Ambivalent urban sustainability transitions: Insights from Brisbane's building sector

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A R T I C L E   I N F O

Article history:

Cities are suggested as being the key level for shifts towards more sustainable modes of production and consumption. The building sector with its significant carbon footprint plays an important role in urban climate change adaptation strategies. Using the case study of Brisbane (Australia), the paper examines the place-specific contextualisation of green building transitions by analysing the co-evolution and interplay of building practices, policy making and involved actors. Drawing on theoretical approaches of Transition Studies and Evolutionary Economic Geography, we trace back and analyse policy and economic trajectories focusing on formative and hindering processes. The paper discusses ambivalent pathways and 'regime resistance' caused by local economic and political specificities. The analysis illustrates how crucial the continual support from both policy makers and industry actors can be when economic market mechanisms do not drive sustainability transitions. Regime actors can play a powerful role as 'transition detractors' and can determine the dynamics and the scope of sustainability transitions. © 2017 Elsevier Ltd. All rights reserved.

1. Introduction

Cities are increasingly understood as the key level for addressing climate change and as loci for action towards low-carbon solutions (Bulkeley et al., 2014; Hodson et al., 2017; IPCC, 2014; Loorbach et al., 2016; OECD/IEA, 2016). Scientific advisory bodies such as the German Advisory Council on Global Change (WBGU, 2016) highlight the 'transformative power' of cities as far as sustainability is concerned. Related to these understandings, sustainability transitions — socio-technical shifts from conventional towards more sustainable modes of production and consumption (Markard et al., 2012) — have been predominantly analysed and interpreted on a national level (Hodson et al., 2017). However, the role of place specificity in the sustainability context remains underdeveloped (Coenen et al., 2012; Frantzeskaki et al., 2017; Hansen and Coenen, 2015; Murphy, 2015; Nicolosi and Feola, 2016). It is widely unclear how and why sustainability transitions occur, develop and vary in different urban contexts, even though the origins are often identified on the local level (Geels, 2011).

While a growing body of literature helps in understanding 'successful' shifts, explanations for slow or distracted sustainability transitions remain largely unexamined. In other words, apart from research on model cities and 'best practice', more solid empirical research considering path dependencies, barriers and resistance is needed (de Gooyert et al., 2016; Geels, 2014; Maassen, 2012). Research is particularly lacking on 'transition resistant' city contexts for innovative practices (technological and institutional) that do not gain momentum, are delayed or distracted. We argue that a city's specific and distinctive political, economic and technological pathways and their interrelated co-evolution need to be investigated further to better understand current dynamics, drivers and barriers in urban sustainable development.

This paper contributes to closing this research gap by providing empirical insights from a case study of green building transitions in Brisbane (Australia). In contrast to global forerunner cities such as Freiburg in Germany or Vancouver in Canada, Brisbane can be seen as a 'latecomer' due to a relatively slow uptake of 'green building' practices. The building and construction sector has a significant carbon footprint and therefore plays an important role in climate change adaptation strategies (IPCC, 2014; OECD/IEA, 2013; UNEP, 2011). Surprisingly, relatively little academic literature has been published in this field. While there is increasing interest in different aspects of sustainability processes in the building sector (Cidell,
in-depth analyses at the city level are still lacking. This paper examines how and why green building practices develop and what barriers exist at the city level. Investigating this issue is not only relevant for further research but also for practitioners and policy makers seeking to take action on different urban sustainability areas.

The context of Brisbane provides the opportunity to explore pathways of green building practices, in both residential and commercial sectors, with a special focus on barriers and distractions. Following a transdisciplinary approach, which combines expert knowledge from public, private, and academic sectors, policy document analysis and secondary statistical data, this paper traces back Brisbane’s green building pathways. We particularly focus on changed practices and the interrelated institutional, economic and political city context. More specifically, the paper examines the following research questions:

1. What are significant changes in practice in Brisbane's building sector; when and why did changes occur or were hindered?
2. Who are the key actors actively participating in these processes and who drives or resists sustainability transitions?
3. How are policy making processes (e.g. regulations, incentives, guidelines) interrelated in the building sector?
4. What are significant barriers and challenges in transitioning Brisbane's building sector?

