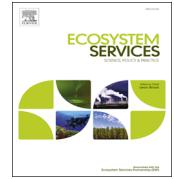




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A comparative exploration of uptake and potential application of ecosystem services in urban planning

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ABSTRACT

The concept of ecosystem services (ES) holds promise as a framework for more integrated urban planning, but its application in planning practice, including related challenges, remains an area of investigation. This paper seeks to help fill this gap through a comparative case study exploring current and potential application of ES in the cities of New York and Berlin. We examine: (1) how the concept of ES has been adopted, taking into consideration ES addressed in strategic planning documents as well as perceptions of the concept by key stakeholders in planning and management of urban green space, and (2) needs and challenges identified by stakeholders for green space planning and management. A multi-method design is used, combining literature review, content analysis of strategic plans and semi-structured key informant interviews. Findings reveal a reasonably high level of awareness, understanding and perceived importance of the concept but a much lower degree of uptake at an operational level. We identified a number of challenges which ES can address, including inter-departmental and multi-scale coordination, educating and engaging citizens in environmental stewardship, communicating strategy goals for the environment and assessing impacts of planning decisions. We conclude with implications for ES research and policy in urban areas.

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1. Introduction

1.1. The promise of the ecosystem services concept

Since publication of landmark studies such as the Millennium Ecosystem Assessment (MA, 2005) and The Economics of Ecosystems and Biodiversity (TEEB, 2010), the ecosystem services (ES) concept has made its way into national and supranational policymaking across the world (BSR, 2014). The European Union, for example, has used the concept in its Green Infrastructure Strategy (European Commission, 2013a), Forest Policy (European Commission, 2013b) and Biodiversity Strategy to 2020 (European Commission, 2011). At the national level, several countries have committed to nation-wide ecosystem service assessments (e.g. UK National Ecosystem Assessment, Natural Capital Project China), have formally adopted Payment for Ecosystem Service programs (e.g. Costa Rica) or institutionalized ecosystem services research into relevant agencies (e.g. the US Environmental Protection Agency's Ecosystem Services Research Program).

While this increasing embrace of the concept has not gone without critical debate (Jax et al., 2013; Norgaard, 2010; Schröter et al., 2014), a general consensus is that it offers a range of advantages for environmental decision-making, especially in urban areas, where fragmentation, density and heterogeneity create additional challenges for land use planning (Gómez-Baggethun and Barton, 2013). Many of these advantages are rather conceptual, such as providing anthropocentric-oriented argumentation for conserving species and ecosystems (Hauck et al., 2013a; Lamarque et al., 2011), broadening consideration of a wider array of benefits humans obtain from nature (MA, 2005), and stimulating more holistic, systems-based thinking (Norgaard, 2010). Other advantages are more operational, such as encouraging interdisciplinary cooperation (Cowling et al., 2008) and enabling valuation of services for both the public and private sector (Jack et al., 2008; Molnar and Kubiszewski, 2012).

Despite these advantages and the concept's recent arrival into national and supranational level policymaking, there are indications that its implementation at regional and local levels of planning remains poor (Daily et al., 2009; Kushner et al., 2012; Von Haaren and Albert, 2011). This begs the question of why this may be the case—whether it is simply too early for adoption or whether

