

# Chapter 3

## Urban Sustainability and the Governance of Greening



**Abstract** Cities have long been seen as important in achieving sustainability. However, conceptions of and approaches to urban sustainability and greening have changed over time from a primary focus of environmental problems as urban problems to cities as leaders in global climate change mitigation. This chapter provides a brief overview over the changes in understandings of and research on urban sustainability over the past few decades with a specific focus on governance and sustainability approaches. The literature review provides the context for situating and understanding green building transitions in the four case study regions where interpretations and implementations of green building have changed over time and need to be understood within the broader spatial and temporal context. The chapter introduces the concept of policy mobility and related work on urban assemblages that emphasise the relational character of local and urban processes. These perspectives understand cities as consisting of both local and global influences and elements. One emphasis of policy mobility is to understand these relationships through processes of learning, adaptation and mutation of knowledge and practises (e.g. green building policies, certification programs, planning approaches and construction techniques) between individuals and actor groups such as policy-makers, consultants, scientists, urban designers and architects. The chapter proposes an analytical framework that utilises the synergies of policy mobility and transition study approaches and that addresses the complexity of sustainability transitions as socio-spatial and socio-technical processes.

### 3.1 Introduction

The ideal of the sustainable or green city has become a central element of urban planning, policy-making and development strategies over the past few decades. Objectives of smart growth, sustainable cities, sustainable urbanism and green cities are shaping urban agendas and commonly contribute to core objectives in cities around the world (Joss 2010). Whether through the construction of new eco-cities or eco-districts,

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through retrofitting of the built environment and upgrading of existing infrastructure or green policies to regulate current and future impacts, cities are seen as “both harbingers of future conditions and test beds in which to establish more sustainable ways of living” and have become “subject to ever more vigorous ecological conceptualization” (Evans 2011: 223). Cities around the world are setting ambitious environmental goals, implementing socio-technical innovations and cooperating and competing as global climate change leaders (Bulkeley et al. 2011). First discussed at the international level at the United Nations Conference on the Human Environment (UNCHE) in 1972, the idea of the *sustainable city* underlines the importance to plan and manage human settlements, particularly urban areas, in a way that does not threaten local and global environmental quality. Since the 1990s, a large number of programs for sustainable urban development have been launched from the transnational (e.g. European Sustainable Cities Programme, Reference Framework for Sustainable Cities) to the local level (e.g. Local Agenda 21, smart growth) including numerous city networks. More recently, a summary report by the German Advisory Council on Global Change (WBGU 2016) in preparation of the Habitat 2016 conference emphasised the *transformative power* of cities towards sustainability goals.

Considerable research has focused on urban sustainability including work on sustainability initiatives such as green policies, regulations, infrastructure and neighbourhood developments (goals and objectives, drivers and barriers of such policies, strategies, technologies, etc.), their implementation (governance processes, sustainability in practice, challenges and opportunities) and relevance of these initiatives beyond the urban scale (e.g. transferability, best practices, good governance, policy transfer and mobility, etc.). Whitehead (2003) and Bulkeley and Betsill (2005) have criticised one strand of work which has been mainly concerned with the practical, political implementation of sustainability (e.g. Houghton and Hunter 1994) as it runs the risk to reduce the analysis to technical issues of institutional restructuring, traffic management, architectural design and the development of green technologies. Another more ontological perspective of urban sustainability “tends to give a neutral, almost apolitical, veneer to sustainable cities and conceals the asymmetries of power which inform the social construction of urban sustainability” (Whitehead 2003: 1187). Green building in cities is largely influenced by urban planning and design, decisions related to infrastructure provisioning, green policies and regulations as they relate to the local and urban scale. This emphasises the importance of urban governance, planning processes and policy research to understanding geographies of green building and underlying power relationships. While many initiatives are launched and supported at the municipal scale, the urban scale here refers to specific places or locales that have urban characteristics (e.g. density of population, social and economic activities, expressions of public culture), but that may extend beyond the political jurisdiction of urban local authorities. Further, cities are not isolated containers but relational spatial constructs influenced by different spatial scales (Massey 2005). Urban governance research has increasingly focused on the interplay of spatial scales through approaches of multi-level governance and work on policy transfer and mobility, while geographical engagements with transition studies equally have emphasised a need for spatial sensitivity (see Chap. 2).

