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Environmentalities of urban climate governance in Maputo, Mozambique

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ABSTRACT

Interest in the role that cities can play in climate change as sites of transformation has increased but research has been limited in its practical applications and there has been limited consideration of how policies and technologies play out. These challenges necessitate a re-thinking of existing notions of urban governance in order to account for the practices that emerge from governments and a plethora of other actors in the context of uncertainty. We understand these practices to constitute adaptive governance, underpinned by social learning guiding the actions of the multiplicity of actors. The aim here is to unpack how social learning for adaptive governance requires attention to competing understandings of risk and identity, and the multiplicity of mechanisms in which change occurs or is blocked in urban climate governance. We adopt a novel lens of 'environmentalities' which allows us to assess the historical and institutional context and power relations in the informal settlements of Maputo, Mozambique. Our findings highlight how environmental identities around urban adaptation to climate change are constituted in the social and physical divisions between the formal and informal settlements, whilst existing knowledge models prioritise dominant economic and political interests and lead to the construction of new environmental subjects. While the findings of this study are contextually distinct, the generalizable lessons are that governance of urban adaptation occurs and is solidified within a complex multiplicity of socio-ecological relations.

1. Introduction: cities and climate change governance

One of the main findings of the Earth Systems Governance Project has been that sustaining the future will require a "substantial" transformation of existing socio-economic practices within today's societies (Biermann et al., 2012). In this context, interest in the role that cities can play in climate change as sites of transformation has grown over the last decade (Bulkeley, 2013), and the World Bank has referred to the need to address climate change and cities as an "Urgent Agenda" (World Bank, 2010). This interest follows almost two decades of research on the governance of climate change within cities. Research on specific city initiatives has shown the different ways in which cities can intervene to address climate challenges (Betsill and Bulkeley, 2007) and also demonstrated different patterns in which governance practices are organised, often centred around particular modes of intervention, such as regulation, service provision, enabling and self-governing (Bulkeley and Kern, 2006; Kern and Alber, 2008). In addition, this work has shown the increasing importance of actors' connectivity and the circulation of discourses and ideas (Biermann and Pattberg, 2008).

However, whilst cities have been heralded as key sites in which to address climate change, the initial promise (given by the capacity of cities to bridge between global and local scales) remain to date unfulfilled. Moreover, in practice, research on climate change governance in cities has been limited in its practical applications, leaving a gap between rhetoric and action (Betsill and Bulkeley, 2007; Bulkeley, 2010; Rutland and Aylett, 2008). This has been partly because academia has paid little attention to the fact that deployment of policy mechanisms and technologies takes places in a specific context. Majority of research adopts a view on

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cities that focuses predominantly on governmental actors and their capacity to address climate change.

While recognising the potential for intervention by other actors, municipalities or local governments appear to have a dominant role in interventions for climate change in cities across the World (Castán Broto and Bulkeley, 2012). Nevertheless, an exclusive focus on local authorities – encapsulated in city networks and the most recent intervention programmes of the World Bank in cities – may obscure the complexity of climate change governance in cities, and in particular the variety of socio-ecological relationships which shape climate governance interventions by local governments and a plethora of other actors.

These constraints require a re-thinking of existing notions of urban governance to address the multiplicity of actors who intervene in the city, the confluence of value pluralities, and the need to deal with climate uncertainty on different spatial and temporal scales (Boyd and Juhola, in press). In particular, we aim to respond to institutional analyses of climate governance that focus on the potential for climate action within municipal authorities (e.g. Carmin et al., 2012), sometimes overlooking the richness of interaction that shape climate governance in cities. Building on the literature on adaptive governance, we approach cities as socio-ecological systems (SESs) (Folke, 2006). As SESs, cities are characterised by the simultaneous interactions of related socio-ecological processes and capacity to continue to learn and overcome barriers encountered in cross-level interactions (Cash et al., 2006). An environmentalities analysis (Agrawal, 2005), which concerns itself with broader dimensions of governance, offers a critical and novel entry point to address the complexity of climate change governance in context, including the multiplicity of actors, cross-scale relationships, and the reality of living with uncertainty. An environmentalities lens provides the opportunity to ask: how can we better understand power, knowledges, and institutional context so that we can better support social learning for adaptive governance?

