

Re-scaling IPE: local government, sustainable energy and change

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ABSTRACT

Sustainable energy has emerged as a new area of policy, in part as a response to greater political acceptance of the need to reduce greenhouse gas emissions. Local governments are understood to be potentially important actors here, but also as having been constrained in their political capacities by neoliberal political institutions and the centralised nature of energy systems. This paper combines insights from energy IPE, political geography, new institutionalism and socio-technical transitions to build a conceptual framework for analysing local sustainable energy policy-making in relation to a broad range of influencing factors. It explores the ways in which policy and material aspects of energy systems inter-relate; considers ways in which ideas, contestation and learning are fundamental to change; and understands local governments as actors in their own right rather than ‘takers’ of global or national rules. This approach recognises specific influences of embedded institutions and infrastructures over local policymaking, but also allows us to better comprehend the implications of political and energy re-scalings for their capacity to govern and to influence political debates at national and global levels. It concludes with a plea for IPE to take better account both of sector specifics as well as of the local scale.

KEYWORDS

local government; sustainable energy policy; scale; ideas; institutions; change.

1. Introduction

The Paris Agreement commits most countries in the world to greenhouse gas emissions reductions. Within this context sustainable energy policy has been widely accepted as essential to delivering targets via the decarbonization of energy supply and decreases in energy use. Sustainable energy is, however, a new policy area whilst the task of using political tools to re-fashion deeply embedded energy systems is both large and unprecedented. As such, although it is increasingly argued that the state needs to take a central role in energy transitions, policymakers are still learning how to engender sustainable change. At the same time, across relevant policy and academic debates, calls for local action have re-emerged (Bulkeley &

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Betsill, 2013; Broekhoff, Erickson, & Lee, 2015; IEA, 2017a; REN21, 2017; van der Ven, Bernstein, & Hoffmann, 2017; Britton, 2018). This is partly based on observations, in particular within political geography, that so many climate associated problems and solutions have their roots in local activities (Hodson & Marvin, 2017, p. 12), but also that local governments constitute sources of sustainable leadership, dynamism and innovation (Gordon, 2013; van der Ven et al., 2017). This article develops a framework for analyzing this growing arena of local government sustainable energy policy that explicitly takes scalar, political and material factors into account. It does so in an intentionally non-deterministic fashion, striking some balance between context and change.

In building such a framework we can learn quite a bit from energy IPE about factors influencing *sustainable energy* policymaking, and from political geography scholarship, on cities and climate change, about factors that influence *local* policymaking. The small, but emerging, energy IPE scholarship on transitions draws our attention to the deeply political and contested nature of sustainable energy as a policy area, particularly in relation to the broader political contexts that limit state action. Indeed, although new policies seek to drive, often radical, changes in embedded systems of energy production and use, incumbent energy actors have displayed considerable abilities to resist sustainable change through their influence within energy policymaking processes. Their ability to do so is sometimes explained with reference to debates about neoliberalism, the retreat of the state and market power (Baker, Newell, & Phillips, 2014; Kuzemko, Lockwood, Mitchell, & Hoggett, 2016; Johnstone & Newell, 2017), and to the broader power relations that underpin fossil fuel capitalism (Newell & Paterson, 2010; Di Muzio, 2013; Newell, 2018).

This IPE scholarship has, however, so far trained the analytical lens onto national policymaking processes, whereas there is a need here to better understand the local level. Scholarship, often within political geography, on cities and climate change tells us more about local processes of governing, including about political responsibilities and capacities. Harriet Bulkeley, in her comprehensive review of the literature, points out that there have already been two temporal phases of local government responses to climate change (2010, pp. 232–233). She, and others, draw our attention to the disappointing differentials that emerged between stated ambitions and the capacity of local governments to deliver (Bulkeley, Luque-Ayala, McFarlane, & MacLeod, 2016; Beveridge et al., 2016; March & Ribera-Fumaz, 2016). Here lack of local government capacity is also partly explained in relation to the broader political context of neoliberalization. This is sometimes done with reference to IPE debates about the hollowing out of the state that interpret local governments as limited to acting as takers and/or purveyors of global rules and norms, and as strategic partners of business (Jessop 2002; Brenner & Theodore, 2002). In addition, lack of local capacity is understood in relation to the hierarchical nature of relations between the local and national state (Betsill & Bulkeley, 2006; Bulkeley, 2010; Homsy & Warner, 2015).

Combined, these readings of the limited abilities of national and local states to act with discretion, let alone to pursue policies that could disrupt fossil fuel capitalism, beg an interesting question about how local governments can emerge as important sustainable energy actors. It is argued here that, in order to address this question, a new framework is needed which allows us both to focus on local policymaking and to consider more sector-specific factors. In constructing the framework three further conceptual departures are taken. The first is to consider local

government policymaking less as operating within static contexts, but as part of wider processes of contestation and change. Constructivist IPE lenses are adopted here that help us to understand processes of policy change and the vital roles played by alternative ideas, challenge and learning therein (Hay, 2001; Blyth, 2002; Schmidt, 2008; Kuzemko, 2013). Indeed, to the extent that some local governments explicitly develop alternative ideas about sustainable energy, and the methods through which it can be achieved politically, they can be seen both as engaging in processes of normative change and as bolstering their capacities to act with discretion.

The second conceptual turn taken here is to consider certain material factors as influential over processes of local, and indeed national, sustainable energy policymaking, in line with the view that policymaking debates are shaped by material factors, as well as ideas and interests (Hall, 1993). This is a response to claims that not enough account has been taken yet of material factors when considering political attempts to reshape how energy is produced and used (Johnstone & Newell, 2017; Cowell, Ellis, Sherry-Brennan, Strachan, & Toke, 2017), and to arguments that IPE analyses should do more to be sector specific when analyzing differences in political approaches (Crouch, 2005; Döring, dos Santos, & Pocher, 2017). Largely with reference to socio-technical transitions (STT) research, it is argued here that energy policies can and do have implications for material aspects of energy systems, whilst also foregrounding the new opportunities for local governments that emerge as a result of re-scalings within energy systems.

Lastly, little IPE attention has been paid to the local scale beyond the 1990s/early 2000s debates wherein the local was interpreted either as a possible site of resistance to (Obi, 1997; Pieterse, 1997; Cheru, 2000), or as subsumed within (Jessop, 2002; Paul, 2002; Brenner & Theodore, 2002), economic globalization. Here, with reference to recent political and urban geography debates about political re-scaling (Brown, Cloke, & Harrison, 2015; Gailing & Moss, 2016; Cowell et al., 2017), greater emphasis is placed on understanding local government policymakers as actors in their own right. Important relationships between local, national and global politics are set out in less hierarchical and more dynamic terms. This approach allows us to consider discretionary aspects of local government politics, and to foreground emerging local sustainable energy policies, such as energy re-municipalization, that overtly contest national and global institutions.

