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Where are urban energy transitions governed? Conceptualizing the complex governance arrangements for low-carbon mobility in Europe

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ABSTRACT

This article addresses the question of where urban low-carbon energy transitions are governed. A challenge is that urban governance is not simply urban, but a complex assemblage of institutions, networks and socio-technical arrangements. There are several on-going literature debates discussing the different types of processes in which cities are involved. I disaggregate these into vertical processes (multilevel governance perspectives), horizontal processes (network and policy mobility perspectives), and what I term infrastructural processes (steering by conditions in the built environment). The purpose of the article is to show how all these types of governance processes combine to drive urban low-carbon energy transitions. Using the notion of policy assemblage, I outline a framework through which the different types of governance processes can be reconciled. This is illustrated through a discussion of how the different types of processes interact in the context of urban low-carbon mobility in Europe. A discussion of the case of Stavanger, Norway, shows how different types of governance processes combine to drive and constrain low-carbon energy transitions and underlines the importance of taking seriously the constraints of the built environment.

1. Introduction

It has become a commonplace assertion that urban governance is not simply urban. Cities are widely seen as governed through processes above and beyond the territorial boundaries of cities themselves. In recognition of this, urban scholars have become increasingly concerned with how cities are produced in and through cross-scale relationships, by flows of people, capital and ideas (Bulkeley & Betsill, 2005; Campbell, 2012; McCann, 2011). The theoretical impetus for the interest in the trans-urban processes shaping urban governance can be linked to several broader theoretical debates, for example to thinking on globalization, networked society and the reconfiguration of state authority (Brenner, 2004; Castells, 2000; Sassen, 2000; Swyngedouw, 2004), critiques of ideological shifts in urban governance (following on from Harvey, 1989), and broader debates on the spatiality of contemporary politics in human geography (Jessop, Brenner, & Jones, 2008).

Following from the recognition of the increasing role of cities, there has also been a growing acknowledgment of the emerging role of cities in responding to climate change and in driving low-carbon energy transitions (Rosenzweig, Solecki, Hammer, & Mehrotra, 2010). This is particularly the case on the policy-making side, for example as witnessed by the emergence of many city-to-city networks of urban policy makers connecting pioneering cities that attempt to develop climate change responses (e.g. C40). Responding to climate change has also become a strategic challenge for cities in terms of positioning in relation to energy security, carbon markets and image (Bulkeley, 2013; Hodson & Marvin, 2012). And finally, international and transnational governance institutions seem to increasingly reorient solutions and initiatives towards cities and actors at the level of urban municipal governments. For example, the European Commission has mobilized several initiatives directed at climate change and low-carbon transitions in cities and in cooperation with city authorities (Pflieger, 2014). City governments and local authorities are seen as critical actors both in implementing adaptation and in governing adaptation responses in relation to other cities and governance actors (Kern & Abler, 2008).

As is the case with governance systems more widely (Rosenau, 2005), there seem to be a growing complexity and fragmentation of climate change and low-carbon transition governance. Given this growing complexity, there is a need to assess and conceptualize the whereabouts of the authority and capability for addressing the challenges of climate change and transitions. The basic question posed in this article is; *where are urban low-carbon transitions governed*?

In addressing this question, the article outlines and discusses some key approaches to analyzing the arrangements through which urban low-carbon transitions are governed. Analysts tend to emphasize either vertical processes (primarily understood through the multilevel governance perspectives), horizontal processes (network and policy mobility perspectives), or to a lesser extent, what I term infrastructural processes (emphasizing urban form and the built environment). I argue that all

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these different types of processes need to be taken into account if we are to understand what drives urban low-carbon transitions, and outline a framework through which they can be reconciled. To illustrate the argument the article examines how the different types of processes interact in the context of urban low-carbon mobility in Europe. The case discussion of Stavanger, Norway, shows how different types of governance processes combine to drive and constrain low-carbon energy transitions, and underlines the importance of taking seriously the constraints of the built environment.

2. The whereabouts of urban low-carbon governance

2.1. Vertical and horizontal perspectives

With the fragmentation and decentralization of political decision-making processes for the past decades (Rosenau, 2005), analysts are primarily looking for power and influence in networks and institutional hierarchies that span territorial borders and the immediate scope of singular governmental institutions. Within this complex assemblage of cross-cutting and overlapping governance relations, analysts tend to emphasize different types of processes.

