State enrolment and energy-carbon transitions: syndromic experimentation and atomisation in England

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Introduction

Across the global North, governments are engaged in restructuring around the increasingly linked agendas of carbon management and energy security (While *et al.*, 2010; Lovell *et al.*, 2011). These agendas are characterised by complexity, uncertainty and all-pervasiveness. In order to meet these goals governments necessarily implement programmes to enrol a range of institutions, institutional spaces and individuals to act on energy-carbon restructuring. Enrolling territorial subjects and objects raises significant challenges for government, including dealing with path-dependencies created by existing socio-technical societal, economic and infrastructural configurations; and developing specific means to (re)construct objects and enrol subjects on energy-carbon goals. Addressing these challenges requires consideration of the forms of power to be exercised in doing so, ways in which new policy interacts with existing institutions, and determining the balance of responsibilities between different institutional and non-institutional actors. It also necessitates engagement with different actors through different means and different territorial and institutional configurations.

This paper sets out to explore these challenges and responses by explicating how national governments have sought to govern at a distance to embed energy-carbon rationalities in sub-national subjects and objects. The interrogation of governing at a distance, already the subject of extensive discussion (see Rose, 1996; Miller and Rose, 2008; Dean, 1999; Mackinnon, 2000) lends itself well to reflection on governmental action in rolling-out state goals. The notion has particular appeal to studies of energy-carbon governance, owing to the complexity and ubiquity of energy-carbon entanglements, which require the embedding of new governmental rationalities across numerous subjects. To date, explicit consideration of this literature in relation to energy and/or carbon governance has focused on specific subjectivities: for instance, governing individuals at a distance (see Paterson and Stripple, 2010; Letell *et al.*, 2011). In order to more explicitly draw out relationships between governing at a distance and energy-carbon governance it is important to consider a broader agenda, exploring the range of different modes of engagement between national government and the objects and subjects of transition strategies.

In taking this approach, this paper also fleshes out notions of governing energy-carbon at a distance through engagement with literature on the creation of new policy domains, considering how policy might map onto existing governmental regimes. This complements work investigating the prospects for national governmental engagements with different institutions and actors (see While *et al.*, 2010; Hodson and Marvin, 2013), and takes forward the concerns of Bulkeley *et al.* (2005, 2007) for the forms of power utilised and the institutional configurations involved. Through engagement with these bodies of work, a conceptualisation of 'modes of enrolment' is generated, which is then operationalised to explore the empirical case of England. The analysis shows a disordered approach to carbon governance focusing on modes of enrolment increasingly operating outwith classical-modernist governmental approaches or mechanisms that seek to integrate carbon reduction into existing policy domains. This is characterised by the syndromic use of policy experimentation in the implementation of governing technologies and atomisation of subjects and objects of governing. Rather than the (albeit weak) 'interconnecting strands' across domains and scales seen in previous rounds of environmental and sustainability policy integration, we increasingly see a process of by-passing and re-enrolment: policy aimed at non-state spaces which then requires the re-enrolment of state actors in order to ensure effective delivery. There are a range of explanatory factors for this, including the interaction of the various lock-ins (Unruh, 2000) outlined above. The consequence of the policies that are enacted is greater difficulty for other institutions to act in a systematic, programmatic or collective manner.

The following section considers challenges for governments in enrolling different subjects and objects, followed by a conceptual basis for mapping processes of enrolment. Taking inspiration from Bulkeley *et al.* (2005, 2007), the paper then constructs a 'modes of enrolment' framework outlining ways in which enrolment is enacted, focusing on power modalities and forms of policy integration. The paper then moves on to empirical analysis, structured around five modes of enrolment employed in England. This analysis highlights two central trends - experimentation in implementation and atomisation in effects - and draws out some of the challenges that have shaped these modes.

Energy-carbon transitions as a process of state enrolment

The realisation of state strategy requires the ability to exercise power and influence over others, involving their enrolment in state programmes: governments are required to define and attribute roles to actors, "who accept them" (Callon, 1986). As such, "government is programmatic, attempting to organise institutional spaces and the conduct of actors in line with specific aims and objectives" (Bulkeley *et al.*, 2007 p.2736). To exercise power and influence, objects (targets of governmental action, for instance, territories, carbon emissions and so on) and subjects (actors whose thoughts and actions are the focus of government) of government and mechanisms for governing at a distance need to be established. This is not only about the state extending its authority, but also about exercising various power modalities in order to enrol different actors and territories within a particular governing regime or rationality (Allen, 2004): the exercise of power to "structure the possible field of action of others" (Foucault, 1982 p.221). The literature on governing at a distance focuses on "the 'how' of government, on the specific mechanisms, techniques, and procedures which political authorities deploy to realise and enact their programmes" (MacKinnon, 2000, p.295, in Bulkeley *et al.*, 2007). In other words, "the state cannot be used to explain events but must itself be explained through empirical analysis" (Mackinnon, 2000 p.294).

In order to enrol, national governments construct new regulatory and governance relationships to reorder objects and spaces. This is partly about spatial management, where a concern for various manifestations of strategic selectivity of state decision-making is important (Jessop, 1995). Part of this involves working with existing state architectures. Crucially, in order to analyse how the state has sought to produce energy-carbon objects it is necessary to think beyond the enrolment of other state institutions and institutional spaces towards non-state spaces and subjects: 'communities', households, businesses and individuals. For example, producing self-governing individuals is a central and enduring theme of governmentality literature and those concerned with governing at a distance (Lemke, 2010; Paterson and Stripple, 2010; Maniates, 2002; Dean, 1999; Miller, 1992). It is important to consider the division of governing across different subjects and objects, and how these are constructed by governmental modes of enrolment.