The paper starts out by explaining that more attention needs to be paid to the various city actors and the new forms of adaptive governance that are emerging (see Bulkeley and Castán Broto, 2012) and what role social learning plays in this (Folke et al., 2005). We describe the 'enviromentalities' lens focusing on novel actor-relations, institutions and governance arrangements that constitute adaptive governance in order to understand how power and knowledge interact to (re)conceptualise people and the environmental challenges they face. This includes subjecting to analysis how struggles between experts and citizens are made manifest and what forms of government regulations of science and technology dominate in cities which are exposed to climate change risk, such as Maputo in Mozambique. We present our qualitative methodology and in the subsequent section present our main case study findings. The discussion is rooted in the importance of power, knowledges, and institutional context to understanding that the ruling elite might only worsen the living conditions of the poor and could exacerbate existing power inequalities if urban climate risks are used as an excuse for officials to continue with business as usual rather than work and negotiate with poorer communities.

2. Adaptive governance for climate change

The need to draw attention to adaptive governance emerges from the failure of current institutions to respond to existing environmental crises (Ostrom, 2010a; Duit and Galaz, 2008). In the literature, adaptive governance has been defined as decision-making systems that comprise formal and informal institutions and social networks that are able to adapt in the face of uncertainty (Boyd and Folke, 2012). Institutions are seen here as formal regulations, rules or conventions, and informal values which establish the patterns of human interactions with the environment (Vatn, 2005). Mechanisms within these systems may have multiple benefits within SESs, such as the establishment of mechanisms with which to deal with uncertainty, to foster collaborations among diverse agents and to share power (Armitage et al., 2009; Berkes, 2007; Folke et al., 2005). Such mechanisms need to be understood within their political context and in relation to their emancipation potential and risk of co-optation (Fennell et al., 2008), and here it is crucial to understand how adaptive governance mechanisms can be implemented in practice, for challenges of implementation, see (Huitema et al., 2009).

Diversity and experimentation are two core components of adaptive governance systems, within which there is an inherent recognition of value plurality. According to Booher and Innes (2010), a governance system is adaptive when it has: (1) diversity in its agents and components; (2) ample opportunity for interactions amongst agents; and (3) effective methods for the selection of appropriate actions (Booher and Innes, 2010). This enables the development of institutional mechanisms which facilitate a degree of interaction and decision making between diverse components and agents, connecting individuals, organisations, agencies, and institutions at multiple scales (Folke et al., 2005).

The second important feature of adaptive governance systems is their direct engagement with questions of scale. Termeer et al. (2010), for example, have characterised modes of adaptive governance as an intermediary between mono-centric and multi-level approaches to governance. While mono-centric approaches to governance (most commonly hierarchical and government-led modes) do not take scales into account, multi-level approaches may emphasise the need to connect different scales (Cash et al., 2006). Adaptive governance mechanisms are composed of intermediary networks that move away from mono-centric approaches, whilst simultaneously trying to moderate the transaction costs through an on-going process of communicative dialogue and trial and error (Huitema et al., 2009). In this manner adaptive governance involves the recognition of local actions and agendas (Brunner and Lynch, 2010).

Brunner and Lynch (2010) highlight the centrality of bottom-up decision making embedded in value-sensitive rationalities, which attend to the technical and procedural aspects of situated modes of science. However, it is important to remember that successful adaptive governance also depends on the availability of a supporting regulatory framework (Biermann et al., 2012; Pahl-Wostl, 2009) and structures capable of reaching across scales. Whilst coordination of efforts is not a pre-condition for successful adaptive governance, enabling spaces to take advantage of resources and opportunities across scales is. It is well established that the implementation of adaptive governance relies on the development of networks which enable social learning across organisations and scales (Folke, 2006; Folke et al., 2002). Consequently, adaptive governance is denoted as depending "upon polycentric institutional arrangements spanning local to higher organisation levels so as to balance top-down and bottom-up control" (Foerster, 2011; p. 3).

2.1. Social learning and adaptive governance

There are a multiplicity of scholarly traditions that converge on social learning, including those that focus on processes of individual learning (Bandura, 1977), the analysis of interactions within groups in shared learning processes (Wenger, 1999) and the transformative potential of critical reflection (Capra, 2007). These antecedents have given rise to critical differences in the literature. Rodela (2011), for example, has identified three distinct research approaches with differing learning processes, outcomes and