

An Integrated FA-FEAHP Approach on the Social Indicators of Taiwan's
Green Building

王維民, Lee, Amy H. I., Chang, Ding-Tsair

Architecture and Urban Planning

Architecture

weiming@chu.edu.tw

Abstract

Green building indicator system has become an essential instrument for fulfilling the sustainable development of collective residence environment. Under the action principle of “Global thinking, Local action”, the indicator system should reflect local characteristics and requirements, and must possess extensivity. However, the followed norm in Taiwan does not contain the related social impact factors that reflect the characteristics of high density and collective dwelling. Therefore, this paper first collects the relevant possible impact factors based on the inhabitant users' information, local characteristics, and other indicator systems. Then, factor analysis method (FA) is employed to investigate the users and to extract the principal components of social impact with regional characteristics. Then, the social indicator establishment and application problem is solved by applying the fuzzy extended analytic hierarchy process method (FEAHP). Finally, by integrating the examination of actual cases, a hierarchical assessment framework is built. The subjective qualitative values for indicators are transferred into objective and quantitative priority weights by fuzzy pairwise comparison to reflect the degree of importance and evaluation efficacy. The results of this research not only strengthen the comprehensiveness of the existing green building indicator system, but also signify the concrete direction for improvement for evaluated cases.

Keyword : Green Building Social Indicators, Housing Community, Factor Analysis (FA), Fuzzy Extended Analytic Hierarchy Process (FEAHP)