Enrolling might encounter resistance from some interests, support from others. It is therefore likely that modes of enrolling will be shaped by the politics of resistance and the balance across different pressures and demands. This opens up questions regarding the legitimacy of the actors involved and of energy-carbon restructuring as a policy goal. For Bulkeley (2012), legitimacy foregrounds authority, a central pillar of governance. An absence of authority potentially promotes territorialisation by stealth: the use of light touch instruments, co-ordination and facilitation to steer sub-national actors towards production of a carbon governance object rather than use of instrumental coercion through targets, significant fiscal provision or authoritative reconfiguration of existing governance structures. Different means of enrolling subjects and objects from 'above' create different sets of issues for the enactment of energy-carbon restructuring. Furthermore, the types of instruments used and the modes of power exercised in implementing them both have a bearing on what and where tensions arise. The role of mediators presents further potential challenges in the translation of strategies into action, when considering the differing levels of commitment, resources and legitimacy likely to be present within different actors, networks and spaces of governance (Latour, 2005; Hodson and Marvin, 2010).

Prioritising different objects and subjects for programmes of enrolment is another important consideration. This might be about prioritising particular levels of governance, including the distribution of responsibilities within institutions. The integration of energy-carbon goals at sub-national scales fits a wider project of territorial re-scaling observed across Western states over the 1990s and 2000s (Lobao *et al.*, 2009). A more managerial rationale for national intervention on carbon enrolment is to ensure consistency of government policy throughout the architecture of the state. The production of energy-carbon governance objects beyond the nation state may also act as a form of metagovernance to 'set the rules of the game' (Jessop, 2004): the conduct of conduct (Foucault, 1978), producing self-governing carbon objects by changing ways of considering what the space fundamentally consists of. This might also be about disaggregating accountability, providing both a disciplining framework when national policy goals are not achieved but also shifting responsibility onto bodies that can act as useful 'shields' for central government (Goodwin and Painter, 1996).

This raises questions regarding existing institutional architecture and how energy-carbon governance maps onto it. The typical response to capitalist crises has been to implement governance fixes without radically altering existing arrangements within and between existing institutions (Hooghe and Marks, 2001; Gore, 2004). The challenges here relate to how possible it is to enrol people and places in energy-carbon action in the same ways as other policy objects; and the role of existing governance architecture in shaping both the way carbon is spatially conceived and how it is governed. This highlights questions regarding the ontology of energy-carbon objects within such a context. In their exposition of the carbon calculus in Portland (USA), Rutland and Aylett (2008) show how political concerns regarding the role of local government shaped the construction of 'local' carbon emissions: the local carbon governance object became 'what local government felt they could influence.' Rules, routines and accepted norms regarding policy design and implementation were crucial.

Finally, it is important to emphasise that governed people, places and institutions might drive or work against national priorities (Gibbs *et al.*, 2002). This might move beyond the rationales of what has come to be understood as liberal or neoliberal governance and include searches for a more socially and environmentally progressive subnational politics (North, 2011). This is covered in detail elsewhere (see Bulkeley and Betsill, 2003; Schreurs, 2008; Bulkeley, 2012): the intention here is to set such developments specifically within the multi-level governance frameworks that shape such activity. Throughout these sets of challenges run themes regarding the prioritisation of different actors and spaces in creating new governance objects; the capacity and capability of sub-national organisations to enact or resist new governance logics; and the legitimacy of the constructed spaces, governing actors and policy themes involved. These threads run through the empirical investigation below.

Modes of enrolment

Thinking about the 'how' of energy-carbon enrolment necessitates explicit consideration of power and modes of governing (Bulkeley *et al.*, 2005; 2007), and of the multi-level and multi-scalar nature of contemporary governance. Different institutional mechanisms will likely require the exercise of

different power modalities and will be mediated by actors along the way. It is also useful to reflect on literatures exploring the construction of new policy domains and policy integration, allowing consideration of different options available to the state in relation to existing institutional arrangements. This literature has been a regular feature of multi-level and transnational governance literature on the environment, sustainable development and climate change (see Hajer, 2003; Lafferty and Hoven, 2003; Nilson and Persson, 2003; Gore, 2004). This work has tended to centre on policy goals aimed towards "the integration of environmental objectives into non-environmental policy-sectors" (Lafferty and Hovden, 2003). This is an important element in energy-carbon enrolment and was central to sustainable development discourses throughout the 1980s and 90s (*ibid.*). There are three ways in which policy integration tends to be considered: 'disruptive' change through the creation of new institutions or institutional spaces ('institutionalisation'[1]; see Lenschow and Zito, 1998); inserting interconnecting strands into existing policy domains such as planning or economic development (Gore, 2004); and using existing governance paradigms (such as taxation, regulation or grants/subsidies) to promote action in new areas of policy.