This chapter identifies some common threads in the urban governance and sustainability literature and brings these together with ideas presented in Chap. 2 to develop a conceptual framework that allows to capture and make sense of geographies of green building in Freiburg, Vancouver, Brisbane and Luxembourg. The next section (Sect. 3.2) presents a brief overview over approaches to urban sustainability and how they developed over the past five decades in particular in respect to how they have been discussed in urban studies and related disciplines. Section 3.3 presents a more critical view of urban sustainability initiatives shifting the emphasis to narratives, framings and interpretations of sustainability highlighting the importance of governance approaches in understanding green building in urban areas. More specifically, Sect. 3.4 highlights recent work on policy mobility as a relational perspective on urban sustainability transitions that can help reveal the local and global aspects of urban greening. In this regard, it also discusses the role of the urban in respect to other scales as well as its boundaries, in particular the fuzziness and relationality of the urban scale and urban governance processes with their inherent challenges and conflicts. The last section (Sect. 3.5) brings together sustainability transition thinking and urban research perspectives to present the framework of analysis applied to the case study cities discussed in Part II of the book.

## 3.2 The Rise of Urban Climate Change Governance

Ideas of cities as environmentally and socially sustainable places are not new. Urban planners and designers have developed proposals to address negative impacts of large-scale urbanisation (related to industrialisation) since the nineteenth century including, for example, Howard's Garden City, Le Corbusier's Radiant City and the British New Towns. These approaches usually proposed some grand vision of green urban structure and design that, as criticised by Jacobs (1965), did not respond to real, ordinary cities nor helped address urban problems. The new sustainable urbanism that emerged in the late 1960s and early 1970s as part of the rise of the new environmentalism differed from these approaches and is frequently seen as an early wave of sustainability and greening initiatives in cities (Joss 2010; Whitehead 2003). Even though the concept of sustainability did not emerge until the mid 1980s, urban problems were seen as a combination of environmental, economic and social crises triggered by rapidly sprawling and heavily polluting urban agglomerations leading to deteriorating living conditions for many urban residents. Rather than seeking to impose new forms on urban structure, urban scholars and practitioners focused on the potential of cities for sustainable development through a "vision of a compact, mixed-use urban setting" (Whitehead 2012: 32) also associated with smart growth. The concept of the sustainable city or neighbourhood was characterised by integrated thinking largely influenced by urban planners and designers on green neighbourhoods and eco-cities with a strong focus on stakeholder engagement and bottom-up processes (Barton 1998; Beatley and Manning 1997; Beatley 2000; Roseland 1997, 2000). Freiburg's green neighbourhoods but also Vancouver's Olympic Village in Southeast False Creek incorporate many of these ideals.

**Table 3.1** Timeline of main urban sustainability events, documents and declarations (own research and Whitehead 2003, 2012)

Year	Event/initiative	Urban sustainability focus
1972	United Nations Conference on the Human Environment (UNCHE), Stockholm	Introduction of the idea of the “sustainable city”
1976	Habitat I—United Nations Conference on Human Settlements, Vancouver	First document (Vancouver Declaration) to lay out principles of sustainable urbanism
1987	World Commission on Environment and Development	Chapter 9 of the Brundtland Report focuses on “The Urban Challenge”
1990	European Commission’s Green Paper on the Urban Environment	Highlights the need to focus on urban environmental issues
1992	United Nations Conference on Environment and Development, Rio de Janeiro	Local Agenda 21 explicitly places sustainability on the agenda of local governments
1993	European Sustainable Cities Programme	Focused on sustainability in European urban settings
1996	Habitat II—second United Nations Conference on Human Settlements, Istanbul	Focused on the implementation of Local Agenda 21 in urban areas
2000	Millennium Development Goals	Goal #7 focused on sustainability more broadly
2002	Second United Nations Conference on Environment and Development, Johannesburg	Focus on sustainability more generally
2012	“Rio+20”—third United Nations Conference on Sustainable Development, Rio de Janeiro	Promotion of sustainable patterns of production and consumption
2015	UN Sustainable Development Goals	Sustainable cities and communities
2016	Habitat III—third United Nations Conference on Housing and Sustainable Urban Development, Quito	Focused on housing and sustainable urban development; WBGU document on the transformative power of cities

The emergence of climate change debates in the late 1980s shifted the focus of urban sustainability research from largely local concerns to a perspective of global-local dependencies (Table 3.1). A growing body of work started to focus on how cities address global problems at the local scale through urban carbon control and climate change mitigation (Betsill 2001; Bulkeley and Kern 2006; Deangelo and Harvey 1998; Jonas et al. 2011; McEvoy et al. 1999; While et al. 2010; Wilbanks and Kates 1999). Rather than questioning the ideals of sustainable cities and neighbourhoods, climate change debates provided a new context within which sustainability and its objectives and meanings were being (re)considered. Many scholars and policy-makers identified cities and the local level as the optimal scale to mitigate action on climate change due to the ecological footprints of cities and their levels of greenhouse gas emissions (UNEP 2011; Hoornweg et al. 2011), the authority municipal governments have over local land use planning and their willingness to integrate sustainable development goals (see Chap. 1 as well as Bulkeley and

Betsill 2005). Bulkeley (2013) distinguishes between an earlier phase of *municipal voluntarism* in the early 1990s during which a number of municipalities developed local climate change policies and the broad adoption and mainstreaming of climate change action as *strategic urbanism* that led to a significant increase of municipal action during the late 1990s. This development reflects the shift from earlier, primarily local planning strategies to a (re)emergence of regional development strategies that were rolled out at a broader scale.

