研究报告

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基于熵权TOPSIS模型的区域资源环境承载力评价实证研究

Empirical study about the carrying capacity evaluation of regional resources and environment based on entropy-weight TOPSIS model

关键词：资源环境承载力 熵权 TOPSIS模型 灰色关联系数 承载力评价

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摘要：为深度了解区域资源环境承载力水平,准确把握承载力变化趋势,从经济子系统、资源子系统和环境子系统3个子系统中选取18个指标构建区域资源环境承载力评价体系,运用熵权TOPSIS模型对安徽省2000-2013年的承载力和3个子系统内部承载力水平进行评价,并采用灰色关联系数选择和识别影响承载力的关键因素.结果表明:2000-2005年安徽省资源环境承载力水平略微下降,但"十一五"以来,安徽省承载力水平稳步提升.经济子系统发展力水平呈稳步上升趋势,2013年达到0.99524,几乎达到最优承载力水平;资源承载子系统承载力水平波动起伏,但总体变化幅度小,基本呈"V"型曲线;环境承载子系统(除2009年外)承载力水平呈逐年上升趋势,在2013年达到最大值0.98106;其中,经济子系统发展力和环境承载子系统承载力变化趋势与整个资源环境承载力变化趋势基本一致.采用灰色关联系数计算发现,工业固体废物综合利用率等4个指标是影响安徽省资源环境承载力的关键因素.

Abstract：To comprehensively understand the carrying capacity of regional resources and environment and accurately identify its trend, 18 indicators were chosen to build the carrying capacity evaluation system from three carrying subsystems, i.e. economy subsystem, resource subsystem and environment subsystem. Based on entropy-weight TOPSIS model, the carrying capacity of Anhui Province from 2000 to 2013 and the inner carrying capacity of three subsystems were evaluated and the key factors of affecting the carrying capacity were selected and identified through gray correlation coefficient. The results show that:1the carrying capacity of resource and environment had declined slightly in 2000-2005 years, but since the 11th Five-Year Plan, the whole carrying was steady promoting;2the developing capacity of economy subsystem had obviously improved every year, and nearly reached the optimal capacity of 0.99524 in 2013, while the carrying capacity of resource subsystem showed slight and V-shape fluctuation; the carrying capacity of environment subsystem had been rising except 2009, and reached the maximum of 0.98106 in 2013. The developing capacity trends of economy subsystem and the carrying capacity of environment subsystem were basically the same as the carrying capacity trend of whole resources and environment;3by making use of gray correlation coefficient, four indexes, e.g. the comprehensive utilization of industrial solid wastes, were proven to be the key factors in affecting resources and environment carrying capacity in Anhui Province.

Key words：resources and environment carrying capacity entropy-weight TOPSIS model gray correlation coefficient carrying capacity evaluation