Through the development of the framework this article takes more account of political and energy re-scalings but, more importantly, reveals their significance for sustainable energy policy. Specifically, these re-scalings are enabling various forms of political and technical learning by local governments that, in turn, are used to increase local political capacity and legitimacy in sustainable energy. Local actions, ideas and learning then feed back into broader processes of political change and into a reshaping of the IPE of energy. With reference to IPE debates about the hollowing out of the state, this article argues that growing state capacity at the local level has enabled local governments to act as challengers, rather than mainly purveyors, of global energy institutions. Whilst IPE has been relatively successful at moving past boundaries between the national and global, this suggests a greater need for research on how the local scale can be better incorporated into IPE analysis.

2. Local government and sustainable energy in context

This section lays the foundations of a framework for analyzing local government sustainable energy policy. Local government is taken to refer to all levels of government below the national. It is with reference to scholarship on cities and climate change, in the absence of energy IPE scholarship on local policymaking, that *local* responsibilities and capacities are set out, including their relation to global and national political factors. This section then turns to energy IPE and STT scholarship in order to be more specific about the choices that sustainable *energy* policymakers face, whilst also establishing the significance both of national energy policies and material aspects of energy systems for local government choices and actions.

Throughout [Section 2](#), in order to support and illustrate conceptualizations of local government and sustainable energy policy, regular reference is made to empirical evidence from tertiary sources. In [Section 3](#), however, given the relatively greater emphasis on change, there is a tendency to draw more on primary and secondary sources,¹ and very recent academic research. This is done to provide more up-to-date evidence of how contextual changes, such as re-scalings, provide new opportunities for local government. Given the interest here in understanding both opportunities and constraints faced by local policymakers, most empirical examples given are of local governments already active in sustainable energy policy.

2.1 Local responsibility, capacity and political context

In the 1990s, there was a surge in local environmental activities (Ward, 1996; Bulkeley, 2010), at the same time as a broader rescaling of the state across much of the Global North and South (MacLeod & Goodwin, 1999; Brown et al., 2015). Some local governments are understood to have gained an enhanced role in deciding how their localities should be governed, albeit from a low base in many cases, whilst others were also beginning to develop transnational links with other cities and regions (MacLeod & Goodwin, 1999, p. 505). This coincided with some analytical attention within IPE falling onto the local scale, sometimes interpreted as a site of alternative ideas and/or of resistance to forms of economic globalization (Ward, 1996; Obi, 1997; Pieterse, 1997). Jan Pieterse, for example, saw local politics, to the extent that it places citizens back within the range of conventional forms of political control, as a workable response to economic globalization, increasingly remote democracy, and shifts of power into the hands of transnational corporations (TNCs) (1997, p. 79). Similar arguments informed debates about local government and climate change.

Early analyses of urban sustainability in particular, and the technical measures adopted by local governments, came to be viewed as too place bound. Harriet Bulkeley and Michelle Betsill argued that a ‘step beyond the local as a frame of reference’ was needed in order to take wider political contexts into account (2005, p. 48). Over the course of the 2000s a strand of literature emerged that placed a greater analytical focus on local–national relations, and how these influence local policy capacities. This has, more often than not, been achieved through the application of multi-level governance approaches, whereby the local–national relationship is set out in vertical terms between hierarchical levels of governance (Bulkeley,

2010, p. 236; see also Betsill & Bulkeley, 2006; Jaglin, 2013; Bulkeley & Betsill, 2013; Homsy & Warner, 2015; Ehnert et al., 2018). Within this vertical relationship, patterns of influence are often shown as flowing in one direction, from national down to local. For example, national legal or constitutional arrangements have implications for: the degree of local autonomy or discretion from national governments (Eckersley, 2017; Ehnert et al., 2018), the size of local government and which areas they have administrative responsibility for (Bulkeley et al., 2016; Cowell et al., 2017), as well as the financial resource base from which they can draw (Bulkeley & Kern, 2006; Beveridge et al., 2016).

Clearly local powers and responsibilities can vary quite substantially according to national political institutions both in terms of responsibilities and duties but also of degrees of autonomy. For example, comparative analyses note the relatively greater political and financial autonomy of German states, cities and towns, under cooperative federalism, compared with the UK's centralized unitary state and low local autonomy (Bulkeley & Kern, 2006; Ehnert et al., 2018; Eckersley, 2017). Here it is worth noting that only in some countries have local governments been tasked with specific climate change or sustainable energy duties. For example, in China cities are tasked with implementing national and provincial energy and carbon intensity targets (Broekhoff et al., 2015), whilst in the UK nationally defined local responsibilities have come and gone over time. In both Japan and Sweden local governments were encouraged by national authorities to develop climate change strategies but, importantly, were also provided financial resources to support this work (Bulkeley, 2010, p. 232). Indeed, it has been noted that if national governments expect local governments to deliver climate change tasks then there should be extra resources associated with new responsibilities (Webb, Hawkey, & Tingey, 2016). What this also means, however, is that many local political responses to climate change are taken voluntarily.

Despite variety in set climate change responsibilities, most local governments have powers in areas, such as planning, public transportation, roads, and congestion, environment, waste, and the maintenance of their own estates. As many of these areas are relevant to climate change mitigation some degree of capacity here can provide opportunities for local sustainable action (de Oliveira, 2009; Brown et al., 2015). There are, indeed, some strong examples: Malmö (Sweden), Vitoria-Gasteiz (Spain) and Ljubljana (Slovenia) have all made use of planning rules to reduce energy consumption in transportation (Beveridge et al., 2016, pp. 17–18). By the same token, however, in situations where resources are tight local capacities can be narrowly focused on delivering set duties leaving comparatively marginal issues, such as climate change mitigation, to one side (Bulkeley, 2010, p. 235).

National political rules also have significance for where taxes are gathered, how financial resources are distributed between the local and national state, and therefore for the degree of local financial capacity. This is significant to the extent that financial resources need to be of sufficient size to pursue the sustainable policy agenda envisaged (Davies & Blanco, 2017, p. 4). There is a good deal of variety here too: German local governments tend to have relatively strong local financial institutions that often support sustainability projects (Hall, Foxon, & Bolton, 2016); Bogotá (Colombia) has discretionary powers over local petrol taxes (Strahan, 2018); whilst other political systems involve a far greater concentration of financial revenues within national government (Bulkeley & Kern, 2006; Beveridge et al., 2016).

