targets (Power & Cowell, 2012).

15. The reality of these announcements may amount to nothing like a local veto (Early, 2013), but the Conservative Party subsequently issued statements proclaiming that its manifesto for the 2015 election would introduce such a measure.

16. Lord Deben, quoted in Murray (2014) 'Committee on climate change insists onshore wind still has a role to play in cost-effective energy mix', *Business Green*, 28 May. http://businessgreen.com/bg/news/2346982, accessed 29 May 2014.

17. The only (partial) exception to this pattern is that the Welsh and Scottish Governments have shown a greater inclination to use spatialized policies for on-shore energy and other infrastructure than Westminster, in turn giving future national development scenarios greater tangibility and attracting more responses. However, the devolved governments also broadly share the UK government's support for European Commission moves to further accelerate the decision-making process for TENs (Trans-European Connections) like cross-border electricity grids and pipelines, which would further interconnect their energy markets but also frame national decision-making processes within an EU Directive.

18. Ed Davey MP, Secretary of State for Climate Change, speech, 18 June 2013, Brussels. In the end, the EU endorsed binding renewable energy targets beyond 2020, but for the EU as a whole not disaggregated to individual member states.

19. November 2014.

20. http://www.go100percent.org/cms/index.php?id=3, accessed 17 June 2014.

References

Benson, D., & Jordan, A. J. (2010). The scaling of water governance tasks: A comparative federal analysis of the European Union and Australia. *Environmental Management*, 46(1), 7–16.

Blowers, A., & Pepper, D. (Eds.). (1987). *Nuclear power in crisis. Politics and planning for the nuclear state*. New York: Nichols Publishing.

Bogdanor, V. (1999). *Devolution in the United Kingdom*. Oxford: Oxford University Press.

Bradbury, J., & Mawson, J. (Eds.). (1997). *British regionalism and devolution. The challenges of state reform and European integration*. London: Jessica Kingsley and Regional Studies Association.

Bridge, G., Bouzarovski, S., Bradshaw, M., & Eyre, N. (2013). Geographies of energy transition: Space, place and the low carbon economy. *Energy Policy, 53*, 331–340.

Bulkeley, H., Watson, M., & Hudson, R. (2007). Modes of governing municipal waste. *Environment and Planning A, 39*, 2733–2753.

Bulkeley, H., Watson, M., Hudson, R., & Weaver, P. (2005). Governing municipal waste: Towards a new analytical framework. *Journal of Environmental Policy and Planning, 7*(1), 1–23.

Butler, H., & Macey, J. (1996). *Externalities and the matching principle: The case for reallocating environmental regulatory authority*, Faculty Scholarship Series. Paper 1447. Retrieved from http://digitalcommons.law.yale.edu/fss_papers/1447

Cairney, P. (2012). Intergovernmental relations in Scotland: What was the SNP effect? *British Journal of Politics and International Relations, 14*, 231–249.

Coenen, L., Benneworth, P., & Truffer, B. (2012). Toward a spatial perspective on sustainability transitions. *Research Policy, 41*, 968–979.

Cowell, R. (2007). Wind power and "the planning problem": The experience of Wales. *European Environment, 17*(5), 291–306.

Cowell, R., & Murdoch, J. (1999). Land use and the limits to (regional) governance: Some lessons from planning for housing and minerals in England. *International Journal of Urban and Regional Research, 23*(4), 654–669.

Cowell, R., & Owens, S. (1998). Suitable locations: Equity and sustainability in the minerals planning process. *Regional Studies, 32*(9), 797–811.

Cowell, R., & Owens, S. (2006). Governing space: Planning reform and the politics of sustainability. *Environment and Planning 'C', Government and Policy, 24*(3), 403–421.

Dahl, R. A. (1994). A democratic dilemma: System effectiveness versus citizen participation. *Political Science Quarterly, 109*(1), 23–34.

Davey, E. (2012, December 11). *Energy policy in an independent Scotland*. Scotsman conference, DECC, London.

Degeling, P. (1995). The significance of "sectors" in calls for urban public health intersectoralism: An Australian perspective. *Policy and Politics, 23*(4), 289–301.

Department of Communities and Local Government. (2012). *National planning policy framework*. London: Author.

Department of Energy and Climate Change. (2011a, July). *UK renewable energy roadmap*. London: Author.

Department of Energy and Climate Change. (2011b, July). *National policy statement for renewable energy infrastructure (EN-3)*. London: The Stationery Office.

Department of Energy and Climate Change. (2012, December). *UK renewable energy roadmap update*. London: Author.

Department of Energy and Climate Change. (2014). *Statistical press release: UK energy statistics*, March 27, 2014/016. Press Release. London: Author.

Department of Energy and Climate Change. (2014b, September). Regional renewable energy statistics. *Energy Trends*, 49–59. Retrieved from November 7, 2014 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/357527/Renewable_electricity_2013.pdf

Department of Energy and Climate Change and Department of Communities and Local Government. (2013). *Onshore wind: Communities to have a greater say and increased benefit*. Press Release, June 6, 13/057.

