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TABLE OF CONTENTS

1. The governance and economics of place-based resilience and sustainability 4
2. Blending adaptive governance and institutional theory in urban sustainability strategies .. 8
3. Territorial authorities as a bridge between niches and regime 28
4. Mediation between bottom-up and top-down approaches in urban regeneration policies 39
5. A participatory approach for real-world system transitions 61
6. Conclusion 75

DISCLAIMER

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1. The governance and economics of place-based resilience and sustainability

Much attention has been paid to environmental and biophysical aspects of urban transitions towards resilience and sustainability, but the *governance* of these transitions is still not properly understood and remains one of the key challenges for turning what are currently still marginal initiatives into full-blown social-ecological regime changes.

Why is governance so central to sustainability transitions? A superficial answer to this question would argue that these transitions are about the *policies for* and the *politics of* a significant move towards a resilient and sustainable society. This answer correctly emphasizes the important interplay between the State, civil society and the market in formulating appropriate measures (*policies for transitions*) as well as the importance of bargaining power when it comes to negotiating between alternative trajectories (*politics of transition*). But on a deeper and arguably more relevant level, the reason why governance constitutes both a bottleneck and a key to societal transitions is that the latter will involve a much broader, complex and fuzzier set of interventions than merely formulating adequate policies: changing the current social-ecological regimes in European cities and regions will require transcending the State-civil society-market triangle and overcome seemingly insurmountable barriers, powerful vested interests, incommensurate metrics, dazzling complexities and a multiplicity of agencies: in practice, the State is not a unified actor but includes both political and administrative agencies; civil society is also diverse and contains potentially antagonistic interests; finally, the market is a place where radically different players such as multinational corporations and small family business interact. Dealing with such an intricate problem as social-ecological transitions therefore requires new ways of approaching societal problems, forging new politico-economic alliances and reframing the terms of the debate – and many of the innovations necessary to achieve this are likely to be social and related to governance rather than technological.

So how can we ***govern the adaption of European cities and regions*** to the urgency of the current social, environmental and economic crises? How can we make ***extant governance models more adaptive*** so as to ensure sustainable and resilient transitions rather than short-run solutions?

For evident reasons, this report will not be able to provide an all-encompassing account of all transition-related problems and their respective relationships with governance issues. But our research reflects a concerted, multidisciplinary and empirically grounded effort to examine one of the most pressing governance challenges of sustainability transitions and that we frame as ***bridging challenges***. Indeed, many of the difficulties associated with passing from one social-ecological regime to another are related to building bridges between different types of knowledge, actors, interests, scales, etc. We refer to initiatives that help solving these problems as ***bridging activities***. Some of the bridging activities that we have identified as being highly instrumental for sustainability transitions in urban contexts are the following:

- ***Reconnecting disparate bodies of transition-relevant knowledge;***
- ***Mediating between the interests of actors who operate in niches and those that represent the incumbent economic and political establishment;***

- ***Reconciling transition activities emanating from bottom-up and top-down initiatives;***

- ***Moderating between the repercussions of transition activities at different geographical and institutional scales.***

Transitioning towards sustainable and resilient cities and regions implies changing the current organization of social, economic and environmental subsystems. While the interdependence of these different subsystems should always be borne in mind, our research has focused on the economic aspects of the transition. We therefore analysed these bridging challenges from the particular angle of their relationship with ***resilient and sustainable economies***, leading to a more specific set of bridging activities, namely:

- ***Reconnecting knowledge on the biophysical and socio-political subsystems with knowledge on new economic opportunities and strategies in a given place;***

- ***Mediating between the emergent niche models and the incumbent economic actors (multinational companies, federations, public administrations, etc.);***

- ***Reconciling bottom-up place-based economic initiatives with top-down economic policies and strategies for sustainability transitions;***

- ***Moderating between the need for creating sustainable place-based economies and an interconnected world of globalised value chains.***

Our empirical strategy to shed light on these economically relevant bridging activities was to observe them in ongoing transition initiatives that form our different case studies situated in the metropolitan areas of Rome (Italy), London (United Kingdom) and Brussels (Belgium), three agglomerations that are not only vibrant capitals but also places harbouring social, economic and environmental struggles. An apparently trivial but nevertheless highly consequential and often overlooked observation is that the above-mentioned bridging activities do not and cannot exist independently from the actors that carry them out. We refer to these actors as ***bridging actors*** or, as most of them are organizationally anchored, as ***bridging organizations.*** Indeed, the literature on the governance of social-ecological systems increasingly recognizes that addressing the bridging challenges of societal transitions hinges crucially on the capacities of bridging organizations, often defined as facilitators who allow for "interorganisational cooperation" and that are credited with reducing the nonmonetary costs of collaboration and conflict resolution in multistakeholder governance set-ups. There is, however, a gap in the literature when it comes to understanding the specific context that bridging organisations operate in, which in turn affects the type of bridging activities that are carried out as well as their chances of success.

To fill this gap, our research programme was structured around the role of bridging challenges, bridging activities and bridging organizations in transitions towards sustainable and resilient economies in specific geographical contexts. We pursued this programme through four complementary thematic studies that are presented in more detail in Chapters 2 to 5 and that we now briefly introduce.

Blending adaptive governance and institutional theory in urban sustainability strategies

Chapter 2 defines the main concepts such as resilience, sustainability, adaptive governance and social-economic systems that are employed in all articles presented in this document.

Adaptive governance is an emerging theory in natural resource management and has many repercussions for sustainable and resilient economies. The chapter addresses a gap in the literature by exploring the potential of adaptive governance for delivering resilience and sustainability in the urban context. We explore several bridging challenges to transitioning to urban resilience and sustainability: bringing together multiple scales and institutions; facilitating a social-ecological-systems approach; and embedding social and environmental equity into visions of urban sustainability and resilience. Current approaches to adaptive governance could be helpful for addressing these first two challenges but not in addressing the third. Therefore, this chapter proposes strengthening the institutional foundations of adaptive governance by engaging with institutional theory. We explore this through empirical research in the Rome Metropolitan Area, Italy. We argue that explicitly engaging with these themes could lead to a more substantive urban transition strategy and contribute to adaptive governance theory.

Territorial authorities as a bridge between niches and regime

Chapter 2 provides a theoretical framework for more politically nuanced urban sustainability and resilience strategies. It also emphasizes the role of power and institutions, which invites us to take a closer look at bridging organizations and the institutional arrangements in which they operate. Analysing this nexus in practice, Chapter 3 examines the question whether territorial authorities can play a major role in the transition towards more sustainable and resilient urban systems. This question is explored using an empirical example of a territorial policy: the Employment-Environment Alliance (EEA) in Brussels, Belgium. We notably show that the administration responsible for the EEA has innovatively operated as a "bridge", capable of creating the right conditions for mediation between “niche” actors and “regime” actors. However, we conclude that due to the ambiguous nature of the relationship between these two types of actors, mediating a systemic transition must be based on a strong and shared political vision, which is currently lacking in Brussels, but probably also in many European city-regions.

Mediation between bottom-up and top-down approaches in urban regeneration policies

Chapter 4 provides a complementary perspective on the role of public institutions as bridging organizations and is concerned with their insertion in multi-level governance set-ups. In particular, we provide a more nuanced understanding of specific bridging activities and their contributions towards urban sustainability. The analysis in this chapter is based on applying methodological triangulation (drawing on geolocalised data, interviews and action research) to 20 years of urban renovation investments in the city-region of Brussels. We distinguish between multi-scale, multi-actor and multi-dimensional tensions in urban renovation programmes and link these tensions to three different bridging roles for BOs. Empirical observations suggest that the three types of tensions/mediations form a trilemma rather than a trilogy: the BOs in our case study have mediated one tension by de facto exacerbating another. Lessons from action research suggest that a wider use of temporality and conceptual translations in urban renovation projects could attenuate the mediation trilemma faced by BOs.

A participatory approach for real-world system transitions

The engagement of local actors and stakeholders in urban areas requires bridging activities that are increasingly considered a prime leverage point for transitions towards sustainability. In practice it is a field imbued with complexity and conflict and awkward to navigate. While planning practitioners increasingly accept complexity as a fundamental challenge within the transition processes, they struggle with tools and approaches that accommodate it. Drawing on the notion of the curatorial from art and design, this chapter explores a novel approach that engages directly and constructively with bridging challenges evident with multi-scalar,

multi-actor and multi-dimensional urban planning projects. Chapter 5 describes a novel and practical method to compress this diversity within time and place - such as during multi-party stakeholder discussions - in what we call a "curatorial approach to system transitions". The chapter describes the theoretical basis of this approach and why it is a relevant lens in which to approach complexity and conflict in urban areas. We also present empirical evidence from its application to a real-world sustainability transition related to the governance of a large urban asset in the metropolitan area of Rome in Italy.

Interdisciplinary research published in top academic outlets

The TURAS project represents five years of extensive academic research on sustainability and resilience in different European regions. From the outset one of the central objectives of the project was to produce knowledge and methods that are relevant for local authorities, local communities and small and medium businesses related to local economies, but also contribute to academic debates on urban sustainability and resilience. This compendium presents the strand of TURAS research that is related to the themes of governance and economics in sustainability transitions.

The research presented here was coordinated by Brussels Environment (BE), the Belgian capital's environmental management agency, and involved an interdisciplinary team of geographers, urban planners, economists, sociologists and designers from the University East London (UEL), the Université libre de Bruxelles (ULB), the University College Dublin (UCD), the Université Catholique de Louvain (UCL), the Bureau of Urbanism Leuven (BUUR), and the Katholieke Universiteit Leuven (KUL). The excellent academic quality of the different strands of research presented here can be gauged by the fact that the four flagship articles on which the chapters 2-5 are based have been presented and submitted (partly already accepted) in outstanding international academic journals and at prestigious interdisciplinary conferences:

- VANDERGERT, P., COLLIER, M., KAMPELMANN, S. and NEWPORT, D. (2015). "Blending adaptive governance and institutional theory to explore urban resilience and sustainability strategies in the Rome Metropolitan Area, Italy." Accepted subject to minor revisions in ***International Journal of Urban Sustainable Development***.

- CHEVALIER, C., COURTOIS, M., KAMPELMANN, S. and VAN VYVE, M. (2015). "Territorial authorities as a bridge between niches and regime: the case of the Employment-Environment Alliance in the Brussels-Capital Region." Presented at the 2nd Interdisciplinary Symposium on Sustainable Development, 20-22 May 2015, Université Catholique de Louvain, Belgium. Submitted in ***Brussels Studies*** (peer-review in progress).

- KAMPELMANN, S., VAN HOLLEBEKE, S. and VANDERGERT, P. (2015). "Stuck in the middle with you: mediation between bottom-up and top-down approaches in urban regeneration policies." Presented at the 11th International Conference of the European Society for Ecological Economics (ESEE), 30 June - 3 July 2015, University of Leeds. Earlier version published as "The Governance of Economic Resilience: 20 Years of Urban Adaptation Projects in Brussels" DULBEA Working Paper, Research series, N°15 -01.RS. Submitted in ***Ecological Economics*** (peer-review in progress).

- KAMPELMANN, S., KAETHLER, M. and VICKERY HILL, A. (2015). "Curating complexity: a participatory approach for real-world system transitions." Presented at the 51st ISOCARP Congress, 19-23 October 2015, Netherlands and Belgium. Submitted in ***Planning Theory & Practice*** (peer-review in progress)

2. Blending adaptive governance and institutional theory in urban sustainability strategies

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Case studies: Urban renovation projects in Manziana, Bracciano and Municipio XIV in the Rome Metropolitan Area, Italy

2.1 Introduction

In an increasingly urbanized world, social inequalities, economic boom and bust, degraded environment, climate change and unsustainable resource use are all problems that are discussed in the urban context (see, for example, Harvey 2009; Rydin and Kendall Bush 2009; Lancet 2012). In the face of these challenges, urban sustainability and resilience are emerging as twin goals, whereby policymakers are articulating visions for the way urban societies and places should be (Ahern 2013). Given the complexity of the urban context, how to deliver these visions remains a key governance challenge, particularly in a socially and environmentally equitable way.

In this chapter we explore a central question: how helpful is an adaptive governance lens in exploring transition strategies to achieve urban sustainability and resilience? After firstly outlining the challenges for urban sustainability and resilience, we review adaptive governance, which has evolved within natural resource management literature. Our analysis suggests that adaptive governance can help address urban challenges of combining multiple governance scales and institutions and adopting a systems approach that integrates the social, economic and ecological. However, we highlight a limitation common to discourses in urban sustainability and resilience and adaptive governance: addressing environmental and social equity and the impacts of asymmetric power relations. We propose blending adaptive governance and institutional theory to develop a refined conceptual framework that could address this gap. We explore this framework through analysis of urban resilience and sustainability strategies in the Rome Metropolitan Area, Italy. We reflect on the empirical analysis and how helpful the conceptual framework is in understanding complex real world processes to establish sustainable and resilient urban strategies and how our contribution can address gaps in the adaptive governance literature.

2.2 Urban sustainability and resilience: definitions and challenges

Sustainable development has become a paradigm that has guided many global processes and policy developments in terms of elaborating societal and environmentally beneficial development goals. Three important principles were established by the World Commission on Environment and Development and the first intergovernmental Earth Summit in Rio in 1992. These principles were: the three pillars of sustainable development

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(environment, society, economy); the need for both global and local actions; the need to consider future generations (WCED 1987). Neumayer (2010) distinguishes between weak and strong sustainability concepts, where strong sustainability is an effective combination of the three pillars so that there is balance between environmental, social and economic goals. In the urban context, where social and economic concerns have tended to dominate, a primary goal of urban sustainable development is the explicit inclusion of environmental considerations within urban policy, planning and development (Cities Alliance 2007; Wilkinson 2012; Pickett et al 2013). However, the concept of an urban system based on an environmental system is far from the mainstream approach to urban planning and management (Da Silva et al 2012). Discourses about how to achieve urban sustainability often take place within particular disciplines, for example: architecture; urban design; planning; engineering; transport management; energy management; and green business. Thus, debates at policy level often tend to focus around low carbon technologies, resource efficiency, sustainable construction materials and methods and minimising pollutants, and more recently climate change adaptation. Whilst there is ongoing progress in the development of new technologies and innovative approaches to urban challenges, harnessing these innovations to most effective use is often a governance issue (Vandergert et al 2013). Williams (2010) highlights the need to move beyond dualistic thinking in relation to technological advances on the one hand and social change on the other. Policies and practice to integrate multiple disciplines and scales in a systems approach remain a key urban challenge, as does the form of governance best able to harness a systems approach.

Resilience is identified as a specific property of an element or system whereby it can recover after an endogenous or exogenous shock. Within urban disaster management, resilience is identified as the ability to respond positively to exogenous shocks, such as earthquakes or flooding, to recover normal functions quickly (Ye 2001; Price 2008). Within ecology, resilience is the ability of species or ecosystems to recover and/or adapt in the face of endogenous and exogenous shocks (Holling 1986). Unlike sustainability, resilience in origin is objective rather than normative: resilience is not necessarily a 'good thing' – poverty or invasive species can be resilient to efforts to reduce or eradicate them. However, discourses of resilience have been evolving to become more normative, more abstract, and to emphasise the positive resilience property of adaptation within an anticipatory/proactive conceptualisation, rather than as a return to the status quo paradigm (e.g Cowell 2013). This is particularly evident in discourses of climate adaptation and resilience (see, for example, Tyler and Moench 2012; Bahadur and Tanner 2014). Thus, whilst urban resilience has long been discussed in relation to (natural) disaster management such as earthquakes, it is emerging as a new policy and planning vision in relation to climate change adaptation, and how cities' infrastructures, communities and governments can adapt to the impacts of a changing climate, particularly the increased occurrence of extreme weather events (Davoudi 2012; Da Silva et al 2012; Collier et al 2013). In the UK, for example, climate change adaptation has been included as a risk in Local Resilience Forums, alongside terrorism (Welsh 2014).

Whilst these definitions of urban sustainability and resilience are useful, we believe there are critical dimensions that are not well addressed. That is, environmental and social equity and the impact of asymmetric power relations on outcomes. The concept of contested domains within sustainable development has been drawn out in academic discourses where underlying sociological and political ecology dimensions to agents, choices and processes are explored within a more political context of asymmetric power relations and social and ecological inequities (e.g. Forsyth 2003). Redclift argues that it is an illusion to believe that environmental objectives are 'other than political, or other than distributive' (Redclift 1984:130) and advocates an analysis of power structures in relation to the environment (Redclift 1987). By examining power structures and conflict over use and access to resources, Bryant and Bailey (1997) argue that many environmental problems are social and political in origin.

Davoudi (2012) sounds a note of caution about over-extending the usefulness of resilience and Welsh (2014) questions the use of resilience as a 'de-politicising' concept, shifting responsibility for sustaining livelihoods and communities onto individuals rather than government, and the inherent 'blindness' to political processes associated with asymmetric power and government responsibility. Boyd (2012 p.258) expresses the gap thus: 'resilience thinking fails to consider how power and fairness influence outcomes, however important they might be to institutional resilience'.

We therefore suggest that there is an overarching wicked problem for urban policies - how do decision-makers ensure socially and environmentally equitable outcomes from urban resilience and sustainability visions and practice? We propose that environmental and social equity and a consideration of the consequences of asymmetric power relations should be explicitly embedded within definitions of urban sustainability and resilience in order to address this wicked problem, see figure 1 below.

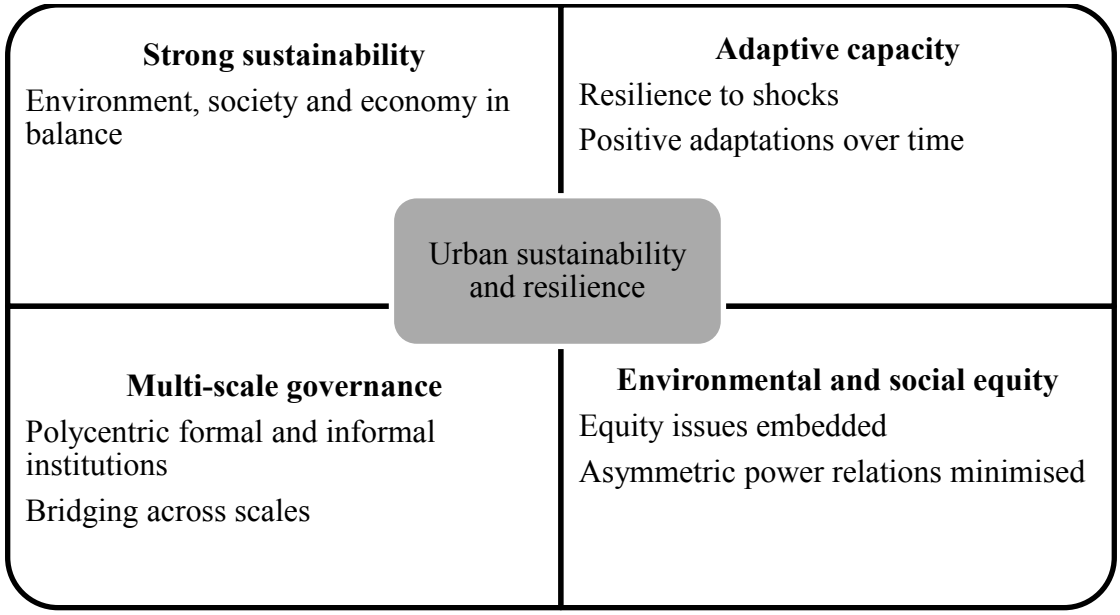


Figure 1 Urban sustainability and resilience

Based on the definitions of urban sustainability and resilience outlined in figure 1 above, our research question is this: how helpful is an adaptive governance lens in exploring transition strategies to achieve urban sustainability and resilience? In the next section we critically analyse adaptive governance and propose a conceptual deepening of its framing of institutions through blending adaptive governance with institutional theory concepts, in order to strengthen its engagement with environmental and social equity and asymmetric power relations. We then explore this framework as a lens to analyse urban resilience and sustainability strategies in the Rome Metropolitan Area, Italy to start to understand how this conceptual blending adds depth to analysing processes for transitioning to urban resilience and sustainability.

2.3 Conceptual framework

In this section we explore the emerging theory of **adaptive governance** in terms of facilitating the vision and transition strategies to build urban resilience and foster sustainability at a local level, where adaptive governance is the bundle of formal and informal institutions and individuals who collectively come together across different scales (such as spatial and governmental) to envision collaborative sustainable and resilient environmental outcomes (Folke 2007). Adaptive governance has developed in relation to natural resource management and focuses on interactions between communities and local resources from a **social-ecological-systems perspective**. Evolving from common property theory (Berkes 1989, Ostrom 1990), it has helped clarify the role of communities and human actors in ecosystem management. Adaptive governance systems have been found to self-organize as social networks and connect individuals, organizations, agencies and institutions at multiple organisational levels (Folke 2007). Also explicit within adaptive governance is the concept of **polycentric institutions**, where multiple governance units exist at multiple scales, with each unit having some self-governing capacity appropriate to its scale (Ostrom 2010). It is this institutional foundation of adaptive governance that we are particularly interested in exploring further, together with related themes that have informed the evolution of adaptive governance thinking: social-ecological systems and resilience.

