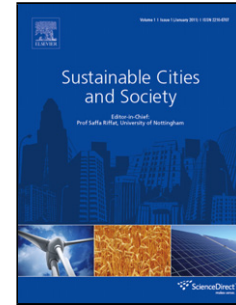# Accepted Manuscript

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Site selection decision framework using fuzzy ANP-VIKOR for large commercial rooftop PV system based on sustainability perspective

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Highlights

- This study establishes a decision framework for LCRPS site selection utilizing Fuzzy ANP -VIKOR method.
- Based on the sustainable cites and society prospective, the comprehensive index system for LCRPS site selection is established.
- To dispose the vague and imprecise information in the site selection for LCRPS, the triangular intuitionistic fuzzy numbers are normally utilized.
- The fuzzy ANP method is proposed to create appropriate weights, which takes the relationships between the criteria into consideration.
- The fuzzy VIKOR method is introduced to rank the optimal alternatives on the basis of the opinions of different DMs.

Abstract

The Large Commercial Rooftop Photovoltaic System (LCRPS) projects have been rapidly proposed in China due to policy promotion towards sustainability. Site selection immensely determines the life cycle of LCRPS projects based on sustainability perspective, in need of considering the impact on environment and society. However, inadequacies still exist in the decision for LCRPS site selection. Firstly, uncertainties of information cannot be described integrally. Secondly, consideration of the correlation among criteria from sustainability perspective is lacking. Thirdly, the ranking methods in previous studies cannot reflect decision makers' subjective preferences. Therefore, this study establishes a decision framework for LCRPS site selection utilizing Fuzzy Analytic Network Process (Fuzzy ANP) method and Fuzzy Vlsekriterijumska Optimizacija IKompromisno Resenje (Fuzzy VIKOR) method. First, the triangular intuitionistic fuzzy numbers (TIFNs) are adopted to describe indeterminate information. Second, fuzzy ANP is introduced to reflect the correlation