Local government capacities to act sustainably are also often linked with access to personnel resources, including learning and knowledge. For example, climate change policymakers need to have access to some degree of specialist knowledge, but this is not always the case in local government (Bulkeley, 2010, p. 234). There are, however, opportunities for local governments to join transnational networks where specialist knowledge, and new ideas, can be accessed via shared networks and funding opportunities (Bulkeley, 2010; de Oliveira, 2009; Gordon & Johnson, 2017). Indeed, groups such as Cities 40 (C40), the ICLEI, and the European Covenant of Mayors are seen as important elements of the networks through which cities govern for climate change, whilst membership continues to grow. This is not to overstate the benefits to local governments of network membership (Yi, Krause, & Feiock, 2017), but to suggest that transnational networks offer additional capacities as well as the opportunity for local governments to club together to influence national and global debates.

Despite considerable variety between local governments as compared between, and arguably also within, countries a degree of consensus has emerged about the lack of sufficient local government capacity to pursue, sometimes ambitious, sustainability goals (Bulkeley & Betsill, 2013, p. 140; Homsy & Warner, 2015, p. 46; Beveridge et al., 2016, p. 4; March & Ribera-Fumaz, 2016, p. 225; Gordon & Johnson, 2017, p. 5). Specifically, capacity constraints are identified as a lack of personnel and financial resources, knowledge of the problem of climate change and how to take action, and decision-making autonomy, particular over certain regulations and/or taxes (Martins & Ferreira, 2011, p. 46; de Oliveira, 2009, p. 254; Bulkeley, 2010, p. 243). As suggested in the introduction to this article, these constraints are, in turn, explained in relation to broader, national and global, political contexts.

Indeed, local politics has been understood both as limited by and as subject to the path-dependent character of global, and national, neoliberal reform projects (Brenner & Theodore, 2002, p. 349). This is partly because they are incentivized to compete for limited resources between localities (Paul, 2002; Webb et al., 2016; Davies & Blanco, 2017). As such, local actor groups, including governments, are portrayed as either passive participants or active agents in the reproduction, mutation and continual reconstitution of neoliberalism (MacLeod & Goodwin, 1999; Brenner & Theodore, 2002; Paul, 2002). Some neoliberal reforms are understood to have resulted in a downloading of '... service and jurisdictional responsibilities onto the shoulders of municipal governments' (Gordon, 2013, p. 292), whilst decisions to pursue austerity measures are seen to have resulted in less resource available to fund these new responsibilities (Davies & Blanco, 2017). There are ample illustrations of how austerity measures have forced local governments in Spain, Italy and the UK to cut public sector budgets and to roll back public services, resulting, in the case of Italy, in a weakening of local autonomy (Bolgherini, 2014; Davies & Blanco, 2017). Under these conditions it has become harder for local governments to dedicate resources to climate change, especially if it is not a set duty or seen as a core political goal (Jonas, Gibbs, & While, 2011, p. 2242).

More generally, neoliberal institutions are seen to have encouraged an overall shift of responsibilities from the public to private sector (Jessop, 2002; MacLeod & Goodwin, 1999). Under these conditions local governments have increasingly come to rely upon horizontal, networked relations with corporates and NGOs in the

implementation of climate change strategies (Bulkeley & Betsill, 2013; Mees, 2017). Often local governments are seen as having been, at best, limited to an ‘enabling mode of governing through which businesses and communities are encouraged to act in, and on behalf of, the city’ (ibid: 140). This form of networked governance is seen as privileging certain interests resulting in ‘... the heightened influence of the business classes in the public-private governance of urban... development’ (MacLeod & Goodwin, 1999, p. 509). In the UK, where these conditions have arguably been at their most extreme, local governments have been viewed by national government merely as ‘intermediaries in an envisaged market competition between technologies’ and as ‘economic, rather than welfare, entities’ (Webb et al., 2016).

2.2 Sustainable energy in political and material context

This section moves the framework on by focusing on the kinds of choices faced by local policymakers in the area of sustainable energy specifically, rather than climate change mitigation more generally. Sustainable energy policy is relatively new and exists today because alternative environmental ideas have been successfully articulated to highlight problems associated with systems of energy production, distribution and use and to identify, consequently, a need for policy change (Kuzemko, 2013). As a new policy area, a wide range of important questions and choices face policymakers, at all levels, not least about *how* to cause sustainable change whilst at the same time ensuring affordability and security of energy supply. This is a tall order, given that security of supply has been a core political concern for many decades, partly due to the central place of energy within the modern political economy (Mitchell, 2011; Di Muzio, 2013). Furthermore, security of supply has often been associated with the need for continuity, and this is an argument that incumbent energy actors have used to argue against sustainable change (Lockwood, Kuzemko, Mitchell, & Hoggett, 2016; Newell, 2018, this SI). It is also becoming increasingly clear that energy choices need to be considered in relation to other policy areas, such as economic, fiscal, welfare, food and employment (Butler, Parkhill, & Luzecka, 2017; Kuzemko, Lawrence, & Watson, 2018).

There are already three main categories of sustainable energy policy: target setting, policies focused on energy production, and those more centered on usage and demand. Each policy category includes a wide variety of measures to engender sustainable change in different energy sectors such as electricity, heat and transport. Target setting has arguably been the most consistently applied approach thus far, and many thousands of regions, cities, towns and villages across the world now have sustainable energy targets. Measures to decarbonize energy production have been centered around support programs, albeit of varied political design, to boost the production and dissemination of low carbon energy, including renewables. Support programs tend to have been run by national governments, although some regions, such as the state of Victoria (Australia) now operate their own schemes (Victoria State Government, 2017). A more usual route, however, for local governments to become involved in renewable energy has been to invest directly in electricity and heat supply, often through national support schemes (de Oliveira, 2009; Jaglin, 2013; Brown et al., 2015; Webb et al., 2016; Britton, 2018; Ehnert et al., 2018). It is worth making explicit here that national energy policy frameworks, and

the nature of policies pursued, have implications for local government renewable opportunities and constraints (see also Broekhoff et al., 2015).

The third, and increasingly important, sustainable energy policy category is demand reduction which includes energy efficiency policies as well as those aimed at improving demand side response and management (Rosenow, Kern, & Rogge, 2017). Energy efficiency policies are often understood to contribute toward reductions in energy poverty and with support for more vulnerable gas and electricity users (*ibid*). There has been a relatively high degree of energy efficiency activity within local governments (Bulkeley, 2010, p. 325), for example in retrofitting public buildings and, thereby, contributing towards lower estate maintenance costs (Chmutina & Goodier, 2014, p. 65). A number of cities have put in place stringent planning standards to drive changes in new build construction, and these are particularly successful in the instance that local governments own the land being built upon, as has been the case in parts of Malmö and Stockholm (Smedby & Quitzau, 2016).