Increasingly, within the literature on adaptive governance, there is acknowledgement of the wider applicability of adaptive governance principles beyond the natural resource sphere and its applicability in a wider socio-ecological context. For example, Brunner (2010a) examines adaptive governance with regard to climate change. Brunner also develops adaptive governance as an explicit reform strategy that can apply beyond the social-ecological context, looking at healthcare policy, international aid and even national security (Brunner 2010b). Cooney and Lang (2007), meanwhile, take an adaptive governance approach to analyse the World Trade Organisation and its treatment towards national measures to prevent the spread of invasive alien species. They find the WTO wanting in regard to responding to uncertainty when analysed through the adaptive governance lens. Folke et al (2005) and Birkmann et al (2010) outline their interpretations of emerging governance discourses in relation to the environment and urban planning systems. The former refer to nested, polycentric institutional arrangements involving multi-scale actors with quasi-autonomous decision-making capacity, finding a balance between decentralised and centralised control. The latter describe urban governance discourse as evolving to refer to non-formal and non-governmental action, whereby governance is distinct to government. Both these approaches echo the early conceptualisation of polycentric institutions in relation to metropolitan government, as proposed by Ostrom et al (1961) who contend that these smaller institutions within an urban system can in some cases deliver more effective public goods services at local levels compared to a larger authority ('gargantua'), and that this is often related to their ability to be responsive to the wishes of local citizens rather than a more remote authority.

Institutional entrepreneurship has been identified as an important element for successful adaptive governance because of the often complex network of actors and institutions that constitute change agents within social-ecological systems (Westley et al 2013). Institutional entrepreneurs are identified as important in relation to transformation associated with the adaptive cycle and spotting windows of opportunity in different phases associated with the shift to a new configuration of a social-ecological system, namely instutionalizing innovation, releasing resources for innovation and stimulating emerging innovations and partnerships (Westley et al 2013). Conversely, in mature social-ecological systems actors are likely to resist change, preferring to maintain a stable context and there would need to be disruption to existing institutions and / or resources to stimulate the desire

and need for change (Embirayer and Mische 1998; Westley et al 2013). Institutional entrepreneurs can act as bridging organisations across scales, fostering co-operation and conflict resolution between different actors and thus enabling change (Kampelmann et al, 2015).

In an urban context, **social-ecological systems (SES) thinking** is increasingly being recognised as important, even if not common. According to Pickett et al (2013), cities and other urban ecosystems are jointly biological, social, built and geomorphic. Boyd and Folke (2012) argue that economic systems and social-ecological systems are deeply nested concepts, suggesting coherence with the concept of strong sustainability (Neumayer 2010). The relevance of this is illustrated through the empirical analysis we present below. This complex systems approach could be facilitated by polycentric institutions or there could be challenges regarding fit between institutions and systems (Folke et al 2007). The link between **resilience** and adaptive governance is explicit in the literature, with adaptive governance scholars asserting that 'adaptive governance requires the capacity to learn to manage for resilience, and that any institutional arrangement that does not have this capacity is not appropriate for managing social-ecological systems' (Garmestani and Benson 2013). Adger proposes that social resilience mirrors ecological resilience and that this may be central to successful sustainable development programmes (Adger 2000, 2006).

It is suggested in the literature that polycentric institutions are well suited to managing for resilience, because they can enable the flow of local social and ecological knowledge and facilitate linkages between scales because they have diverse information flow capabilities (Ostrom 2010; Garmestani and Benson 2013). From an institutional perspective, Anderies et al (2004) propose a framework for analysing robustness of institutions, rather than their resilience, arguing this is a more useful term when considering the design of institutional arrangements to manage a system. Boyd and Folke (2012) refer to adapting institutions as: 'the capacity of people, from local groups and private actors, to the state, to international organisations, to deal with complexity, uncertainty and the interplay between gradual and rapid change' (Boyd and Folke 2012, p.3)

However, Boyd (2012) examines gaps, barriers and limitations of the resilience approach to evaluating the success of adapting institutions in terms of how to determine the efficiency and equity of outcomes and how to tackle complex, multi-layered challenges such as climate change in practice. Crucially, she touches on a significant gap in current resilience-based thinking on social-ecological systems: 'resilience thinking fails to consider how power and fairness influence outcomes, however important they might be to institutional resilience' (Boyd 2012, p.260). Thus, whilst adaptive governance has resonance in relation to the urban challenges of embedding social-ecological-systems thinking, the complex relationships between polycentric institutions and multiple scales and resilience, it has a limitation in terms of addressing issues of environmentally and socially equitable outcomes.

In considering ways to embed social and environmental equity into visions of urban sustainability and resilience (Harvey 2009; Boone 2010; Bulkeley 2013), we suggest that strengthening the institutional aspects of the adaptive governance framework could help analyse some of these more political dimensions. The rest of this section outlines key concepts developed within institutional theory that we propose could strengthen the institutional underpinning within adaptive governance.

Within political economy, institutional theory has developed explicitly to give insights into the complex processes, incentives and constraints that shape the formation and evolution of institutions, where institutions are the formal rules and informal norms that influence human behaviour. Scholars have broadened the scope of institutional theory beyond market settings and economic development to consider politics and ideology. For example, Bates (1989) argues that public policies do not evolve due to objective decision-

making by government in pursuit of optimal efficiency, but rather as a result of the struggle between competing interests.

By focusing on the political nature of institutions, scholars are able to study institutional choice and change as a result of asymmetries in power and **distributional conflict.** The relative **bargaining power** of the parties and competing interest groups (whether individuals or organisations) influences the distributive outcomes, with potential losers having the incentive to impede change, whilst potential winners have the incentive to support and facilitate change (Libecap 1989; Knight 1993). Bargaining power is based on factors such as financial and other resources (for example, technological) that can be used to influence outcomes, the knowledge base of the bargaining parties and their links to those with political power. North (1990, p.16) describes the influence of bargaining power on institutions thus: 'Institutions are not necessarily or even usually created to be socially efficient; rather they, or at least the formal rules, are created to serve the interests of those with the bargaining power to devise new rules' and argues that the bargaining strength of individuals and organisations is fundamental to whether changes occur or not: 'only when it is in the interest of those with sufficient bargaining strength to alter the formal rules will there be major changes in the formal institutional framework' (North 1990, p.68). Libecap (1989) argues that vested interests in the status quo will resist changes to the institutional framework that they perceive would make them worse off economically or politically.

The role of **ideology** as a factor in institutional choice and change has been identified as a significant one. Ideology is variously described by institutionalist scholars as the subjective models that individuals have to explain the world around them, which are often based on incomplete or erroneous information (North 1990) and as the values and beliefs that determine people's goals and shape their choices, which can involve altruism as well as self-interest (Ensminger 1996). North states that such ideologies exist at the micro level of individual relationships as well as at the macro level of organisational ideologies, and that these theories are influenced by individuals' normative views of how the world should be organized. Any decision-making is thus influenced by the subjective beliefs and motives of the actors and therefore actors' perceptions matter (North 1990, p. 137). Ensminger defines ideology as 'the values and beliefs that determine people's goals and shape their choices' (1996, p.5) and that it is ideology that shapes people's notions of fairness and justice, including the proper distribution of benefits within the society. Where institutions and actors have differing ideologies, conflicts often arise.

A final factor identified as significant by institutional theorists which is worth considering within the analytical framework is the role of history, in particular the concept of **path dependence**. This is defined as the constraints placed on future behaviour by the existing institutional and ideological structures in a society (Ensminger 1993). Whilst North (1990) stresses that path dependence does not mean that the future is pre-determined by the past, and that there are always a number of choices along the path of institutional evolution, nonetheless he proposes that the 'cultural inheritance' of a society can influence the ability of bargaining parties to effect institutional change. Libecap sees path dependence as a limiting factor to the range of possible institutional solutions. He argues that, although the nature of the constraints posed by history depend on the case in question, in order to understand the process of institutional change one has to take account of the 'prevailing distributional norms, past political agreements, the precedents they foster, and the vested interests they create' (Libecap 1989, p.116). However, an analysis of historical processes can also help illuminate factors that influence institutional change. For example, changing ideologies and changing power relations between actors over time can all influence institutional choice and change. They can create a facilitative environment for new institutional approaches, enabling modifications to existing arrangements (MacKinnon et al 2009).

Whilst institutional theory is not the only theoretical approach that enables an analysis of power relations and equity (see, for example, Bryant and Bailey 1997 and Forsyth 2003 for a political ecology approach), it provides a good 'fit' for adaptive governance because of the latter's focus on institutions. Figure 2 outlines a refined framework that blends concepts as a lens for exploring urban sustainability and resilience strategies.

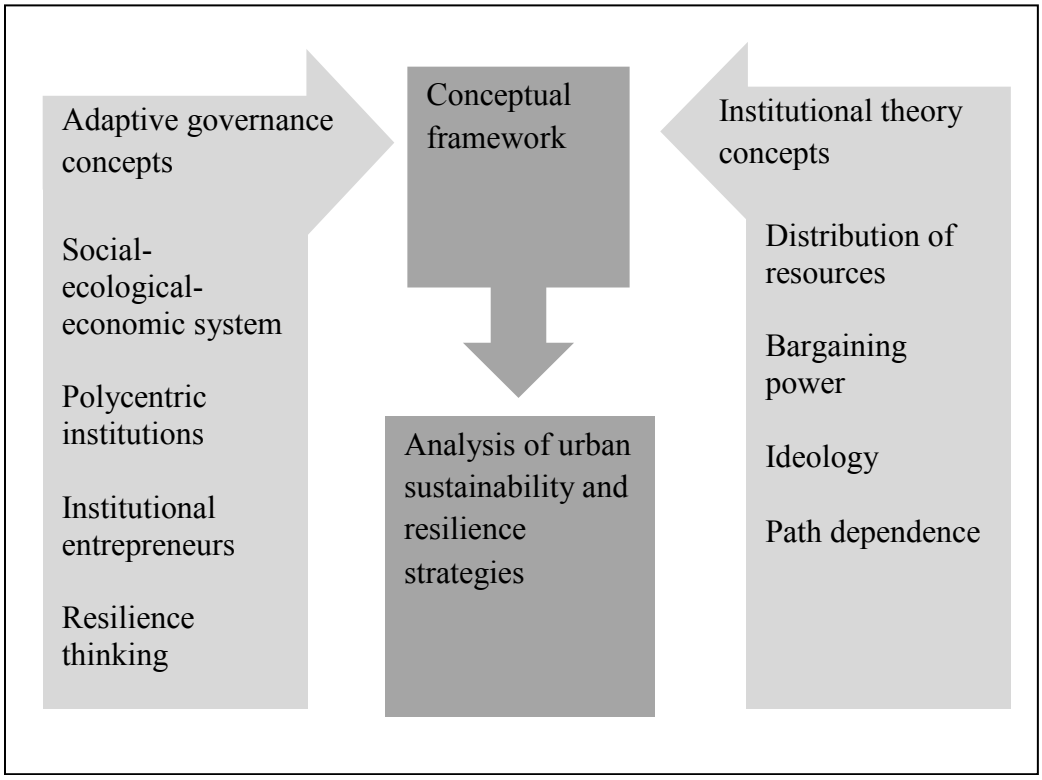


Figure 2 Conceptual Framework

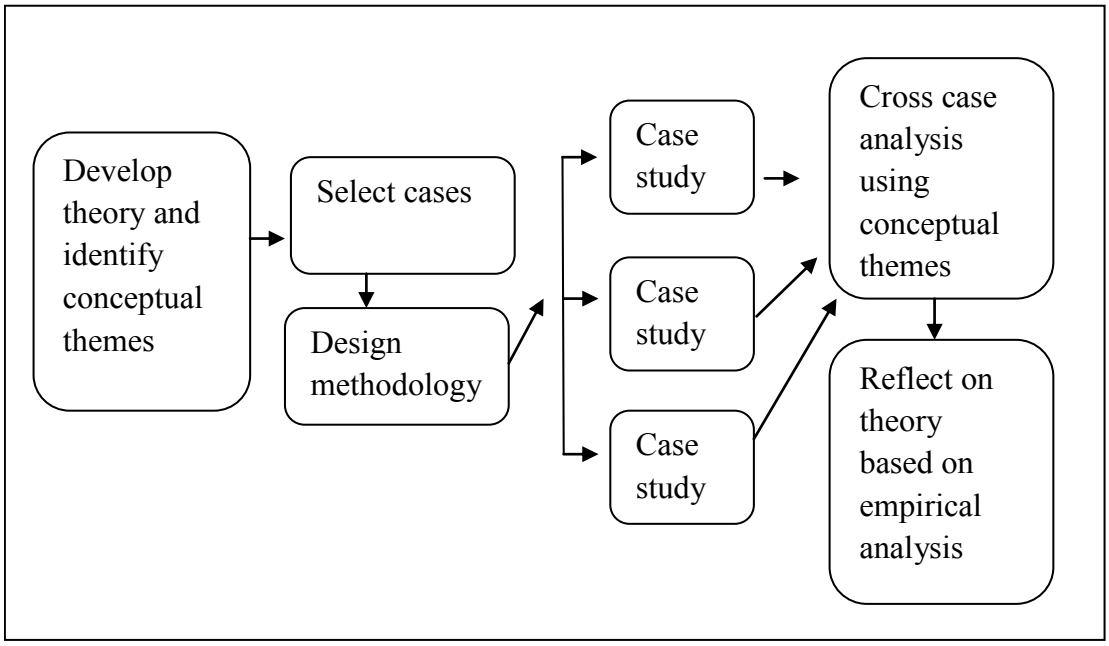
In summary, adaptive governance embeds social-ecological systems thinking and provides a framework for understanding governance as bundles of locally appropriate institutions and multi-scale networks that are resilient through adapting positively to shocks. To address a gap in the adaptive governance literature regarding equitable outcomes, we suggest that concepts from institutional theory provide scope to explore power relations and environmental and social equity through a more politically nuanced analysis.

2.4 Methodology

We use the conceptual framework developed above as an orienting framework and explore it in the context of the empirical research, analysing urban sustainability and resilience strategies in the Rome Metropolitan Area, Italy. Combining theoretical concepts in this way has been explored by Krellenberg et al (2014) in their research on supporting local adaptation; they combined concepts of urban fragmentation and vulnerability in order to understand how context-specific and overarching responses to climate change and urbanisation can be developed.

Empirical research, and particularly case study research, has been a core part of the evolution of adaptive governance, which has developed from empirical research in the sphere of natural resource management such as water use (Pahl-Wostl and Kranz 2010) and community forestry (Carvalho-Ribeiro et al 2010). In terms of resilience thinking and the institutional analysis that underpins adaptive governance, Boyd and Folke (2012) note the importance of understanding real world responses: 'Insights are required that are based on empirical observations of the features of the institutional responses to sudden and slow-onset shock at local, national, regional and global levels' (Boyd and Folke 2012, p.2). The usefulness of case studies has been noted in relation to new approaches to urban planning (Sevenant and Antrop 2010), and the context-dependent knowledge generated through case study research is argued to be a key contribution to advancing understanding of processes and actors that more generalised research often misses (Flyvbjerg 2006).

The refined conceptual framework of adaptive governance and institutional theory informs the data analysis. The data is then used to reflect back on the conceptual framework with a view to identifying emerging strengths and weaknesses and areas for future research. This follows the methodology outlined by Yin (2009), see figure 3 below.



Source: adapted from Yin (2009)

Figure 3 Methodology

The cases are two peri-urban agriculture initiatives and one cultural initiative within the Rome Metropolitan Area, Italy. These initiatives were purposefully selected as useful research subjects because: each of their visions has been framed by the actors themselves explicitly to develop local resilience in response to the economic crisis and austerity measures and to do so within social, economic and environmental parameters; they aim to do this through multiple actor engagement and the development of a network of formal and informal institutions who they identify as being necessary to the realisation of the vision; the initiatives are geographically bounded yet relate to complex connections between a city and its surrounding areas in terms of land and governance, thus requiring a multi-scalar approach (Neuman 2007). In order to explore the processes, relationships and motivations of relevant actors in developing these strategies, qualitative interviews were conducted with 15 actors representing a range of interests from the public and private sectors at both regional

and local levels. The private sector interviewees were all entrepreneurial small enterprise owners; the public sector interviewees were both senior elected officials (at the local municipal level), senior officers (at regional and local levels) and academics (at regional level). Interviews were conducted in Rome, Bracciano, Manziana and Viterbo. The interview analysis is supplemented by data gathered from the regional development agency ('institutional entrepreneurs' – see below) over several months through observation of their participation in workshops and through analysis of project documentation.

The aim of the interviews was to gain a deeper understanding of the strategies and how they are evolving in the local and regional context by a range of actors, representing formal and informal institutions and governance processes. The interviewers were particularly interested to hear the interviewees' perceptions of opportunities and challenges in relation to the strategies. Interviews were qualitative and the conceptual framework provided a lens to guide both questions and analysis. Of particular interest to the interviewers was identifying whether interviewees discussed the projects in terms of a social-ecological vision and resilience; how they viewed resource allocations and any conflicts, particularly physical assets and finance; and their perceptions of the roles and relations of the formal and informal institutions involved.

2.5 Empirical analysis

Our three cases are in the Rome Metropolitan Area (RMA), which is within the Lazio Region of Italy. RMA encompasses 121 communes (*communi)* including the city of Rome (*Roma Capitale*). The city of Rome is itself divided into 15 municipalities (*municipi*). Our cases are based in two of the communes of the metropolitan area (Bracciano and Manziana) and in one of the municipalities of the capital (XIV Municipality). The cases involve strategies to build local social and economic resilience and develop sustainable entrepreneurial activities. The strategies have emerged from a programme of work developed by BIC Lazio, the regional business innovation agency for the Lazio Region. Being a public agency, BIC Lazio relies on Lazio regional government funding and EU structural and research funds. The programme has actively sought to sustainably renovate locally significant former industrial buildings and sustainably develop under-used land through cultural and agricultural small business development. The main focus of this research is the projects to establish sustainable sub-regional food networks in Bracciano and XIV Municipality, and the sustainable redevelopment of a former sulphur factory in Manziana. Bracciano is a town situated 30km north west of Rome and, directly connected by rail to Rome City, is increasingly becoming a commuter town for young professional families. Manziana is a small urban settlement bordering Bracciano, located about 40 km north west of Rome city. The XIV Municipality is within the boundary of the City of Rome, and lies to the north west of the city centre.

The I-Agri project is part of a continuum of projects that began in 1999 to facilitate innovative small business activities in the Bracciano area of Lazio Region. This has been funded by various European Commission funding streams, including rural development funds (LEADER +) and latterly research funds (Framework Programme Seven). Under the EU LEADER + programme, a network of innovative small businesses mainly in the food and culture sectors was established under the banner of GAL '*Tuscia Romana*'. This network has provided the basis for the I-Agri project, which aims to provide 60ha of under-used agricultural land in the Bracciano area in 3ha plots to small, innovative businesses for sustainable agricultural growing and production, with physical incubator space also being available for value-added processing. The aims of the project were specified in the call for applicants, where priority has been given to enterprises in the field of organic / biodynamic agriculture that wish to promote diversification through short production and supply chains (short circuit economy); use of species and autochthonous varieties that have a high risk of genetic erosion; regionally typical and traditional products of the Lazio region; testing of innovative techniques; models of social farming.

From this programme a complementary project has been identified in the XIV Municipality of Rome City, where almost 400 hectares of land have been designated by the local municipality as a '*parco agricolo*' – a protected agricultural area. Of the total area, half is in municipality ownership and half is in private ownership – but the whole can only be used for agricultural purposes. Currently, the land is under-utilised, with only about 60 ha of the municipal-owned land being actively farmed as an agricultural co-operative. The municipality wants to develop a sustainability and resilience strategy for the land that adapts the I-Agri Bracciano project approach by encouraging local entrepreneurial ecological food production that can primarily serve the densely populated local neighbourhoods that include three local food markets. They are embarking on a collaborative planning process with local and regional actors to establish a shared vision for the site based on strong sustainability principles, plus the involvement of international mentors to act as facilitators and guides to the visioning process.

The **Manziana** project has received European LIFE + funding to decontaminate a former sulphur factory and land (*solfatera*), so it can be redeveloped as a cultural and creative hub. Although at an early stage of visioning, emergent themes shaping the project are culture, especially cinematic and film projects, and regional food production and processing. Early visioning work was undertaken through an 'Experience Lab' methodology which involved collaborative and creative storytelling through a facilitated 'walking workshop' with local actors to vision potential uses. This experimental approach used the former industrial area as a case study for developing a methodology to identify the specific development opportunities of the local area and linking them with the strategic capacities of local stakeholders. The aim was to enable strategic actors at different levels to support local actors develop a local plan that could build resilience and sustainable activities in response to the economic crisis that started in 2008. The vision seeks to create a balanced relation between environment, technology and society; and facilitate sustainable development while respecting the needs and expectations of the local community.

The three projects share some key characteristics of interest. In each case, local and regional actors in both the public and private sectors have expressed a shared vision in supporting the development of local, resilient economic activities that benefit the local communities and respect the local environmental assets. In each case, there are multi-scalar institutions that will be needed to bring the visions to fruition. In each case, the economic crisis of 2008, and subsequent austerity measures, is cited by local actors interviewed as both opportunity and rationale for developing these local development models. Interviewees in the public and private sectors consistently described how the location of Rome within Lazio has an enormous influence to shape surrounding areas' development, including through real estate development both within the city of Rome boundaries and in surrounding towns of the Metropolitan Area, which are increasingly becoming dominated by commuters. The construction industry is very powerful, and this pressure has seen loopholes being exploited for residential development even in areas that are not zoned for this use. Interviewees described how the economic crisis meant that the pressure for real estate development has greatly reduced, which gives breathing space for local institutions to vision alternative development models. In addition, interviewees articulated the cultural values attached to regional food specialities and the unique character of the Lazio region products.

