

问题讨论

内陆河流域生态系统服务价值的动态估算方法与应用——以甘肃河西走廊石羊河流域为例

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摘要 Costanza等提出的单位面积生态系统服务价值没有考虑生态系统服务的空间异质性, 是与生态系统结构和功能有关的生态系统本身的价值, 这里称为静态价值。在实际应用于指导以社会、经济、生态综合效益最大为目标的流域水土资源优化配置决策时, 不能反映资源的稀缺程度和随社会经济发展水平变化的对生态价值的支付意愿, 使得静态生态价值的研究成果难以得到应用。提出了动态生态价值的概念, 某一特定区域生态系统服务的动态价值是指其相应的生态服务功能在特定人群一定支付意愿下的现实价值。在Costanza等人提出的单位面积生态价值的基础上, 考虑生态类型的覆盖度等特点结合专家咨询法提出了林地、草地单位面积生态价值的修正系数, 估算流域生态系统服务的静态生态价值; 建立了基于发展阶段系数和资源紧缺度的生态价值动态估算方法。以甘肃河西走廊石羊河流域为例, 估算出2000年流域生态系统服务的静态价值为4.17亿美元, 相当于当年流域GDP的0.3657倍, 且在空间上呈现从上游山区向下游荒漠区递减的规律; 动态生态价值为2.35亿美元, 下游和上游大, 中游较小。动态生态价值的研究为生态价值研究成果进一步在资源合理配置中的应用提供了途径。

关键词 [生态系统服务](#); [动态生态价值](#); [阶段发展系数](#); [资源紧缺度](#); [石羊河流域](#)

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A dynamic evaluation method and its application for the ecosystem service value of an inland river basin: A case study on the Shiyanghe River Basin in Hexi Corridor of Gansu Province

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Abstract The estimation method of the ecosystem service value per unit area proposed by Costanza et al. is a crude approximation without consideration of the spatial heterogeneity within the same biome. It is based on the values of the structure and functions of the ecosystem and hence named as static evaluation here. When it is used for optimal allocation of water and land resources in a basin to obtain maximal integrated social, economic and eco-environmental benefits, such method can't reflect the scarcity of ecological resources and the willingness-to-pay of individuals for ecosystem services, which will appear with the social and economic development and the depletion of ecological resources. Therefore this method is difficult to be applied.

Here the concept of a dynamic evaluation of the ecosystem service values is proposed. It is a currency value based on the current willingness-to-pay of individuals for ecosystem services. Referring to the method of Costanza et al., a modification coefficient for the ecosystem service value per unit area is proposed according to the cover degrees of biomes combined with expert consultation. Based on the developmental coefficient and scarcity of ecological resources, a dynamic evaluation method is proposed. The Shiyanghe River Basin in the Hexi Corridor of Gansu Province is sel

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ected as the study area. The annual static value of the ecosystem services in the Shiyanghe River Basin is estimated as 0.417 billion \$, equal to 0.3657 times of the local GDP in 2000, and showing a descending trend from the upper reaches to the lower reaches. The annual dynamic value is 0.235 billion \$, more in the lower and upper reaches than in the middle reaches. This study shows that the dynamic evaluation method is useful for the optimal allocation of the natural resources.

Key words ecosystem services dynamic value of the ecosystem services developmental coefficient scarcity of ecological resource Shiyanghe River Basin

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