Other literature focuses on the challenges of operating outwith existing policy domains (Hajer, 2003; see also Biesbroek *et al.*, 2009). Hajer (2003) writes about the changing nature of policy formation, particularly within 'institutional voids': focusing only on the 'classical-modernist' machinations of the state is no longer sufficient. This is taken on by Biesbroek *et al.* (2009), who argue: "these voids [can be] spaces of opportunity where innovations and experiments are unhindered by any institutional structures" (p.8). In the current paradigm of fiscal retrenchment and on-going support for marketisation of the state one argument is that we should expect such experiments to be used as a test-bed for further or advanced neoliberal governance techniques (Brenner *et al.*, 2010). Equally, however, experimental governance in institutional voids might be used to avoid conflict with existing policy pathways: these approaches by-pass or bolt onto, rather than challenge, existing policy regimes.

[1] This is a deliberately narrow and specific interpretation of the term in order to more clearly delineate between different forms of policy integration - the term institutionalisation in a broader sense could be applied to most forms of policy integration.

There is therefore a challenge integrating with existing spatial constructs, subjects and subjectivities as well as creating a domain for energy-carbon governance in its own right. This is difficult to negotiate and we might therefore see different institutional mechanisms being utilised. These variations also impact on the form that governing technologies take, depending on the existing constructions in place and on-going engagements between the state and those constructions. But producing new domains where no classical-modernist governing infrastructure exists can provide particular challenges for the state in promoting new agendas: for instance, it might impact on modes of governing or shape experimentation.

Pulling together the factors outlined above points to energy-carbon enrolment as a multi-faceted 'constellation' (Bulkeley *et al.*, 2005) of relations across different spatial constructs, and objects and subjects involved. Borrowing from Bulkeley *et al.*'s modes of governing approach (*ibid.*; 2007), we might consider modes of energy-carbon enrolment, taking into account power modalities, policy objects, and forms of policy integration to generate an understanding of different modes of enrolment. This informs the empirical analysis immediately below.

Modes of energy-carbon enrolment in England

This paper draws on evidence from a number of research council and national government-funded projects on energy-carbon restructuring in England from 2007-2014 (carried out by the author). These projects include two evaluations of specific government initiatives (DECC, 2015a, 2015b), a British Academy funded study of urban energy-carbon restructuring[2] and an ESRC-funded PhD study of sub-national carbon reduction policy. In total, the paper draws on a rich dataset of 16 in-depth qualitative interviews with government officials; a focus group of national stakeholders such as national energy/carbon reduction charities and government officials; 148 in-depth qualitative interviews with regional, city-regional and local authority representatives; and 20 in-depth qualitative interviews with local-level VCS representatives. This is a substantial dataset, making it a unique source for analysing carbon and energy policy in the UK. These projects were not specifically designed to answer

[2] *Carbon Value Change and Policy Choices in Local Governance*, British Academy grant SG111169.

questions explored in this paper, but they nevertheless provide detailed insights into the overall policy landscape as well as policy-making processes and impacts. Interviews were transcribed, recoded and analysed using NVivo 10 software. Evidence was further supplemented through three additional interviews with community energy practitioners and a documentary review. The overall dataset also allows a longer-term perspective on the direction of travel and of the impact of policy over time.

Over the period 2007-2014 policy change became an ingrained facet of energy-carbon governance in the UK. During this period a range of strategies and policy interventions were enacted. A timeline of key staging points is outlined in Table 1. Between 2007 and 2010 a Labour administration oversaw significant policy developments including the creation of a dedicated Department for Energy and Climate Change (DECC), the introduction of legally binding carbon emissions targets leading up to an 80 per cent reduction in emissions based on 1990 levels by 2050, and experimentation with local carbon emissions targets. From 2010 to 2015 a Conservative-Liberal Democrat Coalition remained broadly supportive of carbon reduction policy, although various elements of planning and fiscal policy were weakened: for instance, the Coalition introduced new planning guidelines that were widely seen to have weakened sustainable development commitments, and overall expenditure on low carbon projects was reduced (While, 2014).

Table 1: Key UK government policies and strategies, 2007-2014

Year	*Policy instrument/document*	*Political Administration*
2007	Energy White Paper: commits UK to 60% CO_2 reductions by 2050	Labour
2007	Carbon Reduction Commitment: mandatory emissions trading for non-energy intensive commercial and public organisations	
2008	Creation of Department of Energy and Climate Change	
2008	Climate Change Act receives Royal Assent: commits UK to CO_2 emissions reductions of at least 80% by 2050	
2008	UK Renewable Energy Strategy published	
2009	UK Low Carbon Industrial Strategy and Low Carbon Transition Plan published	
2009	First UK Low Carbon Economic Areas announced: funding for experimentation around low carbon specialisms in UK regions	
2010	Introduction of feed-in-tariffs: subsidies for renewable energy production	
2011	Coalition's UK Low Carbon Plan published	Conservative-Liberal Democrat Coalition
2011	Feed-in-tariff scope and payments reduced (and again in subsequent years)	
2012	National Planning Policy Framework published: replaces all previous guidance and reduces emphasis on sustainable development/climate change	
2012	Introduction of the Green Deal: domestic energy efficiency loans scheme replacing existing 'free-to-user' schemes	
2013	Smart meter roll-out across UK begins	
2014	UK Community Energy Strategy published	

England is characterised by highly centralised governance structures, with national government ceding relatively few resources to sub-national institutions. Similarly, energy infrastructure is centrally organised and owned: a national grid for electricity and gas with over 90 per cent of energy market share held by six multi-national businesses (Ofgem, 2014). This compares to just 46 per cent of electricity market share held by four firms in Germany, although many other EU nations have high market concentrations owing to the continuing existence of nationalised energy suppliers, unlike in the UK. Nonetheless, the intention here is to use the English example to look at broader challenges of

energy-carbon enrolment in the context of ideological, technical and institutional 'lock-ins' and uncertainties.