In exploring constraints upon sustainable energy policymakers IPE scholarship also draws our attention to political institutions. The entrenchment of neoliberal ideas is seen as having discredited the role of the state, usually understood in terms of the national state, in sectors such as energy, water and food provision (Goldthau, 2014; Johnstone & Newell, 2017). Associated energy sector liberalizations, and sometimes also privatizations, in countries across the Global North and South, have underpinned the dominance of incumbent energy corporations (Baker et al., 2014; Brown & Cloke, 2017; Johnstone & Newell, 2017). One important factor here is that, under conditions of liberalization, small and medium sized companies, including municipal energy, increasingly found themselves unable to compete with large corporations. For example, even in Germany where municipal energy capacities were relatively well established, liberalization contributed to a widespread loss of local government contracts to national and transnational corporations (Moss, Becker, & Naumann, 2015, p. 154; Webb et al., 2016, p. 28).

These observations tend to suggest that the relationships between political decisions and the shape of energy systems, and vice versa, are important to consider (Cowell et al., 2017; Johnstone & Newell, 2017; Schmidt & Sewerin, 2018). Energy geographers have observed that the way in which ‘energy systems are organized ... is not pre-ordained and arises instead as a product of economic and political decisions’ (Bridge, Bouzarovski, Bradshaw, & Eyre, 2013, p. 338). One example is that the centralized energy systems of the Global North came about as a result of historical political decisions to nationalize the public provision of energy – also with devastating implications for the municipal supply of energy services (Brown et al., 2015). In turn, the centralized, large-scale design of energy systems still shapes national policy choices in ways that disadvantage local governments, as well as limiting their sustainable energy choices (Bridge et al., 2013; Goldthau, 2014; Lockwood et al., 2016; Johnstone & Newell, 2017). These observations about scale, in terms of location and size of energy systems, are interesting in the light of work by Amory Lovins who argued that the ‘hard’ energy pathway, based on a continuance of large scale, centralized systems of energy supply has far fewer social benefits in the long run. The ‘soft’ path, by contrast, involves greater conservation of energy, renewable energy, more widely distributed energy assets, far lower costs, and greater public involvement and benefit (*ibid*). These reflections remind us why

it is important to think about sustainable energy policy and material characteristics of energy systems in a relational sense.

3. Rethinking local government and sustainable energy

This section further builds out the framework for analysis by moving beyond the emphasis, thus far, on understanding the more static contextual factors that constrain local governments. This is largely achieved through a synthesis of STT accounts of changes in energy systems, urban geography accounts of political rescaling, and new institutionalist accounts of the role of ideas, contestation and learning within processes of change. The intention is not necessarily to argue that there are fewer constraints, but merely to suggest that some of these are now comparatively well understood and that a different perspective allows us to think more about what new opportunities are developing, why, and with what consequences.

3.1 *Dynamic relations between politics and energy*

Here there is a turn towards trying to better understand the relationship between political decisions and material factors by exploring *how* recent material changes within systems relate to local government sustainable energy opportunities and capacities. The story of energy system change starts with renewables that have recently become the fastest growing source of electricity. The world is now adding more renewable electricity capacity each year than from all other fossil fuels combined (REN21, 2017, p. 33), whilst in 2017 the sector employed 10.3 million people (E360 Digest, 2018). Growth in renewables is widely expected to continue apace, for example forecasts are that by 2050 up to 85% of electricity will be generated from renewable sources, from 30% now (Clark, 2017; IEA, 2017b; REN21, 2017). This is significant in itself, but some also predict that there will also be a radical electrification of the whole energy system (Wainstein & Bumpus, 2016, p. 572; Sovacool & Walter, 2018), potentially making electricity one of the most important forms of energy. These increases in the deployment of renewables, and associated processes of learning, have contributed toward the rapid fall in costs of generation. As such, in many localities, solar PV and onshore wind already compete on a cost basis with more traditional, fossil fuel forms of electricity production (PWC, 2014; IEA, 2016, 2017b). This, importantly, reduces the need for government support programs, and lowers the cost of entry for those seeking to get involved.

Of particular relevance, when considering implications for local governments, is that renewable electricity can be generated at smaller scales and this makes it a more accessible technology for small and medium sized actors, whilst innovations in storage also improve the capacity to retain electricity locally. This can be understood in direct contrast to large-scale, energy production that requires access to big finance and which tends to shut local actors out of markets. These smaller-scale characteristics of renewable electricity have already resulted in more diverse patterns of ownership (Becker, Beveridge, & Gailing, 2016, p. 151; Cowell et al., 2017, p. 1142), whilst the number of smaller groups, including municipals, communities and citizens, that now own and operate renewable electricity has grown rapidly (Bridge et al., 2013; Gailing & Moss, 2016; Mey, Diesendorf, & MacGill, 2016).

Indeed, for many local governments, renewable electricity generation is already a widespread budget relevant activity (de Oliveira, 2009; Mey et al., 2016; Webb et al., 2016; Dütschke & Wesche, 2018), often in the form of direct investments in wind, solar PV and electricity from waste. Growing numbers of actors and groups involved in renewable generation imply a less passive relationship with energy for those involved (Mey et al., 2016, p. 33; Wainstein & Bumpus, 2016, p. 573), hence growing interest in connections between renewable growth and energy democracy.

Changes in the scale of energy production relate to important changes in *where* electricity is produced, that is, toward a broader geographic dispersal, and predictions are that these trends will continue (Bridge et al., 2013; Chmutina & Goodier, 2014; Brown et al., 2015; Cowell et al., 2017). Energy re-scalings are notable across the Global North, although it is clear that some countries, in particular in Northern Europe, are further down this road than others. For example, in 2017 the Danish electricity grid ran independently of centralized power producers, i.e. entirely powered by decentralized, small-scale electricity and storage, for 41 days (State of Green, 2018). Whilst in the Global North this can be viewed as a step away from centralized systems new, distributed energy projects also offer important options for the more than 1 billion people currently without access to electricity, mainly in the Global South (REN21, 2017, p. 19; IEA, 2017b). Importantly shifts, in who is generating and where, bring production back closer to where electricity is used which, in turn, provides conditions for more localized co-ordination between production and usage and less need for large scale transmission grids (Kuzemko, Mitchell, Lockwood, & Hoggett, 2017).