Early voluntary initiatives by individual municipalities emerged in the 1990s and were often driven by a longstanding interest of local constituencies in sustainable development. For example, and as described in more detail in Chap. 5, interest in green building in the city of Freiburg developed out of a broad public opposition to nuclear power and a strong interest in identifying alternative, green energy sources including solar energy for buildings. Similarly, Vancouver's image as a green city is frequently embedded in a history of early environmental activism but also linked to its natural setting (see Chap. 6). While individual cities set their own targets and declared their goals to reduce greenhouse gas emissions and developed climate change policies and other strategies, municipalities also started to develop partnerships with each other to connect and share their experiences but also to mobilise at a global scale. A number of city networks were founded during this time including Local Governments for Sustainability (1990) originally known as International Council for Local Environmental Initiatives (ICLEI), the Climate Alliance (1990) and Energie Cités (1994).

The late 1990s saw a second wave of municipal initiatives characterised by the expansion of existing and the creation of new municipal networks. This phase of strategic urbanism saw climate change become an integral part of wider urban agendas with a strong emphasis on the management of carbon emissions (Bulkeley 2013). For example, the relatively recent European Covenant of Mayors was launched by the European Commission in 2008 where signatories commit to strict greenhouse gas reduction targets through increased energy efficiency and transition to renewable energy. In April 2016, the Covenant of Mayors counted more than 6600 signatories. But the surge was not only in response to renewed national and international commitments to address climate change (driven by increased scientific evidence of the scale and severity of the problem); it also illustrates municipal frustration with limited action and contradictions of initiatives at the national and international scale. The C40 Cities Climate Leadership Group network consists of 40 of the world's largest cities and further affiliate members and illustrates the willingness of these cities not only to claim responsibility but also to take leadership in climate change action. With the emergence and growth of these initiatives, urban sustainability and greening was no longer defined by actors in the Global North but was increasingly adopted by cities in the Global South (Bulkeley 2013).

This roll out of urban climate change policies and sustainability initiatives has been accompanied by a change in the way greening is being understood and implemented. The shift towards a focus on carbon emissions has resulted in increased efforts to quantify the amount of carbon that is being released or reduced within certain areas (usually at the urban or municipal scale). This shift towards carbon

accounting initiatives is also evident in the four case study regions although to varying degrees. Commitments such as the Covenant of Mayors rely on setting of targets to reduce carbon emissions that are usually sought to be achieved using a number of variables or proxies to measure the success of climate change strategies. Urban policies including Vancouver's Greenest City 2020 Action Plan provide another example of such an approach. Green building certification schemes adopt the same logic of quantifying building characteristics and performances to allow transferability, comparison and evaluation of their success. Across the four case studies discussed in Part II, interview respondents highlighted the centrality of quantified approaches to promoting and establishing green building (for a discussion of limitations, see Sect. 3.3).

Green and clean technologies are also playing a major role in this shift in urban sustainability thinking. They do not only provide solutions to reduce the use of fossil fuels and other sources of carbon emissions, but they also address aspects of economic development through the promotion of a green economy and linked to it (regional) economic sustainability. A significant amount of work has highlighted the role of technology and focused on a number of key sectors including transportation, energy, waste and building (McCauley and Stephens 2012; Raven and Geels 2010; Verbong and Geels 2010). An infrastructural perspective supports the idea that "urban low-carbon transitions are mediated by the urban infrastructure and the socio-technical regimes in which they are immersed" (Haarstad 2016: 6). This perspective is closely tied to work in transition studies that more recently has been utilised by urban geographers (Bulkeley et al. 2011; Rutherford and Coutard 2014) (see Chap. 2). The strong reliance on technology is particularly evident in concepts of smart cities that promote technologically advanced, socially inclusive and green cities. Smart technologies are seen as the key to increase efficiencies including energy and water but also other infrastructure and social services within cities with the ultimate goal to cut costs. These approaches have been criticised as relying on technological fixes and "hyper-technological rationalities and new geometries of power" in favour of those controlling technology and data (Vanolo 2014: 883). A focus on green, clean and to a lesser extent smart technologies is also evident in green building transitions in the case studies presented (see Part II). In Luxembourg and Vancouver, for example, the promotion of green building and green technologies is clearly present in political rhetoric and development strategies and strongly linked to rationales of economic prosperity which are often associated with enhanced quality of life. Criticism is growing related to the social costs of these technocratic approaches that appear to reinforce existing inequalities, power relationships and growth-dominated thinking.