A framework of governmental intervention

The UK government's Carbon Plan (2011, p.5) outlines the role of government in effecting a transition to a low carbon society as: "…to set the legal and market frameworks and to provide the information to enable businesses, households, local areas and communities to play their part". The focus here is on the production of self-governing entities through shaping the conditions for activity, in preference to direct regulation, especially through the creation of markets; and on the removal of market failures to allow rational action on carbon reduction. Information provision acts as a key basis for removing 'market imperfections' seen to hold back activity. This statement identifies four target groups, avoiding focus on state organisations, by for instance preferring 'local area' to 'local government'. A more detailed analysis of the Carbon Plan and related initiatives shows that this broad vision for governmental action plays out differently across territorial constructs and with different modes of enrolment employed to differing effects. Table 2 outlines five modes of enrolment, ranging from traditional 'classical-modernist' levers to marketisation and individualisation, more recently accorded to notions of advanced neoliberal governance.

These modes were identified through analysis of documentary and primary material to outline the range of policies and programmes undertaken by the UK government over the period under consideration. Policies were labelled according to: the power modalities exercised; the mode of policy integration utilised; a broad descriptor of the policy; and links between policies (for instance inclusion in the same strategy document). The policies were then grouped by similar characteristics. The intention was to analyse trends, discourses and implications of policies. There is a degree of fluidity between modes: this is revisited in the concluding discussion.

This analysis does not discount the existence of or potential for alternative modes of enrolment. Rather, analysis reflects a particular period of time in a particular context and is designed to draw the

gaze to the level of experimentation taking place in England outwith more traditional modes of fiscal and regulatory governance. An analysis of other Western states or different levels of governing might produce new modes, or different outcomes to those outlined here. For example, a focus on policy in Germany might open up modes of enrolment relating to contrasting relationships between different levels of government with greater strategic systemic provision.

Table 2 shows common features across each identified mode of enrolment in the UK. Common features include a prevalence of 'soft' power modalities such as induction, seduction and facilitation being exercised (see Allen, 2005 for a discussion of different ways of exercising power). It also shows a tendency for experimentation in voids, especially in the case of more recent approaches to enrolment focused on individuals and sub-local geographies. Hodson and Marvin (2013) note that experimentation is a prevalent theme of UK carbon governance. The analysis below suggests that this might be seen as a syndromic characteristic borne of a range of ideological, institutional and material tensions: experimentation has become the default setting for policy implementation on energy-carbon matters. This is understood as syndromic because it is an outcome of wider challenges, rather than necessarily a goal in itself. This poses questions for understanding processes of energy-carbon enrolment: for instance, whether the wicked nature of carbon governance makes 'ordered' governance an intrinsically impossible task (see Watson and Shove, 2007), beyond the broader challenge of contemporary governance marked by policy-makers' reflexive irony regarding the inevitability of governance failure (Jessop, 2005; cf. Kooiman, 2000).

Most starkly the spatial implications of each mode point towards atomisation through (variously) fragmentation, individualisation, calculative practices and lack of support for systemic, programmatic or truly collective solutions to energy-carbon transitions. Atomisation in the context of energy-carbon is defined here as entailing both "the act of separating particles into discrete units … [and] a social mechanism whereby collective units (e.g. families, unions, classes) are reduced to individualised units consisting of one person rather than many" (Boykoff, 2011 p.105). This is embedded across all modes of energy-carbon enrolment, inherent in techno-calculative exercises and fiscal levers as well as

approaches more aligned to neoliberal or minimalist governance logic. This atomisation is problematic when dealing with a systematic problem such as carbon emissions. As with experimentation in implementation, atomisation is a result of tensions created by a range of the different challenges and path-dependencies outlined above. These issues are unpacked in the following sections, covering each of the identified modes of enrolment.

Table 2: Modes of energy-carbon enrolment in England

Mode	Power modalities	Policy integration	Policy object	Examples	Spatial implications
Classical-modernist state levers	authority/ provision	existing paradigms/experimentation in voids	individual/ firm	Fuel duty Planning guidance HECA	Atomisation through individualisation and lack of re-combining redistributive measures. Some disaggregation of regulatory resources but subject to national government intervention.
Calculative instrumentalism	quasi-authority/ induction	institutionalisation/ interconnecting strands/ experimentation in voids	local/ regional	Local Area Agreements and later monitoring of emissions/renewables and so on	Atomisation through reduction of carbon flows to data points – potential to 'calculate out' systemic interventions. Restriction of 'the local' to a small set of potential actions.
Strategically selective enabling	selective provision/ facilitation	integration/ experimentation in voids	local/ regional	Competitive grants; preferred places (e.g. core cities)	Atomisation through fragmentation and 'internalising' governance: the production of self-governing objects. Governance-by-project limits local capacity to effect systemic transitions, especially in context of broader fiscal austerity.
Marketised individualisation	induction/ seduction/ manipulation	experimentation in voids	individual	Green Deal Behaviour change Feed-in-Tariffs	Atomisation through individualisation, by-passing and subsequent re-enrolment of local state to ensure success of failing programmes.
Constructing new state spaces	induction/ seduction/ facilitation	experimentation in voids	communities	Community Energy Strategy Collective Switching Urban/Rural Community Energy Funds Green Deal Communities	Tension between attempts to configure collective action and atomising tendency of other modes of downscaling. Three trends: financialisation; communities as 'meta-individual'; and instrumental 'governing-through-community'.