Department of the Environment. (2009). *Planning policy statement 18: Renewable energy*. Belfast: Author.

Department of Trade and Industry. (2000). *New and renewable energy: Prospects for the 21st century: Conclusions in response to the public consultation*. DTI: London.

DETI. (2010). *Energy. A strategic framework for Northern Ireland*. Belfast: Author.

Eadham, W. (2012). Constructions of the carbon city. In J. Flint & M. Raco (Eds.), *The future of sustainable cities. Critical reflections* (pp. 65–86). Bristol: The Policy Press.

Early, C. (2013). '"No veto" for wind farm plans', *Planning*, 14 June, 6–7.

Ellis, G., Cowell, R., Sherry-Brennan, F., Strachan, P. A., & Toke, D. (2013). Planning, energy and devolution in the UK. *Town Planning Review, 84*(3), 397–410.

Ellis, G., Cowell, R., Warren, C., Strachan, P. A., & Szarka, J. (2009). Wind power: Is there a "planning problem"? *Planning Theory & Practice, 10*(4), 521–547.

Friends of the Earth. (2014, March 28). *Re: European commission investigation into UK measures supporting nuclear energy, Hinkley C*, State Aid SA.34947 (2013/C), Submission from Friends of the Earth England, Wales and Northern Ireland.

Hamilton, P. (2002). The greening of nationalism: Nationalising nature in Europe. *Environmental Politics*, *11*(2), 27–48.

Harvey, F. (2012, May 15). Plans to reform electricity markets 'unworkable', says green businesses. *The Guardian*. Retrieved May 16, 2012 from http://www.guardian.co.uk/environment/2012/may/15/reform

Helm, D. (2003). *Energy, the state, and the market. British energy policy since 1979*ct. Oxford: Oxford University Press.

HM Government. (2009). *The UK renewable energy strategy*. Cm7686 London: The Stationery Office.

Hodson, M., & Marvin, S. (2013). *Low carbon nation?* London: Earthscan.

Hvelplund, F., Möller, B., & Sperling, K. (2013). Local ownership, smart energy systems and better wind power economy. *Energy Strategy Reviews*, *1*(3), 164–170.

Inglethorpe, S. (2014, May 20–22). *Ill wind or good?* ENDS Report, 471.

IPCC. (2014). Summary for policymakers. In: Climate change 2014, mitigation of climate change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlomer, C. von Stechow, T. Zwickel and J. C. Minx (Eds.)]. Cambridge and New York, NY: Cambridge University Press.

Jay, S. (2010). Planners to the rescue: Spatial planning facilitating the development of offshore wind energy. *Marine Pollution Bulletin*, *60*, 493–499.

Jessop, B. (1997a). The complexity of governance and the governance of complexity: Preliminary remarks on some problems and limits of economic guidance. In A. Amin & J. Hausner (Eds.), *Beyond market and hierarchy: Interactive governance and social complexity* (pp. 111–147). Cheltenham: Edward Elgar.

Jessop, B. (1997b). *The future of the national state: erosion or reorganization?* General reflections on the West European case. Mimeo, Department of Sociology, University of Lancaster.

Jessop, B. (2003). *Governance and metagovernance: On reflexivity, requisite variety and requisite irony*. Lancaster: Department of Sociology, Lancaster University. Retrieved from http://www.comp.lancs.ac.uk/sociology/papers/Jessop-Governance-and-Metagovernance.pdf

Jessop, B. (2005). The political economy of scale and European governance. *Tijdschrift voor Economische en Sociale Geografie*, *96*(2), 225–230.

Latour, B. (1986). The powers of association. In J. Law (Ed.), *Power, action, belief* (pp. 264–280). London: Routledge and Kegan Paul.

Lauber, V. (2012). Wind power policy in Germany and the UK: Different choices leading to divergent outcomes. In J. Szarka, R. Cowell, G. Ellis, P. A. Strachan, & C. Warren (Eds.), *Learning from wind power. Governance, societal and policy perspectives on sustainable energy* (pp. 38–60). Basingstoke: Palgrave Macmillan.

Lovins, A. B. (1977). *Soft energy paths: Toward a durable peace*. Penguin: Harmondsworth.

Marsh, D., & Rhodes, R. (Eds.). (1992). *Policy networks in British Government*. Oxford: Clarendon Press.

Martin, B. (1978). Soft energy, hard politics. *Undercurrents*, *27*, 10–13.

Marvin, S., & Guy, S. (1997). Creating myths rather than sustainability: The transition fallacies of the new localism. *Local Environment*, *2*(3), 311–318.

May, P., Burby, R. J., Ericksen, N. J., Handmer, J. W., Dixon, J. E., Michaels, S., & Ingle Smith, D. (1996). *Environmental management and governance*. London: Routledge.