### 3.3 Assessing Urban Greening

The changed context and understanding of sustainability and greening from local problems to global challenges of climate change outlined above illustrate the multi-scalar dimension of urban sustainability. While there is general agreement in the literature that cities and urban agglomerations are strongly influenced by processes

at different spatial scales transcending the local, approaches to analyse urban sustainability vary considerably. In the geographic literature, strong emphasis is placed on the local context, for example, with respect to urban planning, the policy context and the perspectives and understandings of actors involved, providing a very-context-specific, localised process of putting policies and strategies into practice (Lombardi et al. 2011) as well as work on community or local empowerment, citizen participation and sustainable communities (Barton 1998; Roseland 2000). At the same time, “cities are widely seen as governed through processes above and beyond the territorial boundaries of cities themselves” (Haarstad 2016: 4). Further, there is a strong trend—and this is not restricted to recent work—of *debordering* local policies and practices, on transferable models, best practices and success stories from elsewhere that are circulated internationally and globally (Peck and Theodore 2015).

Campbell (1996: 301) argued in the 1990s with respect to the planning community that “In the battle of big public ideas, sustainability has won: the task of the coming years is simply to work out the details, and to narrow the gap between its theory and practice”. This task has clearly not been an easy one, and many have argued that the elasticity of the concept that has been used to interpret and redefine the concept and the challenges to realise a triple win in practice bears their risks (Lombardi et al. 2011; Eden 2000). Considerable criticism has emerged in response to the surge of urban sustainability campaigns both in terms of processes and outcomes. For example, While et al. (2004), Lombardi et al. (2011) and Long (2016) amongst others highlight how urban greening strategies have been hollowed out and twisted to cover a range of bases. Governance approaches are common tools in the analysis and the effectiveness of urban sustainability approaches as they help to grasp different actors and processes. Whereas more traditional governance approaches have focused primarily on aspects of stakeholder engagement, representation and participatory tools, more recent research has paid attention to the role of underlying power structures, the strategic use of greening and sustainability narratives.

One strand of the literature has focused on identifying successes and limitations of sustainability strategies both with the aim to explain unique developments but also more normatively to identify common denominators. This strand of urban sustainability research has addressed the challenges of defining and categorising urban greening initiatives. The 12th Science for Environment Policy Report by the European Commission (2015) provides an overview over “the best currently available indicator tools for sustainable cities, focusing on the environmental dimension”. It identifies a number of transferable or scalable and easy-to-use approaches illustrating the high interest in indicator tools by urban authorities (Table 3.2). This illustrates trends towards quantifiable approaches, metrics, accountability, reporting and comparison in greening initiatives. While measurable targets allow tracking of progress and hence present very effective and powerful approaches in climate change mitigation, critics have raised concerns that this may shift campaigns towards using measurable and achievable targets that will prioritise achieving these targets over other actions. Even where targets may be of high relevance, variables and proxies used to measure progress may not generate the highest impact but include ones that are easier to quantify, measure and achieve. Further, and with

**Table 3.2** Examples of “easy-to-use sustainable city indicators” as identified in the Science for Environment Policy report (European Commission 2015)