Classical-modernist state levers

Classical-modernist state levers are the 'traditional' fiscal and regulatory mechanisms employed by the state across mainstream policy domains, including taxation, direct regulation and fiscal redistribution (Hajer, 2003). This mode is potentially a central element of energy-carbon enrolment, and taxes on energy and fuel are a significant source of income for the Exchequer.[3] However, income from these taxes is not ring-fenced for energy-carbon programmes. Increasingly, fiscal interventions have been implemented through experimental market measures, such as those aimed at energy companies to deliver domestic energy efficiency goals. For instance, the Energy Company Obligation (ECO), which mandates energy suppliers to provide funding for domestic energy efficiency, is administered via a market mechanism through energy companies: "we're now in a place where there isn't any central government funding, no Exchequer funding for energy efficiency per se; it all goes through a market mechanism" (interview with national NGO, 2014). The cost of these measures is passed onto consumers through energy bills, with redistribution offset by these charges and benefitting those with higher incomes (CSE, 2013). Progressive banding of taxation and redistribution of funds in line with the goals of the particular tax is an important means of producing a societal or systemic programme of governing.

Fiscal levers in the UK have been found to be unnecessarily complex, often generating sub-optimal outcomes (Bassi *et al.*, 2014). The failure to implement a comprehensive energy-carbon taxation regime in the place of myriad smaller, indirect interventions is in part a symptom of challenges policy makers face in attempting to work within existing paradigms without sufficient legitimacy. The political turmoil accompanying any significant change to vehicle fuel prices (see for example the

[3] Vehicle fuel duty is the highest source of taxation income to the UK government after income-based taxes and VAT. In 2013 this amounted to an income of £26 billion. (HMRC, 2014). VAT also applies to domestic fuel use and the government (in some cases led by the EU) has also implemented a raft of fiscal measures aimed at businesses or large organisations in the last decade. These include the Carbon Reduction Commitment, Climate Change Agreements, Climate Change Levy, Company Car Tax, Carbon Price Floor, Renewables Obligation and the EU Emissions Trading Scheme.

strikes and protests against high petrol prices in the UK in 2000) is one indicator of the political contentiousness of carbon taxes.[4]

The centralised model of engagement differs slightly when considering planning and building regulations: in the majority of cases local authorities are responsible for ensuring planning and building regulations are met. Increasingly the role of national government in 'planning at a distance' has been to shape the conditions for local action (Counsell and Haughton, 2013). The Coalition government's National Planning Policy Framework (2010) which informs local authority action, places an emphasis on growth as the primary goal of planning, and "the overall effect could be summarised as seeking to reduce or contain the environmental role of planning" (Cowell, 2013 p.40). Yet regulation of energy supply is overwhelmingly conducted at a national level and the centralised energy system necessitates this. Here the government has taken a more active role, albeit with a greater emphasis on energy security and economic growth than emissions reduction, for instance through the development of National Infrastructure Plans (NIPs; HMT, 2010, 2011 and 2014), which set out the governments priorities for national infrastructure development. Seeing "achieving a secure, diverse and reliable energy supply for the UK" (HMT, 2011 p.4) as a primary factor in national economic wellbeing, energy infrastructure is partly removed from the enrolment of other territorial actors as a matter for direct intervention. Marshall (2013) argues that this move towards national planning of energy infrastructure is about protecting economic and political interests in continued fossil fuel production and "to smooth the way for a new generation of nuclear power stations" (p.13). The roots of greater levels of direct governmental intervention lie in attempts to protect existing ideological, infrastructure and economic path dependencies.

The classical-modernist mode of enrolment has been underutilised, with different configurations of obdurate challenges shaping government policy. Political legitimacy in particular has caused tensions relating to the direct interventions on the actions of individuals, leading to indirect, increasingly

[4] It is perhaps worth noting here that the impact of fuel duty on fuel consumption is quite small (Parry and Small, 2005), but the efficacy of the duty has not been the focus of protests.

marketised methods of implementation. At the same time embedded ideologies and a concern for 'growth first' have led to energy infrastructure planning being partly removed from other governmental subjects. Both fiscal and regulatory actions are atomistic in effect by stripping out deliberative or collective engagement (in the case of NIPs) and non-redistribution of taxation to maintain a link between individual and collective gain.

Calculative instrumentalism

The UK government has experimented with more overt forms of shaping energy-carbon subjectivities through spatial emissions targets: a form of instrumental calculation seeking to order carbon and territory to create a politically legible framework for acting on carbon reduction. The disaggregation of national targets and monitoring regimes to other scales of governing is a significant move in the territorialisation of the low carbon state and potentially marks an important stage in the process of governing energy-carbon at a distance.

Spatial carbon reduction targets were implemented in England between 2008 and 2011[5] on a non-mandatory basis, although 75 per cent of local authorities included an area-wide carbon reduction target in their Local Area Agreement (LAA; Eadson, 2008), and monitoring of emissions continued for all local areas through the period under consideration (DECC, 2014a). This mode of enrolment frames sub-national spaces as disaggregated territories bound within a national framework of emissions monitoring, although the vagaries of the calculations impact on the way in which different objects are defined. For instance initial modelling suggested little scope for local action on carbon emissions: all but a small number of actions outlined in the modelling were nationally-led, with local authorities cast as intermediaries between national government and individuals or firms.