In the following paragraphs we explore how the conceptual framework developed in the previous section could be a useful lens for analysing the development of these three urban sustainability and resilience strategies. We discuss interviewee responses in relation to each of the themes identified from the adaptive governance and institutional theory literature outlined in section 3 above, exploring how they can help in understanding not only the processes and motivations in developing the strategies but also some of the challenges and barriers.

The concept of **integrated social ecological systems** (Folke 2005, Boyd and Folke 2012) seems to resonate with the actors interviewed and seems to be embedded in project development documents. Whilst objectives for each of the three projects were described by interviewees primarily in terms of local economic and social benefits, activities were expressed in ecological language. In Bracciano, the I-Agri project has been framed within the context of supporting small entrepreneurial businesses, developing innovative local employment opportunities through ecological agricultural production and zero kilometre local supply chains. In the XIV Municipality, the project objectives were expressed as ecological agricultural activities, local food supply chains through neighbouring markets, providing economic opportunities in agriculture for local young people and continuing with the social agriculture approach already established through the existing social co-operative on site. For the Manziana project, it was expressed as sustainable renovation of a former industrial site for post-industrial uses, primarily cultural and creative, but with local businesses identifying the complementary role that local food producers and processors play in the broader cultural offer of the area.

Interviewees articulated connections between the ecological and social, particularly in relation to the local place and tradition of regional farming, with interviewees for each of the three projects specifically referring (unprompted) to the regional food specialities that are best in the Lazio region compared to other parts of Italy. However, there was also a strong sense of innovation expressed by the enterprises especially, with regard to new sustainable techniques and methods and in terms of social innovation regarding involvement of local people through social agriculture. Younger people were especially identified as being a target to attract to these new enterprises, as a way of renewing and reinvigorating local communities' relationships with the land. The 'Zero Kilometre' and organic principles[2] were referred to by most interviewees and seen as an aspirational guide to production, distribution and consumption goals. However, in the Bracciano case, some of the private partners were keen to develop high value, niche products that would find international and national markets as well as local and regional markets, thus undermining the local short supply chain aspirations.

All three projects contend with **polycentric institutions** that operate at multiple governance and spatial scales, as elaborated by Ostrom (2010). For Bracciano and Manziana, the local municipality is not the only formal local institution with jurisdiction over the land, with local *agraria universita* in each case being the custodian for public lands for civic use. In addition, the regional government has responsibility for agricultural development and associated structural funds. The key institutional actor in the three projects is the regional business innovation agency, BIC Lazio, headquartered in Rome. They have local semi-autonomous innovation hubs working with local enterprises, one of which is located in Bracciano. The personnel therefore have strong connections at both regional and local scale with public and private partners and this multi-scalar institutional dimension (Neuman 2007) appears to have been significant in ensuring the buy-in of these multiple formal and informal institutions. This also resonates with the analysis of Ostrom et al (1961) that the provision of urban public services and goods can be more responsive to local needs within a polycentric urban governance system.

Furthermore, an interesting aspect of the Bracciano and Manziana cases is the complexity of spatial as well as governance scales. The regional business innovation agency has successfully harnessed local municipalities and businesses to self-identify with the '*Tuscia Romana*' informal area, which covers 13 municipalities in the central Lazio region, between Rome city and Viterbo in the north of the region. The *Tuscia Romana* network of local small businesses that was established under the EU LEADER +- funded GAL programme still functions beyond the life of the programme as an informal institution and

[2] Zero Kilometre' is the aspirational name for short local food supply chains

provides a loose co-operative umbrella for collaborative private sector alliances, with its own online presence. This revival of Tuscia Romana as a cultural 'place' rooted in Etruscan history has been both a marketing strategy and, in talking to both business and public sector interviewees, it seems to resonate with their identification with the local area that in actuality is not bounded by administrative divisions. Possible tensions were indicated from our public sector interviewees, with some being more open to acknowledge the capacities of the private sector actors and institutions whereas others focused on their own role as decision makers.

Whilst more research would be needed on this, our initial research suggests that Ostrom's (2010) description of 'nested' institutions, whilst helpful in understanding the multiple levels of negotiation and decision-making that is required to be harnessed in these three programmes, is not without challenges for some participants in terms of sharing decision-making. This also suggests that polycentric institutions are not without equity issues, nor problems associated with asymmetric power relations. Nonetheless, the concept of polycentric institutional arrangements involving multi-scale actors seems to be a useful lens to understand complex urban governance processes in these cases (Ostrom et al 1961; Folke et al 2005, Boyd and Folke 2012).

The central role that BIC Lazio has played in the development of each of these three projects suggests that they act as **institutional entrepreneurs** (Westley et al 2013) in each of the cases. The role of institutional entrepreneurship in the successful evolution of the Bracciano sustainable local food network project, and in levering the required buy-in of the key local and regional actors at public and private levels, appears to be significant. In particular, two key personnel for BIC Lazio have been the driving force from both a governance and a social-ecological perspective in terms of establishing the vision for the local sustainable food network, persuading local and other regional public authorities to participate, recruiting businesses and entrepreneurs, engaging potential regional financiers (both in terms of providing land and regional banks for providing preferential business loans) and successfully attracting EU project funding. These two personnel are embedded in the local community in which they are based, being well-known and respected and having personal stakes in the life of the community. In their professional capacity they are embedded in the regional agency and therefore also have capacity to influence at the regional level.

As a direct result of the success achieved by BIC Lazio in developing the vision for the agricultural incubator in Bracciano, they have been asked to help develop a similar vision for the XIV Municipality in Rome. Whilst the XIV Municipality is leading this project, BIC Lazio are using their institutional entrepreneurship to facilitate its development, leveraging EU-funded projects to transfer knowledge and organise local actor engagement workshops. In Manziana, BIC Lazio are exploring innovative ways to engage local actors to create a vision for the former industrial site and co-ordinating regional and EU funds to support the development of the initiative at the local scale. They have played a bridging role (Kampelmann et al, 2015) between regional and local spheres and public and private actors and this has helped overcome potential conflicts and fostered co-operation. BIC Lazio have identified windows of opportunity for change (Embirayer and Mische 1998, Westley et al 2013), and attempted to harness those opportunities at both local and regional levels.

The language of local **economic and social resilience** within environmental parameters was clearly expressed by interviewees of all three projects. For the public sector and elected interviewees, the projects were seen as a more sustainable and locally beneficial development path than residential development, which had been a dominant force prior to the economic crisis of 2008. Indeed, the economic crisis was seen as an opportunity to develop more sustainable alternatives to real estate, because the pressure for residential development had lessened, and to create sustainable jobs and business opportunities to help alleviate the unemployment which had risen sharply as a result of the recession, especially amongst younger people. This resonates very well with the adaptive governance concepts

expressed of resilience and adaptation in the face of shocks (Folke et al 2007). Knowledge of new systems and new ways of approaching food production was expressed by the enterprises we interviewed as crucial to the projects' success. All of the interviewees were clear this represented a 'new, resilient way of doing things'. This resonates with Garmestani and Benson's (2013) articulation of the capacity to learn as being a fundamental requirement of institutional capacity to manage for resilience.

The preceding paragraphs indicate that there appears to be resonance between adaptive governance concepts and our empirical analysis in relation to two of the urban challenges outlined in section 2 above: firstly, conceiving of a social-ecological-system in a local place; and, secondly, institutional complexity of dealing with multiple spatial and governance scales. However, these adaptive governance concepts seem less useful for analysing some of the challenges that interviewees articulated. In developing our analytical framework we suggested that the institutional elements of adaptive governance theory could be strengthened through an explicit engagement with institutional theory. We proposed that, by analysing institutional factors that can act as barriers or facilitators to change, a gap in adaptive governance theory could begin to be addressed namely addressing social and environmental equity and asymmetric power relations. In the following paragraphs we analyse the empirical data through the lens of these institutional concepts to explore how helpful they might be in addressing *inter alia* complex equity issues. We approach these concepts as potential facilitators as well as barriers to change, as developed by MacKinnon et al. (2009).

Institutional theory offers insights into how **distribution of resources and bargaining power** influence policies and the equitable nature of outcomes (Knight 1993, Libecap 1989). Distribution of resources, particularly with regard to the allocation of land and access to finance, can be identified as both opportunities and barriers for our cases. In terms of the private sector, there are a number of entrepreneurial businesses who are actively seeking to develop a regionally innovative food network, and young people who are keen to enter the sustainable food sector. However, private property institutions can act as barriers to this, with interviewees identifying very low turnover of farming lands and traditional farmers being resistant to new ideas and practices. Whilst the availability of under-utilised publicly owned land and buildings in the three project areas is a key opportunity and therefore facilitator to change, there are political and bureaucratic hurdles to be overcome to enable these lands to be used in new ways. Another key challenge is finding the institutions at local, regional, national or international scale who might release funding for development of the land and regeneration of the former industrial site. Lack of funding seems to be inhibiting development beyond the visioning stage.

The conflict of interest between, on the one hand, the commercial residential development of peri-urban land around Rome and the development of local sustainable agriculture on the other hand will probably remain an ongoing tension. This conflict could, for instance, hamper investments in the agricultural infrastructure of the land (for example, access roads, construction of water management or storage facilities, commercial space for farm shops) or render the extension of the cultivated area too expensive in the face of mounting real-estate pressures. Moreover, the small-scale farming practiced in the agricultural incubators will have to find strategies to overcome the enormous bargaining power of conventional food retailers and the price competition of highly subsidized conventional agriculture in general. A common strategy for small-scale farming of this type is to convince customers that local products are worth more than conventional, non-local products and can therefore be sold at higher prices. But such a high added-value strategy also creates winners and losers, as relatively poor households may not be able to afford the products– in which case the subsidies invested in its creation would mainly benefit the more affluent inhabitants of the area. It is also the case that, whilst they are instrumental as institutional entrepreneurs, BIC Lazio has limited bargaining power in terms of some of the

key aspects of the three initiatives. So in terms of land allocation, they can influence but cannot make decisions on changes of use to the lands held by the *universita agraria*. As a regional public body they use their expertise to lever EU funding to projects, which brings a certain influence, but they also have to engage a range of public and private actors in regard to delivering projects on the ground. This is the case for the Bracciano and Manziana projects whilst the XIV Municipality project may be easier to implement because bargaining power rests with the municipality itself and there are fewer institutional actors needed to deliver the vision. Conversely, where decision-making is more dispersed, working to develop a shared vision and ideology can bring actors together and thus increase their bargaining power (Libecap 1989), and our interviews and observations suggest that this has been evident in Bracciano. Our analysis suggests that, whilst polycentric institutions may increase responsiveness to local needs within an urban system, they do not necessarily lead to more equitable outcomes. An analysis of asymmetric power relations between polycentric institutions would seem to be an important aspect of developing an urban transition strategy that does embed environmental and social equity.

As explored in section 3, **ideology** is a key influence on outcomes. It is ideology that shapes people's notions of fairness and justice, including the proper distribution of benefits within the society (Ensminger 1993). The role of ideology is a key consideration in the three cases. They are reliant on a shared, coherent vision of local sustainability and resilience that encourages the development of innovative alternative local development models. However, although currently there seems to be a shared vision, it is not considered a given that this will remain. Some interviewees expressed concerns that politicians who currently support these alternative economic development models to residential development in the light of the 2008 economic crisis could change again if economic conditions changed or elections resulted in regime change. As North (1990) describes it, decision-making is influenced by the subjective beliefs and motives of the actors, so changing beliefs and motives of those with greater bargaining power could undermine these projects at future stages.

Another ideological dimension to the cases is indicated by our perception that the actors interviewed in the agricultural initiatives display a normative preference for everything 'local' or 'regional', often combined with an implicit opposition to the 'non-local' that is regarded as less desirable. Whilst an ideology centred around local identity might be conducive to foster 'local products' or 'local jobs', it can also be a barrier for institutional change. For example, despite its apparent self-explanatory reference to a geographical location, it might be less evident what 'local' actually means in the context of the agricultural projects' day-to-day operations. Interviewees who championed local were vague when asked to describe the geographic sphere, although 'Zero Kilometre' and 'Short Circuit' were terms used by most interviewees to describe their intent. Some (but not all) of the enterprises expressed aspirations for finding export markets for high value produce, which is not within the vision of the zero kilometre locally-sourced food network. The governance framework of the initiatives will have to address such issues in order to provide a coherent ideological underpinning that all actors can agree to.

Path dependence can be seen to play a positive role as well as act as a potential barrier to change in the case studies. As outlined in section 3 above, path dependence is the influence exerted by prevailing norms that can make change difficult or influence direction (Libecap 1989, North 1990). However, MacKinnon et al (2009) also discuss the positive aspects of path dependence. The agricultural incubator in Bracciano sets out to benefit from regional assets that are historically important, including traditional varieties of fruits and vegetables as well as the area's rich gastronomic heritage. In Manziana there is a proposition to use the region's historic links to the film industry to base the cultural regeneration project around a cinema, a film archive and film studio space for creative businesses, as well as

linking with the regional food networks. However, in these two cases, regional lands held by the local public institutions *Universita agraria* would require a broader interpretation of civic use beyond traditional grazing rights or subsistence gathering. For the XIV Municipality, the *parco agricolo* is already established so they want to build on this existing designation by providing opportunities for innovative farming and short circuit food supply on their own lands, but also influence the private land owners on the park.

2.6 Discussion

Through our analysis of adaptive governance in relation to urban resilience and sustainability strategies in the Rome Metropolitan Area we are contributing to the growing literature that engages with adaptive governance theory beyond its original scope of natural resource management. In exploring how helpful an adaptive governance lens is in exploring transition strategies to achieve urban sustainability and resilience, we have proposed a strengthening of the institutional elements of adaptive governance through blending with institutional theory.

We have clarified three challenges for urban resilience and sustainability strategies: bringing together multiple scales and institutions; facilitating a social-ecological-systems approach and; embedding social and environmental equity into visions of urban sustainability and resilience. Our initial findings indicate that the adaptive governance literature resonates in relation to the first two of these urban challenges: considering the central role of polycentric and entrepreneurial institutions and social-ecological systems. An acknowledged gap in adaptive governance literature is the third challenge of embedding social and environmental equity (Boyd and Folke 2012). By explicitly considering some of the more political aspects of institutions through blending with institutional theory, we suggest that adaptive governance could engage with issues of power asymmetries and social and environmental equity in addition to its strengths in understanding social-ecological systems and resilience. Our exploratory research suggests that this approach could contribute to addressing a gap in adaptive governance literature in relation to equitable outcomes by engaging with how institutions themselves can create barriers to change and adaption. Figure 4 illustrates the relationships between these concepts that our exploratory empirical research suggests are present in the three case studies. These relationships would need to be further investigated theoretically and empirically to investigate further how the institutional concepts act as facilitators or barriers to institutional choice and change (MacKinnon et al 2009).

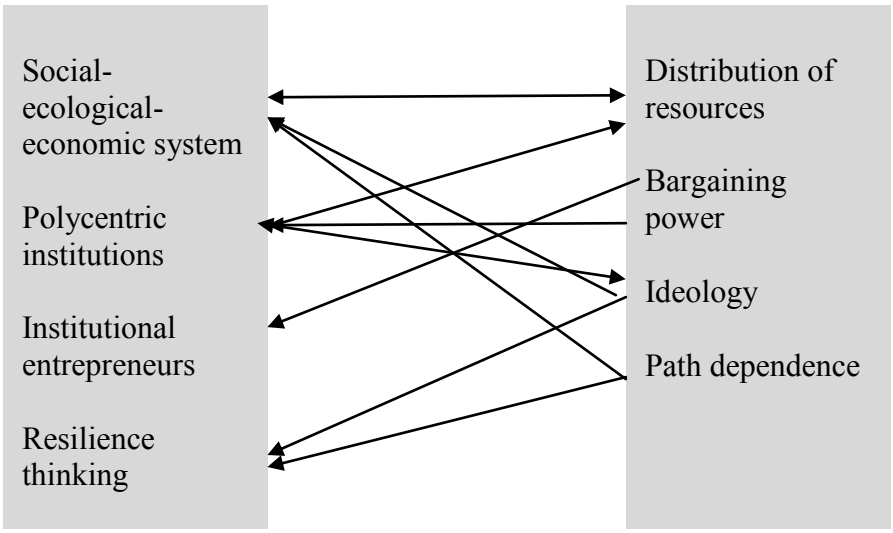


Figure 4 Emerging linkages between adaptive governance and institutional theory

By considering institutional challenges and barriers, it could be possible for the multiple institutions involved in conceiving and implementing sustainable and resilient urban transition strategies to incorporate concepts of environmental and social equity that have local resonance. It would appear from our research that this local resonance, and building of a shared ideology, is a critical phase in developing urban resilience and sustainability strategies at the local level. However, our research also suggests that local buy-in appears to be insufficient to overcome some of the institutional barriers that can be encountered with regard to distribution of resources, asymmetric power relations and path dependence. Thus more strategic actors at regional levels, or institutional entrepreneurs, can help identify appropriate processes to overcome institutional challenges.

Our research also suggests that understanding the different bargaining powers of institutions is a vital step towards creating appropriate governance structures where multiple scales and institutional robustness can be accommodated. Different ideologies amongst institutions can undermine transition strategies because, whilst project language may state sustainability and resilience goals, these terms can encompass different meanings to the different institutional actors. This supports the importance of ideology, where agreeing a shared vision at the outset of a transition strategy is an important step. Considering path dependence in institutions can help identify unintended or unwanted resiliencies and why they can be so persistent, as well as helping to imagine the steps needed to reach alternative directions. Our cases have shown evidence of this in relation to exploiting loopholes for real estate development and difficulties in changing land use.

Whilst other approaches can also address equity issues, such as political ecology (Bryant and Bailey 1997) or ecological Marxism (Swyngedouw 2014), we have identified institutional theory as being a good fit for adaptive governance, because of the shared understanding of institutions as informal as well as formal rules, norms and networks, and therefore moving beyond discourses that focus solely on formal government. However, the 'fit' between institutions and systems is an acknowledged area of tension (Folke et al 2007).

Further research and theoretical development is needed to test these exploratory propositions. Nonetheless, our initial research suggests that strengthening the institutional foundations of adaptive governance by blending with institutional theory could help address acknowledged gaps in adaptive governance theory in relation to social and environmental equity and understanding the impacts of asymmetric power relations. In turn, this offers a framework for more politically nuanced urban sustainability and resilience strategies.

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3. Territorial authorities as a bridge between niches and regime

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Case study: Employment-Environment Alliance in the Brussels-Capital Region, Belgium

3.1 Introduction

This chapter explores the hypothesis that territorial authorities can play a major role in the transition towards more sustainable and resilient urban systems. To this end, we examine the practical example of a territorial policy implemented during the 2009-2014 parliamentary term by the Government of the Brussels-Capital Region (BCR): the Employment-Environment Alliance (EEA). The main idea of the EEA was to develop, promote and structure interactions between "pioneers" of transition and actors of the existing regime.

The chapter is structured as follows. The second part situates our analysis in the literature on the transition of socio-ecological systems. In it, we propose a conceptual framework that enables us to show that the administration responsible for the EEA has innovatively operated as a "bridge", potentially capable of creating the right conditions for mediation between "niche" actors and "regime" actors [Loorbach, 2007]. The third section describes the origin and operation of the EEA system. The fourth part evaluates the extent to which the EEA has actually played a mediation role. Finally the fifth section presents our conclusions.

3.2 The transition of urban socio-ecological systems

A rapidly expanding body of literature examines the issue of how "socio-ecological systems" [Holling, 2006; Laurent, 2011] can be reconfigured in order to improve their adaptability, sustainability or resilience [Kemp et al, 1998, Dietz et al, 2003, Holling, 2006, Brunner, 2010]. These improvements are increasingly analysed as "transitions" [Markard et al, 2012, Rauschmer et al, 2015]. Here, a transition is the movement from an existing regime to a new regime and is based on radical and structural changes to the socio-ecological system or one of its components. These changes may be interconnected and relate to different fields such as technology, the economy, institutions, behaviours, culture, ecology or even belief systems [Rotmans et al, 2001].

The Multi-Level Perspective described by Loorbach [2007] conceptualises transitions in terms of complex interactions between "regime" (the orthodox way of producing, consuming, travelling, etc.), "niches" (socio-technical innovations focused on how we produce, consume, travel, etc. that result in the regime being abolished or changed) and "landscape" (the broader context in which the regime develops and the dominant structural trends). The complex and often conflicting relationships between regime and niches are one of the biggest challenges for a systemic transition.

[3] We would like to thank Nicolas Scherrier (Project Manager responsible for monitoring the CDW Working Group of the EEA-RW for Bruxelles Environnement) and Maarten Gielen (Architect at Rotor) for their contributions to this chapter, together with the participants of the Interdisciplinary Symposium on Sustainable Development at the Université Catholique de Louvain on 21 May 2015.

"Transition Management" (TM) is a set of diverse processes that are designed to guide socio-ecological systems towards more sustainable configurations [Vandenbroeck, 2012]. It is less a management technique but rather the creation of a framework that promotes the system's transition [Geels, 2010, Van den Berg et al, 2011]. In the terminology of Rauschmayer et al, our chapter is a contribution to the prescriptive and intentional processes of TM used by specific actors - in our case the public authorities.

Most of the intentional processes of TM consist in supporting radical innovations by providing them with spaces that are protected from the crushing influence of the regime, which is often inflexible due to phenomena such as "lock in" or "path dependence". Experimentation spaces, sometimes called "transition arenas" would consequently encourage experiments with new socio-technical configurations [Loorbach, 2007]. Vandenbroeck [2012] gives the example of the Flemish Region, which set up transition arenas in the form of "Plan C" (circular economy for the resources and waste industry), "DUWOBO" (sustainable construction) and "New Food Frontier" (agriculture).

