



Indicator development for sustainable urban park management in Hong Kong



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ABSTRACT

Urban park managers in densely-populated metropolises such as Hong Kong have to cope with dynamic user expectations, the impacts of recreation, and the shortage of resources over time, and the goal to improve park management strategies is ongoing. Indicators are potentially effective yardsticks for measuring park conditions and explaining the implications of various conditions on sustainable park management. This study solicits an indicator set through a two-tiered process of indicator selection, screening and rating, and a tripartite engagement by 20 park managers, 9 local scholars, and 743 park users in Hong Kong. The findings from the user-perceived level of importance of each indicator suggest that users pay close attention to landscaping, and that users consider the environmental quality of parks to be important management aspects. User-associated components of urban park management are identified, which reveal gradual changes in park features over the years.

1. Introduction

Urban parks play a unique and indispensable role in providing public spaces and recreation opportunities for urban populations. These urban parks are not easily replaced by country parks or private gardens (Chan et al., 2014; Wong, 1996). Urban parks offer multi-dimensional urban ecosystem functions as well as spaces for human-environment connection (Aldous, 2004; Manning and Moore, 2002; Schwartz, 2002). Ideally, urban park management should allow these parks to satisfy visitor use while still ensuring the sustainability of park resources. However, the huge demand for urban parks in recent years has begun to cause park resource depletion and user conflicts in park spaces, especially due to the clustering of large urban populations in compact metropolises. High population density and limited recreation spaces in these cities impose a high degree of pressure on parks in terms of their usage, and render the sustainability of park resources a challenging management task.

Urban park management and sustainability are site-specific but are collectively significant and global issues across territories because urban parks are spaces which provide multiple functions, among them the enhancement of the wellbeing of urban populations (Crompton, 2017; Konijnendijk et al., 2013; Nilsson et al., 2007; Swanwick et al., 2003). The availability and the quality of urban parks are an indication of livable and sustainable cities (Chiesura, 2004). Some best practices of

park management, such as the use of natural processes, the knowledge of recreation management, and the monitoring of park conditions, also contribute to the sustainability of park management (Herry, 2011).

The challenges of urban park management have become more complex due to the dynamic nature of park visits, a lack of creativity, a low prioritization, and an ineffective public sector, along with insufficient research support and budgetary constraints (Herrmann et al., 2000; Pauleit, 2003; Pauleit et al., 2003; Welch, 1991, 1995). The management objectives of sustainable urban parks are therefore multi-dimensional, and range from institutional aspects and resource provisions to the social equity of user experience and satisfaction (Chan and Marafa, 2006; Harnik, 2003). This complexity of urban park management is further complicated by the tension between entrepreneurial city governance (Jonas and While, 2007) and the call for a participatory approach to green growth (Jonas and While, 2007; McKendry and Janos, 2015; Wolch et al., 2014). Such controversy of urban environmental governance is also apparent in the form of equitable provisions for urban green spaces and the public's involvement in them (Buizer et al., 2016; Rutt and Gulsrud, 2016). It is thus important to understand users' perception of urban park management and to increase their involvement.

Like many other recreational settings, urban park management should balance the environment with its users (Pigram and Jenkins, 1999). Park environments are largely controlled by park management

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authorities, and the effectiveness and functioning of urban parks should be largely determined by a healthy management-user relationship (Jansson and Lindgren, 2012; Randrup and Persson, 2009). However, such a theoretical integration of management-user views in park management research is still uncommon (Chan et al., 2014; Smith et al., 1997). Even some good examples of benchmarking exist across territories (e.g., *World Urban Parks*, 2016; Yardstick, 2017), many of these existing standards are less academically supported, and were instead largely developed by practitioners or decision-makers. Practically, there is a general international recognition of the value of and the call for integrative public participation in park management and green space maintenance activities (European Environment Agency [EEA], 2015). However, the trend of urban park management has remained an operation-led domain across countries over the years (Peter Neal Consulting [PNC] and Community First Partnership [CFP], 2016; Randrup et al., 2017).

Whereas adding large public parks into compact urban areas is difficult, an equally important way to cope with park usage is to strengthen management and enhance the sustainability of existing parks. It is therefore essential to improve the quality of park management by adopting effective strategies and tools. Continuous monitoring of park conditions is key for sustaining the quality of a park environment, especially in high-density urban areas such as Hong Kong. One option is to select and apply suitable indicators to monitor park conditions. As a result, a knowledge gap exists, and research is needed to develop additional management tools such as an indicator system. Indicators are specified and defined parameters that provide policy-relevant information over time and space (Astleithner et al., 2004). These indicators show and measure important changes, represent meanings, and signal the need for action (Jenkins and Pigram, 2003). The use of indicators addresses the multi-dimensional aspects of the management of park conditions, which helps to enhance the sustainability of parks (Hermy, 2011; Ibes, 2014).