Furthermore, this model focused on the 'end user' in energy systems: the individual or organisation consuming energy at the final point in the system is recorded as the 'producer' of that emission. This

[5] These targets formed a part of LAAs, which involved local authorities agreeing on up to 35 targets with central government from a suite of 200 national indicators across a range of policy domains. These were discontinued when the 2010 Coalition government came to power.

has a number of consequences. First, it reduces energy systems to data points: a set of discrete micro-processes rather than flows of carbon. This reduces the focus on systemic issues and solutions, instead focusing on individuals or organisations at one point in the system. Second, a number of important emissions are discounted from the methodology, deemed as 'extra-local'.[6] This has potential consequences for policy considerations about prioritising growth strategies. If certain sites and activities are deemed extra-local, these could then form the focus of growth strategies that increase overall emissions. An example of this can be seen in Greater Manchester where the city has implemented policies towards developing a carbon neutral airport, focusing on reducing emissions in servicing the airport ('local' activities), alongside the aim of growth for the airport as a whole. In addition, the omission of energy producers reinforces the schism between energy supply as a national concern and energy demand, partly disaggregated as a local concern. Nor does this take into account the embedded emissions in the production of goods: emissions produced in production, storage and transportation. Subsequently, areas engaging in consumption-based approaches to energy-carbon restructuring, such as localisation of food production, may find themselves actually increasing their measured emissions. Consequently a fragmented, atomised energy-carbon object is constructed: local areas are understood as the sum of individual consumers' actions rather than as entities that are more than the sum of their parts.

Entrepreneurial places: strategically selective enabling

A third mode of enrolment centres on how national government enables action at the city-regional and local level, a theme explored in other literature on the urban governance of climate change (see Hodson and Marvin, 2013; Bulkeley *et al.*, 2010; While *et al.*, 2010). Following the demise of the English regions as spaces of institutional governance in 2010, increasingly their replacements, Local Enterprise Partnerships (LEPs) – operating across city-regions – acted as brokers in this mode of

[6] This includes the well-known examples of 'bunker' emissions – those that are produced by international (and in this case, national) air travel and shipping – as well as inter-local/inter-regional road and rail transport. Importantly the methodology also omits heavy emitting organisations that are captured within the EU Emissions Trading Scheme (EU ETS) and energy producers.

enrolment, which centres largely on the allocation of funding through competitive funding calls, or direct negotiation with local authorities. Examples are outlined in Table 3.

Table 3: Examples of competitive funding and grants for cities

Funding	Description	Government department	Means of access
European Regional Development Fund (ERDF)	EU funding for economic development projects	European Union	Competition/negotiation
City Deals	Central government funding for economic and infrastructure development	BIS/DCLG/DECC	Competition/negotiation
Pioneer Cities	A set of loosely linked projects to promote action on a number of energy related areas, including the Green Deal; heat networks; fuel poverty; and collective energy switching	DECC	Competition/negotiation
Low Carbon Economic Areas	Funding for cities/regions to develop expertise and test new approaches to emerging low carbon economic sectors.	BIS/DECC	Competition
Regional/Local Growth Fund	Funding for economic development projects	DCLG	Competition

These programmes promote the construction of self-governing sub-national territories: cities and regions are ostensibly free to bid or negotiate with central government or the EU depending on local priorities. However, while often publicised as promoting sub-national autonomy, these programmes also entrench centralisation of energy-carbon enrolment by ensuring that funding is tied to particular sets of outputs and aims, which can involve extensive negotiation with central government, as outlined by one national-level respondent, talking about the Pioneer Cities Heat Networks programme, which gave funding of up to £300,000 to local authorities to develop plans for local Heat Networks:

> even when they're relatively small sums by departmental standards, we're talking tens of thousands … you can't simply hand it over to a local authority, but once we'd spoken to each of the cities and

had meetings with them, we went up there, they came down here … we agreed on the project plans and we gave them the money. (Central government policy officer)

Whole place solutions were eschewed for funding for discrete, relatively small projects, in many cases piloting new policy approaches or promoting experiments in discrete transition domains, as for the Low Carbon Economic Areas programme, which funded region-wide programmes including on low carbon vehicles (North East), low carbon built environment (Greater Manchester) and hydrogen and low carbon fuel technologies (Wales).

This is a continuation of broader trends in territorial government in relation to notions of the entrepreneurial city and inter-urban competition, with spatial fragmentation and existing spatial inequalities reproduced through conferment of advantage to the most 'successful' places. This was evident in interviews with local authorities where some talked of their regular communication with government, while others expressed frustration at the lack of freedom granted to local authorities:

The idea is it's consistent devolution of funding to local level and [the Pioneer Cities project] didn't work like that, there was a DECC underspend, a little bit of money that was left over from the last financial year and it was what could you do with this. So it was good start to a conversation with DECC but not really the kind of mainstream devolution of funding that you would hope to come out of that process. (City region policy manager)

This mode represents a form of atomisation whereby places are encouraged to internalise governing logics as self-governing objects, provision is fragmented both within and between places, and competition logics discourage solidarity and cooperation.