It is important to note, however, that new sustainable energy opportunities for local governments are not confined to investment in and returns from renewable electricity, transport or heat. Local governments have been active in developing new models with value propositions that challenge old practices, sometimes by being not-for-profit or by placing specific value on sustainability (Hannon, Foxon, & Gale, 2013; Hall & Roelich, 2016; Wainstein & Bumpus, 2016). For example, one popular municipal investment across Europe has been in creating energy service companies (ESCos) that operate an alternative style of contract based on enabling consumers to use less energy and save costs, as opposed to the traditional model of volume sales of units (Hannon et al., 2013; Brown et al., 2015; Hall & Roelich, 2016; Mey et al., 2016; Webb et al., 2016). Another example is new, municipal retail companies set up with the explicit intention of reducing electricity and gas costs for local constituents, often the most vulnerable users, thereby contributing towards energy affordability (Hall & Roelich, 2016). These movements towards municipal sustainable energy can be understood as part of broader shifts from outsourcing to municipal provision that are also taking place in other utility sectors, particularly water (Hall, Lobina, & Terhorst, 2013; Beveridge & Naumann, 2014; Lobina, 2016).

It is worth being explicit that local government sustainable energy policies not only deliver social goals, such as lower emissions or improved air quality, but also provide public financial opportunities (de Oliveira, 2009). This is important within the context of framings of sustainability as a public policy cost. Some municipal energy companies deliver, often much needed, public revenues that can be spent on improving other public services locally (de Oliveira, 2009; Energy Cities 2017). For example, at the more extreme end, since buying back its distribution grid,

Hamburg has generated a €35 million profit from grid operations (Energy Cities, 2017, p. 9). As another example, energy efficiency schemes lower the maintenance costs of public buildings, whilst producing electricity from waste that can contribute toward keeping local government landfill costs down (de Oliveira, 2009, p. 257). In these ways, sustainable energy projects can help to anchor monetary flows within the local, public economy (Energy Cities, 2017, p. 9). This can be important for the ability of local sustainable energy policymakers to make an internal, and external, political case for further action.

Many of the sustainable energy projects discussed so far challenge the fossil fuel, privatized and supply oriented nature of energy systems, but some local governments are emerging as leaders in thinking about how to further decentralize energy (Hall & Roelich, 2016; Kuzemko et al., 2017), more in line with Lovins's 'soft path'. Localized, decentralized markets can, with the help of new storage and information and communication technologies (ICT), more easily balance local, sometimes intermittent, renewables with local demand. This can be achieved partly through encouraging greater demand during times of high local electricity generation, for example a lower, local 'sunshine' tariff for when it is sunny and solar PV panels are producing (Regen, 2017). Berlin and Hamburg plan to coordinate local municipal electricity production, distribution and retail companies in order to establish local energy markets, whilst new regulations in New York are being put in place to encourage greater local demand flexibility (Kuzemko et al., 2017).

The ability of local governments to act in these more active, localized ways is in part related to their position as closer to the infrastructures, weather patterns, communities and citizens involved (Dütschke & Wesche, 2018). As Becker et al. note tangible, visible objects, like wind turbines or solar PV panels, make sustainable energy changes easier to grasp, which can lead to a higher quality of local debate about associated advantages, disadvantages, and for whom (2016, p. 21). We can put this another way: for such projects to succeed there is also a need for local organizational capacities and knowledge, given geographic and political variety, about opportunities and how to match them to local needs (Brown et al., 2015, p. 41; Bergek et al., 2016, p. 58; Kalf, 2016, p. 64). Others see energy citizens as central to sustainability in that more distributed energy systems rely upon some degree of, active or passive, public participation (Fudge, Peters, & Woodman, 2016; CSE, 2017). If this proposition is accepted there follows a need to find the right conditions that enable the public to 'get on board' (CSE, 2017), and this role can theoretically be better filled by local government. Indeed, there are examples of local governments providing vital support functions, in terms of financial and knowledge capacities, to community and citizen energy projects (Fudge et al., 2016; Mey et al., 2016; Hall et al., 2016). As such, just as large-scale, centralized systems have required national governance, so too can it be argued that more decentralized systems will require greater levels of localized governance and that sustainable energy technologies are an important site in the rescaling of energy policy.

3.2 Local re-scaling, rethinking and contesting

As argued in Section 2.1, multi-level governance approaches to understanding local climate change governance have tended to understand local capacities in relation to hierarchical relations with national government, as well as horizontal relations with

business and civil society. These relations explain limited local capacities that, in turn, force local governments to rely upon partnerships in order to enable, rather than direct or drive, change. There are, indeed, plenty of examples of transfers of environmental responsibilities from the nation state to local units of government without the all-important transfers of additional powers (Jonas et al., 2011; Tsukamoto, 2011; Brown et al., 2015), leaving local governments yet more reliant on partnership working to meet responsibilities.

By the same token, however, it is also possible to conceive of political decentralization in ways other than local governments waiting for the center, situated above, to give them more powers. Not all local government activity needs to emerge as a result of, or be determined by, national legislation. Striking examples are local government decisions to (re-)municipalize energy services which are sometimes taken in opposition to national energy policies and wider norms of privatization. Furthermore, as most local governments do not have statutory responsibilities for sustainable energy, the many actions taken here emerge from discretionary decision-making. These activities are taken as examples of a different form of political re-scaling whereby local governments become more politically active and sometimes act outside, or beyond, formal national or global governance (Gustavsson, Elander, & Lundmark, 2009, p. 70; Gailing & Moss, 2016, p. 115; Gordon & Johnson, 2017, p. 4). Under this interpretation not only are local governments interesting as actors in their own right, but new factors need to be considered in terms of local decision-making. These include internal relations between sustainable energy personnel and other teams within local government and relations with local businesses and civil society.

Another example of this form of political re-scaling is local governments, and transnational city collectives, using their discretion to rethink what is meant by sustainability and their role in driving it forward (Rutherford & Jaglin, 2015). Indeed, shifts in energy systems, and associated new business models, have made policies in line with alternative sets of ideas more actionable (Jonas et al., 2011, p. 2541). Some local governments have recently been able to translate alternative concepts, like urban environmentalism and/or municipalization, into action via sustainable energy projects in ways that bypass centralized institutions (Jonas et al., 2011; Beveridge & Naumann, 2014; Rutherford & Jaglin, 2015). Elsewhere, Swindon Borough Council (UK) applies a local renewable and battery storage model in order to pursue their goal of making sure that “local authorities and communities can play a part in changing the way energy is generated and managed” (Public Power Solutions, 2018).

