The Role of Multi-scale Approach in Planning and Design of Circular Cities: Mapping the Nexus Between Urban and Natural

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The focus of this research is how a multi-scale approach in geospatial information and mapping can contribute to the planning and design of more connected, inclusive, healthy, climate-friendly, and multi-functional circular urban environments. The research addresses the relation between socio-ecological and economic aspects of city development on different spatial levels as a key challenge of European cities. This requires a multidisciplinary and integrative approach to produce effective strategic scenarios of urban development. This methodology is focused on multi-scale analyzes of environmental relationships and provides a flexible framework for improvement of the planning and design of circular cities. Through these advantages, the applied methodology can allow for more flexible identification and improvement of nexus between urban and natural.

One of the basic problems for achieving circularity in urban development is the discontinuous and unplanned urbanization. Such developmental characteristics of cities, as well as the increasing need for nature and biodiversity in cities, necessitated the search for new ecological approaches and principles for their implementation in the process of spatial planning and urban design. The central research question in the context of sustainable spatial development has become how to ensure multiple balances in-between social, cultural and economic versus ecological systems.

In order to improve the existing circularity and built-natural relations, it is necessary to develop a more complex mapping system which involves planning systems of smaller-scale natural-ecological units integrated into the existing urban structure and connecting them with linear natural-ecological elements. In this sense, the multi-scale methodology is not only reflected in the evaluation of the current situation but also can be used as a tool for testing the variant development opportunities toward circular cities.

The applicability of the developed methodology has been tested within the spatial framework of Belgrade, while the result is a series of critical maps illustrating the nexus between urban and natural in the city.

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