

Urban Flood Vulnerability Assessment Based on FCDM and PSR Framework

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Abstract

Flood is a major threat to human society, and scientific assessment of flood risk in human living areas is an important task. In this study, two different methods were used to evaluate the flood in Ulsan City, and the results were comprehensively compared and analyzed. Based on the fuzzy mathematics and VIKOR method of the multi-objective decision system, similar evaluation results were obtained in the study area. The results show that due to the large number of rivers in Ulsan City and the relatively high exposure index, the whole city faces a high risk of flooding. However, fuzzy mathematics theory pays more attention to the negative impact of floods on people, and the adaptability in the Nam-gu District is lower. In contrast, the VIKOR method pays more attention to the positive role of the economy and population in flood protection, and thus obtains a higher score. Both approaches demonstrate that the city of Ulsan faces a high risk of flooding and that its citizens and policymakers need to invest in preventing flood damage.

Keywords : Fuzzy mathematics, VIKOR, Flood vulnerability, Urban flood resilience

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