In the framework of TM, experimentation in transition arenas is not a goal in itself, but a means to stimulate socio-technical innovations that could then impact the regime, whether by "progressive contamination", "upscaling" or any other form of trajectory from the niche to a larger scale. The TM approach discussed in this chapter is less concerned with the innovation phase but rather the process through which these innovations could "create a system". In practical terms, the approach developed by the EEA and the BCR was conceived as a way of taking niche actors out of their immediate context in order to stimulate their impact on the regional socio-ecological system.

A promising strategy for structuring the interaction between niche and regime actors is the creation or strengthening of "bridging organizations" (BO). A BO is a formal or informal agent, able to create links between the knowledge of the different types of actor. While the essence of this form of "bridging" can be defined as "inter-organisational collaboration" [Westley, 1995], the concept of a BO does not imply a specific type of institution and can be applied equally to a local community leader or a department in a large administration. According to Folke et al [2005], BOs *"appear to be essential in building the capacity to adapt to change"*. These actors often take on a facilitator role, lowering the non-monetary costs of the collaboration and resolving conflict within a governance composed of multiple stakeholders. For example, they may create social incentives for all parties to invest in building a relationship of trust or identify and structure common interests. Berkes [2009] argues that the BOs work like a forum for interactions between the knowledge acquired at different levels of the socio-ecological system and help to coordinate the tasks enabling cooperation.

We propose considering the Employment-Environment Alliance (EEA), the operation of which is described later in detail, as a BO. However, a scheme such as the EEA - designed, financed and supervised by the regional government - is not an obvious candidate for a BO, since the territorial authorities, by their very nature, have a tendency to keep the existing regime rather than to change it radically. The hierarchical structure of the administrations may also become an obstacle to facilitating horizontal discussions between actors. This is all the more problematic when it is precisely the bottom up ("*grassroots*"), spontaneous, creative initiatives that are developed outside established practices which are considered most innovative [Moelart et al, 2005].

That said, we propose to consider with interest the potential of regional administrations to play the role of a BO during transition.

Firstly, the commitment of a public body in the transition could help mitigate a disadvantage inherent in niche initiatives, namely to be highly selective regarding their audiences and their

mechanisms of governance and control [Swyngedouw, 2000]. In this respect, the public administration has the advantage of being required, formally at least, to seek the collective interest of the whole city rather than representing the views of just one particular group. It is a sort of third party guarantor that is also found in public institutions in which there is citizen participation, as in the case of the Office de Consultation Publique de Montréal or the Commission Nationale du Débat Public in France.

Secondly, as noted by Rauschmayer et al [2015], transition requires changes in terms of both individual action and societal structure. This may mean that an actor whose action focuses on a larger scale may have the advantage of being able to apply knowledge to the structural aspects of the transition - a weakness for many innovative initiatives which do not address the structural constraints of a systemic transition [Vandenbroeck, 2012]. The challenge for the regional administration is therefore to apply the structural knowledge while questioning such knowledge from the perspective of specific experiences. This could be achieved by concentrating the territorial authorities' effort on creating a framework that conveys knowledge and diverse views and which would be conducive to their convergence towards the system's transition [Moulaert et al, 2005].

Using the practical example of the EEA, we can empirically examine the scope of these arguments in favour of an intervention in the transition by the territorial authorities in the role of a BO.

3.3 The "Employment-Environment Alliance"

In its regional policy declaration at the start of the 2009-2014 parliamentary term, the government of the BCR agreed to launch the EEA with sustainable construction as its first sectoral priority. The actual implementation phase of the sustainable construction priority began in February 2011. The other sectors selected to join the EEA were water (November 2012), resources and waste (September 2013) and sustainable food (December 2013). Across all 4 sectors, there have been 16 decisions by the Government of the Brussels-Capital Region (GBCR), 5 opinions from the Economic and Social Council of the Brussels-Capital Region (ESCBCR) and 1 opinion from the Environment Council.[4]

As public coordinator for the EEA, Bruxelles Environnement (BE)[5] is responsible for the operational monitoring of all its processes and also the implementation of specific initiatives that it manages and finances.

The EEA's actions are managed by coordinators who are the cornerstone of the actions. Indeed, these coordinators orchestrate the work specific to each of the some 200 actions that have been launched by the EEA. The choice of coordinators is extremely important and must be justified by their skills. In practice, it is the contributors who declare themselves as potential coordinators and as long as there is no challenge from the actors present or the supervisory offices, the contributor becomes the action's coordinator. Otherwise, a consensus is reached by the members of the workshop, or if necessary the Steering Committee. The coordinator is not remunerated for their involvement in the participatory process but the public authorities fund, at least in part, most of the actions through subsidies or by financing contracts and studies. Coordinators symbolically sign the EEA charter which invites them to invest their resources in completing their action while the government agrees to provide its support, financial or otherwise. If there is public financing through the awarding of a subsidy, coordinators are linked to the administration that finances them by an agreement or through an instruction from their supervisory office if it is an administration.

[4] The full list can be obtained by making a request to the authors.

3.4 The "Reuse of construction and demolition waste" working group

3.4.1 Characterisation of the current regime

This section focuses on the practical case of the "Reuse of construction and demolition waste" working group (CDW WG) under the "Resources-Waste" (RW) priority of the EEA. The economic and environmental challenge of reusing CDW is considerable. CDW is the largest annual waste stream in tonnage in the BCR, representing a third of all non-domestic waste in Brussels (which is more than 650,000 tonnes/year). In economic terms, the construction sector is Brussels' largest with a turnover of 5.7 billion euros and 26,000 direct and indirect jobs in 2011, comprised mainly of very small enterprises.

Discussions within the CDW WG helped to characterise the regional regime of CDW-related material and financial flows by the following elements:

- Materials used for construction and renovation are, for the most part, imported from outside the Brussels region and often from outside Belgium; a significant portion of the costs of these imports relates to their transport from the production site to worksites in Brussels.
- The actors that take part in a construction project (architects, contractors, skilled trades) are not involved in the manufacturing process for these materials and do not maintain close relationships with the producers.
- Materials that have become obsolete (during construction or following a renovation or demolition) are directed towards specialist companies that collect them through schemes inside or around the region. A large amount of this waste is recycled for so-called "inferior" uses through "downcycling" outside the BCR (inert waste such as concrete and crushed bricks is often used to build new foundations, for roads for example), another significant portion is recycled after demolition so that it can be reused without being destroyed (window frames, doors, internal fittings, etc.), while a smaller amount of hazardous waste is subject to specific recycling or engineered landfill (asbestos for example). This downcycling is the consequence of the unsustainable consumption of virgin raw materials in construction, a critical waste of more or less high-grade materials and leads to high-energy consumption due to the upstream transportation of raw materials and the downstream transportation of recycled waste. Part of the cost of exporting CDW outside the BCR is related to its transport between the worksite and its recycling location.
- This regime is therefore characterised by a strong linearity of the flows: the different actors intervene sequentially to organise the material flows in a single direction from the production site (for example a quarry in China) to its use in the Brussels urban fabric, for a shorter or longer period and then to landfill or downcycling (in rural areas in Belgium or abroad).
- The systematic reuse[6] of CDW is currently a niche in relation to this regime; instead of organising linear flows, this niche is based on a certain circularity which disconnects the use of materials from both the production and recycling sites located outside the region.

[6] The reuse of construction materials refers to construction materials that have already been used a first time in a first building; the material's structure is maintained in its original state between both uses. It is either used for the same purpose (e.g. a reused door is still the same door), or for a different purpose (e.g. a door transformed into a work surface). A material may be reused directly or be prepared for reuse (e.g. a door can be sanded, resized and repainted before its reuse).

The actions of the CDW WG in this field may be interpreted as a desire to support the transition from a linear system to a circular system for some of the material flows in the construction sector.

3.4.2 Composition and action sheets of the CDW WG

The CDW WG was launched under the EEA-RW and is comprised of the members who appear in Table 1. These include the main cross-cutting actors from the construction sector and the relevant public bodies. Some actors are invited occasionally and new actors have recently joined such as the architect firm 4/5, which reuses CDW in architecture projects.

We have classified all the members of the CDW WG according to the distinction between niche actors and regime actors (last column in Table 1). The way in which these two categories operate results in a continuous spectrum rather than a dichotomy: the classification of each actor depends on its insertion in the linear system outlined above. Regime actors are those who are associated with producers-construction-recycling type flows, while niche actors are involved instead in organising circular flows of reuse. Table 1 shows that only two organisations can clearly be identified as niche actors[7]. Six organisations occupy an intermediary position between regime and niche, for example because they are involved in the linear system of the material flows for construction while participating in the organisation of reuse flows. On the other side of the spectrum, there are actors whose main activities are, at present, more closely related to the linear system.

Table 1: Composition of the CDW WG

Name	Activity	Relationship to the regime
ROTOR	Collective for the research and promotion of innovation in terms of design, materials and waste	Niche
Ressources	Federation of actors of the social economy	Niche
Mission locale de Saint-Josse (MLSJ)	Training	Regime/ Niche
Vrije Universiteit van Brussel (VUB)	Education/research	Regime/ Niche
Bruxelles Environnement (BE)	Public body responsible for the environment in the BCR	Regime/ Niche
Minister of the Environment	Represented by BE during meetings	Regime/ Niche
Reference centre for Construction (CDR Construction)	Training	Regime/ Niche
Bruxelles Formation (BF)	Public body responsible for training in the BCR	Regime
Fédération des entreprises de gestion de	Federation of companies in the waste sector	Regime

[7] The classification in Table 1 was submitted to the members of the CDW WG to confirm our assessment.

l'environnement (FEGE-COBEREC)		
Centre scientifique et technique de la construction (CSTC)	Research	Regime
Confédération de la construction de Bruxelles-Capitale (CCBC)	Federation of Brussels construction companies	Regime

The CDW WG is responsible for coordinating the implementation of 15 action sheets. A large number of these actions are currently in progress. These actions reflect the key transition challenges facing the CDW WG. This transition involves in particular implementing procedures such as "Design for Change"[8], "Design for Deconstruction"[9], selective demolition[10] or even recycling[11].

3.4.3 Mediation between niches and regime

It should be noted that the niche/regime terminology is not used by EEA managers to designate the actors that are involved in the process. The scheme was not therefore explicitly designed to build bridges between "regime actors" and "niche actors". Nevertheless, the EEA was intended to promote meetings between new innovative actors - which the managers called "pioneers" - and traditional representatives from the construction sector; so the EEA's approach can be assimilated to promoting an interaction between regime and niches. The mediation strategy was to organise their meeting within a new discussion platform, facilitated by BE, but also around a common issue because the CDW WG had to deliberate jointly on the projects that would later be financed by the government.

Overrepresentation of regime actors

The EEA's directors used their formal and informal networks to identify "pioneers" (that can be compared to niche actors) and sectoral representatives (that can be equated to the regime). This resulted in the CDW WG being largely comprised of actors associated with the linear system of construction flows; federations and public or semi-public administrations directly involved in the organisation of this system (ref. Table 1). Although this composition may be statistically "representative" of the sector, it could be problematic if the challenge lies at the level of the system's transition. The small number of niche actors within the CDW WG is partly due to the fact that new socio-technical configurations are on the fringes of a territorial administration's field of vision; by definition, they are relatively recent, small, not very professional and therefore difficult to integrate into an institutional process. Regime actors however are already well connected (through their sectoral federation for example), directly and indirectly, to the institutions simply due to their longer existence. In terms of the

[8] Design for Change: buildings designed so that they can be repurposed and adapted, with removable and reusable components.
[9] Design for Deconstruction: buildings designed so that they can easily be deconstructed.
[10] Selective demolition: demolishing a building (or its elements) so as to preserve the materials from which it is made. The demolished materials are then grouped together into homogeneous fractions, which allows them to be reused or recycled with high added-value.
This is in contrast to a demolition where all the materials are destroyed together, which totally prevents their reuse and leads, after an additional sorting phase, to low quality recycling (downcycling).
[11] Recycling: the structure of the material is destroyed and the material subsequently obtained is used to produce a new material, potentially different from the starting material (e.g. an oak door recycled into an MDF panel).

CDW WG, it is important to note that both niche actors that were involved are characterised by their express desire to influence how the construction industry operates. These niche actors have therefore developed a professional and communications approach that has enabled them to establish a relationship with the territorial authorities. However, other niche actors, such as the more or less informal agents who, once a week, resell construction materials on the MABRU site, have not been recruited for the EEA process. Although it is unlikely that these informal activities can be systematically disseminated throughout the regime, it would nevertheless have been interesting to gain a better understanding of their role in the current organisation of circular flows.

Increased visibility for niche actors

The niche actors present within the CDW WG reflected a desire to expand their activities and influence construction industry practices. They were seeking public support and funding to demonstrate their innovations. Financial support, through the awarding of subsidies to certain private actors involved in the CDW WG[12] and political support, through the Minister responsible for the EEA policy, allowed niche actors greater exposure in the media. The EEA approach therefore seems to have helped inform the policy debates about some niche projects related to CDW. Indeed, the meetings revealed that those involved in the CDW WG believe that the EEA has been a communication tool that has educated and convinced the GBCR, a regime actor, on issues where it had previously seen less political significance.

The risk of the status quo for regime actors

Regime actors have been present and active since the start of the process. This is partly explained by the fact that regime actors are keen to observe the development of innovations that risk influencing their sector and believe that they need to be involved in such forums if they want to influence subsequent policy and administrative decisions. This is probably a lesson learned during the 1st EEA in sustainable construction, which followed the enactment of new, highly ambitious construction standards by the public authorities. By making contact with niche actors, regime actors have become aware of the importance of the processes for these niche actors. This importance represents both an awareness that it is (technically) possible for the construction sector to work differently and that strategic changes to the market could eventually appear for regime actors and that it would be good to anticipate such changes.

The inherent risk of niches-regime mediation implemented within the EEA is that regime actors use their resources and knowledge of mediation not to commit to the transition, but instead to consolidate their position and block change. At the meetings, a niche representative believed that the proposals from the various participants in the CDW WG strongly reflected their current working methods; although all participants questioned the linear system, the current working method of some organisations seemed to limit their commitment to a more systematic transition. The involvement of regime actors in the transition therefore presupposes a framework within which maintaining the status quo is, in principle, excluded in order to encourage all actors to commit to a process including profound changes.

Niche vs. regime: an ambiguous relationship between cooperation and conflict

[12] Despite everything, unfunded actors participated in the CDW WG: MLSJ, BF, VUB, CCB-C and CSTC are not specifically funded for the work of the CDW WG while only ROTOR, Ressources and CDR Construction are currently funded.

The relationship between niche and regime actors within the CDW WG was ambiguous and often wavered between cooperation and conflict. This ambiguity is the consequence of unbalanced interests and power: while the interests of niche actors are fused with the transition, regime actors only commit to the transition when it benefits them. This is all the more problematic when the transition involves, or is otherwise defined by, the disappearance of certain activities, typically related to regime actors, and the simultaneous creation of new activities. Indeed, one of the EEA's objectives was to create new trades and local jobs related to such new activities, which would offset job losses related to declining activities. For example, the large-scale reuse of construction materials would reduce both the market for the sale of new materials and that for the treatment of construction waste. The EEA's configuration failed to provide a systematic resolution for this imbalance and limit the bargaining power it gives to representatives of the status quo. In fact, the EEA's mediation strategy focused almost entirely on cooperation between niches and regime by seeking a shared consensus. Instead of generating tensions or contradictions between niche and regime, the EEA's mediation created a framework within which the different actors would agree on the nature of the projects to be financed. Mediation was therefore marked by the search for a certain "neutrality" in relation to the specific interests of niche and regime actors.

To implement this type of cooperative mediation, the EEA relied heavily on the role of "coordinators" (see Section 3), and the difficult task of managing potential conflicts between transition and maintaining the status quo fell mainly to these coordinators. However, without a political mandate to go beyond simply managing the action sheet for which they were responsible, the coordinators' work was limited to searching for shared agreement and did not generally involve identifying the activities of the regime that would be incompatible with a systemic transition. Consequently, most of the results therefore reflect the cooperative nature of the mediation and are part of a process that promotes knowledge exchange and networking between niches and regime.13 The cooperative nature of the mediation is also reflected in the fact that the CDW WG, together with the administration, is preparing an action plan and a strategy of reusing construction materials with the objective of integrating it into the future waste plan for the BCR.

3.5 Conclusions

The CDW WG may be seen as a tool for the transition from a linear system of use for construction material flows towards a circular system based on reuse. The distinctive feature of this experience comes in part from the original role played by the territorial authorities, a role that may be thought of as niches-regime mediation. Within the CDW WG this mediation was able to progress the transition for some construction and demolition waste.
We conclude with a discussion about the commitment of the territorial authorities as a mediator of the transition by distinguishing two components of territorial public action: that of the public administration (in the case of the CDW WG: mainly Bruxelles Environnement) and that of the political power (i.e. the government of the BCR).

The public administration has a certain number of advantages as a bridging organisation in the context of a transition of a socio-ecological system. Firstly, the public administration is a relatively stable organisation over the medium and long term and its investment in a transition process can ensure the sustainability and implementation of such a process, guaranteeing investment from private companies. Secondly, the fact that the public administration is perceived as a legitimate third party guarantor, formally neutral and

[13] One exception to this observation is the debate within the CDW WG that highlighted that the actors of the FEGE have particular interests in recycling construction materials that may sometimes be contradictory to reuse objectives. However, it is perhaps significant that the FEGE does not appear among the representatives of the regime within the CDW WG.

constrained by public interest is an undeniable advantage for building bridges between specific interests.

The main restriction for a transition mediation by a public administration such as BE is that this activity involves socio-technical skills and working and organisational methods that are not part of the habitus of the administration or of the coordinators that it could mobilise. For the most part, facilitating a co-construction process, arbitrating conflicts of interests and proposed projects and evaluating the impact of initiatives on complex systemic problems are activities outside the traditional administrative role. Consequently, the transition risks being marked by the shortcomings in a traditional bureaucratic process, the inescapable maintenance of the status quo and particularly the exclusion of certain innovative actors. Within the framework of the CDW WG, this undoubtedly led to the under-representation of niche actors. Therefore, one way of improving the public mediation scheme would be to ensure that all working methods are inclusive and accessible to a wide range of actors, particularly niche actors. Individual incentives are an important aspect of these working methods. Unlike many of the current participants in the EEA, setting up subsidised projects in the form of "action sheets" is not the usual activity of an entrepreneur or innovator. It is therefore important to consider other intrinsic or extrinsic incentives, including the awarding of a per diem allowance for expert participants.

A second limitation in mediating the systemic transition is that it depends on its insertion into a political vision of the socio-ecological system. This refers to the role of the territorial political powers in the EEA. Political powers have various "top-down" tools to encourage the transition. These include the financial and legislative capacity, but also and especially the creation of a framework for mediation within which the paths to the system's transition may be negotiable but not the transition itself. Indeed, a recurring theme which appears in the meetings with niche actors and even with some regime actors, is their desire for a stronger and more "top-down" political vision, particularly when defining the political vision for a circular system. The observations of the discussions within the CDW WG clearly highlight that there are conflicts of interest and power imbalances between niches and regime which are difficult to overcome through a neutral mediation that seeks only consensus and cooperation. The transition from a linear system to a circular system is a political issue: it would directly affect, through a redistribution of material and financial flows, the interests of certain regime actors who are then impelled to block or deter initiatives for change. In the case of the CDW WG, a strong and restrictive political vision to escape the linear system - we should remember that this is the source of the largest waste streams in tonnage in the BCR - would encourage all actors to adapt to a flexible, but basically non-negotiable transition. Some regime actors, more open to the idea of transition, have also understood the benefit of the requirement for a strong political vision, in order to promote their own interests based on their "competitive advantage" in terms of transition.

Of course, asserting a political vision requiring transition from the system of material flows, even on the scale of a single economic sector, represents a break with market democracy; the political power would take a more interventionist role to speed up the development of a new vision of the socio-ecological system. This requires the political will to overcome the immediate conflicts of interests of the relevant actors, but also to incorporate all knowledge likely to fuel the construction of a circular system. At this level, the experience of the EEA is a step in the right direction.

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4. Mediation between bottom-up and top-down approaches in urban regeneration policies

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4.1 Introduction

Since the 1970s, virtually every large agglomeration in the Northern hemisphere was forced to adapt to regional structural change. Despite substantial heterogeneity across city-regions, Couch et al (2011), in their review of 30 years of urban regeneration projects in Britain, Germany and France, have identified deindustrialisation, globalisation, demographic change and obsolete urban structures, environments and housing as common pressures in many city-regions.[15]

It is a stylised fact that some city-regions have been less successful than others in responding to these pressures: agglomerations like Detroit, Cleveland or Rochester in the United States or Charleroi in Belgium, which had previously prospered by exporting their industrial production, have experienced prolonged social and economic crises and lost both population and employment since the 1980s (Hill et al 2012, Cowell 2013). By contrast, cities like Toronto in Canada (which is situated less than 400 km away from Detroit) and Lille in France (which is less than 150 km from Charleroi) provide more employment today than in the mid-1970s and have increased in population size over the last two decades. The contrasting evolution of Toronto/Detroit and Lille/Charleroi is not only striking in light of their geographical proximity, but also because their respective socio-economic structure in the 1970s and their exposure to similar external economic forces over the last forty years. This could suggest that place-based policy responses might contribute to make a difference.