The paper is structured as follows: Section 2 covers a brief discussion of the literature on urban sustainability transitions and the conceptual approaches used for this paper. An overview and the relevance of the building sector is provided in Section 3 before the case study Brisbane and the broader context are introduced in Section 4. Section 5 outlines the methodical approaches applied in this paper. The research results are presented in Section 6 by tracing back and analysing the different phases of Brisbane’s green building pathway. A final discussion, conclusions and an outlook for further research completes this paper in Section 7.

2. Urban sustainability transitions

Publications in the vibrant research field of urban sustainability transitions have started to explore cities as important arenas for grassroots movements (e.g. Wolfram, 2016), experimental niche developments, learning by doing and governance (Bulkeley et al., 2011; Nevens et al., 2013; WBCU, 2016). Even though cities are always embedded in wider political, economic and social systems at different scales, every city is an irreducible individual case (Scott and Storper, 2015). For this reason, place dependency is receiving increasing attention as an important conceptual and analytical aspect in sustainability transition research (Haarstad, 2016; Hodson and Storper, 2015). For this reason, scholars are increasingly bringing together TS approaches (predominantly the ‘multi-level perspective’ and ‘transition management’) and Economic Geography (Boschma et al., 2017; Fastenrath and Braun, 2016; Gibbs and O’Neill, 2015).

Approaches from Evolutionary Economic Geography such as ‘path creation’ (Garud and Karnoe, 2001) and ‘path dependency’ (Boschma and Frenken, 2006; Martin and Sunley, 2010) are helpful in better conceptualising the dynamics of socio-technical change in light of a co-evolutionary understanding of technology and institutions. To understand and steer current socio-technical changes, ‘urban sustainability transition history’ must be analysed. Conceptualising and analysing pre-existing socio-economic-technological structures (Martin and Sunley, 2008) and non-linear sustainability transition pathways (Turnheim et al., 2015) helps when exploring the dynamics and interactions between practices and adaptations of innovative and established structures of so-called ‘socio-technical regimes’ (Geels and Schot, 2007). The geographical perspective in transition research helps in understanding the development trajectories of cities, industries, production networks, and economies (Murphy, 2015, p. 73).

Spatial and relational perspectives are also a support when tracing back processes of resistance (de Gooyert et al., 2016; Geels, 2014) and lock-in against sustainability-oriented shifts (Maassen, 2012; de Gooyert et al., 2016; Geels, 2014). These processes, which occur when policy makers and economic actors form a “core alliance at the regime level, oriented towards maintaining the status quo” (Geels, 2014, p. 6), are under-researched. A changed focus from niche developments to the regime level is required to explore and understand barriers in sustainability transitions. Place-specific economic logics, hindering processes and ‘transition detractors’ need to be identified (Fastenrath and Braun, 2016). Therefore, further research needs to shed light on institutions, actors and inter-actor tension, interests and the outcomes of policies (Coutard and Rutherford, 2010; Gorissen et al., 2016). Accordingly, this paper considers place-specific institutional processes in sustainability transitions in Brisbane’s building sector.

3. Green building transitions

The built environment is a significant contributor to human-related greenhouse gas emissions (IPCC, 2014), and buildings are increasingly seen as both a major cause and a solution to climate change. Transitions from conventional towards sustainable modes of building and construction are therefore playing an increasingly important role in international public debates on climate change and resource efficiency (UNEP, 2014). In countries of the ‘global north’, most of the energy consumed in buildings is used for space heating or cooling, followed by water heating and usage of electric appliances (OECD/IEA, 2013) (see Fig. 1). On intergovernmental levels, the significance of a more sustainable built environment and related policy support is discussed in the context of urban and regional climate change adaptation strategies (UNEP, 2014).

While there are diverse approaches and interpretations, green building is commonly understood as the practice of creating
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