عنوان مقاله:

Group Decision Making based on a New Evaluation Method and Hesitant Fuzzy Setting with an Application to an Energy Planning Problem

محل انتشار:

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خلاصه مقاله:

In recent two decades, countries focused on extraction of the minimum amount of fossil fuels and utilization of the renewable energies based on their policies and environmental considerations. Thus, choosing the best renewable energy alternative plays a significant role on the investments. Among the classical decision approaches used in the literature, a hesitant fuzzy sets (HFSs) theory is an appropriate tool to deal with uncertain and imprecise conditions. The HFSs can help the decision makers or experts in an energy sector to consider some membership degrees for a renewable energy alternative regarding to the conflicted criteria under a set. The aim of this paper is to propose a hierarchical complex proportional assessment (COPRAS) method to consider subjective judgments and objective opinions based on the HFS theory for multi-criteria group decision making (MCGDM) problems. In addition, the hesitant fuzzy decision matrix and main criteria along with sub-criteria are defined based on linguistic variables and then are converted to hesitant fuzzy elements. In the proposed approach, weights of experts are different and computed by a proposed hesitant fuzzy entropy method. Also, the weights of main criteria are determined by a new relation in n levels of the hierarchy structure with experts' risk preferences. Finally, a real case study in Iran on the renewable energy selection in the hierarchy structure is presented and a hesitant fuzzy hierarchical complex proportional assessment (HF-HCOPRAS) method is applied in order to show the applicability of the proposed approach.

کلمات کلیدی:

Group Decision Analysis , Hierarchical Complex Proportional Assessment , Hesitant Fuzzy Sets , Renewable Energy Planning ,

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