Indicator/toolkit	Organisation	Further information
China Urban Sustainability Index	Urban China Initiative	<a href="http://www.urbanchinainitiative.org/en/resources/report.html">http://www.urbanchinainitiative.org/en/resources/report.html</a>
City Blueprint	Waternet Amsterdam; KWR Water Cycle Research Institute	<a href="http://www.watershare.eu/tool/city-blueprint/start/">http://www.watershare.eu/tool/city-blueprint/start/</a>
European Green Capital Award	European Commission	<a href="http://ec.europa.eu/environment/europeangreencapital/press-communications/egca-publications/">http://ec.europa.eu/environment/europeangreencapital/press-communications/egca-publications/</a>
European Green City Index	Economist Intelligence Unit; Siemens	<a href="https://www.siemens.com/press/pool/de/events/corporate/2009-12-Cop15/European_Green_City_Index.pdf">https://www.siemens.com/press/pool/de/events/corporate/2009-12-Cop15/European_Green_City_Index.pdf</a>
Indicators for Sustainability	Sustainable Cities International	<a href="http://sustainablecities.net/wp-content/uploads/2015/10/indicators-for-sustainability-intl-case-studies-final.pdf">http://sustainablecities.net/wp-content/uploads/2015/10/indicators-for-sustainability-intl-case-studies-final.pdf</a>
Reference Framework for Sustainable Cities (RFSC)	RFSC	<a href="http://www.rfsc.eu/">http://www.rfsc.eu/</a>
STAR Community Rating System	Sustainability Tools for Assessing and Rating Communities (STAR)	<a href="http://www.starcommunities.org/">http://www.starcommunities.org/</a>
Cities Statistics (Urban Audit)	Eurostat	<a href="http://ec.europa.eu/eurostat/web/cities">http://ec.europa.eu/eurostat/web/cities</a>
Urban Ecosystem Europe	International Council for Local Environmental Initiatives (ICLEI); Ambiente Italia	<a href="http://informed-cities.iclei-europe.org/fileadmin/template/projects/primus/files/ECOURB-UE07-FINALREPORT-EN6.pdf">http://informed-cities.iclei-europe.org/fileadmin/template/projects/primus/files/ECOURB-UE07-FINALREPORT-EN6.pdf</a>
Urban Metabolism Framework	European Environmental Agency	<a href="http://ideas.climatecon.tu-berlin.de/documents/wpaper/CLIMATECON-2011-01.pdf">http://ideas.climatecon.tu-berlin.de/documents/wpaper/CLIMATECON-2011-01.pdf</a>
Urban Sustainability Indicators	European Foundation for the Improvement of Living and Working Conditions	<a href="https://www.eurofound.europa.eu/sites/default/files/ef_files/pubdocs/1998/07/en/1/ef9807en.pdf">https://www.eurofound.europa.eu/sites/default/files/ef_files/pubdocs/1998/07/en/1/ef9807en.pdf</a>



respect to cities, actors need to rely on variables and targets that can be linked to the urban scale which may be difficult to define (While et al. 2010). Infrastructure provisioning, for example, often transcends municipal boundaries as services (e.g. waste, water, energy, transportation) are provided for the larger region rather than within municipal boundaries alone. This makes it difficult for municipalities to include transboundary systems into their climate change account.

Another focus in the literature revolves around the identification of drivers and barriers of greening and linked to that, frequently the search for replicable and transferable success models or best practices. Questions of the transferability and comparability of urban sustainability initiatives and approaches are not straightforward as they are spatially complex: what works in one place may not be right in another. Work by Joss (2010) and Holden et al. (2015), for example, have focused on identifying and categorising urban sustainability developments that are frequently considered to be “aspirational and world-class model sustainable community developments” (Holden et al. 2015: 11419). Similarly, van Doren et al. (2016) identify different ways through which low-carbon urban initiatives can be scaled up in order to increase impact. Bulkeley (2013) distinguishes between (1) institutional factors including a range of resources such as know-how and expertise, financial resources but also the ways in which responsibilities of climate action are allocated and negotiated between different institutions; (2) political factors highlighting the centrality of individual political leaders, policy entrepreneurs or thought leaders; and (3) socio-technical factors focused on material and technical systems. Interest in these latter factors has brought together work in transition studies (see Chap. 2) and urban governance to investigate *urban sustainability transitions* taking a stronger technological focus and solution-oriented approach (Bulkeley et al. 2011; Rutherford and Coutard 2014). But it is the intricate relationships between these factors that require further scrutiny, many argue. In this regard, Fitzgerald and Lenhart (2016) have highlighted the lack of longitudinal studies and the importance of post-occupancy studies that focus on the success of green building in practice as they are being used and inhabited. They argue that publicity and success stories of eco-districts are not necessarily supported by actual outcomes and that more needs to be done to evaluate the long-term sustainability of urban greening initiatives (on Stockholm see also Rutherford 2008).

Despite the rich literature on environmental governance within geography and related disciplines, the majority of work is focused on environmental policies and mainly adopts normative approaches including good governance studies and best practices as mentioned above. Critics of these approaches have highlighted uneven power relationships and the role of actors, networks and eventualities through which information and experiences travel. Empirical evidence of traded and transferred policies and planning processes, often interpreted as best practices, reveals a persistent neglect of environmental and social aspects in favour of economic interests (Krueger and Gibbs 2007; McCann and Ward 2011; Cook and Swyngedouw 2012; Temenos and McCann 2012). This neglect is similarly reflected in governance analysis that fails to overcome the predominant *nature-culture dualism* (Parra and Moulaert 2016) and fails to provide a balanced account of environmental, sociocultural and economic dimensions that underlie the political contestation of land use policies and practices.

