

Sustainable indicators for rural area and analysis of causal relationships  
using FDM and fuzzy DEMATEL

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Abstract

Due to rising environment consciousness and perception of returning to rural nature, sustainable development of rural area has been increasingly valued these days. For practicing the sustainable development for rural area, it is essential to determine appropriate evaluation indicators. The purpose of this study is to find the impact factors that influence rural area sustainable development, to select the critical evaluation indicators, and to determine the causal interrelationships among these indicators. Since establishing sustainable indicators is a multiple criteria decision-making (MCDM) problem in nature, this study adopts a model which integrates fuzzy Delphi method (FDM) and the fuzzy Decision Making Trial and Evaluation Laboratory method (fuzzy DEMATEL). The FDM is applied to extract the critical factors from the possible impact factors. The fuzzy DEMATEL method is adopted next by inviting rural development experts to evaluate the importance of the indicators and to construct the causal interrelationships among the indicators. This study not only show the core dimensions and the sustainable indicators under each dimension for the sustainable development of rural area, but also the impact-relation maps among the indicators. The results of this study can provide useful guidance to rural area development, and can be reference for related policy making.

Keyword : Sustainable indicators, Rural area, Fuzzy Delphi method (FDM), Fuzzy Decision Making Trial and Evaluation Laboratory method (fuzzy DEMATEL)