The *vertical perspective* emphasizes governance processes that are to a significant degree structured by formal jurisdictions and a hierarchical set of governance institutions. The basic framework here is the multi-level governance perspective (Bache & Flinders, 2005). In relation to cities, the primary focus is on how cities are positioned within broader political structures and how they maneuver in relations with national states and international institutions. Bulkeley and Betsill's (2005) influential article showed the way for later work by foregrounding the way cities engage in multi-level governance relationships with the state and other actors. They illustrate how national policy and international programs condition local and urban decision-making. Even though the MLG perspective is not always explicitly referenced, many writers on urban governance now position cities in larger policy-making systems and consider the influence of "higher" policy levels (Späth & Rohracher, 2012). For example, Hodson and Marvin write that agency at the city level cannot be reduced to the actors working at this scale, "it also involves and requires understanding of, the influence of actors at national and supranational scales of action…" (Hodson & Marvin, 2010, p. 481). The perspective is particularly helpful in revealing how lack of interaction between levels creates barriers to effective governance. Research within this perspective has shown that states often do not put to use the instruments they have at hand to push for local authorities to respond to climate change (Kern & Abler, 2008). Multi-level governance perspectives often take informal and networked relations into account as well (which is what Marks and Hooghe (2005) term Type-II multi-level governance), for example by examining how they interact with formal structures. Kern and Bulkeley (2009) examined how transnational municipal networks maneuver and lobby in the context of multi-level European governance. Yet the underlying premise is that levels or scales of institutions and organizational hierarchies structure governance.

Other analysts and contributions have understood trans-urban governance processes in more *horizontal* terms. In human geography there has been an emerging interest in the "mobility" of urban policy and how policy knowledge about cities circulates in networks in which urban policy-making authorities engage. Here writers draw on the relational perspective on cities (Jacobs, 2012), in which cities are not "bound by scale", but rather "intensive nodes that gather connections from more widely distributed spaces" (Rodgers, Barnett, & Cochrane, 2014, p. 1553). This perspective pays less attention to institutional hierarchies and the "territorial orthodoxy in urban studies" (McCann & Ward, 2012, p. 42) and is instead more concerned with the informal flows of discourses, ideas and knowledge. A key reference in point is the work of Jamie Peck (Peck, 2011; Peck & Theodore, 2012), who argues that policy-making now spills across borders and "mutates" in the contexts where they are adopted. In terms of low-carbon energy transitions, this perspective is helpful in shedding light on how ideas for green solutions emerge and travel between cities, who promotes them and who adopts them, and how do they mutate to fit the particular context of the cities that adopt them. It is evident that particular cities, like Freiburg, Utrecht or Copenhagen, have become "models" and sources of inspiration, and receive delegations of policy-makers and activists seeking to learn. McCann (2011), who studied how Vancouver functions as a site for learning about popular ideas for environmentally and socially sustainable urban development, coined the term "policy mobility" to describe these processes. Wood (2015) studied the politics of policy circulation that led to the varied adoption of Bus Rapid Transit (a model that originated in Bogotá) in South Africa. These network perspectives are certainly not ignorant of scales and hierarchical relations – McCann stresses that policy knowledge is structured by embedded institutional legacies and path dependencies – but they suggest that an increasingly important part of urban policy-making processes is shaped in these city-to-city networks and circuits of information and knowledge exchange.

What the vertical and horizontal perspectives share is that they look at governance processes (decision-making, learning, exchange of ideas) in *trans-urban* arenas. They are complementary in the sense that they highlight different types of urban governance processes, from the formal, hierarchical structures to the highly informal and flexible relations of networks. The strength of these perspectives is precisely that they unpick how power and discourses circulating in trans-urban arenas impact on urban development. However, given that the key sites of intervention that they highlight are those taking place above and between cities, I find it useful to evoke a third perspective on the whereabouts of urban governance. As a complement to transurban forms of governance here is a need to take greater account of material nature of cities, and how low-carbon transitions and climate change responses are mediated by existing infrastructures and built environment in cities. This is what I here term the infrastructural perspective on where and how urban-low carbon transitions are governed.

2.2. The infrastructural perspective

It is a well-documented insight that the physical shape of cities conditions the behaviour of residents as well as the options available to change that behaviour. Studies show a clear link between urban form and greenhouse gas emissions, with extensive cities and suburban areas having far greater per capita emissions than compact cities and city centers (Newman & Kenworthy, 1989; VandeWeghe & Kennedy, 2007). The clear policy recommendations from these studies are to increase urban densities, concentrate developments around city centers and public transport corridors, and restrict suburban developments. While such ideas have become relatively common-sensical within a "sustainable mobility paradigm" (Banister, 2008), they now appear to be increasingly brought into debates on finding solutions to climate change. The 2014 New Climate Economy report listed as one of its ten policy recommendations that policy makers should "[m]ake connected and compact cities the preferred form of urban development" (Global Commission on the Economy and Climate, 2014).

The emphasis on urban form suggests that urban low-carbon transitions are mediated, if not governed in the traditional sense of the term, by the infrastructure and built environment in cities. Several theoretical contributions suggest that material and technical infrastructures condition and constrain policy action. For instance, Unruh's (2000) discussion of "carbon lock-in" illustrates how particular infrastructures enable existing technological systems to benefit from economies of scale, and thereby block competing systems even if their design may be superior (for example in terms of lower carbon intensities). The socio-technical transition literature stresses how infrastructure and technological design spur relatively stable "regimes" that condition social and behaviour (Geels, 2013; Rip & Kemp, 1998). It is clear that the seemingly mundane and hidden infrastructure that surround us is never neutral — it