

研究简报

基于投入产出技术的区域生态足迹调整分析——以2002年江苏为例

赖力^{1, 2}, 黄贤金¹, 刘伟良², 赵登辉^{1, 2}

1. 南京大学城市与资源学系, 南京210093

2. 江苏省信息中心, 南京210013

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摘要 目前国际学界有两类生态足迹模型, 即以Wackernagel为代表的经典模型和Bicknell为代表的投入产出模型。研究以2002年江苏经济为例, 依照Bicknell的投入产出模型思路, 采取Feng的改良计算方法, 对江苏经济的需求、进口、出口以及积累各项的生态性土地占用及化石能源地占用做出一一估算。综合两种模型的优缺点, 调整了足迹结果, 转换成以全球标杆衡量的虚拟土地, 以评估江苏这样的开放型经济区域的可持续发展能力。

结果显示: (1) 江苏人均地区生态足迹实际高达2.33hm², 真实生态赤字率高达58.8%, 可持续能力堪忧;

(2) 江苏通过国内外贸易实现了0.009hm²的生产性土地顺差和0.068hm²的化石能源地逆差, 贸易方式总体属于生态逆差型。最后, 引入足迹影响力与足迹感应力的概念, 研究生态足迹的产业波及效果, 结果显示江苏二产部门的足迹感应力系数最强, 其未来发展也将面临较大的生态瓶颈

关键词 [生态足迹](#); [投入产出](#); [足迹影响力系数](#); [足迹感应力系数](#); [江苏](#)

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Adjustment for regional ecological footprint based on input-output technique: a case study of Jiangsu Province in 2002

LAI Li^{1, 2}, HUANG Xian-Jin¹, LIU Wei-Liang², ZHAO Deng-Hui^{1, 2}

1. Dept. of Urban & resources Sciences, Nanjing University, Nanjing, 210093, China;

2. Jiangsu Information Center, Nanjing 210013, China

Abstract

Ecological footprint, as a measure of sustainability evaluation, represents the biologically productive areas necessary to sustain current levels of resource consumption for a specified population. At present, there have been two alternative models to estimate ecological footprint. One is based on the standard methodology proposed by Rees and Wackernagel and its later refinement, which is sufficient enough in a closed economy. The other one, suggested by Bicknell et al., is based on input-output analysis which signifies the land appropriation used as intermediate input from those as a final consumption. Furthermore, the latter method can take the final demand, imports and exports into account synthetically in an open economy. However, Feng pointed out some errors in the concept and calculation in Bicknell's method and proposed to use the composition of land multipliers instead of land multipliers in calculation.

Taking Jiangsu Province of 2002 as a case, the authors followed the viewpoint of the input-output analysis by Bicknell, and adopted the revised methodology of Feng to estimate the regional ecological footprint per capita. Further, the authors calculated the productive land and fossil energy land and appropriation respectively. In this paper, the calculation method was based on the monetary input-output table, in response to avoiding the shortcoming of previous EF model claimed by Bicknell, and had successfully given out the implicit land appropriation embodied in final demand, accumulation, inter-regional trade and international trade respectively.

Furthermore, the authors compared the difference between the results of land appropriation in tw

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o models. It can be found that the productive land in the Bicknell's model was not as hypothetical land area as those in Wackernagel's. Rather, it is genuine land area without the balance of global benchmark. Thereby, the author advanced a method amending the genuine productive land into hypothetical land, and bridged the two self-existent models. The amended results revealed: (1) the regional EF per capita of Jiangsu is 2.3 hm², and the ecological deficit proportion is 58.8%; (2) There had been per-capita EF deficits 0.059 hm² lead to trade, including 0.009 hm² productive land surplus and 0.068 hm² energy land deficits.

At length, the authors introduced the concept of land infection coefficient and land inductivity coefficient to analyze the eco-economy relationship by sectors. As a result, the highest land appropriation inductivity coefficient was the 2nd sector, which implied the probable EF conditionality of 2nd sector of Jiangsu in the future.

Key words [ecological footprint](#) [input-output table](#) [land infection coefficient](#) [land inductivity coefficient](#) [Jiangsu Province](#)

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通讯作者 赖力 fireshake@163.com