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Research Article

APPLICATION OF MULTI-CRITERIAL ANALYTICAL METHODS FOR RANKING ENVIRONMENTAL CRITERIA IN AN ASSESSMENT OF A DEVELOPMENT PROJECT

Elżbieta Szafranko[1]

[1] University of Warmia and Mazury in Olsztyn, The Faculty of Geodesy, Geospatial and Civil Engineering, Heweliusza Str. 4, 10-724 Olsztyn, e-mail: elasz@uwm.edu.pl

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ABSTRACT

Building investment projects, both during the construction work and afterwards, have a certain impact on the natural environment when a raised structure is used. Depending on the character, size and location of a planned structure, such influences will vary. At the stage of planning a new development, investors are obliged to execute several procedures connected with the preservation of nature, for example they prepare several variants of the planned investment and evaluate which one will have the weakest effect on the environment. Assessment of variants is based on a series of criteria, and the final outcome is not always unambiguous. Hence, when trying to establish the importance of each criterion, it is advisable to apply efficient decision support methods. One option is to use multi-criteria analytical methods. However, for such methods to be applicable, an investor must prepare a wealth of information. The first stage preceding the actual analysis of variants is to define the assessment criteria and assign to them appropriate weights (importance). This stage requires the participation of experts, who – through questionnaires and interviews – express their opinions on the criteria that must be included and on their importance. This article contains a model procedure implemented for the sake of determination of the importance of parameters, which includes the methodology used for assessment and ranking of parameters. The approach presented in this paper demonstrates the usefulness of multi-criteria analytical methods when making an evaluation pertaining to the impact of a building investment on the environment.

Keywords: building investments, environmental impact, assessment criteria, multi-criteria analysis

INTRODUCTION

Construction of buildings is inextricably linked with the economic and social development of regions and whole countries. It is impossible to engage in a business without new buildings. Construction Law identifies numerous building structures having different functions and use [Law regulations]. They include residential buildings, ranging from single family houses to blocks of flats, commerce and service buildings, elements of street architecture. The most diverse group comprises non-residential building structures, which consists of industrial buildings and facilities, hydrotechnical facilities, electric power facilities, linear structures, roads, bridges and flyovers. These are just a handful of examples, but they are sufficiently numerous to realize that on account of their nature such building structures can exert strong and adverse effects on the natural environment. Hence, our focus of attention will be on how to identify and evaluate environmental criteria while making an assessment of a development project, such as the construction of a road [Rodriguez-Pose and Fratesi 2004, Šelih et al. 2008.].

The execution of a building investment invariably means large intrusion in the environment