In countryside recreation, indicators are widely studied and applied (Newsome et al., 2013), and the availability and quality of public parks have also been adopted as indicators for the assessment of urban quality of life, livability, urban sustainability, and more recently, ecosystem services (Buizer et al., 2016; Rall et al., 2017). Collaboration and information exchange systems are well established in urban parks across various countries (e.g., Yardstick, 2017), but indicators are still not systematically applied by some park authorities for monitoring and managing park conditions (Chan et al., 2014; Smith et al., 1997). Even if such sustainable management practices are recognized by park authorities, a resident-participatory approach has not yet been widely adopted in the context of urban environmental governance (McKendry and Janos, 2015), and this has often been criticized (Rutt and Gulsrud, 2016). In the case of Hong Kong, for example, such advancement is still not observed over the years (Chan et al., 2014), even though there were scholarly initiatives designed to pioneer improvements in urban park management (Jim, 1998; Wong and Domroes, 2002) and indicator development (Chan and Marafa, 2006).

In an attempt to address this prolonged research and policy need, this study is therefore undertaken to develop indicators for sustainable urban park management through an empirical study with a tripartite engagement in Hong Kong. The study applied a two-tier process of selecting, screening and rating indicators by including three groups of urban park actors, namely park managers, park scholars, and park users. This paper presents the results of the process and of two practical objectives, which are firstly, to solicit an indicator set for urban park management in Hong Kong based on a combined view of park managers, academics, and park users, and secondly, to understand the key

components of urban park management in Hong Kong from the perspective of park users through factor analysis of the rating of indicators, where the level of importance of each indicator is examined and the entire set is ranked.

The findings shed light on the theoretical advancement of the concept of sustainable urban park management, especially for compact metropolises where urban parks are under varying forms of pressure and face challenges from resource constraint and user expectation to environmental depletion (Herrmann et al., 2000; Pauleit et al., 2003). The user-perceived components of park management represent a reference to important park dimensions for inter-city and regional comparison. On the policy-supporting and practical side, the extracted indicator set provides an empirically-laden tool that is applicable to different park settings by park managers, leading to an innovative step forward in Hong Kong's parks.

2. Literature review

Despite the fact that the definitions and typologies of urban parks are complicated (Haaland and van den Bosch, 2015), studies have reviewed the multi-dimensional functions provided by urban parks (Annerstedt et al., 2012; Schwartz, 2002; Swanwick et al., 2003). These functions imply the availability and the provision of diverse environments and attributes in the parks that require complicated management efforts.

2.1. Sustainable urban park management and the need for indicators

In a broad sense, management is the process of following plans and strategies with actions and resources of a specific space (Çay, 2015; Torkildsen, 1999), which often tackles the environment-human relationship. Recreation management frameworks for outdoor and countryside recreation have attempted to satisfy user expectation and preserve resource settings (Jenkins and Pigram, 2003; Pigram and Jenkins, 1999). These frameworks, such as the Recreation Opportunity Spectrum, and Limits of Acceptable Change and Visitor Impact Management, have addressed multi-dimensional aspects in recreational environments including public parks (Newman et al., 2001; Wight, 1998). These frameworks were also among the earliest initiatives to include indicators that define recreation opportunities and management objectives into appropriate monitoring and evaluation processes (Manning, 1999; Newsome et al., 2013). Indicators of quality refer to specific, measurable and manageable variables or parameters that reflect the essence of management objectives, resources, and social conditions to be managed, and are related to the quality of the recreation experience (Bacon et al., 2001; Laven et al., 2001). Because indicators have differences in importance and applicability (Manning, 1999), indicators and standards in countryside recreation may not be universally adoptable in urban park scenarios (Ammons, 2001). Whereas the idea of adopting indicators in urban park settings emerged after the millennium (e.g., Hermy and Cornelis, 2000), it was extended to global and regional cooperation only in relatively recent years (e.g., *World Urban Parks*, 2016; Yardstick, 2017).

In the context of urban parks, Jansson and Lindgren (2012) and Randrup and Persson (2009) emphasized the need for tripartite user-space-management relationships for sustainable park management. Urban parks are specific sites for recreational functions and uses, and thus the relationship between the quality of a recreation experience and that of the recreation environment is reciprocal. According to Pigram and Jenkins (1999), the relationship between the performance of outdoor recreational activities and their impacts on the environment

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