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EVALUATION METHOD FOR SUSTAINABLE DEVELOPMENT OF URBAN LOW CARBON ECOLOGICAL CONSTRUCTION BASED ON SUPER-EFFICIENCY DATA ENVELOPMENT ANALYSIS (SE-DEA) MODEL

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Abstract

This paper proposes an evaluation method for sustainable development of low-carbon ecological construction in cities based on the Super-Efficiency Data Envelopment Analysis (SE-DEA) model. The method involves four steps: (1) constructing the SE-DEA model to determine the input and output indicators; (2) establishing an evaluation system using Analytic Hierarchy Process (AHP); (3) determining the weights of indicators using the entropy method; and (4) evaluating the sustainable development level of cities using the SE-DEA model and a comprehensive evaluation approach. The method was applied to 26 indicators in a case study. The results show that the proposed method achieves an accuracy above 90%, with the highest consistency reaching 96%, and an average evaluation time of 7.00s. The proposed method provides a more accurate, reliable, and efficient tool for evaluating the sustainable development of low-carbon cities.

Key words: evaluating indicator, SE-DEA model, sustainable development, urban low-carbon

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