Marketised individualisation

State-centred interventions such as those outlined above have increasingly been accompanied by approaches that bypass state institutions, especially through experimental measures aimed at

individuals and communities. For instance, an increasing focus of governmental intervention has been on consumer behaviour in relation to energy and carbon emissions. Behaviour change has been a growing state agenda in the UK, hallmarked by 'nudge' economics and a liberal paternalist doctrine. This has been documented by a number of scholars (see Jones *et al*., 2013 and Whitehead, 2014). In governing carbon and energy the policy focus has tended firmly towards generation of *homo carbo-oeconomicus*: a 'better', marketised, financialised energy *consumer*. This is manifest in policies aimed at improving the function of energy markets by supplying more accessible information to customers via energy companies, including initiatives such as the Big Energy Savings Network – a DECC-funded initiative aimed at improving customer engagement with energy markets – and on a grander scale the roll-out of smart meters across all households in the UK by 2020. There are ideological factors at play here beyond that of encouraging 'better' energy behaviour among individuals, including a desire to reduce state expenditure and direct regulation. The Green Deal is a case in point. Until 2012, installation of domestic energy measures was incentivised through direct provision via various government schemes, some of which were administered by energy suppliers, others by local authorities. In 2010 the incoming Coalition government announced the introduction of the Green Deal, replacing the majority of direct provision with loans to households to pay for energy saving measures secured on the house. Importantly this greatly reduced the emphasis on local authority involvement in strategic delivery of domestic energy efficiency, including area-based schemes: again stripping out state coordination and reducing the potential for systemic action.

Uptake of the Green Deal was low. In the first 18 months of the programme, only 9,000 measures were installed. In comparison, 10 per cent of all households received insulation through the free CERT programme between 2008 and 2011 (DECC, 2012), with around 1.5 million measures delivered in 2010 alone. This suggests that the attempt to construct households as financialised energy-carbon subjects has yet to meet with success. As one respondent explained, while DECC convention is to refer to residents as consumers, people's lives remain mostly outside the logic of market-state (Polanyi, 1980):

> The trap that regulators and consumer bodies often fall into is that they lose sight of the fact that people are only consumers for a small part of the day (National stakeholder)

Despite low initial uptake there was strong ideological commitment to this project. DECC launched a number of initiatives to incentivise take-up by part-subsidising Green Deal measures. One example was the Green Deal Home Improvement scheme which allowed residential property owners and/or tenants to claim back up to £7,600 for improvements carried out on their homes as long as they took out a Green Deal loan.

There are also spatial implications, with a great degree of variation in uptake across local areas. For instance DECC statistics for November 2014 show that rural areas had lower levels of take up for Green Deal assessments as did some of those with higher proportions of rented accommodation. Areas with greatest uptake appeared to be those where there was strong local authority involvement in promoting or providing the Green Deal (DECC, 2015), suggesting an important role for the local state as facilitators of energy-carbon financialisation in this instance.

Constructing new carbon spaces: the rise of energy communities

Finally, the rise of community energy presents further evidence of ad-hoc experimentation and atomisation, even where policy purportedly encourages collective endeavour. Community energy as a discourse in academia and practice has grown in recent years (Eadson and Foden, 2014), and this has been taken up by central government. In 2013, then Secretary of State for Energy and Climate Change Ed Davey argued for "a community energy revolution in the UK" (Davey, 2013), and in 2014 the government produced its Community Energy Strategy which set out a vision to stimulate community-level energy initiatives: "we believe that community energy has the potential to [offer] new solutions where Government action alone is not enough." (DECC, 2014c p.2). 'Community' was therefore about doing what the state reportedly cannot.

While this rhetoric suggests an attempt by government to stimulate collectivism the reality tends in the other direction, as governing programmes sought to 'govern through' communities and promote individualised agendas. This approach was explained by a national government policy lead when talking about a project providing funding to community VCS organisations to help individuals engage with energy markets and energy savings measures: "it's almost like DECC facilitates it, is leasing the car, handing over the keys to a group of organisations, but it's still the owner of the car" (National policy officer).

Part of this involved aiding the financialisation of community energy projects through grants such as the Rural and Urban Community Energy Funds (RCEF/UCEF) that provide funds to help projects to become "investment ready" (DECC, 2014d). Increasingly government programmes also contained a 'community' element even when not expressly focused on communities: the Community Energy Strategy brought together a range of policy initiatives, ranging from the Heat Networks Delivery Unit (a DECC programme, aimed largely at local authorities) to the roll out of smart meters and grids. The argument is that 'community' can play a role in each of these. But this role was largely as a facilitator of national state action: communities were used as an instrumental vehicle for achieving governmental goals. This marked out the community not as a 'not state' object, as implied in government discourse, but fundamentally a state-led object with much of the role for communities reduced to state-mediator. In other words 'community energy' was used as a vehicle for policy experimentation and driving forward ideological state commitments within a spatial void. An example here is the Green Deal Communities initiative. Local authorities were invited to bid to an £88 million fund to promote the Green Deal to individual households in specific geographic areas and could use resources to fund a proportion of the cost of implementing household energy efficiency measures as long as the remainder was met through a Green Deal loan. Achieving energy efficiency was a secondary consideration to achieving take up of Green Deal loans: "DECC were really keen to have a household contribution through Green Deal finance. They're desperate for it to work" (local authority officer).