In another re-interpretive move some local governments, and transnational city networks, now articulate sustainability specifically as a social enterprise that interconnects multiple policy areas that, if pursued correctly, can lead to greater inclusiveness, equity and justice (Cities 100, 2015; C40, 2016; March & Ribera-Fumaz, 2016; Gordon & Johnson, 2017). For example, projects to decarbonize local transport, in Caracas, Medellin and Rio de Janeiro, are also targeted at providing mobility for the residents of favelas (Beatley, 2013), whilst many energy efficiency projects are pursued with the explicit intention of reducing energy poverty and improving energy justice. These activities are embedded within more general attempts by local governments, for example in New York City, Portland, Leipzig, Malmo, Nantes, and Rotterdam, to rethink local policymaking in ways that can

bring about greater equity and more inclusive, sustainable growth (Green, Kispeter, Sissons, & Froy, 2017).

Whilst many of these local reinterpretations offer alternative ways of understanding, and methods of achieving, sustainability other discretionary local movements are aimed at contesting specific national, and global, climate change and energy policies. The State of Victoria established their own renewable energy support schemes because, in their view, Australian federal policies were insufficient (Victoria State Government, 2017). Another example of policy discretion is that local governments, including Vancouver, Copenhagen, Reykjavik, Stockholm, San Francisco, Salt Lake City, Boulder, Los Angeles, San Diego, New York and Hamburg, actively chose to set sustainable energy targets and standards that are in excess of those targeted by their national governments (REN21, 2017, p. 128). Likewise, over 80 local governments in the UK have recently, in an attempt to influence the national debate, committed to reaching 100% renewables by 2050 in contrast to national policy which has no renewable energy targets beyond 2020 EU commitments (UK 100).

These moves are partly about seeking to influence national and global debates but such contestations, and the emergence of debates that develop alternative ideas, have also been seen as a core condition of the ability of localities to disrupt 'conventional inter-scalar relations' (Davies & Blanco, 2017, p. 17). At the same time, as is discussed in more detail below, to the extent that local processes of rethinking sustainability, and how it can be achieved through political actions, successfully influence national policy debates this suggests a more co-constitutive, and less zero-sum, aspect to local-national relations (Brown et al., 2015, p. 16).

3.3 Learning, credibility and capacity for change

Contestation of existing institutions, learning and credibility are important concepts in constructivist IPE understandings of change (Hall, 1993; Blyth, 2002, 2013; Schmidt, 2008; Baker & Underhill, 2015). This is because the capacity to drive change is dependent in part upon alternative ideas that can credibly contest institutions and suggest new solutions. Sustainable energy exists today, as a new policy area, because learning about anthropogenic climate change, and its relation to energy systems, has informed new ideas and some successful contestations of fossil fuel energy (Kuzemko, 2013). From this evidence social learning has both been an integral part of the process of formulating new ideas about energy, and a process through which some policymakers came to recognize the need for change and to revise actions accordingly (Hall, 1993; Hall et al., 2013).

Likewise, within STT scholarship, the ability to change energy systems is understood as dependent upon processes of experimentation and learning wherein alternative ideas about how to provide energy services can be developed and demonstrated (Geels, 2004; Mazzucato, 2013; Andrews-Speed, 2016). Interestingly, from this perspective, the state is key to creating conditions for learning to take place – partly through the research, development and demonstration (RD&D) process (Mazzucato, 2013; Andrews-Speed, 2016). This does somewhat beg the question, however, of how alternative sets of ideas about sustainability become credible enough that they can be utilized to effect change. If politics is partly about who gets to speak 'authoritatively' (Blyth, 2013, p. 201), and at which points in time,

then this places credibility at the heart of the ability to contest and to successfully argue for change.

It is argued here that a foregrounding of questions of learning, credibility and capacity for change, from across both constructivist IPE and STT debates, places local governments in a potentially interesting position. This is partly because the local scale is sometimes explicitly conceptualized as a site for the development of new ideas (Pieterse, 1997), and technologies and business practices (IEA, 2016; March & Ribera-Fumaz, 2016). The local scale is also understood, just as importantly, as key to demonstrating the validity of new policy and technical ideas (Goldthau, 2014). It is through such processes of demonstration, often via area-based schemes, that wider social and political credibility can be gained and alternative approaches to energy can become more tangible. As an example of demonstrating new technical approaches, Bristol City Council developed schemes whereby houses along individual streets were equipped with sustainable energy innovations, like insulation, new boilers and solar PV panels (CSE, 2017). Citizens from neighboring streets were then invited to come and see not only that these changes can be beneficial, for example in lowering heating bills, but also what they look like in their locality (*ibid*).

In terms of building credibility for new ideas, some local policymakers can now show, through application, that sustainable energy policies have positive implications for other policy areas, often core areas of responsibility, such as traffic congestion, public health and well-being, and conditions of social housing (Bulkeley & Betsill, 2013; Hall & Roelich, 2016; Webb et al., 2016). The ability of sustainable energy policymakers to demonstrate that alternative approaches work in practice can then also form an evidence base for more local sustainable policies. The small market town of Schwäbisch Hall, Germany, is illustrative here. The Schwäbisch Hall Stadtwerke having demonstrated the effectiveness of its, then novel, sustainable energy strategy, now plays an active role as partner to other localities seeking to learn from its model of combining renewable generation with CHP and energy efficiency (Kuzemko et al., 2017). Elsewhere links between learning, demonstration and credibility have been evidenced in California and Hawaii (Mulkern, 2017), and in Sao Paolo where the success of the Cities for Climate Protection (CCP) programme was used as the basis for a range of further actions (de Oliveira, 2009, p. 257). Other cities and towns show proof of possibility by meeting ambitious sustainable energy targets and this can be effective for building local, national and transnational credibility. Similarly, small US towns, like Aspen, Burlington and Greensburg, and German Länder, like Mecklenberg-Vorpommern and Schleswig-Holstein, already produce more electricity from renewables than they consume (Ramsey, 2017; Morris & Jungjohann, 2016).

Some IPE scholarship explicitly interprets the value of local learning to lie in processes of sharing, debating and discussing successes and failures with other groups (Pieterse, 1997). Although many experiments take place in specific localities, and may be conditional upon local geography or political capacities, sharing learning about sustainable energy solutions is one of the core functions of transnational networks, such as the C40, Covenant of Mayors and ICLEI (Cities 100, 2015; Gordon & Johnson, 2017, p. 6; C40, 2016). Specific forums have been set up to share and discuss new learning as it arises, for example the ICLEI's renewable cities global learning forum (ICLEI, 2017), and the C40 Building Energy 2020

Programme. It is arguably also through the wider accumulation of knowledge that these networks, and some individual local governments, can credibly pursue their sustainability leadership and advocacy aims.

