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Title: Evaluation of vulnerability of natural environment system in Beijing-Tianjin-Hebei metropolitan circle

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摘要: 自然环境脆弱性是测度区域自然环境系统可持续发展的相对水平、趋势和可能性的一种量度,是区域自然环境系统在内外不利扰动下表现出来的固有属性,和敏感性正相关,和应对与恢复能力负相关。运用熵权法、集对分析法对京津冀都市圈10城市"十五"、"十一五"、"十二五"典型年份的自然环境脆弱性进行了评价与分析。从整体来看,自然环境脆弱性由低到高依次是京、冀、津;从各城市来看,脆弱性由低到高的情况是北京、承德优于其他城市,秦皇岛、张家口紧随其后,保定的变化最为突出,沧州、廊坊的形势不容乐观,天津、石家庄、唐山排名靠后。降低区域自然环境系统脆弱性需要从敏感性、应对与恢复能力同时着手;现阶段,区域经济政策对自然环境脆弱性影响较为明显,政策的制定要有利于京津冀全面协调可持续发展。虽然指标选取与评价模型建立存在不完善之处,但是上述结论值得警醒。

Abstract: Natural environment vulnerability is degree measure to judge the relative levels, trends and possibilities of the sustainable development of regional natural environment system. It is the inherent attribute of the regional natural environment system manifested under unfavorable internal and external disturbances, which is positively correlated with sensitivity, negatively correlated with the response-recovery ability. In the present study, entropy method and set pair analysis were used to evaluate and analyze the natural environment vulnerability of ten cities within Beijing-Tianjin-Hebei metropolitan circle in typical years of the 10th Five-Year Plan, the 11th Five-Year Plan and the 12th Five-Year Plan. On the whole, the natural environment vulnerability from low to high is in the following order: Beijing, Hebei, Tianjin. From the viewpoint of

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cities, Beijing and Chengde are superior to other cities, Qinhuangdao and Zhangjiakou followed, changes in Baoding are the most prominent, the status of Cangzhou and Langfang are not optimistic, Tianjin, Shijiazhuang and Tangshan fall behind others on the list. Reducing the vulnerability of regional natural environment system should take measures in both decreasing the sensitivity and increasing the response-recovery capability at the same time. At present stage, the impact of regional economic policy on the natural environment vulnerability is obvious. Policy making should be beneficial to the comprehensive, balanced and sustainable development of the Beijing-Tianjin-Hebei metropolitan circle. Although there is large development space for the index selection and evaluation model establishment in the future, great attention should be paid to the aforementioned conclusions.

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