A Comparison between Fuzzy Analytic Hierarchy Process and Fuzzy Analytic Network Process for Rationality Evaluation of Land Use Planning Locations in Vietnam

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Abstract : In Vietnam, land use planning is utilized as an efficient tool for the local government to adjust land use. However, planned locations are facing disapproval from people who live near these planned sites because of environmental problems. The selection of these locations is normally based on the subjective opinion of decision-makers and is not supported by any scientific methods. Many researchers have applied Multi-Criteria Analysis (MCA) methods in which Analytic Hierarchy Process (AHP) is the most popular techniques in combination with Fuzzy set theory for the subject of rationality assessment of land use planning locations. In this research, the Fuzzy set theory and Analytic Network Process (ANP) multi-criteria-based technique were used for the assessment process. The Fuzzy Analytic Hierarchy Process was also utilized, and the output results from two methods were compared to extract the differences. The 20 planned landfills in Hung Ha district, Thai Binh province, Vietnam was selected as a case study. The comparison results indicate that there are different between weights computed by AHP and ANP methods and the assessment outputs produced from these two methods also slight differences. After evaluation of existing planned sites, some potential locations were suggested to the local government for possibility of land use planning adjusts.

Keywords : Analytic Hierarchy Process, Analytic Network Process, Fuzzy set theory, land use planning
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