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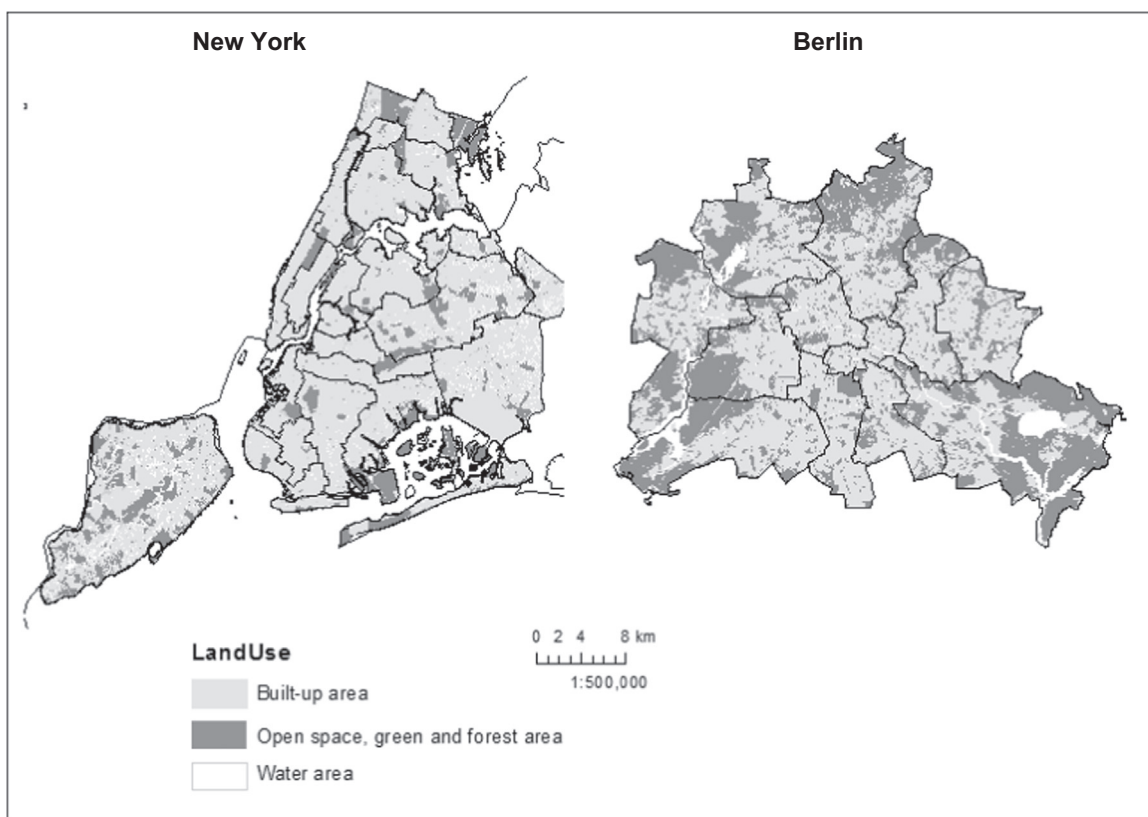


Fig. 1. Green space coverage across New York City (left) and Berlin (right). The cities share approximately the same land area, but Berlin has a much larger share of open space and less than half of New York's population.

there are other reasons why uptake has been limited, such as ES research not adequately addressing stakeholder needs, or the perception that the concept provides little added value compared to established concepts and traditions. Though scientific research on ES has risen almost exponentially in the last decade and there have been many technical advances in ES assessments, there has been less consideration from scientists about actual integration into local urban planning, including real-world factors of implementation: the awareness, knowledge, views and needs of stakeholders, and supportive institutional and political conditions (Haase et al., 2014). Recognizing this incongruence, some researchers have called for ES research to “more explicitly take into account the interests, decision-contexts, and requirements of potential users if it intends to provide relevant information for decision support” (Albert et al., 2014, p. 11).

1.2. Research questions and approach

A handful of studies have recently examined implementation of ES at the regional-level (Albert et al., 2014; Hauck et al., 2013a, 2013b; Mascarenhas et al., 2014) or the city-level (Wilkinson et al., 2013). However, most of these have elected to use a single method for analyzing implementation of ES in planning, preventing a deeper, contextual analysis of the level of ES integration and influencing factors.

Recognizing this gap and following the basic assumptions that (1) the conceptual framework of ES may be already implicitly included to some degree in city policies and plans (Matzdorf and Meyer, 2014; Wilkinson et al., 2013), and (2) awareness, organizational capacity and institutional and political contexts may strongly influence how the ES concept is applied (Primmer and Furman, 2012; Young, 2013), we explore the uptake and potential application of the ES concept in the cities of New York and Berlin in

relation to contextual conditions. The cities are both part of the European research project URBES (Urban Biodiversity and Ecosystem Services, <http://cbc.iclei.org/about-urbes>), of which this study is a part. By using a comparative case study approach (Yin, 2003), our aim is to shed light on areas of urban planning where the ES concept has gained traction as well as contribute to greater understanding of the real-life drivers, conditions and needs which may influence future ES implementation. Finally, we point the way towards more targeted ES research and policy guidance. Three research questions guided our explorative study: (1) How is the concept of ES taken up in strategic planning in these cities and how is it perceived by stakeholders involved in green space planning and management? (2) What are the main needs and challenges stakeholders identify for green space planning and management (the main influencing factors for ES provisioning)? (3) Which of these needs and challenges can the ES concept help address?

2. Methods

We used a multi-method design to explore these questions. The design included a literature review, a content analysis of strategic planning documents, and semi-structured key informant interviews.

2.1. Case studies

New York and Berlin were chosen as case study cities because they share a number of similarities but also exhibit distinct differences which we wanted to compare in terms of their possible influence on ES implementation. Both are the largest cities in countries with long established and wide-spanning environmental policies and planning, face rising populations and development

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