While governance inherently assumes the inclusion of a broad range of actors including the public or community, vested interests tend to dominate decision-making processes (Hodson et al. 2016). Bulkeley (2013) highlights the central role of municipal governments through strategies of self-governing, provisioning and regulation but rightly highlights the need to critically examine drivers and motivations behind municipal greening. Krueger and Gibbs (2007) and Temenos and McCann (2013) have raised questions on social inequalities, exclusions of urban sustainability of these strategies (regulation and provisioning) and the extent to which different actors are able to access and influence these processes. Urban sustainability is frequently shaped through specific discourses and narratives that help legitimise certain strategies and practices and that may deviate from sustainability objectives (Freytag et al. 2014). For example, climate change action, sustainability and greening have been used as powerful tools not only to tackle urban climate change challenges such as pollution, traffic congestions and energy consumption but also to promote or brand cities to boost their image (McCann 2013) as particularly evident in the cases of Vancouver and Freiburg but also Luxembourg (see Chaps. 5, 6 and 8).

Cook and Swyngedouw (2012) as well as Kenis and Lievens (2015) attest a general trend in (Western) societies to accept sustainability as good and to conflate greening with a triple bottom line. Similarly, Wilson (2015: 2) emphasises the “politically unstable, tenuous, and ever blinking character of this dominant sustainability vision” that is promoted around the world and considers sustainability as value-free and impartial development and planning ideal that can deliver a triple win. He highlights the “elaborate discursive” elements that are often tightly linked to technical knowledge and solutions (Wilson 2015: 2). Most of these critical contributions are indeed cautious of technological solutions as proposed by ecological modernisation that suggests environmental benefits through economic development and growth.

### 3.4 Urban Greening and Policy Mobility

Innovations (in green building) are driven by processes of learning and knowledge exchange that are closely linked to individual choice. The relatively recent policy mobility approach focuses on how cities learn about urban policy innovations and how (good) practices circulate from one place to another employing an actor-centred perspective (McCann and Ward 2010, 2011). In contrast to earlier work on policy transfer that has been primarily concerned with what policies and innovations were transferred, a policy mobility perspective highlights aspects of mobility, transfer, adaptation and translation of policies from one location to another (see, e.g. Stone 2012). The perspective is not driven by normative ideas of replicability and scaling up of best practices but by an interest of how, when and why urban policies, knowledge and practices travel and change in the process. In particular, it highlights that policies are never just transferred but are always adapted and transformed when

implemented elsewhere. It embodies a response to two critiques of (environmental) governance analysis within geography and related disciplines. First, work on environmental governance frequently adopted by policy-makers tends to emphasise economic viability and growth over social and environmental values in local and regional development as evident in the case of green building transitions in Luxembourg. Secondly, there is a strong focus on normative approaches regarding the management and uses of space, resources and rights which often overlook many of the core constituents of real, on the ground processes. Policy mobility rejects the idea of localised best practices and models of good governance and highlights context-specific decisions as well as continuous transformation and adaptation and the forces that shape these changes.

A focus on policy mobility highlights the role of actor groups and individuals in knowledge and policy transfer and learning (McFarlane 2009; Temenos and McCann 2012). It understands the transfer and transformation of knowledge, ideas and models as social processes where actors are part of certain networks and are embedded in specific institutional structures. It hence goes beyond unidirectional learning processes. Policy mobility is strongly linked to the motivations, capacities and circumstances of specific actors and actor groups in their respective contexts. The *how* of policy development and processes of political contestation imply a political dimension of knowledge and policy transfer where actors strategically choose and transform knowledge, regulations and practices that best serve their needs and meet set objectives. Policies may be driven by specific (local, urban or other) political agendas that are predominately locked into a neoliberal sustainability logic that neglects sociocultural and environmental imperatives in favour of economic growth objectives and market regulation (Cook and Swyngedouw 2012). The four city regions discussed in Part II of this book provide very different examples of the role of local, regional and state governments as promoters of or barriers to greening.