Other scholars have identified local political approaches that are purposive and strategic in seeking to capture new forms of learning and experience in order to have the capacity to speak authoritatively to national energy debates (Bulkeley & Broto, 2013; Smedby, 2015). For example, amongst lessons learnt from Mannheim city experiments around local markets was that German Federal regulations had not kept pace with socio-technical change, and that further policy change was required (Kuzemko et al., 2017). Local governments also inform central government by sharing stories of local successes thereby underpinning credibility through demonstrating the value of progressive energy policies (Cities 100, 2015). To the extent that learning emerging from the local scale does inform national or global governance (Broekhoff et al., 2015), this can be seen as evidence of growing local government capacities to enter into a more dynamic, two-way relationship with national government. This approach helps us to understand why some local policy experiments can be regarded as central to the ways in which climate mitigation politics is being both contested and (re-)configured (Bulkeley & Broto, 2013, p. 362; Gordon, 2013, p. 288).

Although there is a cumulative aspect to these notions of learning the proposal here is neither that learning is linear nor that new approaches developed in one locality will necessarily be relevant for others. Indeed, recent work to establish generic urban 'types' is important in gaining insights into which cities might be peers for the transfer of successful sustainability practices and policies (Beveridge et al., 2016). It is also worth noting that there has also been room for learning from failure which is, perhaps, as important as recognizing and seeking to replicate success. For example, Frankfurt learnt through trial and error that it might not be able to meet a 100% renewable energy target, given the size of its population and the space it occupies, so new plans are to produce as much renewable electricity and heat as it can, integrating these systems, and to import extra amounts of renewables needed from surrounding rural areas (Morris & Jungjohann, 2016, p. 100).

It is considered significant here not only that these forms of learning are taking place at the local scale but also within the public sector. This is partly because policy and technical learning, and taking energy services back into public hands, can be seen as methods of reversing previous losses of public knowledge capacity (see also Le Strat, 2017). Indeed, if knowledge about sustainable energy continues to accumulate within and across local governments this may go some way towards reversing previous trends, whereby large corporations became the recognized holders of superior knowledge about energy systems. This is, of course, not to say that all local governments will, or indeed need to, play an active part in processes of learning about sustainable energy. But in each instance that new solutions can be made available for others to consider, interrogate and debate the political and financial costs for other local governments interested in taking part can potentially be lowered.

4. Conceptualizing local sustainable energy policymaking

Given that this article has synthesized insights from across a reasonably broad scholarly terrain it is worth summing up the conceptual framework. It was

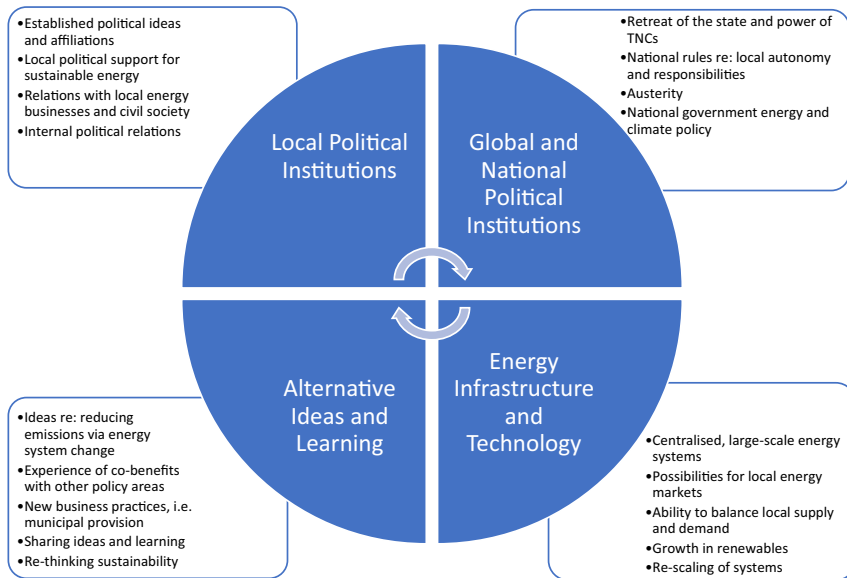


Figure 1. Factors that Influence Local Sustainable Energy Policymaking.

considered necessary to take an inter-disciplinary approach in order to assemble a framework that could take the local scale, energy politics and materialities into account, and because energy IPE, city climate change, new institutional and STT approaches each miss out one or more of these aspects. Although it remains fairly broad brush, this conceptualization allows us to focus on local sustainable energy policy, and the choices facing decision-makers, whilst also considering dynamic interlinkages between local, national and global policy institutions and debates. By understanding local policymakers as contextually constrained, but also as capable of discretionary thinking and of contributing toward ideational and policy change, the framework presents us with a nuanced, if more complex, picture of policy decision-making at this scale. It also helps us to understand why some local governments can be considered as having important contributions to make to sustainable change.

In its essence local policymaking in sustainable energy is understood as taking place in relation to a broad range of factors that influence policy debates, the choices that policymakers can make, their capacity to act autonomously and to direct and/or otherwise enable changes of a sustainable nature. For illustrative purposes four sets of factors are set out, in [Figure 1](#), as well as some more specifically defined factors contained within each set. These are not considered exhaustive but merely reflect the influencing factors referenced in this article as being of particular importance. ‘Global and national political institutions’ and ‘local political institutions’ are understood as sets of factors that are underpinned by established thinking and patterns of power relations. Under ‘global and national political institutions’, an important factor is existing national government energy and climate change policy as this has clear implications, as set out above, for the choices local governments can make. ‘Local political institutions’, often left out of energy IPE, includes existing relations with local energy businesses and civil society as

influential. Relations *within* local governments are also considered important given that sustainable energy personnel often need to present their, often new, ideas to finance departments or elected representatives before approval can be given.

