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作者：Jing Dong, Ruonan Guo, Fei Guo, Jun Cai

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Potential evaluation and implementation strategy for pocket park construction in high-density urban areas: A case study in Dalian, China

Jing Dong, Ruonan Guo, Fei Guo, Jun Cai

School of Architecture and Fine Art, Dalian University of Technology, Dalian 116024, China

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01论 文 题 目

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02作 者

Authors

Jing Dong, Ruonan Guo, Fei Guo*, Jun Cai

School of Architecture and Fine Art, Dalian University of Technology, Dalian 116024, China

03论 文 摘 要

Abstract

As an important element of urban renewal in highly urbanized areas, pocket parks with small size, flexible layout and daily accessibility are becoming a major component of green infrastructure and the mainstay of outdoor recreation space expansion in high-density urban centers. Nevertheless, the absence of a comprehensive framework for evaluating the potential of pocket park construction (PPC), one that integrates diverse influencing factors on a macro scale, has resulted in the random installation of such spaces, often failing to optimize the utilization of urban land. Addressing this critical lacuna, we propose an approach to evaluate PPC potential from a city-scale perspective, which is used to support the determination of which land units should be prioritized for PPC. A complete and feasible workflow was also established to identify potential land units, construct an index system for PPC combining demand and supply levels, quantitatively calculate indices based on remote sensing (RS) and geographic information system (GIS), accurately evaluate PPC potential using an entropy-weighted TOPSIS model, and develop targeted renewal strategies. A case study in Dalian, China, demonstrated the applicability and implications of the workflow. The results showed that it is flexible and easy to adapt to different local contexts, allowing evaluators to introduce parameters considering the availability of local data, and will help decision makers to build pocket parks in the most effective plots, providing a strong reference for high-quality development in other high-density urban centers facing the contradiction between ecological construction and land scarcity.

作为高度城市化地区城市微更新的重要内容，面积小、布局灵活、日常可达的口袋公园正逐渐成为高密度城市中心区绿色基础设施的主要组成部分和户外游憩空间拓展主体。然而目前对于城市口袋公园的空间规划问题研究尚不多见，由于缺乏从宏观尺度综合衡量不同影响因素的潜力评估框架，导致口袋公园随机建设，没有最大化城市土地价值。为了解决这个问题，我们从宏观尺度提出了一种评估城市口袋公园建设潜力的方法，用于支持确定哪些用地单元应被优先考虑建设口袋公园。还建立了一个完整可行的工作流程，以结合需求和供给层面构建口袋公园建设潜力评估指标体系，基于RS、GIS等方法定量计算指标，采用熵权TOPSIS模型开展潜力分级评估，从而得出用地单元的更新改造优先权，分类提出针对性更新策略。在中国大连一个典型的高密度城市中

心区进行的案例研究证明了该工作流程的适用性和意义。结果表明，该方法很容易适应不同的当地环境，允许评估人员考虑当地数据的可用性确定相关参数，将帮助决策者在最有效的地块建设口袋公。

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