In terms of a spatial understanding of the urban, the critical urban geography literature advocates a relational understanding of space and recognition of the “contingent, historically specific, uneven, and dispersed nature of material and non-material flows” (Olds 2001: 8 quoted in McCann and Ward 2011: xxiv). The policy mobility literature relates to the multi-scalar, the fixed and mobile and the territorial and relational character of policies for local and regional sustainable development (McCann and Ward 2010). While policy-makers are usually bound to administrative levels and territorial boundaries and so are many other actors (e.g. practitioners restricted by legislation, codes of practices, etc.), they are inextricably affected by processes beyond the local and urban scale. This perspective understands cities as “emergent translocal assemblages, or moments in more globally extensive flows” (McCann 2011: 144). According to McFarlane (2011: 652), “assemblage does not separate out the cultural, material, political, economic, and ecological, but seeks to attend to why and how multiple bits-and-pieces accrete and align over time to enable particular forms of urbanism over others in ways that cut across these domains, and which can be subject to disassembly and reassembly through unequal relations of power and resource”.

A focus on the urban level to deliver sustainable development bears the risk to isolate the local level from other spatial scales through which environmental governance is exercised and to ignore “wider social, economic and political processes which shape sustainability in urban places” (Bulkeley and Betsill 2005: 58; Bulkeley 2005; Gibbs and Jonas 2000). The relational conceptualisation of space from a policy mobility and urban assemblage perspective avoids such local or regional determinism which is at least implicitly underlying research on best practices and good governance. While the approach is spatially sensitive, there is a tendency of policy mobility research to focus on ongoing processes and dynamics (*presentism*) (Temenos and McCann 2013) and to ignore broader time frames (e.g. successes and failures in the past and future potential and limitations) even though there have been exceptions (Clarke 2012). With broader acceptance and application of the concept, more historical and historically situated accounts of policy mobilities are emerging in the literature (e.g. Craggs and Neate 2017). Policy mobility analysis includes a broad range of policy actors, but its analytical focus remains on the development, transfer and implementation of policies and neglects social and environmental values and practices that emerge in parallel or result from policy development and mobility (Affolderbach and Schulz 2016). While urban sustainability policy (embedded in wider governance processes) is a crucial part of green building, there are more dimensions including experiments and initiatives by new actors and actor constellations, socio-technical contexts and aspects related to occupancy and green practices of green building that need to be considered carefully to unravel the trajectories of green building in urban areas.

### 3.5 Towards an Analytical Framework for Urban Green Building

The brief review of urban sustainability research reveals a number of challenges and limitations that require consideration: the diversity of actors involved in sustainability transitions; the challenge of triple wins which calls for an incorporation of technological, institutional, procedural and other innovations; and the multi-scalar nature of urban sustainability and different spatial conceptualisations of context-specific developments. Following Affolderbach and Schulz (2016) and Haarstad (2016), this book brings together critical work on urban governance, in particular policy mobility, and transition studies to trace the development, objectives and spatial expressions of green building in four city regions. Both Affolderbach and Schulz (2016) and Haarstad (2016) emphasise the complementarity of transition studies, urban governance and policy mobility and highlight the strengths of a conjoined approach in order to “point to and emphasise different aspects of the complex assemblage of institutions, networks and socio-technical artifacts through which urban-low carbon transitions are governed” (Haarstad 2016: 6).

Transition studies provide a heuristic framework that governance-oriented and policy mobility-driven approaches can help fill with life as they trace real, on the

**Table 3.3** Comparison of conceptual dimensions of policy mobility and transitions studies (Affolderbach and Schulz 2016: 1950)

	Policy mobility	Transition studies
What?	Mobility/transfer of knowledge Socio-spatial(-political) processes	Knowledge creation Socio-technical processes
How?	Learning, adaptation and mutation	Radical niche innovation
Where?	Relational	Localised
Who?	Individuals and actor groups	Actor networks and institutional structures

ground processes at multiple scales. Table 3.3 summarises the complementarity of the conceptual dimensions of the two approaches. As outlined elsewhere in more detail (Affolderbach and Schulz 2016), a blended approach is well suited to tackle complex processes of sustainability research as they apply to green building. First, policy mobility helps to put into perspective the comparatively strong technology-oriented focus of transitions studies through incorporation of socio-spatial (and in particular political) dimensions, while transition studies offers a broader temporal perspective to policy mobility. A policy mobility perspective reveals decision-making processes that do not necessarily favour or select optimum solutions (only those innovations that successfully budded in protected niches) but highlights the diversity of “mobilized knowledge, transformations and mutations that reflect messy, contested and complex realities” (Affolderbach and Schulz 2016: 1949). It hence emphasises the importance of processes of mobility of knowledge and ideas as much as knowledge creation (innovations) that are sensitive to the local contexts. It further helps identify knowledge and practices that are not being mobilised and transferred to other levels but that yet may be crucial to urban transformation processes. Locally specific practices and values play an important role here as illustrated by high levels of environmental consciousness amongst residents in certain cities (e.g. Portland, Oregon and Växjö, Sweden) versus relative resistance to more sustainable lifestyles in many other places. For example, community-led green developments including strong resident involvement (e.g. through building groups) are exceptions rather than common practice.