This chapter is concerned with place-based policies in urban social-ecological systems (Folke et al. 2005). These policies are alternatively referred to as 'urban regeneration', 'urban renovation', 'urban revitalisation', 'urban renewal' etc. While most academic research in this area has focused on the link between implementation and outcomes (Nolan and Wong 2004; Glaeser and Gottlieb 2008; Busso et al 2013; Briant et al 2015), our chapter focuses on the understudied relationship between governance and implementation, and in particular the tensions and possible mediation strategies between urban regeneration projects that are implemented at different scales, by different types of actors or concerning different dimensions of social-ecological systems.

Our empirical evidence draws on the case of the main urban regeneration policy in Brussels, Belgium's largest city-region with a surface of 161 km² and 1.2 million inhabitants. Through this policy, called "Neighbourhood Contracts" (NCs), 1.14 billion euros have been invested

14 We thank Adrian Vickery Hill for improving Figures 1 and 5. Patrick Van den Abeele (Brussels Environment) provided extraordinary research assistance.

15 We use the terms 'urban agglomerations' and 'city-regions' interchangebly. Following Le Corbusier, an agglomeration can be defined by its limits: the area of influence of another agglomeration (Le Corbusier, 1957).

over the last twenty years. The NC programme brings together local, regional and federal actors and allows a study of the tensions and mediations between different scales, actors and dimensions over a long period.

The chapter is structured as follows. In Section 2, we situate our research in the governance literature in general and research on the role of bridging organisations (BOs) in urban renovation actions in particular. Section 3 describes the main features of Brussels' urban renovation programme. Section 4 presents a triangulaton of our case study based on 1) an exhaustive administrative database with all geolocalised urban renovation investments between 1994 and 2014; 2) a series of qualitative interviews with key stakeholders that we carried out between 2013 and 2015; and 3) four action-research projects in which we engaged between 2013 and 2015. The final section concludes.

4.2 Governance of urban renovation

The management of complex social-ecological systems such as urban agglomerations is increasingly framed as a governance problem. A rapidly expanding body of research is concerned with how the governance of social-ecological systems can be improved so as to increase the systems' adaptability, sustainability or resilience (Dietz et al 2003, Kemp and Parto 2005, Holling 2006, Brunner 2010). However, the traditional focus of the governance literature on issues related to natural resource management such as forests or fishing stocks (e.g. Plummer and Armitage 2007) means that scholars have started only recently to study the adaptation of urban social-ecological systems from a governance perspective (Brenner 1999, Biddulph 2011, Vandergert et al. 2015), so that our study is one of the first to examine empirically the governance of urban renovation policies.

A central issue regarding the governance of urban renovation is its scale: indeed, policies can be implemented at city/regional, local/neighborhood or any intermediate scales. Larger scales are generally associated with 'top-down' and smaller scales with 'bottom-up' approaches (Németh and Langhorst 2014). In practice, the difference between top-down and bottom-up initiatives not only refers to the "direction that is given to regeneration policy" (Couch et al 2011), but also evokes distinct types of actors. For instance, specialised experts are more likely to intervene in projects carried out from the top at larger scales, whereas local communities typically play a more prominent role in small-scale projects initiated from the bottom.

A key insight from the urban planning literature is that different scales should not be regarded as having per se any instrinsic value (Swyngedouw 1997, Marston 2000). Born and Purcell (2006) warn against a "local trap" that consists in the increasingly popular assumption that policies are inherently better if they are carried out at a smaller rather than a bigger scale. Instead, scale is only a means that can lead to different desirable or less desirable ends: the final outcome of a strategy "will depend not on the scale itself but on the agenda of those who are empowered by the scalar strategy" (p. 196).

In the context of urban regeneration policy, it is likely that both bottom-up and top-down approaches provide opportunities for improving the capacity of urban social-ecological systems to adapt to structural change. On any account, in most cities multiple approaches to urban renovation coexist at different scales and involve various types of actors and knowledge. One of the key governance problems is therefore not picking the "most appropriate" scale or strand of knowledge for urban renovation, but rather improving the interactions across different scales and heterogeneous bodies of knowledge. These interactions can be problematic: for instance, bottom-up and top-down projects can be disconnected from each other or even be counterproductive. Németh and Langhorst (2014)

argue that avoiding such negative outcomes requires processes combining top-down (city/regional scale) and bottom-up (local/neighborhood scale) analysis and action.

According to a widening consensus in the literature on the governance of social-ecological systems, BOs can play key roles in facilitating the interactions across scales and across types of actors and knowledge. The term "bridging organisation" can be defined as "interorganizational collaboration" (Westley 1995). Hahn et al (2006) describe the role of BOs as "providing an arena for trust-building, vertical and horizontal collaboration, learning, sense-making, identification of common interests, and conflict resolution" (p. 586) and point out that these activities can reduce the nonmonetary costs of collaboration and conflict resolution in multistakeholder governance set-ups. BOs achieve this for instance by identifying common interests and by providing social incentives to all stakeholders to invest in building trust. The beneficial impact of briding organizations has been attributed to the observation that social incentives may have a more lasting effect on behavior than economic incentives (Pretty 2003). Berkes (2009) argues that BOs act as fora for the interaction of knowledge acquired at different scales and contribute to the coordination of other tasks that enable co-operation. There is now ample evidence that BOs often have the capacity to create horizontal linkages and information flows across sectors and scales (Brown 1991; Vignola et al. 2013). According to Folke et al (2005), BOs "appear to be essential for building the capacity to adapt to change".

While all BOs engage in interorganisational colloboration, they can take on different organisational forms and be the result of a variety of iniatiatives. Indeed, BO can be formal institutions or only loose networks. The initiative to a bridging organization may be bottom-up or top–down (Hahn et al 2006).

Our chapter adds to this literature by zooming in on the scope, roles and challenges faced by BOs in the context of urban regeneration policies. In order to frame the analysis of our empirical material, we can schematically distinguish different governance configurations in which BOs operate. These configurations are characterised by:

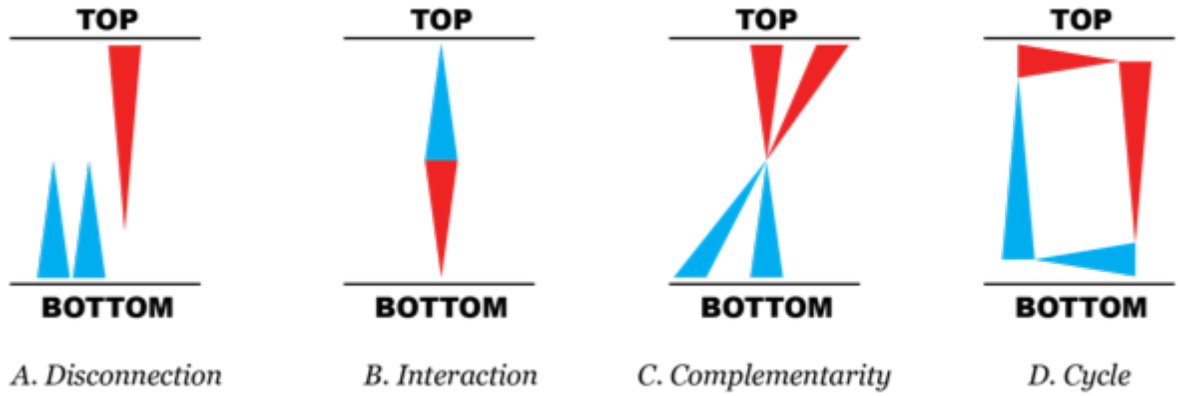
the scale at which urban renovation actions are initiated (top or bottom);

the direction of these actions (top-top, top-down, bottom-bottom or bottom-up);

the relationships between different actions (disconnection, interaction, complementarity or cycle).

The schematic representation in Figure 1 illustrates these different configurations.

Figure 1: Different configurations combining top-down and bottom-up policies



4.3 Overview of Brussels' urban renovation programme

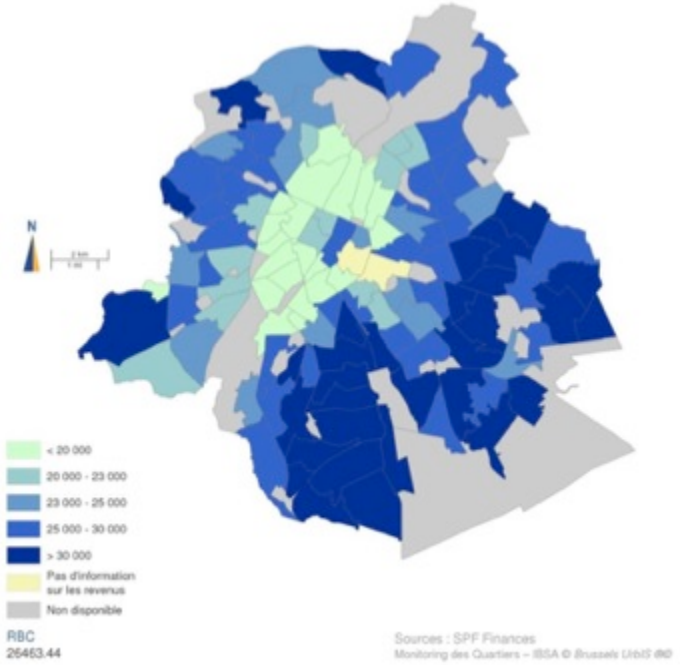
This section provides background information on Brussels' neighbourhood contracts (NCs). The legislative basis of the NC came into force in 1993 as one of the first major policies of the Brussels-Capital Region, a new territorial entity that was institutionalised in 1989. The first wave of NCs started in 1994, the second and third generations in 1997 and 1999. Since then, a new wave of NCs starts every year. Although the regulation and implementation of the NC programme has somewhat evolved over the last twenty years, the policy is characterised by remarkable stability.

The NC programme is in part a response to a long history of large-scale projects that left visible scars in the urban tissue of inner-city neighbourhoods: the tunneling of the Senne river, the construction of the port, the railway junction between South and North stations, the construction of the metro… each of these projects came with its share of uncertainties, expropriations, demolitions and large construction sites that lasted for years, sometimes even for decades (Demey 1990, Lenel 2013). They also exacerbated the two historical trends of Brussels' urbanization since the mid-19th century, namely a) a centrifugal movement of middle- and upper-class households from the centre to the periphery and b) the contrast between the relatively poor working-class population in the canal area and the former wetlands of the Western Senne valley (the "poor crescent") and the bourgeoisie in the South-East.

Starting in the 1970s, regional structural change further accentuated the bipolarity of the city-region: the manufacturing industries in the canal area, traditionally the main employers of workers, slowly but steadily declined. Having reached its maximum capacity in the mid-1970s, the port lost much of its importance as the city's transportation hub. Over the 1990s and 2000s, relatively new socio-demographic developments have arguably complexified the historically determined dichotomies of East-West and Centre-Periphery. Like other service-oriented urban economies, Brussels is witnessing an influx of young professionals who prefer living in inner-city neighbourhoods to commuting to peripheral suburbs. This development has, however, not yet erased Brussels' historical dichotomies: Figure 2 shows the distribution

of average income in tax declaration in 2012 for different neighbourhoods and illustrates that outer neighbourhoods still tend to be richer than more central ones and the concentration of relatively poorer neighbourhoods in the canal area.

Figure 2: Average income in tax declarations (in 2012 euros)



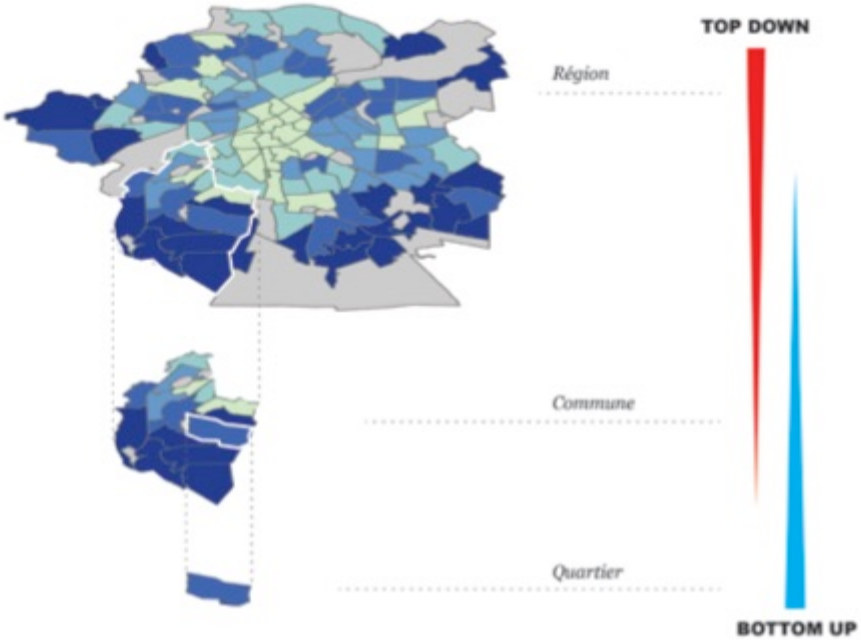
In order to target the neighbourhoods most in need of revitalisation, the regional authorities used a series of socio-economic criteria to define a priority zone from which each year neighbourhoods are selected for a local NC. This zone was defined in two Regional Development Plans in 1995 and 2002 (Figure 3) and subsequently enlarged in the Regional Sustainable Development Plan in 2013 (Figure 4). The priority zone covers neighbourhoods situated in 12 of the 19 municipalities that are part of the Bruxelles-Capital Region and, with some exceptions, roughly coincides with the area in the vicinity of the canal.

Figure 3: Priority zone 1994-2013 ***Figure 4: Priority zone since 2013***

The NC is formally an investment contract between the region and a municipality, but also involves other actors at different levels of governance, including federal (notably the Beliris investment fund), regional (regional ministries and administrations, regional NGOs) and local actors (different municipal services, local communities, local NGOs, individuals). The

multiple levels of governance are depicted in Figure 5, which also illustrates that both bottom-up and top-down approaches can be associated with the same level of governance: the direction given to urban renovation policy by municipal actors can point to the top when it interacts with regional or federal interlocutors or to the bottom when it is concerned with local communities in individual neighbourhoods.

Figure 5: Directions of top-down and bottom-up initiatives in the Neighbourhood Contract Programme



The total duration of a local NC (including preparation and completion of all interventions) spans around 7 years, a relatively short period of time to carry out some of the more complex operations.16 By the end of 2014, a total of 75 neighbourhood contracts have been signed between the regional and local administrations. The cumulated investment for all NCs that started in the last 20 years was 1.14 billion euros17, yielding an average of 15.14 million euros per neighbourhood.

The funds were spent on 1,933 different operations so that each NC combines on average 26 individual operations. The distribution of the total investment among different spending categories and by source of funding is shown in Figure 6. Supply and quality of housing is the biggest spending category (39%), followed by social cohesion and public facilities (28%), amenities and infrastructure (26%) and local economy (5%). The management of the programme accounted for 3% of the total budget.18

[16] A detailed description of the lifecycle of a local NC programme can be found in CREAT/METICES-CRU (2008).

[17] All monetary amounts in this article are deflated and expressed in 2013 euros.

[18] For a detailed description of the definition and content of the different spending categories, see Kampelmann et al (2015).

Figure 6: Cumulated funding by investment and source of funding (1993-2014)

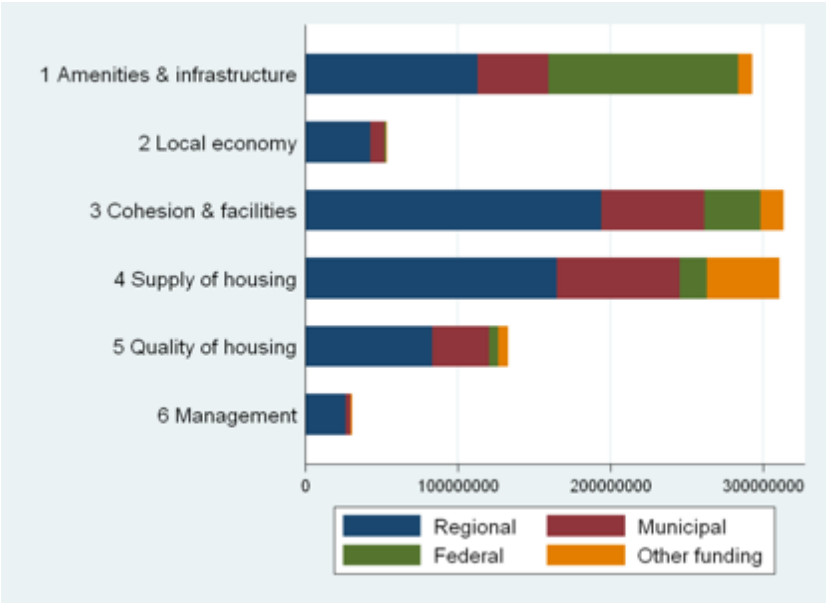


Figure 7 shows the evolution of the NC investments over the last twenty years. The total annual amount fluctuated around 50 million euros during the first ten years and then increased to around 70 million euros over the last ten years. In the 1990s spending was concentrated on the renovation and construction of housing, but the share of this category decreased over time as investments in cohesion/facilities increased.

Finally, an important feature of the NC programme is that it invested not only in tangible operations that modify the physical environment of neighbourhoods, but also in projects directed mainly at people, such as training activities, awareness raising, cultural or artistic projects, neighbourhood cohesion etc, which was the case for around 47% of all operations (including project management). However, the average tangible operation was more than four times as expensive as the average intangible operation so that 84.5% of the total budget was spent on physical modifications, while only 12.8% were intangible investments other than project management. Figure 8 depicts the evolution of the annual share of intangible investments since the start of the programme. After a strong increase during the first ten years, the share oscillated around 17% over the last ten years.

Figure 7: Evolution of funding by type of intervention

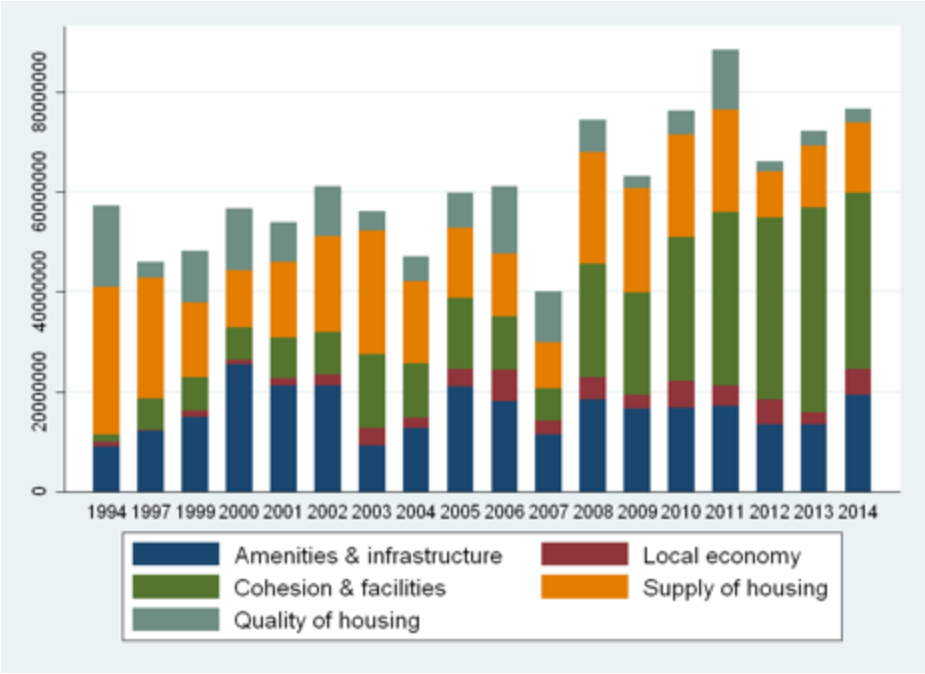


Figure 8: Share of intangible interventions

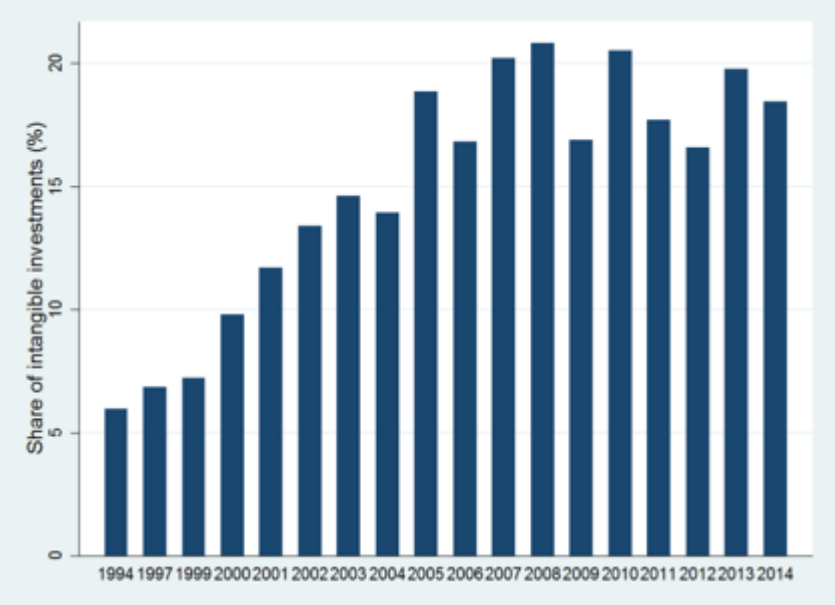


Figure 9: Evolution of intangible investments by adaptation tool

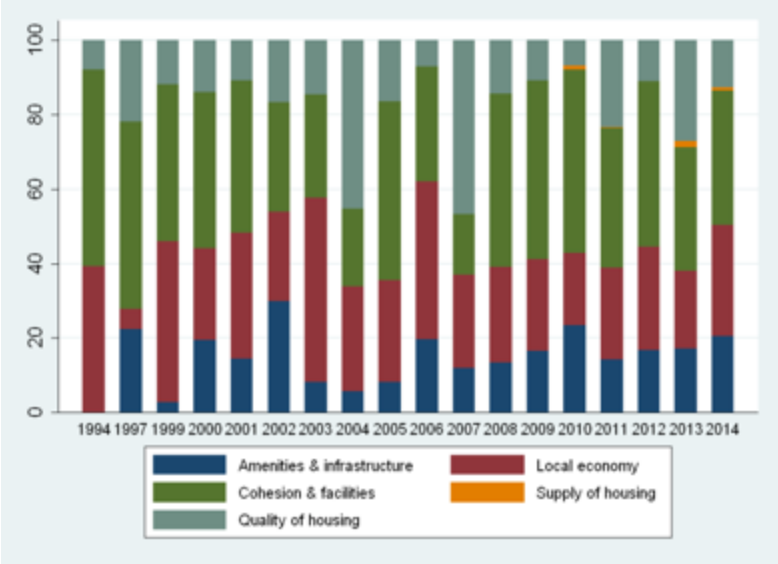
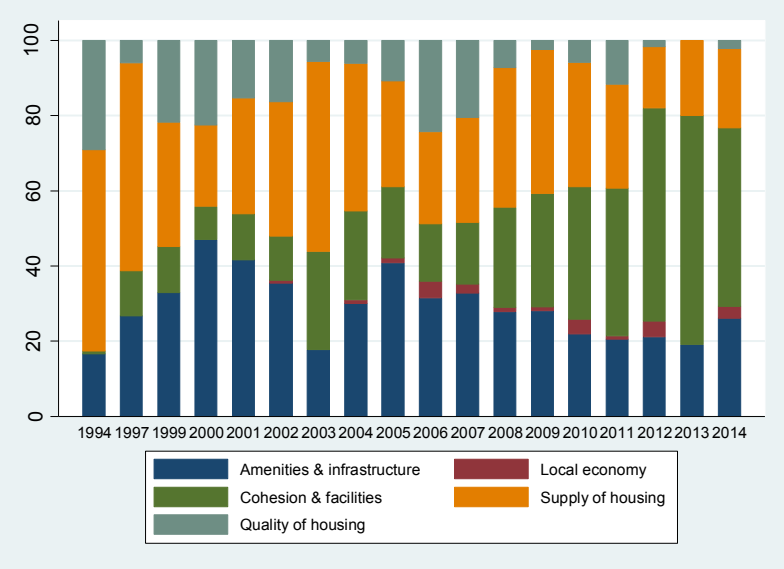


Figure 10: Evolution of tangible investments by adaptation tool



4.4 Empirical analysis

In this section we analyse the role of BOs in Brussels' urban renovation programme. We employ methodological triangulation and combine three complementary perspectives: a database with all geolocalised urban renovation investments (Section 4.1), interviews with key stakeholders (Section 4.2) and action research (Section 4.3).