‘Energy infrastructure and technology’ factors have been added to reflect the assumption that policies can and do affect material ways in which energy is produced and used and vice versa. Factors here include both infrastructures and embedded practices, local conditions for energy generation, and important recent re-scalings of energy systems. Material factors are often under analyzed within city climate change and IPE approaches to low carbon transitions but are particularly important in relation to recognizing new opportunities for local political action. Lastly, the inclusion of a set of factors based around ‘alternative ideas and learning’ reflects arguments, above, that IPE and city climate change approaches have been too static in their emphasis on context. Interestingly, by including alternative ideas and learning, global and national institutions, such as ideas about privatization, become both factors influencing local policymaking but also that which is subject to contestation. In the particularly fast-evolving political and technical landscape of sustainable energy, the capacities that new learning can engender in relation to driving change are considered here as vital. It is also considered significant that new learning takes place at the local, not national, level to the extent that this poses questions regarding the scale at which energy should be governed.

There are some useful inter-connections that can be drawn out between sets of influencing factors – hence the arrows between boxes on Figure 1. Overall the conceptual frame has been devised in a way that considers how various factors influence policy in different localities. For example, local and national political institutions may differ in the instances, as is often the case that political parties in power differ. This provides a further explanation as to why some local governments choose to pursue sets of ideas about sustainable energy, and how to achieve it, that contradict those of their national governments. Another example of links between sets of factors, this time between ‘alternative ideas and learning’ and ‘energy infrastructure and technology’, is that the decentralizing tendencies of some technical changes have, in turn, created conditions better suited to pursuing alternative ideas about local ownership of energy assets and provision of public goods. As such, learning that is taking place in various localities around the world is both enabled by material energy re-scalings, but also contributes towards local government capacities for further policy re-scaling.

5. Conclusions

Underpinning this concluding section is a broad appeal to IPE scholars, including those interested in low carbon transitions and climate change more broadly, to take more account of the local scale and the ways in which it interacts with national and global political economy. This is partly because there is much to be learnt about how to move towards sustainability in more equitable and inclusive ways from the debates, learning and policy actions taking place at this scale. It is here that we see evidence of ideas and practices emerging that can help to inform types of sustainable energy transformations, beneficial to many rather than the few, that some IPE and other scholars support (see Lovins, 1977; Kuzemko et al., 2016; Newell, 2018; Sovacool & Walter, 2018). It is worth re-stating that this is not to

argue that ideas and policies that lead to better energy access and affordability and low emissions at the local scale are necessarily scalable nationally or transnationally. It is, however, important both that systems of energy provision that are sustainable in a broader social sense are shown to be possible, and that further interrogation takes place about what aspects are transferable and at what scale. Taken together the changes outlined here provide evidence of a reshaping of the IPE of energy, by decentering both states and large corporations and empowering local communities and governments through changes in forms of ownership and scales of operation. The broad effect is that of some disruption to conventional inter-scalar relations that makes further study of inter-connections between the local, national and global yet more pertinent.

Despite relative silence on the local since the early 2000s there does appear, however, to be some IPE interest re-emerging. Recent analyses identify local government contestations of global and/or national rules, as part of broader processes of activism, in policy areas other than energy. Specifically, they observe local government resistance to privatization in water in the form of re-municipalization (Hall et al., 2013; Beveridge & Naumann, 2014), whilst others have referenced resistance by local governments to national and/or EU trade policy across a number of European countries (Verhoeven & Duyvendak, 2017; Siles-Brügge & Strange, 2019, forthcoming). This framework could be applied in the service of better understanding some aspects of local decision-making processes that underpin these acts of resistance. By suggesting that local government ideas, contestations and learning can have implications for broader political debates this also explains why some local governments might wish to become activists here even if, in technical terms, they cannot always implement different policies locally.

Broadly speaking, however, it remains to be seen how applicable this framework might be to understanding local, or indeed national, policy-making in other areas. Here it has been argued that conceptual frames for analyzing policy and change, although often assumed to be general, have needed some adjustment in order to formulate a more nuanced understanding of policymaking in *energy* at the *local* scale. This might suggest that the framework would only be applicable to similar analyses. Although one obstacle envisaged, in terms of applicability to other areas of policy, is that the set of material factors as set out here relate specifically to energy, there might be room to include instead material factors relevant to other areas of policy – such as water or trade. Indeed, to do so, could also form part of a response to IPE claims that sector specifics should be better evaluated when considering comparative differences in political approaches (Crouch, 2005; Döring et al., 2017). In terms of analyses of national policymaking in energy, overall sets of factors can be considered relevant with the exception of ‘local political institutions’, although more account would somehow need to be taken of the influence of local government on national political debates. In addition, some of the specific factors as set out here, within each set of factors, would also need to be altered, for example ideas about municipal provision would take on a different meaning at the national than local level.

In returning here to conceptualizations of the local as a site of alternative thinking and contestation (Ward, 1996; Obi, 1997; Pieterse, 1997), whilst also considering both forms of local contestation and local government capacities to act, it has been possible to identify what global and national institutions are being contested.

These observations are interesting in relation to debates about the retreat of the state to the extent that processes of re-municipalization challenge global norms of privatization and suggest a degree of return, rather than retreat, of the *local* state. In a similar sense, with relevance to debates about the hollowing out of the state (Brenner & Theodore, 2002; Jessop 2002; Paul 2002), this article has tended to highlight ways in which some local governments have used processes of re-scaling, conversely, to enhance their autonomy and capacity. In these ways, some local governments can be interpreted as active agents, but in pursuit of something other than the reproduction and continual reconstitutions of neoliberalism. Neither is greater local autonomy necessarily a zero-sum game because, by conceptualizing the relationship between national and local as two-way, greater local capacity to solve energy issues can, under the right political conditions, also contribute to greater state capacity overall.

Finally, there are some interesting dualities that emerge here that further research might usefully explore. On the one hand whilst there may well be advantages of re-scaling processes, they can also result in ad hoc energy provision whereby citizens in more progressive locations benefit from cleaner air and/or more affordable, sustainable energy, whilst those in others do not. Unless there is some form of broader co-ordination it may well become increasingly difficult to re-distribute the costs and benefits of sustainable change effectively on a national, let alone global, scale. At the same time, however, to the degree that new policy and technical ideas and learning are being shared, and considered applicable elsewhere, this could help national governments to write policies that can enable all local governments within their jurisdiction to improve their sustainable energy services. Some aspects of learning, and associated reductions in risks and costs, can also make it politically and economically easier for local governments that have yet to make much effort in sustainability to start to do so. What is still required, however, is further consideration of where responsibility, capability and resources should be sited under conditions of political and energy re-scaling.

Note

1. It should be noted that this section is partly informed by my role as commissioner on the West Midlands Combined Authority's regional clean energy policy commission which heard a wide range of evidence from, mainly European, sub-national actors (from the UK, Norway, Ireland and the Netherlands) and through attendance at a number of international city sustainability conferences that included representatives from transnational networks as well as individual authorities from around the world.

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