Second, and closely related to the first point, sustainability transitions in general and transitions in green building more specifically cannot be simply understood through successful radical niche innovations which tends to nurse ideas around green fixes and technological solutions, best practices and transferable models that are easily propagated as magic bullet. A conjoined approach that includes processes of learning, adaptation and mutation illustrates that transitions are not necessarily unidirectional and predetermined developments but shaped by multidirectional and uneven exchanges of ideas and knowledge between multiple actors. Emblematic cases such as Freiburg’s Vauban neighbourhood or the BedZED project in Wallington, London, need to be understood as local-global assemblages that consist as much of external or international influences including best practices and models as well as local interpretations and adaptations including ultimately lived sustainabilities that result from these initiatives. Policy mobility hence questions the assumption in transition studies “that certain best practices, cities, and consultants

‘naturally’ rise to the top” (McCann 2011, 121) and emphasises the need to understand the socio-spatial conditions that shape the success of new policies (and other innovations). Social networks and exchange platforms such as conferences, meetings and other gatherings attended by key actors involved in green building can shed light on the ways knowledge and ideas travel and are passed on. Knowledge transfer is not always based on careful screening processes but as much driven by actor networks and eventualities which policy mobility scholars trace as they follow key actors through mobile ethnographies. While policy mobility tends to emphasise ongoing processes, transition studies help to broaden the focus by adding historical and forward-looking dimensions.

The third strength of a combined approach relates to spatial conceptualisations that are of particular relevance to urban green building transitions as they help demarcate the urban. Work on (sustainability) transitions tends to emphasise the role of the local, regional or national, while policy mobility follows a relational understanding of space that has more recently engaged with work on urban assemblages. From a multi-level perspective, a relational understanding opens up and blurs “the clear boundaries of niches and regimes, changes the relationship between different levels and disconnects the alignment and hierarchy between distinct levels and spatial scales” (Affolderbach and Schulz 2016: 1951). This implies that innovations (whether new or mutated) are never truly urban or local but shaped through multi-scalar interactions which are as central to shaping urban trajectories of greening as local specificities. Local projects and policies branded and marketed as local leadership often have been influenced as much by models and practices from abroad that have been reviewed and (re)assembled into a local model and influenced by the specific context including collective values and practices (for an illustrative example, see Vancouver’s Greenest City Action Plan (Affolderbach and Schulz 2017)).

Fourth, and as already touched upon above, the two perspectives of transition studies and policy mobility are both actor centred but in very different ways. While one focuses on actor networks and institutional structures, the other highlights the role of individual actors or smaller organisational units. Consideration at both levels allows inclusion of a wide range of actors as they are represented in sustainability transitions clearly pushing beyond the frequently biased analysis of technocratic elites and more established institutions and governance bodies. It also highlights the importance of individual pathways that can be much more subjective or accidental as may be assumed. In respect to green building and as further discussed in the four case study chapters (Part II), individuals have been identified as key players in shaping green building transitions. In Vancouver, this includes both political leaders who as individuals have launched ambitious greening policies (a quite common strategy of prestige building and political leadership) and private actors often directed at an external audience around the world. At the same time, thought leaders and scientists, for example, at the University of British Columbia in Vancouver, were identified as influential in shaping an entire generation of professionals in urban design, planning and engineering. In Freiburg, central actors include both research institutions and practitioners, in particular local architects who were involved in early green building experiments (Chap. 5). Green building innovations in Luxembourg on the contrary have been more strongly driven by private investors

including a few visionary individuals who have defined the sector by initiating lighthouse projects (Chap. 8). Rapoport and Hult's (2017) work illustrates the role of private sector architects and consultants in creating, packaging and circulating sustainability norms and best practices at the global scale which impacts on the way local or regional greening initiatives are developed and shaped.

The outlined approach allows a context-specific and spatially sensitive analysis of green building in urban contexts. Rather than identifying models and taxonomies of sustainability approaches, the in-depth case studies of Freiburg, Vancouver, Brisbane and Luxembourg provide rich accounts of trajectories of greening that focus on unique developments including identification of key players, events, initiatives and projects. Following Sayer (1992), the research presented in this book considers context not as background but as a central part to the explanation (though it is not meant to be deterministic). This does not question the transferability of urban greening experiments, practices and ideas but suggests that these are never to be understood as simply transferable models of urban sustainability and greening that are readily available to be replicated but that mobility is shaped by actors, their context and capacity and will be interpreted, shaped and adapted in the process.

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