Environmental Engineering and Management Journal *July 2013, Vol.12, No. 7, 1481-1486*
http://omicron.ch.tuiasi.ro/EEMJ/

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ASSESSMENT OF WATER ENVIRONMENTAL CARRYING CAPACITY IN XI'AN, CHINA

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Abstract

A comprehensive evaluation methodology for water environmental carrying capacity (WECC) has been proposed. It is based on a new definition of WECC and reasonable evaluation models compared with vector norm method for water resources supply, environmental assimilative capacity, and society supporting capacity. Evaluation index of WECC is determined for Xi'an city, depending on characteristics of the water environment in Xi'an and selection principles of WECC evaluation index. Three-layer structure model of evaluation factors is established and index weight of a class of factors is calculated based on analytic hierarchy process (AHP). Thereafter, fuzzy optimization model is adopted to determine each evaluation index weights of WECC. The results show that WECC in Xi'an city is improved in recent years, but total status of WECC is still low. The reason may be caused by water resources shortage and negative issues of social rapid development.

Key words: analytic hierarchy process, evaluation index, fuzzy optimization model, water environmental carrying capacity

Received: November 2012; Revised final: May, 2013; Accepted: June 2013

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