Moss, T., & Newig, J. (2010). Multilevel water governance and problems of scale: Setting the stage for a broader debate. *Environmental Management*, *46*(1), 1–6.

Murdoch, J., & Marsden, T. (1995). Space against time: Competing rationalities in planning for housing. *Transactions of the Institute of British Geographers*, *20*, 368–380.

Owens, S., & Cowell, R. (2010). *Land and limits: Interpreting sustainability in the planning process* (2nd ed.). London: Routledge.

Power, S., & Cowell, R. (2012). Wind power and spatial planning in the UK. In J. Szarka, R. Cowell, G. Ellis, P. A. Strachan, & C. Warren (Eds.), *Learning from wind power. Governance, societal and policy perspectives on sustainable energy* (pp. 61–84). Palgrave: Basingstoke, Hants.

Rootes, C. (2013). From local conflict to national issue: When and how environmental campaigns succeed in transcending the local. *Environmental Politics*, *22*(1), 95–114.

Rydin, Y., Turcu, C., Guy, S., & Austin, P. (2013). Mapping the co-evolution of urban energy systems: Pathways of change. *Environment and Planning 'A'*, *45*(3), 634–649.

Scottish Executive. (2003). *Securing a renewable future: Scotland's renewable energy*. Edinburgh: The Stationery Office.

Scottish Government. (2009). *National planning framework for Scotland 2*. Scottish Government Directorate for the Built Environment, Edinburgh.

Scottish Government. (2011). *2020 Routemap for renewable energy in Scotland*. Retrieved September 12, 2012 from http://www.scotland.gov.uk/Publications/2011/08/04110353/0

Scottish Government. (2013). *Scotland's future*. Edinburgh: The Scottish Government.

Scottish National Party. (2011). *Re-elect a Scottish Government working for Scotland*, Manifesto 2011. Retrieved June 3, 2014 from http://votesnp.com/campaigns/SNP_Manifesto_2011_lowRes.pdf

Sovacool, B. K., & Brown, M. A. (2009). Scaling the policy response to climate change. *Policy and Society, 27*, 317–328.

Sovacool, B., & Cooper, C. (2013). *The Governance of energy megaprojects*. Northampton, MA: Elgar.

Späth, P., & Rohracher, H. (2014). Beyond localism: The spatial scale and scaling in energy transitions. In F. Padt, P. Opdam, N. Polman, & C. Termeer (Eds.), *Scale-sensitive Governance of the environment* (pp. 106–121). Oxford: Wiley-Blackwell.

Szarka, J. (2007). *Wind power in Europe. Politics, business and society*. Basingstoke: Palgrave Macmillan.

Treib, O., Bähr, H., & Falkner, G. (2005). *Modes of governance: A note towards conceptual clarification*. European Governance Papers, EUROGOV No. N-05-02. Retrieved from http://www.connex-network.org/eurogov/egp-newgove-N-05-02.pdf

Toke, D. (2010). Politics by heuristics: Policy networks with a focus on actor resources, as illustrated by the case of RE policy under new labour. *Public Administration, 88*(3), 764–781.

Toke, D., Sherry-Brennan, F., Cowell, R., Ellis, G., & Strachan, P. A. (2013). Scotland, renewable energy and the independence debate: Will head or heart rule the roost? *Political Quarterly, 84*(1), 61–70.

Van den Brande, K., Bruyninckx, H., & Happaerts, S. (2012). Introduction. In H. Bruyninckx, S. Happaerts, & K. van den Brande (Eds.), *Sustainable development and subnational governments. Policy-making and multi-level interactions* (pp. 1–24). Basingstoke: Palgrave Macmillan.

Watson, M., Bulkeley, H., & Hudson, R. (2008). Unpicking environmental policy integration with tales from waste management. *Environment and Planning C: Government and Policy, 26*, 481–498.

Welsh Assembly Government. (2005, July). *Technical advice note 8: Planning for renewable energy*. Cardiff: Author.

Welsh Assembly Government. (2010, March). *A low carbon revolution: The Welsh Assembly Government energy policy statement*. Cardiff: Welsh Assembly Government.

Welsh Assembly Government. (2012, March). *Energy wales: A low carbon transition*. Cardiff: Welsh Assembly Government.

Wilson, E. J., McDougall, F. R., & Willmore, J. (2001). Euro-trash: Searching Europe for a more sustainable approach to waste management. *Resources, Conservation and Recycling, 31*(4), 327–346.

Wolsink, M. (2004). Policy beliefs in spatial decisions: Contrasting core beliefs concerning space making for waste infrastructure. *Urban Studies, 41*(13), 2669–2690.

Woodman, B., & Mitchell, C. (2011). Learning from experience? The development of the renewable obligation in England and Wales, 2002-2010. *Energy Policy, 39*(7), 3914–3921.

Wüstenhagen, R., Wolsink, M., & Bürer, M. J. (2007). Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy, 35*(5), 2683–2691.