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利用生态系统服务价值评估土地利用规划生态效应

Evaluation of ecological effect in land use planning using ecosystem service value method

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中文摘要:

基于土地利用多功能性,以生态服务价值系数为基础,构建不同土地利用类型生态服务价值修正系数。以地处三峡库区腹心地带的重庆市云阳县为例,从生态系统价值以及景观格局视角定量估算三峡库区生态屏障区土地利用规划生态效应。结果表明:至2020年云阳县三峡库区生态屏障区初步构建一个以“林地为骨架,耕地、园草地为补充”的生态系统服务格局;以土地生态功能建设为导向的土地利用规划能够快速提升生态屏障区生态系统服务价值,增强屏障区调节气候、保持土壤、维护生物多样性等方面能力,云阳县三峡库区生态屏障区生态系统服务总价值从2010年的15.53亿元提升到2020年的19.98亿元,年均变化率达到2.87%;云阳县三峡库区生态屏障区生态系统服务价值及其调节服务和支撑服务价值表现出显著地空间分异特征,其中磨刀溪流域生态系统服务价值提升幅度最大,澎溪河流域次之,长江沿岸生态服务系统价值保持稳定增长,而长滩河流域变化不大;磨刀溪流域和澎溪河流域是规划期内云阳县生态屏障区土地生态功能建设的重点区域。同时,通过评估不同土地利用类型结构及其产生的生态效应,进一步明确了云阳县生态屏障区各流域土地利用结构优化调整方向,提升了土地利用规划和生态保护实践工作科学决策水平。

英文摘要:

Abstract: Environmental protection could promote ecological environment into a virtuous circle. The following measures had being taken recently to improve ecological environment in Three Gorges Reservoir Area: Yangtze River shelterbelt was being built, small watershed soil erosion was being controlled, the farmland was being returned to forest and grassland, agro-ecological engineering was being carrying out. Besides the State Council has formally given an official to the Follow-up planning of the Three Gorges Reservoir Area on June 15th, 2011, which has required to enhance ecological environment construction and protection of Three Gorges Reservoir Area, and focused to solve three issues which are improving the social economical development of Three Gorges Reservoir Area, reducing the frequency that geological disasters happened, and protecting ecological environment. This paper took Yunyang county of Chongqing, where was located at the hinterland of the Three Reservoir Area, as a case study and constructed correction coefficients of ecosystem service value in view of multi-functionality in land use among different land-use types based on the basis of Costanza' theories and ecosystem service value coefficient set by Xie Gaodi. And then quantitative analysis was being used to evaluate ecological effect of ecological barrier zone in land use planning from the perspective of ecosystem service value landscape pattern. The results could be shown in the following aspects: 1) Ecosystem service pattern, forest is of primary importance while cultivated land, garden, grassland are supplementary, of Yunyang county' ecological barrier zone would be initially established in 2020. 2) Ecosystem service value in ecological barrier zone could be raised rapidly by land use planning guided by ecological functional construction, which also could strengthen the ability of ecological barrier zone to adjust the climate, conserve water and soil, and maintain biological diversity. The total ecosystem service value of ecological barrier zone in Yunyang county would be rising from 1.552 billions in 2010 to 1.998 billions in 2020, an average annual change rate would reach to 2.87%. 3) The ecosystem service value, especially its regulation service value and supporting service value, of ecological barrier zone in Yunyang county has shown an obvious spatial diversity. The ecosystem service value of Modao River Basin has been rising largest, and followed by Pengxi River Basin, and the ecosystem service value of Yangtze River has been maintained in a steadily increased, while little change has happened in Changtan River Basin. 4) According to the ecological effect analysis, practical guidance was designed to promote policy makers to evaluate and optimize land use pattern and spatial structure for land use planning. It should clarify the adjustment direction of land use structure through the evaluation of land-use structure adjustment among different land-use types and analysis of ecological effect produced by land structure adjustment, and then would achieve the goal of improving the scientific decision-making level in land use planning and ecological protection.

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