XV International Conference on Durability of Building Materials and Components
DBMC 2020, Barcelona
C. Serrat, J.R. Casas and V. Gibert (Eds)

Evaluation of Economic Efficiency of Territory Development

Jana Korytárová[1], Vít Hromádka[2], Martin Marek[3], Svatopluk Pelčák[4] and Jiří Rouzek[5]

[1] Brno University of Technology, Faculty of Civil Engineering, Veveří 331/95, 602 00 Brno, Czech Republic, korytarova.j@fce.vutbr.cz

[2] Brno University of Technology, Faculty of Civil Engineering, Veveří 331/95, 602 00 Brno, Czech Republic, hromadka.v@fce.vutbr.cz

[3] Brno University of Technology, Faculty of Civil Engineering, Veveří 331/95, 602 00 Brno, Czech Republic, Martin.Marek3@vutbr.cz

[4] Brno University of Technology, Faculty of Civil Engineering, Veveří 331/95, 602 00 Brno, Czech Republic, 167293@vutbr.cz

[5] Brno University of Technology, Faculty of Civil Engineering, Veveří 331/95, 602 00 Brno, Czech Republic, 156940@vutbr.cz

Keywords: *Territory Development, Socio-Economic Evaluation, Multicriteria Analysis.*

1 Introduction

The method of assessing the economic efficiency of the territory development depends on the extent and specifications of the technical determination of the change in the current situation. This research deals with level, no specific development projects are defined, however the territory is being prepared for a specific use or combination of uses. This is the level of the land use plan that sets out the urban concept, the concept of landscape arrangement and the concept of public infrastructure, it defines the built-up area, areas and corridors and sets the conditions for the use of these areas.

The research question is whether the territories formed by the combination of the above-mentioned areas can be expressed by economic quantity that would prove their efficiency level.

2 Methodology

Changing the location purpose from the current prevailing use to another entails certain costs that the municipality has to incur in order to implement the new use of the location. At the same time, changes in the use of locations, depending on their character of the usable areas, can bring a certain capacity of new residents and new jobs. The research team identified the following three criteria: Criterion K1 as the sum of the costs of the areas that the location contains, Criterion K2 as the potential revenue of the municipality and Criterion K3 as the potential social benefit.

The output of the economic model is the determination of the overall location efficiency (E), which is defined as the sum of the product of the location classification values in a given criterion (K) and its weight (w).

3 Results

Interim research results are presented on a case study. The case study includes the evaluation of 12 locations boroughs of the statutory city of Brno according to the criteria K1, K2, K3 and the overall efficiency of the location E according to the above. Locations are sorted according to values of efficiency, according to the values of individual criteria is also clear how the individual criteria for overall efficiency involved. The overall efficiency ranges from 2 to 4.2 points of the 5-point scale.

4 Conclusion

The article deals with determination of the procedure for the evaluation of the economic efficiency of designed locations. The economic evaluation is made to compare the extent of economic intensity, potential revenue and socio-economic benefit of individual development locations among themselves and to determine the possible succession for their implementation - a change in their use. For this reason, an economic model of costs, revenues and benefits related to the transformation of the current location into its proposed use was developed. The economic model is designed for the basic economic awareness of the costs, revenues and benefits of the areas under consideration at the level of detailed technical data that are part of the land use plan. Future research will focus on another part of the life cycle of the municipal property thus created, namely the cost of repairing and maintaining in the operational phase, where it will be necessary, among others, to examine its average lifetime.

Acknowledgements

This paper has been worked out under the project of the specific research at Brno University of Technology no. FAST-S-20-6383 Selected Economic and Managerial Aspects in Construction Engineering.

References

Huang, S.L., Yen, C.T., Budd, W. and Chen, L.L. (2009). *A Sensitivity Model (SM) approach to analyze urban development in Taiwan based on sustainability indicators*. Environ. Impact Asses. Rev. 29(2), 116–125.

Olewiler, N. (2006). *Environmental sustainability for urban areas: the role of natural capital indicators*. Cities 23(3), 184–195.

Scipioni, A., Mazzi, A., Mason, M. and Manzardo, A. (2009). *The dashboard of sustainability to measure the local urban sustainable development: the case study of Padua Municipality*. Ecol. Indic. 9(2), 364–380.

Nijkamp, P. and Artuso, L. (1995). *Methodology and Application of Sustainable Environment Concepts for the Built Environment*, Cerie Research Memoranda, 1995-48, VRIJE Universiteit, Amsterdam.

Moussiopoulosa, N., Achillasa, Ch., Vlachokostasa, Ch., Spyridia D. and Nikolaoub, K. (2010). *Environmental, social and economic information management for the evaluation of sustainability in urban areas: A system of indicators for Thessaloniki*, Greece, Cities, Volume 27, Issue 5, October 2010, Pages 377-384. https://doi.org/10.1016/j.cities.2010.06.001