Exploring the Urban Green Infrastructure Index: A Case Study of Zagreb, Croatia

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SUMMARY

Nowadays, with more than half of the world's population living in urban areas, ensuring sustainable development is crucial. Sustainable development involves careful resource planning and optimal utilization. Urban green infrastructure planning is a proven effective tool that offers social, ecological, and economic benefits, thus significantly enhancing the quality of life in cities. Optimal use of spatial resources is a complex task typically involving a considerable amount of spatial data, handled by spatial planning systems. This system sets rules and divides space into zones where certain construction activities are permitted or restricted. It commonly utilizes data from land administration systems. A land administration system (LAS) encompasses all processes, activities, and institutional frameworks used for managing land and its resources. This includes recording, registration, administration, regulation, and management of land rights, as well as the implementation of policies and laws related to land use. LAS incorporates geodetic, legal, administrative, and technical components to ensure efficient land use and protection of property rights. Conceptually modelled by LADM, a standard describing fundamental concepts, data structures, and functionalities necessary for land and property rights management. The main goal of LADM is to facilitate interoperability among different land administration systems worldwide. LADM enables information exchange between different LAS-es, crucial for efficient land management, transparency in property rights, and support for economic development and sustainable urban planning. Urban green infrastructure can be viewed as one of the many factors influencing property valuation, which can be used in spatial planning to ensure a consistent network of urban green infrastructure within a city or municipality. This approach optimizes resources and monitors progress in priority areas. Property valuation assessment is a core function of LAS, where transparent property value data sharing is essential for fair planning, taxation, and other land management operations. Based on the case study of Zagreb, this paper researches the correlation between the urban green infrastructure index (developed and further explained in Samanta Bačić's

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doctoral thesis) and property values extracted from the Zagreb city's land management system. The primary use of this data is to identify hotspots — areas lacking sufficient green infrastructure on one hand, and valuable areas with higher property prices on the other. Depending on desired outcomes, these data can be periodically, completely automatically determined and be used to track trends and, by harmonizing this eco-service, regulate property prices to mitigate spikes in high-priced areas. It's important to note that urban green infrastructure is just one of many factors, and disparities exist between property prices and the urban green infrastructure index in certain areas. The greatest benefit of the proposed methodology lies in using existing geoinformation solutions for sharing and monitoring this factor which can be considered as a key performance index (KPI). Similarly, the same procedure can be used to determine values of other factors, explaining spatial planning priorities or land management systems improvements through enhanced geoinformation-based decision-making in a clear and transparent manner.

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