4.4.1 Database of urban renovation investments

We are the first to exploit an exhaustive administrative dataset on all 1,933 urban renovation operations carried out under the NC programme since 1994. The data has been collected and provided to us by the Directorate for Urban Renovation (DUR), the agency in charge of overseeing the programme for the regional government. All municipalities directly report programme statistics to the DUR through standardised procedures.19

In order to provide a quantitative picture of the multi-level and multi-dimensional setting in which BOs operate in Brussels' urban renovation programme, we have used the database to calculate measures of a) the relative influence of different levels of governance on investment decisions and b) the links between tangible and intangible projects within local NCs.

Multiple levels of governance

An indicator for the relative influence of the regional and municipal levels of governance on the distribution of spending among main investment categories can be derived from the variation in budget allocations across different municipalities; low (high) variations between municipalities could be interpreted as evidence for top-down (bottom-up) budget allocations. We have measured this variation in all 75 local NC programmes through a simple regression framework with spending shares on each investment category as dependent variables and 19 municipalities as independent variables. If municipalities (the region) exert stronger influence on the spending shares, then we would expect relatively high (low) coefficients of determination.

As can be seen in Table 1, the explanatory power of municipalities is weak for amenities and cohesion and the supply of housing (the municipality variables account for less than 10% of the variation in budget allocations) and somewhat higher for local economy and quality of housing (18 and 16%, respectively). In a second step, we have added time variables to the regression; results suggest that the time trend is more strongly correlated with the budget allocation for amenities and infrastructure, cohesion and facilities and supply of social housing (second column in Table 1). Including year and time variables in the regression yields coefficients of determination between 15 and 50%. We interpret these findings as preliminary evidence that the allocation of funding among different spending categories is relatively top-down and/or driven by a regional trend, except for investments related to the local economy and the quality of housing for which a relatively larger share of the variation is associated to the different local municipalities. This points to a potential area of bridging activities between the top-down decisions on spending allocations and the bottom-up perspective of municipalities.

Table 1. Basic regressions with investment shares as dependent variable

Dependent variable	Adjusted coefficient of

[19] For a detailed description of the database, see Kampelmann et al (2015).

	determination		
	Only municipality variables	Only year variables	Municipality and year variables
Share of amenities & infrastructure	-0.0101	0.2735	0.2443
Share of local economy	0.1812	0.0665	0.1776
Share of cohesion & facilities	-0.0799	0.5408	0.5029
Share of supply of housing	0.0793	0.0933	0.1492
Share of quality of housing	0.1571	0.0897	0.3463

Note: Pooled Ordinary Least Squares estimator, N=75 programmes.

Multiple types of projects

The multi-dimensional character of the NC programme is captured by budget allocations to different spending categories (amenities, housing etc), but also by the fact that it invests in both tangible and intangible projects. An indicator for the link between tangible and intangible investments can be obtained by comparing their respective distribution among different investment categories (Figures 9 and 10). This comparison clearly illustrates that intangible projects were more often concerned with the local economy and the quality of housing, whereas tangible operations focused more on cohesion/facilities and the supply of housing.

We have used a simple regression framework to produce a preminiary measure of the connection/disconnection between tangible and intangible investments in local programmes. The rationale of our measure is that a strong link between tangible and intangible investments should lead to a positive correlation between the shares of tangible and intangible projects in the same investment category: a higher share of investments in the physical support for the local economy, for instance, should be positively correlated with a higher share of intangible investments in the local economy in the same NC.

Table 2 presents results for Ordinary Least Squares regressions on investment shares in all 75 local programmes. The dependent variables are the shares of intangible investments in each investment category; the shares of tangible investments for the same category are the main independent variables. The estimated coefficients suggest insignificant correlations, except for the supply of housing where the coefficient is very small.20 We interpret this as preliminary quantitative evidence that the tangible and intangible elements of the urban renovation investments are relatively disconnected, suggesting potential scope for bridging activities between different dimensions of the programme.

[20] This conclusion is robust to dropping local programmes from the sample with zero investment shares for certain categories

Table 2: Regression on link between tangible and intangible investment shares

Dependent variable: share of intangible investments	Amenities & infrastructure	Local economy	Cohesion & facilities	Supply of housing	Quality of housing
Share of tangible investments	0.06 (0.04)	-0.21 (0.20)	0.01 (0.05)	0.00* (0.00)	-0.03 (0.02)
Year variables	Yes	Yes	Yes	Yes	Yes
Municipal variables	Yes	Yes	Yes	Yes	Yes
Observations	75	75	75	75	75
Adjusted R2	0.12	-0.06	-0.03	0.08	0.34

4.4.2 Interviews with key stakeholders

Our second perspective draws on 20 semi-structured interviews that we carried out between 2013 and 2015.21 While we do not claim that our sample is statistically representative of all stakeholders involved in the NC programme, we have selected the interviewees so as to cover 1) different levels of governance (i.e. local, municipal and regional); 2) different types of actors (residents, real estate owners, NGOs, planning companies, civil servants, politicians); 3) different stages of the programme; and 4) different age and gender groups.

In order to flesh out the governance configuration in which BOs operate, we begin by relating the top-down and bottom-up elements of the urban renovation policy at hand, as well as the tensions that were mentioned by our interviewees. We then use the interviews to identify principal BOs and the roles and challenges with which they have been confronted.

Renovating the physical environment down from the top

The regulatory framework of the NC is determined top-down by regional actors. Not only has the priority zone been defined through development plans at regional scale, but also the eligible spending categories (amenities and infrastructure, social housing, etc), the administrative procedures and the decision-making rules are defined unilaterally by the regional government and its administration.

Moreover, the content of individual investments reflects regional priorities. A local programme manager underlined that the region deliberately limits the share of intangible investments in local NC budgets to 20%; this was confirmed by a regional administrator who said that the region thinks the programme "should remain mostly about physical interventions".

Local and regional interviewees agreed that "the region has the final word" in the decision-making process on all important aspects of the programme. The top-down role of the regional

[21] A list of the interviews is available from the authors on request.

administration is also confirmed by the view of a municipal employee who perceived the region as “relatively distant” and “neutral with respect to the actors on the ground”.

From the perspective of the local communities, however, not only the region but also the municipalities appear to impose their interests in a top-down way. In all NC meetings we observed, representatives of local communities often used expressions such as “they have decided that…”, where “they” typically confounds municipal, regional or even federal instances.

Several interviewees noted that the region accords less discretion to the municipalities when deciding on tangible (buildings, parks, facilities, housing) than on intangible (cultural projects, socio-professional training, social cohesion) investments. The municipalities in turn also tend to exercise closer control when implementing projects concerning the physical environment, while often delegating decisions regarding the content and implementation of intangible operations to local communities or the organisations that claim to represent them.

Revitalizing people up from the bottom

The top-down governance of projects concerning the physical environment can be gauged by the actors that are seen to be most important for their inception and implementation, namely the regional government and its administration, the municipal politicians and their administration, international/national planning companies and national/regional construction companies. This contrasts with the actors involved in the inception and implementation of projects that focus on people, such as training activities, awareness raising, cultural or artistic projects, neighbourhood cohesion etc. Key actors in these projects are the municipalities, who select the projects and carry out many of them through municipal departments, but also regional/local NGOs and community-based initiatives. Our interviewees clearly associate the intangible projects with a more bottom-up approach to urban renovation: the involved actors are seen to be “closer to the field”, they know the complex problems and opportunities of the neighbourhood through first-hand experiences, long-standing relationships and credible engagements.

Compared to projects shaping the physical environment, intangible urban renovation projects appear to generate more participation from local actors, for instance through participatory instruments such as regular Neighbourhood Commissions. The local community seems to be more involved in choices among alternative intangible projects and the follow-up of their implementation. Due to the relatively heterogeneous composition of Neighbourhood Commissions and other participatory bodies, intangible projects tend to cover a broad set of interests and concerns, which over time has generated a kaleidoscopic collection of environmental, economic, social and cultural projects funded under the NC framework.

Trouble is multi-level’s middle name

In all interviews we encountered descriptions of conflictual relationships between the different elements of the NC programme. Many of these problems can be associated with issues related to different scales, types of actors and dimensions of urban renovation.

The first critical issue is the often conflictual relationship between the municipal and the regional governments/administrations. Although each local NC is formally a contract between the two levels of governance, it is a contract between parties with unequal power and potentially diverging interests. Both municipal and regional interviewees mentioned regular clashes, heated discussions and walkouts. In many cases such conflicts are underpinned by political differences: administrations ultimately report to politicians who are affiliated to

political parties. On issues such as the choice between a public or private operator for a specific intervention, different political visions can obstruct cooperation. The underlying importance of party politics frequently resurfaces when elections change the majority in either municipal or regional governments, which can lead to a revision of a previously negotiated urban renovation programme.

Although the region has always "the final word", it cannot impose the implementation of any specific operation without the complicity of the municipality in charge of the neighbourhood. A regional administrator framed this problem as "a divergence of visions" and gave a series of examples. For instance, some municipalities do not want to increase the stock of social housing and prefer to attract richer residents through prestigious real estate projects. This contradicts the regional priority of creating more social housing through the NC programme. The municipal and regional visions for urban revitalisation can also clash in the case of intangible projects. A local programme manager told us that regional socioeconomic objectives tend to focus on policy priorities such as employment creation and youth unemployment. While these issues are also on the agenda of municipalities, the latter often prefer to focus on more palpable and immediate concerns. A programme manager described the divergence of visions in this way: "As a neighbour one could think 'Yes, OK, there should be more jobs for young people but I am here to talk about the neighbourhood'. We are at a different scale here." In other words, issues such as youth unemployment are often perceived as pandemic/regional problems by municipal actors, whereas from a regional perspective local interventions in many neighbourhoods appear as a solution to these problems.

A second area of conflict arises from the complex relationship between grass-roots initiatives and public administrations. Many grass-root or community-based organisations participate in the NC programme, either through their presence in public meetings or by receiving subsidies for the implementation of bottom-up projects. But some grass-root organisations have repeatedly criticized the predominant role of public administrations. These activists argue that massive investments in the physical environment lead to the gentrification of working-class neighbourhoods and that bottom-up projects are often instrumentalised to legitimize these investments in the eyes of the local population. In meetings with representatives of the regional federation of neighbourhood committees, our interlocutors said that the NC policy has a "very bad reputation" among grass-roots organisations: while some of the investments formally resembled bottom-up initiatives, they were seen as instrumentalising local actors to serve external, top-down interests.

Finally, a third conflict stems from an apparent disconnection between the bottom-up and top-down elements of the policy. While the former focuses on people, the latter targets the physical environment; the policy hence approaches bricks and people in completely separate, disconnected ways.

One symptom of this issue is the institutional disconnection of the two types of interventions. From a very early stage of a local NC programme, the interventions are split into tangible and intangible elements that are subsequently implemented by different actors that only rarely cooperate with each other. The contractors implementing the physical interventions and the community-based organisations running the people-focused projects seldom meet and almost never work together.

We also identified a cognitive disconnection between the two approaches. Actors we observed made a strict separation between tangible and intangible projects in their neighbourhood and

only rarely made spontaneous connections between them. Tangible investments are mostly referred to as “bricks projects”, whereas the intangible operations are “socioeconomic projects” or simply “the NGOs”. In meetings with representatives of local communities, the cognitive disconnection translates into the opposition between “them” and “us”, where the former refers to the operators involved in physical transformations and the latter to socioeconomic projects targeting people.

Take me to the bridge

Each of these three sources of governance-related conflicts can be associated to different mediating roles of BOs. More specifically, we argue that these conflicts can be attenuated or even resolved by:

multi-level mediation (e.g. finding a vision for neighbourhood regeneration that is shared across different levels of governance);

multi-actor mediation (resolving conflicts between different types of actors);

multi-dimensional mediation (connecting “bricks” and “people” projects).

In the case of Brussels’ urban renovation programme, all three mediating roles are crystallized in the same type of actor, namely the local project manager (“projectleider”). For each local NC programme, the responsible municipality hires a project manager, normally on a four-year contract that is entirely financed by the NC budget. In the 1990s, this role was often shared among two municipal employees. But in order to clarify responsibilities, since 2002 the regional regulation stipulates the appointment of a single project manager. In practice, however, the project manager is still supported by one or several subordinates in charge of specific elements of the programme (e.g. a “coordinator of socio-economic actions”). We can therefore say that the project managers and their teams form the most important BOs in the NC programme.

Through our interviews with 5 project managers and with several local/regional stakeholders with whom they closely interact, we are able to analyse in more detail how the project managers perform the three different mediation roles in practice.

Firstly, multi-level mediation between local and regional administrations is an integral part of the job description of each project manager: they represent the institutional link and main intermediary between the interests of their employer (i.e. a municipality) and the principal source of funding of their employment (i.e. the region). Each project manager interacts on a day-to-day basis with regional administrators of the DUR, often more so than with other municipal departments. Their engagement in multi-level mediation is facilitated by the fact that they are often relatively detached from the departmental structure of municipal administrations, while they are at the same time institutionally anchored as municipal personnel. Also their temporary employment contract reinforces their status as being simultaneously “insiders” and “outsiders” with respect to their municipal colleagues.

None of the project managers we interviewed or who were described to us by others had a political profile. In the event of politically motivated clashes between municipal and regional decision makers, this means that they can act as neutral facilitators who "want the project to get done". As a consequence, they are often the driving force for establishing a common vision among the local and regional levels of administration. One of the ways of achieving this is through focusing on consensual programmes. In many cases, this appears to have tilted investments towards social cohesion and public infrastructure projects: by investing in public facilities the region can claim to address the apparent shortage of daycare facilities and schools, whereas local policy makers can claim to improve the quality of life of the incumbent population rather than attracting new rich (poor) residents that could gentrify (stigmatize) the neighbourhoods. The fact that regions and municipalities have engaged in many NCs over time has clearly facilitated this type of mediation as both stakeholders have gained experience and a better understanding of the negotiation procedure. One interviewee remarked, however, that this advantage is somewhat offset by the relatively high turnover among project managers due to their fixed-term contracts and the problems with the transmission of information, skills and experience that this turn-over engenders.

Secondly, project managers are often able to mediate successfully between different types of stakeholders. Again, their status as temporary agents and insiders/outsiders of the municipality appears to help them in bridging diverging perspectives and interests of local community-based organisations and the public administrations in charge of the programme. Indeed, several project managers told us that a stressful aspect of their job is to represent community interests in meetings with administrations, and administrative interests in meetings with the local community: "we are always criticised and have to defend viewpoints that are not our own".

One of the ways in which project managers mediate between the administrative and grass-roots concerns seems to be to "make do" with the activities of the NGOs that happen to be in the neighbourhood. One project manager described this as follows: "Instead of defining a project with the residents and afterwards looking for an operator at the regional scale, often we do the inverse: we know that in the neighbourhood there is an association that works with a certain group of people, we take them because that responds to a need." This supply-driven process has arguably led to a diversification of intangible projects as local NGOs cater to very different interests and operate in a range of sectors (youth, sports, culture, art, religion, environment etc). Multi-actor mediation has also been facilitated by other features of the governance framework, such as the Neighbourhood Commissions that have been systematically improved and extended over time.

Thirdly, project managers also mediate between different dimensions of urban renovation, notably between tangible and intangible operations. This is also fostered by the fact that they are relatively detached from more sectorally organised municipal departments and that they are one of the few actors following up on all aspects of both tangible and intangible operations. Some project managers have indeed managed to identify local organisations that work on the same issues that are addressed by physical interventions (e.g. water in the public space), and set up programmes that combine "bricks" operations (such as a new fountain) with "people" interventions (such as educational workshops on the role of water in urban contexts). Compared to the two other types of mediation, however, our interviewees related relatively few instances of bridging between tangible and intangible projects, which we interpret as a qualitative corroboration of the quantitative analysis above.

Just enough for the city

Most interviewees spontaneously mentioned one or several mediation activities of project managers. It appears, however, that they have been much more successful in multi-level and multi-actor mediation than in multi-dimensional mediation, although we lack quantitative evidence to back up this claim. This being said, no interviewee objected to the assertion of a general disconnection between tangible and intangible projects.

Comparing the different mediation strategies we identified in the interviews, the observed multi-level and multi-actor mediations could have amplified the multi-dimensional disconnection. Indeed, disconnecting the different dimensions of urban renovation could arguably help the project managers to find consensus on tangible projects between different levels of administration (i.e. focus on social cohesion, facilities and public space interventions), while also allowing to cater to grass-roots concerns (i.e. providing more autonomy and participation in intangible projects). Separating tangible and intangible projects also allows project managers to keep the programmes manageable by avoiding complexity and risks that are inevitably the consequence of the interdependencies of closer links between physical and people-oriented operations. This suggests that BOs could be confronted with trade-offs between different mediation approaches: in this case, multi-level, multi-actor and multi-dimensional meditation should be seen as a trilemma rather than as a trilogy.

4.4.3 Lessons from action research

In this section we confront the analyses based on our database and stakeholder interviews with hands-on experiences that we gleaned by engaging in action research between 2013 and 2015. In essence, our strategy boiled down to performing ourselves the role of a BO in order to learn more about the roles and challenges that BOs face in multi-level, multi-actor and multi-dimensional urban renovation programmes. We performed this role as project managers in the Urban Ecology Centre (UEC), of which one of the authors is a founding member.22 The UEC is a non-profit environmental organization with close links to different academic institutions, but also to grass-roots organisations and local/regional administrations; it notably runs urban gardening projects in different neighbourhoods of Brussels.

Robson (2002) defines action research as involving "action (solving concrete problems in real situations) and research (trying to further the goals of science)". This implies intense cooperation between researchers and their subject matter through experiments or pilot projects that facilitate the direct engagement with problem solving. Especially in the context of urban adaptation, academic involvement in place-based partnerships for co-creating sustainability transitions is increasingly seen as both a means for fostering the social relevance of scientific work and the sustainability of urban forms (Trencher et al. 2013).

In all projects the involvement of the UEC resulted from informal discussions with the respective municipality about on-going NC programmes that led to a formal project proposition of the UEC for the neighbourhood. Two of these projects were funded by the NC and the other two by the regional environmental agency. We have selected these projects for action research because all of them are directly related to Brussels' urban renovation programme and involve different levels, actors and dimensions of urban renovation, i.e. configurations that imply a need for three types of bridging activities.

The four action-research projects can be characterised in more detail through the mediation challenges they represent. The multi-level challenges arise from confrontations between top-down regional planning and bottom-up local adaptation involving one or several issues such

[22] www.urban-ecology.be

as mobility (Bockstael, Bloemenhof), housing (Bloemenhof, Zinneke), green spaces (Bockstael, Bloemenhof, Abbaye), water (Abbaye) and the economy (Zinneke). In all four NCs multiple types of actors intervene, including regional administrations and local residents or NGOs; the municipalities in charge of the NC appear as intermediate actors in all projects. Finally, all four projects address different dimensions of urban renovation and include the adaptation of the physical environment (modification of grey, blue or green infrastructures) and intangible interventions (activation, organisation, participation of concepts or people).

