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Conceptual Model for Integrating the Green-Blue Infrastructure in Planning Using Geospatial Tools: Case Study of Bucharest, Romania Metropolitan Area

Antonio-Valentin Tache [1,2], Oana-Cătălina Popescu [1,2] and Alexandru-Ionuț Petrișor [1,2,3,4,*]

[1] National Institute for Research and Development in Constructions, Urbanism and Sustainable Spatial Development URBAN-INCERC, 021652 Bucharest, Romania; tonytache62@gmail.com (A.-V.T.); oana_katalina2006@yahoo.com (O.-C.P.)
[2] National Institute for Research and Development in Tourism, 050741 Bucharest, Romania
[3] Doctoral School of Urban Planning, Ion Mincu University of Architecture and Urbanism, 010014 Bucharest, Romania
[4] Department of Architecture, Faculty of Architecture and Urban Planning, Technical University of Moldova, 2004 Chisinau, Moldova
* Correspondence: alexandru_petrisor@yahoo.com; Tel.: +40-213-077-191

Abstract: A green-blue infrastructure is essential for achieving the European Green Deal objectives and can be used to protect large cities and their metropolitan areas against urban sprawl. Green-blue infrastructure is an important research topic, because green-blue planning networks provide solutions for mitigating contemporary growing urban and climate challenges. Our study aims to create an innovative methodology for defining and analyzing the elements of green-blue infrastructure and their connectivity within Bucharest, Romania and its metropolitan area, to serve as a planning model. The methodology consists of merging European geodata sets with metropolitan and local data, using GIS tools, and analyzing the connectivity within the study area. All connections resulted from implementing the Linkage Mapper tool were operationalized, using high-resolution satellite images and correcting obtained connections, so that deviations from reality were minimized. The results consist of a conceptual model for planning the green-blue infrastructure within Bucharest and in its metropolitan area, embedding an analysis of its connectivity. The study contributes to implementing the concept of green infrastructure in urban and spatial planning, providing tools for planning the green-blue infrastructures of large cities and their metropolitan areas and, implicitly, reducing urban sprawl, improving air quality and mitigating environmental threats due to climate change.

Keywords: urban greenery; ecosystem services; urban biodiversity; climate changes; environmental planning; landscape connectivity; geospatial analyses

Citation: Tache, A.-V.; Popescu, O.-C.; Petrișor, A.-I. Conceptual Model for Integrating the Green-Blue Infrastructure in Planning Using Geospatial Tools: Case Study of Bucharest, Romania Metropolitan Area. *Land* **2023**, *12*, 1432. https://doi.org/10.3390/land12071432

Academic Editor: Alexander Khoroshev

Received: 20 June 2023
Revised: 11 July 2023
Accepted: 16 July 2023
Published: 17 July 2023

Conflicts of Interest: The authors declare no conflict of interest.

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