

ŽELJKA JURKOVIĆ



# MODEL VRJEDNOVANJA TRANSFORMACIJSKOGA POTENCIJALA ŽELJEZNIČKIH KORIDORA U GRADOVIMA

DOKTORSKA DISERTACIJA [SAŽETAK]

## EVALUATION MODEL OF THE TRANSFORMATION POTENTIAL OF RAILWAY CORRIDORS WITHIN CITIES

DOCTORAL DISSERTATION [SUMMARY]

The sustainability of spatial-traffic development of cities stands in direct correlation with the overall sustainable development of the urbanized world. The consensus in the scientific and professional references singles out three basic sustainability indicators in urban planning: economic sustainability, social welfare and environmental sustainability. In this research, the term railway corridor implies the land on which the railway is built (traffic infrastructure) and its immediate surroundings (the surrounding built or unbuilt space) which immediately borders with the railroad. Railway corridors represent the potential for urban city transformation, as they pass through central city areas, occupying large surfaces and having a linear spatial continuity. The research showed that urban transformation of railway corridors is needed in those towns where the railroad restricts the expansion or integration of town parts, in the towns in which railway traffic is relocated, and in those where railway is or will become a public urban transportation system.

The spatial framework of the research regarding the relation between the city and the railway in Croatia is limited to the area of eastern Croatia, specifically, to three Slavonian cities – railway junctions: Osijek, Vinkovci and Slavonski Brod. The timeframe of the research refers to the period from the construction of the first railway in eastern Croatia in 1870 until today.

The thesis studies, both theoretically and practically, the issue of evaluating the transformation potential of railway corridors. It is established that the method of economic valorization, i.e. the quantitative approach, is inadequate for the decision-making process about evaluating the transformation potential of railway corridors. As opposed to this traditional approach, contemporary approaches consider the issues and the solutions from several aspects, while various experts and the public have a crucial role in decision-making. Owing to the multidisciplinary nature of the railway corridors, it is estimated that decision making about corridor transformation should be based on contemporary methods that enable a structured decision making based on several criteria and the selection of the best solution among several variants.

The research yielded a theoretical model containing an analytical and a dynamic part, while the model itself is complex and integral. Furthermore, it was established which goals are to be achieved by the transformation and which problems are to be solved in the process. The areas with the greatest transformation potential are the ones with the greatest number of existing problems, whose transformation will satisfy the largest number of transformation goals, whether this is a new building within the corridor area or a reconstruction of the existing built spaces. An interactive matrix is created in order to establish the complex correlations. Primarily, three basic matrices of correlation between the problems and goals are formed, as well as the necessary number of secondary matrices. Practical check of the model was performed on the case study in Osijek. The research showed that the urban transformation of the railway corridors is necessary in the cities in which the railway limits the expansion or integration of city parts, in the cities with dislocated railway traffic and in the cities in which the railway is or will become the city public transport system. The particular traits of railway corridor transformation lie primarily in its basic element, which is the railway as traffic infrastructure and all that the railway has generated from the moment it was built until today in the spatial and economic life of the cities. The specific feature of railway corridor transformation in relation to other types of urban transformations is that the railway has a pronounced linear or radial course in the city structure, from the centre towards the edge, creating multiple (spatial, traffic, social, mental) barriers in connecting city parts. Also, terminals and railway facilities are located in the central city parts, and changes, even minor, are visible along the railway and have an effect on the image of the city.

Research has confirmed the initial thesis that the railway corridor transformation into the city development corridors should be implemented according to the established evaluation model based on the scientific approach.

[Translated by SPES]

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Istraživanje je pokazalo da je urbanistička transformacija željezničkih koridora potrebna u onim gradovima u kojima željeznica ograničava širenje ili integriranje dijelova grada, u gradovima u kojima se željeznički promet izmješta te u gradovima u kojima željeznica jest ili će postati javni gradski prometni sustav. Prostori s najvećim potencijalom transformacije jesu prostori s najviše postojećih problema, čijom ce se transformacijom zadovoljiti najviše ciljeva transformacije, bilo da se radi o novoj izgradnji unutar prostora koridora ili o rekonstrukciji postojećih izgrađenih prostora. Za utvrđivanje ovih složenih suodnosa izrađuju se interaktivne matrice. Primarno se formiraju tri osnovne matrice korelacije povezanosti problema i rješavanja ciljeva te potreban broj sekundarnih matrica. Praktična provjera modela istražuje se na primjeru grada Osijeka.