The main lessons from our engagement as BOs can be summarised by two recurring obstacles and the bridging activities that could contribute to overcoming them. Perhaps surprisingly, we observed no case in which actions with different scales, actors or dimensions are completely inconsistent and per se conflictual – interscalar collision seems to be rare in Brussels. But we identified serious obstacles related to asynchronicity and the translation across different elements of the urban renovation projects.

The future's not ours to see

Perhaps the principal challenge we encountered in all four projects are temporal disparities. Asynchronicity can stem from the timing of interventions at different scales and carried out by different actors. Moulaert et al (2005) refer to this issue as "the conflict of temporalities between agencies" that arise notably between the political world, the economy and civil society movements. They argue that this conflict "may seriously disturb the reproduction of socially innovative initiatives" and recommend "to analyse the factors of these differences and how they can be oriented towards a better time-convergence" (p. 1989).

In three of the four projects the regional interventions were still in a planning phase and no physical interventions were expected to materialize before 2017. The precise starting dates of the implementation of the mobility circle (Bockstael) and the roll-on roll-off infrastructure (Zinneke) lie even further in the future. Moreover, each type of actor works according to its own rhythm: while the regional administrations planned several years ahead and were slow to react to new developments, local actors tended to focus on rapid action and immediate change. Finally, the lifecycle of a project involving the adaptation of the physical environment is typically much longer compared to actions directed at people. Each of these conflicts of temporalities renders the coordination of visions, agendas and actions extremely complex and creates considerable uncertainty as to their mutual fit. A frequent risk is that bottom-up initiatives are put on stand-by or taper out as local actors do not have the capacity to follow up on the protracted procedures of top-down projects. This is arguably one of the reasons why the NC programme managers are wary of linking top-down and bottom-up projects in order to avoid the interdependencies that would make both types of projects riskier.

A potential solution to the conflict of temporalities that we experimented with in our action research is to modify the lifecycle of bottom-up projects by presenting them as "potentially temporary interventions". This is similar to Cox et al's (2014) conclusion that conflicts of temporalities can often be attenuated through "temporary constructions or occupations of spaces" as a means "to stimulate the local community to assess their environment more critically or to see previously unnoticed potentialities and qualities" (p. 24).

We experienced this as a way of maintaining the momentum in bottom-up initiatives that thrive on the motivating factor of rapid transformation without committing decision makers at other scales of governance to definite arrangements that could be potentially incompatible with long-term projects. The adverb "potentially" is not trivial because many projects ultimately turn out to be compatible with long-term developments but would probably not have seen the light of day if they had been conceived of as permanent interventions from the outset.23

Lost in translation

The second mediation challenge we were confronted with consists in the translation of narratives across scales, actors or dimensions. For instance, it was challenging to translate a relatively abstract discourse on watershed solidarity into meaningful concepts at the level of an individual house, as was done in the NC Abbaye. A similar difficulty also arose in the Bloemenhof neighbourhood where the implications of a masterplan spanning several hectares had to be translated into a narrative at the scale of a relatively small square. When such translations involve different scales of urban planning, we experienced the NC project managers to be effective translators, arguably because most of them have a professional background in architecture or urbanism. But they are arguably less equipped to translate across scales, actors or dimensions when it comes to social or economic issues on which they have less knowledge.

In order to improve the communication across scales, actors or dimensions, we experienced it to be necessary to include knowledgeable translators in the team of the BO. The competences required for translation differ according to the project at hand and encompassed urbanism and planning competences (Bloemenhof, Bockstael), hydrology (Abbaye) and urban economics (Zinneke). While we believe that this has helped to translate narratives across scales and actors, we found it to be considerably more difficult to translate across different dimensions of urban renovation projects, which arguably adds to the difficulties of project managers to combine projects directed at the physical environment with those directed at people. In projects where it was possible to translate across scales and types of knowledge, this led to a more effective articulation of the interests of all involved actors, which can be a precondition of successful negotiation and constructive communication.

4.5 Conclusion

Numerous city-regions are under strong pressure to render their social-ecological systems more sustainable. This has spurred considerable interest of both decision makers and academics for placed-based policies such as the "City Deals" in the UK, the "Empowerment Zone Program" in the US, the "Zones Franches Urbaines" in France or the "Neighbourhood Contracts" in Belgium. In this chapter we have focused on urban regeneration in Brussels and employed methodological triangulation to illustrate some inherent tensions in urban regeneration policies as well as the mediation roles they engender for bridging organisations.

While the literature on the governance of social-ecological systems increasingly recognizes the central roles of BOs in transition processes, our chapter provides a more nuanced understanding of BO activities and their contribution towards urban sustainability.

First, our research differentiates between three types of bridging activities and develops the notion that urban renovation policies not only create tensions between different scales of

23 Two well-known examples of rather enduring temporary interventions in cities are Paris' Eiffel Tower (1889) and Brussels' Atomium (1958).

governance, but also between heterogeneous types of actors and between multiple dimensions of urban sustainability transitions. These tensions give rise to the need for multi-scale, multi-actor and multi-dimensional mediation.

Second, we used our empirical material to portray how the main BOs in Brussels' NC programme, the local project managers, have performed these different mediation roles. We notably identified a potential mediation trilemma: the strategies that BOs developed for mediating between multiple scales and between multiple actors appeared to have exacerbated the disconnection between multiple dimensions of urban renovation. More specifically, in many programmes the BOs have attenuated conflicts between different levels of public administrations by building a consensus on physical investments, whereas they mediated the tension between public administrations and community-based actors by empowering the latter in investments directed at people. The combination of these two mediation strategies, however, appears to have exacerbated the apparent disconnection between urban renovation investments directed at the physical environment and those targeting people.

Finally, we presented lessons from action research in which we experimented with potential solutions to these mediation challenges. We identified two main drivers for multi-level, multi-actor and multi-dimensional tensions: asynchronicity and communication barriers. Promising mediation strategies to overcome these tensions in urban renovation programmes include the wider use of temporality and conceptual translations. These strategies should, however, be considered as ad-hoc tools requiring further testing in different governance settings to ensure their external validity.

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5. A participatory approach for real-world system transitions

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Case study: Parco Agricolo Casal del Marmo, Municipio XiV in the Rome Metropolitan Area, Italy

5.1 Introduction

Engagement of local actors and stakeholders in urban areas is increasingly considered a prime leverage point for transitions towards sustainability (Loorbach, 2007; Vandenbroeck 2012). In practice it is a field imbued with complexity and conflict and awkward to navigate. While planning practitioners increasingly accept complexity as a fundamental challenge within the transition processes, they struggle with tools and approaches that accommodate it. Drawing on the notion of the curatorial from art and design, we are exploring a novel approach that engages directly and constructively with complex problems evident with multi-scalar, multi-actor and multi-dimensional urban planning projects.

Our approach proposes a novel and practical method to compress this diversity within time and place - such as during multi-party stakeholder discussions - in what we call a "curatorial approach to system transitions". This chapter describes the theoretical basis of this approach and why it is a relevant lens in which to approach complexity and conflict in urban areas. We also present empirical evidence from its application to a real-world sustainability transition related to the governance of a large urban asset in the city of Rome.

In Section 2 we identify three problematic qualities evident in urban planning situations that give rise to complexity. Section 3 shows how this complexity can be addressed and presents the theoretical basis and a process method of our curatorial approach. Section 4 describes a case study in which we applied this method to a participatory planning problem related to the Parco Agricolo Casal del Marmo in the Lazio region in Italy. We notably describe the context of this case, the implementation of the curatorial cycle and the main results of a participatory workshop. Section 5 concludes.

5.2 Problem statement: The complexity of urban transitions

Deliberate strategies to effect 'sustainable transitions' in urban areas have recently been a subject of intense research within the field of Transition Management (Geels 2010, Loorbach 2007). It is now widely recognised that conflicts and complexities common in sustainability transitions are increasingly questioning traditional scientific methods developed in specialised disciplines and call for more integrated, adaptive and creative frameworks. Armitage et al (2008), who explored complexity in sustainability transitions, notes that "social-ecological complexity" should be addressed through new ways of managing

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knowledge and a diversity of scales and actors. We will now analyse in more detail the relevance of diverse knowledge, actors and scales for the case of urban sustainability transitions.

Knowledge: The interdisciplinary literature at the intersection between the natural and social sciences has emphasised the importance of interdependencies between different dimensions of sustainability interventions (Ostrom 2007). For instance, it is crucial to understand how economic behaviour is affected by physical interventions. Practices in urban planning, however, reflect the disciplinary specialisation of professionals so that economists, architects, agronomists, engineers, sociologists, urban planners and so on lack practical tools permitting meaningful dialogues on specific projects (Buchanan 1992). While there is an increasing consensus for the need of interdisciplinary approaches to urban transitions, cooperating across disciplinary boundaries is still confronted by incommensurate semantics, work approaches and demands extremely time consuming methodological and conceptual translations.

Actors + Stakeholders: Planning processes involve a wide range of actors that have to be concerted, convinced or consulted. There has been a surge in tools and methods to select and integrate many of these actors in planning processes, most recently under the banner of "Participatory Design Workshops" (Cox et al 2015). Most of these tools have led to disappointing results. A lack of political will and institutional entropy provides rocky terrain for methods and tools to take root, resulting in overstrained time and resources of different groups, in what is referred to as 'participation fatigue' (Kaszynska et al 2012). There is also a more general concern that a focus on "key stakeholders" overemphasised economic and political power over alternative criteria such as being personally affected by the planning processes, professional and lay knowledge about the site or civic leadership in the concerned area. Drawing on empirical studies of common-pool resources that are often structurally similar to urban assets, one of the design principles advocated by Ostrom (2008) is to authorize most of the individuals affected by a resource regime to participate in making and modifying the rules of the regime. This creates the need for frameworks that allow the incorporation of a more complex set of stakeholders into planning processes in a meaningful and operational way.

Scales: Changing urban form typically affects functioning at multiple scales. Scales are deeply intertwined so that interventions at a particular scale need to understand and anticipate interrelationships with lower and higher scales (Omann and Spangenberg 2002). Moreover, without a nuanced understanding of the different nature of scale levels, policy making can easily become fragmented and inconsistent resulting in confusion and distrust (Swyngedouw, 2005). These can also be interpreted as scales involving time, ranging between the immediate and long term futures of the space. This complexity constitutes one of the core themes of the planning profession and has inspired visual and conceptual tools to address multi-scalar problems. However, in practice planners face time constraints and relatively narrow mandates so that multiple scales often continue to be a poorly resolved issue.

5.3 A curatorial approach to system transitions

5.3.1 Complexity is not chaos: adopting a systems perspective

Due to the different drivers of complexity that characterise urban sustainability transitions, urban planning situations typically accept no clear problem definition. The staggering quantity of interconnected variables and relationships also means that they normally defy

conventional scientific methods based on reductionism. As a consequence, they resemble "Wicked Problems" found in societal contexts involving issues such as environmental, economic, or public policy within a pluralistic society where there is no objective definition of a public good (Rittel & Webber 1973). Churchman (1967) has described such problems as "ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values".

Complexity should, however, not be confused with chaos and there are several longstanding academic traditions that have successfully addressed complex social problems. One of the most powerful ways to capture complexity is through thinking through systems - from the Greek systema, "organized whole, a whole compounded of parts" - that adopts a holistic perspective in order to examine how the elements of a system "stand together". While system thinking was long crowded out by theological explanations of observed complexity, it reappeared in Western philosophy during the Enlightenment, as in Goethe's lifelong struggle to understand "what keeps the world together in its core". In the 1970s, system thinking revolutionised the understanding of complex biotopes such as forests or oceans by framing them as intelligible "ecosystems" (Duvigneaud 1975). Around the same time, MIT scientists applied system thinking to global biophysical developments and charted "the limits to growth" beyond which global production systems would become unstable (Meadows et al, 1972). Historically and intellectually rooted in engineering science, system analysis is today an academic discipline in its own right, while other disciplines have developed specific theories on monetary systems, mobility systems, legal systems or approaches to systems thinking.

The mainstreaming of sustainability as overarching policy goal has led to an increasing necessity for holistic approaches in order to understand the interrelationships between economic, social, environmental and cultural systems at different scales. Emphasising the connectedness of biophysical and anthropogenic systems, many authors refer to their nexus as "social-ecological systems" (Dietz et al 2003). Although it is rarely adopted in urban planning and spatial design, we argue that a "system perspective" provides considerable mileage for dealing with the different forms of complexity associated with them. It invites the participants in a planning situation to consider how different particulars (such as a new building, a new economic activity, a new park etc) together form a whole.

The kind of systems encountered in urban planning situations are, however, intrinsically different from "hard" systems applied to natural science and engineering. The presence of multiple types of knowledge and actors mean that the understanding of social-ecological systems requires dealing with multiple overlapping perspectives as any specific discipline or body of knowledge will always be partial and provisional (Brown et al 2010, Midgley 1991, Moulaert and Van Dyck 2013). As such, dealing with the transition of social-ecological systems is a natural bedfellow with inter- and transdisciplinary approaches and practices. They defy overly rational approaches and tools and call for a plurality of voices, lenses, and instruments. This is notably due to the fact that key elements of the system - its stakeholders and their knowledge - are not exogenous to the analysis of the system. They can for instance decide on the goals and the rules of the system and, on a more fundamental level, assign meaning to the system. The curatorial approach we present in the next section offers an innovative and conscious effort to adopt system thinking in a setting in which the meaning of the system is subject to interpersonal dynamics that are part of the planning situation.

5.3.2 The curatorial as a framework for systems

While much has been written about potential tools for tackling wicked problems, considerably less is written about influential roles that can facilitate these, as individual approaches or assemblages, within a participatory setting. Roles like organiser, facilitator, or moderator tend to reflect the logic of tame problems that can be 'fixed' through analytical decomposition and are not relevant for wicked problems; additionally, roles, such as these,

and associated tools, carry with them considerable institutional baggage (Van den Broeck 2011). With this in mind, we argue instead for a curatorial role, a position that deals with complexity and conflict using multiple approaches, methods and logics.

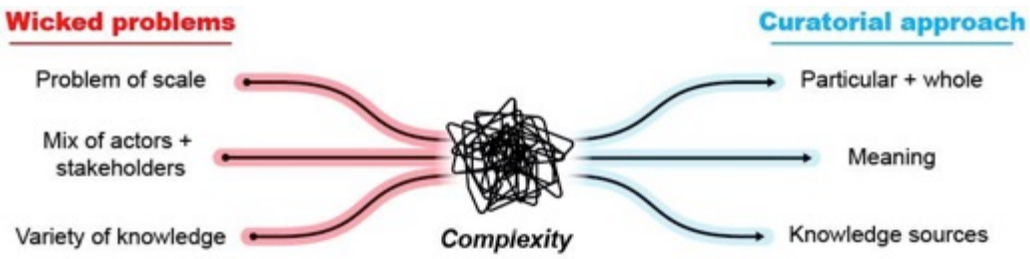


Figure 1: Challenges of wicked problems + the basic aspects of curating

The Swedish curator Maria Lind (2010) defines the curatorial, as "...a way of thinking in terms of interconnections: linking objects, images, processes, people, locations, history and discourses in physical space like an active catalyst generating twists, turns and tensions." In today's art and design world, the curator plays an important role as translator and mediator between the artefact and different audiences. He/she is intimately connected to the artefact itself and deeply concerned with the output of the translation, actively giving it form but plays a role which is neither the cultural producer nor the audience. The curator, having been provided with institutional or cultural legitimacy, has a wide arsenal of techniques for engaging audiences and translating the story of the artefact and its significance.

5.3.3 Three Guiding Principles of Curation

We argue that framing urban planning situations as wicked problems and adopting a curatorial approach with systems at its heart, provides considerable mileage for moving forward, untangling stand-offs and making such problems accessible to relevant actors. This can be derived by looking at three guiding principles that characterise our curatorial approach to system transitions: 1) a focus on 'meaning', 2) knowledge emerges and is transferred from multiple sources, which need not be analytical or cognitive, and 3) an oscillation between the particular and the whole.

1. Meaning: At the heart of the curatorial is an affinity and partiality for the subject matter. It is not value-neutral. It assumes a position of relationality, whereby the curator recognises his/her own subjectivity in the process of their work. The term curator originates from the latin cura, to care for. The role of the curator, originally, was a caretaker of objects and artefacts and today the curator is concerned with what the artefacts 'mean' to different audiences. We adopted both of these roles, a deep consideration and care for the context and its potential futures as well as translators--helping communicate the context's meaning according to local stakeholder positions.

We argue that taking a disinterested position as neutral facilitator does a disservice to the context, rendering analysis and propositions as scientific, concerned more with what 'is' than what 'could be' and limiting the different means to explore the problem and possible solutions. By situating the organiser's role as deeply 'caring' for the context and its outcome, it refocuses discussions and interactions. To do this, we invoke strategies that aim to penetrate below the levels of 'interest' and 'position', to reach points of significance. These

strategies include addressing emotive and experiential facets of stakeholders through visual, creative, experiential and reflective modes of action.

2. Multiple ways of knowing: In line with the a systems perspective, the curatorial affirms that there are multiple ways of knowing—equally so, this is paired with a multiplicity of forms of communication. System transitions not only require tapping into the different bodies of specialised knowledge associated with the canon of academic and professional disciplines but also require uprooting accepted knowledge hierarchies--the thinking which has given us these problems in the first place-- such as giving preferences to art over science, or a designed artefact over a policy document.

Multiple ways of knowing also implies a considerable amount of demystification of the problem being addressed, whereby individuals learn to see and accept their own perspective as part of a much the broader discourse. This can bring about a greater openness to a variety of ways of knowing and an active integration of types of knowing through action, as found in problematisation (Miciukiewicz et al. 2012). We seek to combine multiple forms of knowing and expression, as a way of tapping into the wholeness of our experience as humans, accepting intangible feelings, dreams, nostalgias, or sentiments as valid and useful for the workshop process.

Expression is made meaningful and real through processes of reification, which is the translation or congealing of ideas into 'things' such as artefacts, relationships or even concepts such as 'justice'. The materiality or concreteness involved provides a milieu for inquisition and exploration enabling negotiations among participants with very different interests or skills. Afterwards we are left with an artefact that represents the moment of codification when the knowledge of the group is synthesised into a material and symbolic system, which is embedded with the consequent social, political, cultural and institutional negotiations inherent in its production, what Gherardi and Nicolini (2000), call a "complex form of social and technical bricolage". From this, the artefact or concept, with all its implicit combinations of knowledge, embodies a new context of use and thus also a new starting point within an on-going process upon which dialogue is sustained.

3. Elements within a whole: To work with complexity, it is necessary to work between the individual elements that constitute the whole. Dan Hill (2012) refers to this as skipping between the 'meta' (the big picture) and the 'matter' (the material detail). Taking from the curatorial and systems thinking tradition, we contend that the particular and the whole cannot be understood without the other, therefore, moving towards systems transitions requires change to occur at the individual and structural levels. The curatorial draws the agency from the individual level into the systems level, through this oscillation of scales.

5.3.4 Curatorial Cycle (the workshop structure)

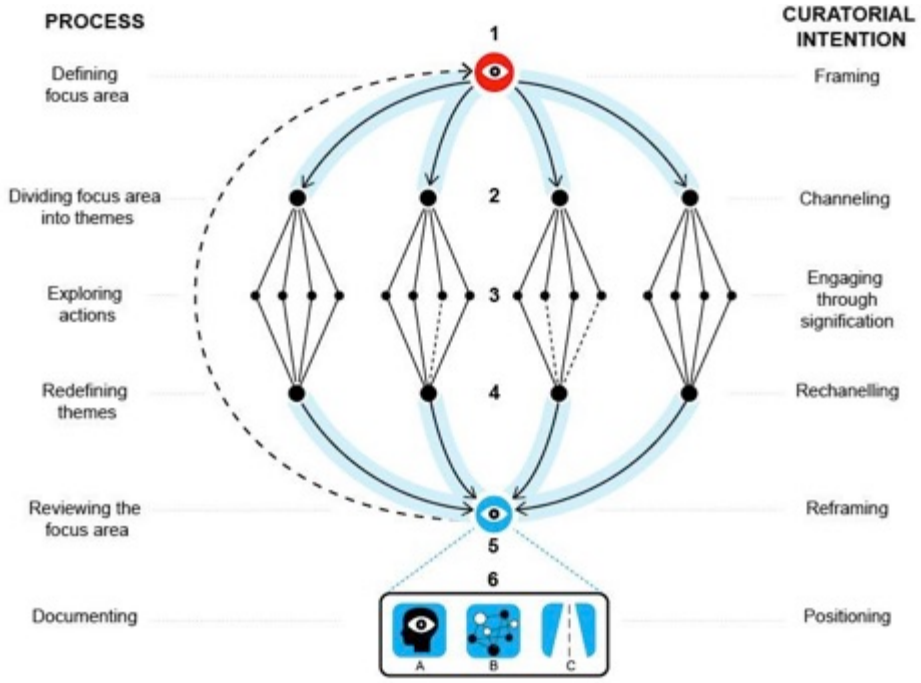
Time constraints remain a considerable challenge in the context of stakeholder meetings. Motivating relevant stakeholders to sit together is a difficult task, often requiring factors such as incentives ("what's in it for me?"), which are difficult to sustain for longer periods. Another important challenge is communicating the urgency of the problem at hand—the need to act and overcome pre-existing barriers in knowledge creation and shared action.