Despite inclusion in the Community Energy Strategy, the term 'community' only applied to the Green Deal Communities initiative insofar as particular geographic areas were targeted. Indeed a relatively large proportion of 'community' policies were aimed at projects which might be better categorised as "meta-individual" (Aiken, 2012 p.90). These policies promote the primacy of economic and market goals ahead of the idea of community as collective relations, which is fundamentally "not individual" (*ibid*.). An example of community policy as meta- rather than not- individual is the government's funding for 'community collective switching' projects, Cheaper Energy Together. This provided a small amount of funding to local authorities or local voluntary sector organisations to enrol residents to collectively purchase energy in search of a cheaper energy tariff: 'community' was defined as 'aggregate demand'. These examples make clear how, rather than "not individual" central government has tended towards a discourse of communities as "not - or beyond - the state", while implementing relatively instrumental state-led policies, which have also often required enrolling local authorities to promote and incentivise them.

The increased emphasis and formalisation in national policy of communities raises questions regarding their role within the division of governing carbon. The Community Energy Strategy was essentially a loose bundle of policies for localised energy generation and demand reduction brought together under the umbrella of 'community'. It provided financial incentives for self-governing energy-carbon objects, but only where some level of existing structural capacity existed. As with each of the modes of enrolling outlined above, the result of these themes of 'meta-individualisation', marketisation and uneven capacity is a sense of atomisation and fragmentation. Importantly, the focus on enrolling individuals and communities through these means also impacts on other governmental issues, in particular the role of local government and the relationship between local authorities and citizens. The increasing focus on individuals and communities represents a form of experimentation in spatial voids: an opportunity for government to explore different modes of governing unencumbered by existing sub-national state architecture. Other state actors, notably local authorities are in effect given a choice by central government: facilitate or be by-passed.

Discussion and Conclusion

This paper has highlighted five modes of enrolment in the period 2007-2014. Categorising the modes in this way reveals different mechanisms through which government has experimented beyond the traditional classical-modernist role of the state, while serving as a reminder of the potential role that fiscal and regulatory instruments continue to play. One overarching implication to emerge is increasing evidence for spatial and socio-economic inequalities as different actors operating at contrasting scales are able to utilise or subvert existing policy regimes: "atomization fragments social relations … we're encouraged to view ourselves as atomized subjects "going it alone" and "maximizing our utility" to improve our lives" (Boykoff, 2011 p.107), while the coordinating and 'gluing' capacity of state and voluntary institutions is increasingly tied to the implementation of such projects.

At the heart of the paper is the tension between a minimalist state ideology, on the one hand, with a tendency towards centralised intervention and control, on the other. This might be summed up as a muted double-movement of the state: promoting the primacy of markets, while at the same time being required to intervene to achieve governmental goals. In broad terms, especially when viewing the dichotomy between national infrastructure intervention and attempts to embed economic subjectivities this can be understood as what Lacher (1999, p.314) terms as the tension of a "… contradiction between the disembedded market and the conditions which make society, and social relations between human beings, possible." These tensions and uncertainty over how to proceed has created the conditions for government-by-experiment and by-project.

As with any typology the approach taken here inevitably highlights some issues at the expense of others. For instance the analysis potentially underplays interaction across modes. In particular selective and limited enabling of sub-national state institutions has tended to reduce their coordinating capabilities, which has had implications for the success of national programmes such as the Green Deal. The conflict between increasing national planning intervention on renewable and low carbon energy developments, with the aim of increasing decentralised energy generation is another example.

It is also notable how little coordination there has been between different broad state strategies, with links often retrofitted after the initial implementation of policy. In the case of the Green Deal, for instance, a 'community' approach was adopted two years after its initial implementation. In the same vein the need to enrol some actors in order to successfully enrol others has led to interdependency across modes: local authorities selectively enabled to produce community-level solutions; the community object produced to further goals relating to individualised market-consumerism; calculative instrumentalism reinforces competitive pressures between places; and so on.

This analytical model is also relatively static. This approach was adopted in order to emphasise experimentation in different forms of governing energy-carbon restructuring, across a range of target groups, at a particular period in time. But the temporal dimension should also be recognised. The period under question saw a trend towards financialisation, marketisation and individualisation in relation to carbon reduction and a centralisation of policy in relation to energy security goals, through national planning instruments focused on grid connectivity and nuclear energy. This suggests that the story of convergence between energy security and carbon reduction goals seen in the late 2000s was becoming more complicated, with some uncoupling taking place. This amounts to the emergence of an overarching mode of enrolment in the form of an order-disorder dialectic: authoritative control, selective empowerment and experimental marketisation, but with clear evidence that these objectives did not always operate in harmony, or with a sense of shared aims.

The English case is undoubtedly singular in many respects, making it harder to use this evidence to theorise across other national contexts. An analysis of other countries would potentially uncover different modes of enrolment to those found in England. But the English case also highlights how Western governments continue to struggle with the range of different pressures, path-dependencies and interdependencies that make energy-carbon restructuring so challenging: policy uncertainty and sclerosis is not peculiar to the UK as demonstrated by the Australian government's experiments with carbon taxation and subsequent abandonment under different administrations; or Spain's struggles to balance fiscal incentives for increased renewable energy generation with financial pressures,

intermittency of supply and demand management. More broadly, the conceptual framework outlined here provides a means for illuminating key factors when attempting to explore state governmentalities: what forms of power are being exercised? How does policy interact with existing institutional figurations? And what are the effects on the properties of different subjects and objects and the relations between them?

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