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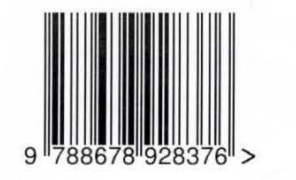

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WASTE MANAGEMENT AND RESEARCH SPECIAL ISSUE (WM & R)

USING MULTI-CRITERIA DECISION-MAKING FOR SELECTION OF THE OPTIMAL STRATEGY FOR MUNICIPAL SOLID WASTE MANAGEMENT

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Abstract

Multi-Criteria Decision Making (MCDM) is a relatively new tool for decision makers who deal with numerous and often contradictory factors during their decision making process. This paper presents a procedure to choose the optimal municipal solid waste management system for the area of the city of Kragujevac (the Republic of Serbia) based on the MCDM (Multi-Criteria Decision Making) method. Two methods of multiple attribute decision making (MADM) – SAW (Simple Additive Weighting Method) and TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) were used to compare the proposed waste management strategies. Each of the created strategies was simulated using the software package IWM2. Total values for eight chosen parameters were calculated for all the strategies. Contribution of each of the six waste treatment strategies was valorised. The SAW analysis was used to obtain the sum characteristics for all the waste management treatment strategies and they were ranked accordingly. The TOPSIS method was used to calculate the relative closeness factors to the ideal solution for all the alternatives. Then, the proposed strategies were ranked in form of tables and diagrams obtained based on both MCDM methods. The results were in good agreement, which additionally confirmed and facilitated the choice of the optimal municipal solid waste management strategy.

Keywords:MCDM, municipal solid waste management, choice of the optimal management system, SAW, TOPSIS

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