We recognise the impediments and opportunities of short-term workshops. We frame scenarios as interventions, creating a spatial/temporal break, disrupting habitual patterns of thinking on the subject matter. We seek to use features such as time and risk as an intrinsic part of the workshop — a compressed multi-experiential event evoking strong emotions,

memories, ideas, and beliefs. Our curatorial approach aims to limit what commonly are long and drawn out 'negotiations' over entrenched stakeholder positions. In this way discussions can be much more frank, open and direct.

Figure 2: The workshop cycle; the curatorial frames the steps in the process

The workshop is designed as a kind of cycle consisting of six steps. The first step (1) opens up



the discussion and frames the focus area - this can be seen as divergent thinking and can be quite abstract. The following three steps (2-4) involve splitting the focus area into smaller themes that invokes emergent thinking. Specific problems can be discussed in detail to test the concept defined in the focus area. It also explores action areas that may be explored further after the workshop. The fifth step (5) uses knowledge gained in steps 2-4 to review ideas noted in step 1 through an exhibition of the work produced - this is a moment where the themes are compared and the vision tested. These five steps are what we, in the context of a workshop, call a curatorial cycle, which can occur numerous times over the course of the workshop. Once the general focus area has been defined, it is possible to refine a vision and define specific actions. The final step (6) evidently involves documenting the process and defining steps forward.

1. Framing

> *Process:* to begin bringing together different ideas, worldviews, hopes and fears.

> *Curatorial intention:* to start with the holistic vision of problem area, which is a curated working hypothesis. This is the basis for exploration using different means available, such as artefacts, images, research material or presentations, which set the tone without directly addressing the specific context.

> *Outcome:* The basic building blocks of a coordinated vision that allow for discussions to funnel towards specific issues.

2. Channelling

> *Process:* Break down the vision of the problem as a system composed of multiple tangible problems, which can be individually addressed.

> *Curatorial intention:* to predefine the themes before the workshop in order to channel the focus of the participants.

> *Outcome:* Participants are not lost within the complexity of breaking down a large problem. Instead, this activates discussions and accelerates the collaborative process towards pre-determined useful themes.

3. Engaging through signification

> *Process*: to personally reflect and identify concrete actions, artefacts or conditions for addressing a part of the problem.

> *Curatorial intention*: to create the conditions for individuals or small sub-groups to personally identify with the problem or solution and to find a unique voice within the wider discussions.

> *Outcome*: The emergence of specific action points for a small part of the larger problem.

4. Rechannelling

> *Process:* Integrate different particular solutions within a larger body of solutions.

> *Curatorial intention:* valorising leverage points.

> *Outcome:* A deepened knowledge of how the particular parts fit within the whole.

5. Reframing

> *Process:* Bring the groups to a point of exchange to review and refine the vision.

> *Curatorial intention:* Negotiation of knowledge(s) through bringing together tensions, juxtapositions, complementarities et to catalyse responses and resonance with the proposed vision.

> *Outcome:* A closer consolidation of particular proposed solutions within the vision.

6. Positioning

> *Process*: Document and communicate the ideas from the previous steps into a meaningful and memorable form.

> *Curatorial intention*: To support multiple voices and expressions in translating different ideas into a visual representation.

> *Outcome*: a visual representation that incorporates the complexity of the problem and the nuances of the multiple solutions provided.

5.4 Curating a system transition in the Parco Agricolo Casal del Marmo

5.4.1 Genesis of the project

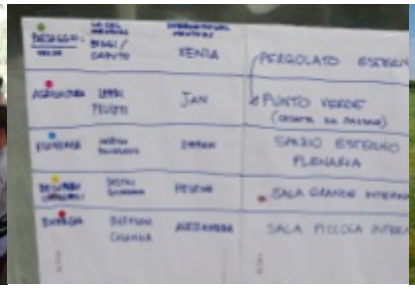
The area referred to as "Parco Agricolo Casal del Marmo" is a 460 ha site situated in the North-West of Rome. Most of the Parco was left fallow after real estate speculation progressively crowded out agricultural uses since the 1970s (Suchiarelli 2002). The site is zoned 'collective interest area' as an 'agricultural park' - a political decision that translated into a considerable financial loss for landowners seeking to develop the land (Bollettino Ufficiale 2014).

In October 2014, the authors were approached by the regional public business innovation agency (BIC Lazio) and the local municipality (Municipio XIV Roma Capitale) to consider the Parco Agricolo in the context of our work on TURAS, a European research project on sustainable and resilient cities. The site clearly fits Rittel's description of a wicked problem (2012). Firstly, the problem statement was ill-formulated, information was confusing, including outputs of previous participatory planning actions for the site (Associazzone Comitato 2012). There were likewise numerous clients and stakeholders with conflicting values; we were asked to work with local and regional agencies with different agendas and interests in the site and also had to consider a wide range of other private stakeholders such as the landowners. Part of the local business community and civil society has also (potential) interest in the development of the Parco. Finally the ramifications of a project at such a large scale within the political and economic hub of the city of Rome has implications for social and natural systems at different scales.

5.4.2 Applying the curatorial cycle in a three-day participatory workshop

In this section we describe how we applied the curatorial cycle described in Figure 2 (section 2 above) to the "wicked problem" we faced at the Parco. Our first action was to create a curatorial situation. We achieved this by suggesting to the local authorities that the complexities of the Parco's development could be addressed by compressing a large variety of viewpoints and forms of knowledge in time and space, a compression that took the form of a three-day, on-site, hands-on workshop with around 60 participants from the area that was organised in June 2015. The workshop also includes five external international experts that help provide inspiration. The overall architecture of the workshop was structured in the form of the six steps of the curatorial approach presented above.


Step 1. Framing


Step 2. Channeling


Step 3. Engage via signification


Step 4. Rechanneling


Step 5. Reframing


Step 6. Positioning

Figure 4.1-4.6: workshop steps

Step 1. Framing. Our working definition of the overall problem area of the Parco embraced a non-neutral and political stance: we decided to engage with the local stakeholders and the site in order to help co-constructing a meaningful vision. We wanted to promote a positive vision that would suggest to the local and regional decision makers that the Parco could play a completely different role in the urban system. While the representatives of the local municipality shared our non-neutral assessment from the beginning, we further curated the narrative to help narrow the focus of the workshop. We clearly stated in all communications that the purpose of the workshop was to "create a community-based food system" of which the Parco was to be the heart.

We then further framed the workshop experience through a mix of visual artefacts, physical exposure and presentations. For instance, we prepared and exhibited on the site of the Parco a series of large photos and descriptions of community-based food projects from different contexts across the globe. Day 1 started with a guided walk around the site. This was followed by short presentations that again focused on community-supported food projects in other cities given by the five external experts.

Step 2. Channelling. Moving from the whole to the particular was achieved by channeling participants and conversations into a limited set of themes: Steps 2-4 thus took place within thematic groups composed of 10-15 participants that were predefined according to interest and expertise. This allocation was based on the municipality's assessment of each participant's knowledge, interests and professional training. This being said, participants were free to affiliate and follow other themes as well - and many did.

The themes were similar to the 'principles of relevance' that designers identify when addressing wicked problems (Buchanan 1992) including: agriculture, urban integration, landscape, energy and resources, and economy. These themes were predefined by the organisers in order to save time and ongoing discussion during the workshop.

Each theme was framed as a 'subsystem' of the site as a whole. During Step 2, the groups formed by each theme were given a set of clear objectives and exercises that aimed at developing systematic thinking, including intermediate objectives such as: "understanding system analysis", "understanding system maps", "identifying the elements of the system" and so forth. While the themes were somewhat elaborated for the teams, it was expected that the team validated or redefined them as they saw it.

The municipality had identified two knowledgeable individuals for each group and assigned them as "coordinator" and "facilitator". In addition, the research team (curators) assigned an international mentor to each group with the intention to provide references to community-based food systems at the sub-system level. The coordinators/facilitators were then handed over a detailed script including the objectives and suggested ways to reach them. In hindsight, group leadership turned out to be a big challenge and would likely have been more effective through self-organisation within the groups.

We found that the act of drawing a system, even a simple system (i.e how a carrot travels from farm to fork) was enough to set a common vocabulary, defined by the participants, to help integrate actors in the map-making process. This self-interpretation and "rule-making" within the group allowed a critical step forward. We observed that groups that did not start to draw a visual representation of "their" system either struggled to structure their ideas and lost time talking abstractly or otherwise resorted to a communication language that fit their predominant vocation and lead to a partial analysis (such as schematic design drawings for the landscape group). The workshop confirmed that people are rarely trained to think in systems and will clutter down, focusing on their specialisation if left to their own accord. The basic concept of systems thinking proved to be quite didactic and helped individuals to express their knowledge in a way that would be commensurate with other conversations.

Step 3. Engaging through signification. Step 3 is pivotal in our framework as it strives to create situations in which all three curatorial aspects come into play. Step 3 further splits the thematic groups into more specific issues and groups of 2-4 individuals that would be most likely to lead to meaningful exchange on a personal level (aspect of meaning). Second, these more intimate conversations would span a broader and deeper spectrum of human communication, and participants were encouraged to walk around the site so as to situate Step 3 in the landscape (multiple ways of knowing and rooting that 'knowing' in meaning). Third, the conversations were framed as a mid-point of the cycle whole-particular-whole (elements within a whole).

The precise content of the conversations in Step 3 was to some extent left to the groups to define, as long as these conversations were oriented towards creating a vision for the thematic sub-system that could be later incorporated into the vision for the whole system. On Day 1 most conversations focused on the values or overall objective that the development of the Parco should pursue, therefore touching not only on analytic but also on personal and emotional aspects that are difficult to discuss in larger groups. The conversations on Day 2 were directed at exploring and defining concrete actions for transitioning towards the overall vision established in Step 5 of the first cycle. Discussing specific interventions in personal conversations proved to be instrumental for keeping discussions relevant and interesting while also fostering commitment and tangible steps towards implementation, as most conversations involved specific actions that individuals wanted to be and could feel personally involved in.

We felt that Step 3 was extremely valuable for the entire workshop process and featured deep conversations about actions that are too often missing from other participatory approaches to planning. The diversity of situated conversations also rendered the work on each theme more resilient: while not all conversations made equal progress, having many of them simultaneously on each theme ensured that the groups could build on a diverse mix of creative, constructive, visionary, and realistic conversations. Also, as the team members

could freely engage with other groups, cross-pollination of ideas allowed both collaboration and competition and propelled the groups forward.

Step 4. Rechannelling. Step 4 is the last step at theme-level and serves to redefine or update the results of Step 2. We set the objective of this step as identifying the action areas with the highest leverage for transitioning the Parco's system in the desired direction. For this purpose, overlapping conversations could be merged and irrelevant or conflicting ones discussed and discarded.

Step 4 was instrumental as a bridge between the personal conversations of Step 3 and the plenary presentation in Step 5. We believe that the symmetric nature of the curatorial cycle allowed to keep the group-level discussions relevant and constructive: results from the personal conversations were presented as contributions to the thematic objectives as well as in the context and language of the framework that the group defined together prior to splitting. This meant that members of the group perceived themselves as "playing for the same team" without excluding the psychologically rewarding sensation of proposing a particularly creative or useful individual contribution.

Step 5. Reframing. In this workshop the step took the form of a plenary session in which a collage of visual material (including vision drawings and subsystem maps) was exhibited as a backdrop. Representatives of each thematic group presented in turn the main outcomes of Steps 2-4 to the plenary, again in an atmosphere of "playing for the same team" since the thematic work was framed as specialised contributions towards the overall vision for the Parco.

At the end the end of Step 5 the group naturally produced a rather heteroclite collage of ideas, concepts, propositions and partial visions. But presenting these elements side-by-side as a first step towards a more coherent vision nevertheless created the impression of an ensemble. It also provided material for fertile interactions between the thematic groups since we observed that many substantial and procedural achievements of Day 1 appeared in the work of other groups in Day 2. On any account, we believe that the exhibition of the results fostered a deep sense of ownership for both the partial results and the vision for the whole.

Many participants referred to the process as "our method" and the research team's main achievement as "having brought us all together so that we can work this out". At the end of the three-day workshop, we proceeded to Step 6 which positions the workshop output through different elements of documentation that are presented in the next section.

Theme A - Economy + gov

Theme B - Urban integration

Theme C - Agriculture

Theme D - Landscape *Theme E - Energy and resources*

Figures 5.1-5.6: Examples of the styles of the maps produced for the final exhibition.

Step 6. Positioning. The following Figures 5.1-5.6 (above) shows the range of ideas developed within the groups. This is only a sample of the output however shows the diversity of the material developed by the participants and how they represented their ideation process. The groups were asked to included 3-5 'action areas' based on the most significant priorities - many of these were those explored during Step 3. The compilation of all of these diagrams helped define overlaps and the main leverage points for the project as a whole. In this case one of the main conclusions from the workshop was that an independent organisation, we refer to as a 'community interest company', was necessary to represent the vision, drive and negotiate change.

5.5 Conclusions

Local communities, especially in Southern Europe, experience the confluence of fiscal austerity, environmental degradation and social tensions. These crises, however, also release financial, physical and human resources that were sofar oriented towards business-as-usual approaches for assets such as public land, vacant real estate or defunct industrial sites. While the integration of such assets into community-based initiatives is becoming an increasingly popular strategy with policy makers and civil society organisations interested in sustainability, we observe narrow and shallow approaches for engaging with the complex and conflictual nature of the "wicked problems" that such transitions typically imply. This chapter contributes to filling this gap by presenting the theoretical and empirical basis of what we call a "curatorial approach" aimed at locally grounded system transitions.

Our theoretical contribution proposes that real-world sustainability transitions call for a fundamental re-thinking of the role of planning professionals in participatory processes. Most urban interventions have repercussions on multiple scales, involve multiple sets of stakeholders and have ramifications on multiple dimensions of social-ecological systems. The combination of these multiplicities means that they should be regarded as "wicked problems" whose complex and conflictual nature defies standard research methods oriented towards analytical, specialised and value-neutral disciplines where outcomes are relatively clear.

The curatorial approach developed in this chapter addresses wicked problems through two complementary strategies. First, by re-thinking the role of planning professionals as "curators" whose interventions are guided by the principles of creating meaning, caring for

the context, fostering diverse ways of knowing, and oscillating between the particular and the whole. The curatorial here provides a unique set of instruments for dealing with different knowledge parcels as well a useful metaphor for thinking of the role of the planner in ecological projects--a caretaker and guardian. Secondly by embedding the curatorial approach in a system perspective, stakeholders are encouraged to simultaneously think in terms of individual and structural actions that are necessary for sustainability transitions. In the case of our work in Rome, the combination of these two strategies led us to develop a "curatorial cycle", which offers an example for planners to navigate through the different steps involved in real-world system transitions.

We have applied this new approach in the context of the development of the Parco Agricolo Casal del Marmo, a site of undeniable economic, environmental and social potential situated in the periphery of Rome. The empirical evidence showed that our approach allows for stakeholders to effectively address the complex and conflictual nature of sustainability transitions. Stakeholders notably felt empowered to make meaningful contributions to the transition of the site towards becoming a hub of a community-based food system and felt confident that the inevitable fuzziness of the transition process could be overcome by aligning all stakeholders through a strong common vision. This is a first large-scale application of the curatorial approach, further empirical testing is nevertheless warranted so as to assess its external validity in other contexts.

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6. Conclusion

We conclude this report by summarizing the main lessons of our research in light of the four main bridging activities for transitioning towards sustainable and resilient economies.

Reconnecting knowledge on the biophysical and socio-political subsystems with knowledge on new economic opportunities in a given place

All four thematic studies presented in this report converge towards the conclusion that system thinking is key for this kind of bridging activity. System thinking needs to expand beyond its current niche existence dominated by engineering methods and become a central tool for understanding path dependencies, current transition obstacles and comparing the social, economic and environmental consequences of alternative social-ecological trajectories.

It is, however, important to note that the complexity of social-ecological transitions is of a very different kind than the complexity of systems analysed by the natural sciences. In social-ecological systems much of the knowledge necessary to understand the current configuration of the system and the possibilities for changing it are distributed across different actors. These actors have to be involved in a meaningful way in the analysis of the social-ecological system at hand. Chapter 4 shows the limitations of such an involvement: in many empirical situations, it is easier to negotiate changes in different dimensions of a given urban system separately with a subset of actors rather than reaching a common understanding with all involved actors – a situation that will eventually disconnect the different subsystems that form together the social-ecological system. In Chapter 5 we present a conscious effort at overcoming this type of disconnection and present an innovative approach that helps to bring together a large number of stakeholders in order to address different dimensions, scales and types of knowledge of system transitions. A central element of this approach is to question the role of the transition researcher: we propose to let go of the roles of both the passive observer and the active expert. Instead, we assimilate our role to the figure of a “curator” who collates different bodies of knowledge and “cares” for its subject matter without imposing a particular interpretation on the variety of stakeholders that have to be the main actors of the system analysis.

While this approach produced promising results in a case study documented in Chapter 5, more research is necessary to overcome incommensurate metrics and language between different disciplines which have colonized different subsystems: for example, it is today extremely difficult for a specialised economist to communicate about the economic system with an urbanist with specialised knowledge on a specific urban system. A fruitful venue of further research in this area is the use of visualizations and collective intelligence in order to facilitate the communication between partial subsystem analyses.

Mediating between the emergent niche models and the incumbent economic actors (multinational companies, federations, public administrations, etc.)

A key lesson from our research is that this bridging activity is both about creating the conditions for constructive dialogue and mutual comprehension between niche and regime actors, but clearly also about overcoming power asymmetries that are in most cases tilted in favour of the incumbent regime. As the analysis in Chapter 3 reveals, this problem should be

addressed by creating a consensus that the specific path of transition is up for negotiation, but that the need for a transition towards a new socio-ecological regime is not negotiable. In other words, regime actors need to receive a clear signal that the status quo is not an option anymore and that business-as-usual will mean overstepping planetary boundaries. In most cases, framing what is up for negotiation and what is not will depend on political decision makers – indeed, even niche actors often call for clearer top-down political will to push the incumbent socio-ecological regime towards change.

Clear political commitment is, however, a very difficult phenomenon to bring about in contemporary democratic societies, as many missed occasions for strict commitments to climate change goals – to cite but one example – have shown. More research is necessary to understand how new participatory governance models can break up political deadlocks and generate clearer commitment to overcome vested interests. Initiatives like participatory budgets are a promising step in this direction but need to be scaled up in order to make a difference at the scale of the social-ecological system of entire cities.

Reconciling bottom-up place-based economic initiatives with top-down economic policies and strategies for sustainability transitions

Clearly both bottom-up and top-down initiatives are necessary to produce the type of social-ecological change that is necessary to overcome the current unsustainability of European cities. Our research shows that mediating between these two types of initiatives can be highly problematic, with bottom-up and top-down transitions not only focusing on different problem areas but also often even producing counterproductive and conflicting outcomes. A more concerted effort is therefore highly warranted. As Chapters 3 and 4 point out, public administrations can be highly instrumental in mediating between bottom-up and top-down initiatives: on the one hand, they possess direct access to political hierarchies and decision makers, and on the other hand they are relatively close to the ground and in constant interaction with citizens and civil society organizations. Moreover, they typically possess the democratic legitimacy to broker between conflicting interests as they are formally bound by the public interest.

In light of these results, it is therefore absolutely vital to keep functional public administrations and a strong civil service that are able to act as bridging actors in the transition. While such as conclusion would probably have sounded superfluous a decade ago, the dramatic budget cuts that have been required from governments all over Europe mean that the resources of what is probably the most competent and legitimate bridging actor have been significantly reduced – and need to be restored urgently. It is an illusion that civil society actors alone will be able to bring about the profound and systemic changes that are needed to steer placed-based social-ecological systems towards sustainable and resilient trajectory.

Moderating between the need for creating sustainable place-based economies and an interconnected world of globalised value chains.

Places and economies interact – a simple observation that is nevertheless overlooked by many economists whose models reflect an abstract, non-physical conception of economic processes. Our research on urban regeneration policies in Brussels and Rome underlines the importance of thinking about new economic activities by connecting them to the specific places in which they occur. The surge of place-based economic analyses is a promising step in

steering economies towards providing value for local communities, while also being firmly embedded in a local environmental system.

Beyond the limitations of economics itself, part of the difficulty with this bridging activity is that many vested interests in Europe are currently tilted exclusively towards globalised value chains in which the clean and high-value parts of the production are carried out in European metropolitan areas, whereas the negative environmental and social consequences accrue in distant countries. The emergent bottom-up transition initiatives that spring up in many European cities often try to relocalize economic activities and tie them closer to local communities and local resources. But often these initiatives are mainly fuelled by personal motivation, individual and collective goodwill and voluntary work – a laudable effort that unfortunately also reflects the fact that these transition activities still do not generate a lot of formal employments. As for top-down transition initiatives, they have often been captured by bested interests: in Chapter 4 we document how the majority of urban regeneration investments are captured by a small number of large construction companies rather than by local businesses. A frequent sign of this capture is that top-down transition initiatives tend to favour technological solutions rather than social innovation, a strategy that often leads to rebound effects and has so far failed to produce a decupling of economic activities and resource use.

A fundamental challenge that still needs further research but also political deliberation is to find ways in which localized and sustainable economic activities can create formal and qualitative employments. One of the instruments for achieving this can be public investments in employment-rich solutions to environmental challenges rather than betting on technological solutions. Further research needs to overcome the current gap between mainstream economic thinking and transition initiatives in order to articulate a new social-ecological trajectory for European cities and regions.

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Brussels, September 2015