

REVIEW OF SUSTAINABLE URBAN DEVELOPMENT INDICATORS

Hakim, C.E.A. (ITMO)

Supervisor – PhD, Technical Science, Associate Professor Sergienko, O.I. (ITMO)

Introduction. Urbanization, driven by rapid population growth and economic development, poses significant challenges to environmental sustainability and human well-being. To address these challenges, there has been a growing emphasis on sustainable urban development (SUD) strategies worldwide. Assessing the ecological state and functionality of urban landscapes is crucial in guiding decision-making towards achieving sustainable urban development goals. This review synthesizes existing literature on sustainable urban development indicators and explores their role in assessing the ecological state and functionality of urban landscapes.

Main body. The review began by defining sustainable urban development and outlining its key principles, emphasizing the integration of environmental, social, and economic dimensions. The review revealed the integration of key principles of sustainable urban development, emphasizing the integration of environmental, social, and economic aspects.

These included environmental indicators such as air and water quality, energy consumption, waste management, and green space provision; social indicators encompassing aspects like equity, social cohesion, health, education, and affordable housing; economic indicators focusing on resource efficiency, economic productivity, job creation, and innovation; and governance indicators assessing the effectiveness of policy frameworks, institutional capacity, and citizen participation. It then delved into the concept of urban ecological state, which encompassed the health and resilience of urban ecosystems, as well as their ability to support biodiversity and provide ecosystem services [1].

Furthermore, the review discussed the importance of assessing urban functionality, which referred to the efficiency and effectiveness of urban systems in meeting the needs of current and future generations while minimizing negative environmental impacts. A comprehensive analysis of sustainable urban development indicators revealed a diverse range of metrics used to assess various aspects of urban sustainability. These indicators could be broadly categorized into environmental, social, economic, and governance dimensions [2]. Environmental indicators focused on factors such as air and water quality, green space provision, biodiversity conservation, and climate resilience. Social indicators examined issues related to social cohesion, health, and well-being, while economic indicators assessed aspects such as resource efficiency, and economic productivity. Governance indicators evaluated the stakeholder engagement in promoting sustainable urban development [3]. The review highlighted the need for integrated approaches to indicator development, recognizing the interconnectedness of environmental, social, and economic systems within urban areas. It emphasized the importance of context-specific indicators that reflected local priorities, challenges, and opportunities. Furthermore, the review underscored the significance of participatory processes in indicator selection and monitoring, ensuring that diverse stakeholder perspectives were incorporated into decision-making processes [4].

Conclusion. The review provided insights into the role of sustainable urban development indicators in assessing the ecological state and functionality of urban landscapes. By adopting a

holistic and integrated approach to indicator development and monitoring, policymakers, planners, and practitioners could better understand the complex dynamics of urban sustainability and make informed decisions to promote the well-being of both people and the planet.

References:

1. Hiremath, R. B., Balachandra, P., Kumar, B., Bansode, S. S., & Murali, J. (2013). Indicator-based urban sustainability—A review. *Energy for sustainable development, 17*(6), 555-563.
2. Zegras, P. C., Poduje, I., Foutz, W., Ben-Joseph, E., & Figueroa, O. (2004). Indicators for sustainable urban development. *From Understanding to Action: Sustainable Urban Development in Medium-Sized Cities in Africa and Latin America*, 157-189.
3. Mori, Koichiro, and Aris Christodoulou. "Review of sustainability indices and indicators: Towards a new City Sustainability Index (CSI)." *Environmental impact assessment review 32*, no. 1 (2012): 94-106.
4. Moldan, B., Janoušková, S., & Hák, T. (2012). How to understand and measure environmental sustainability: Indicators and targets. *Ecological indicators, 17*, 4-13.