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Ecosystem services analyses and valuation of China terrestrial surface water system

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Water ecosystem services imply the natural environmental conditions and their effectiveness formed and sustained by water ecosystem and its ecological processes, on which, human life relies for existence. They not only supply human society with the basic resources and production, but also provide and maintain the fundamental life-support condition. Water ecosystem services was divided into four groups by their function and effectiveness: provisioning, regulating, cultural, and supporting services. Provisioning services consist of the products harvested from ecosystems, including fresh water supply for daily uses and other economic sections, hydro-power generation, navigation, aquatic products and genetic resources. Regulating services imply the benefits obtained from the regulation of ecosystem processes, including water regulation, river transportation, erosion control, water purification and waste treatment, air quality maintenance, and climate regulation. Cultural Services include the non-material benefits people obtained through spiritual enrichment, cognitive development, recreation, and aesthetic experiences, such as cultural diversity, educational values, inspiration, aesthetic values, cultural heritage values, recreation and ecotourism. Supporting services are foundation of the production of all other ecosystem services. Their impacts on people are either indirect or occur over a very long period, including soil formation and retention, production of oxygen through photosynthesis, primary production, nutrient cycling, water cycling, and provisioning of habitat. Chinese terrestrial surface water ecosystems are consisted of rivers, reservoirs, lakes and marshes. In this paper, the ecological services and their economic values were assessed and evaluated by terms of flooding control, soil and sand transporting, water resource storage, soil conservancy, environmental purification, providing wild life habitat, C fixation, biodiversity, and creation and tourism. The base year for assessment is 2000. As a result, the indirect values of water ecosystem services was estimated as 6038.78×10⁸ Yuan RMB, and was 1.6 times more than their direct value (product supply) including water supply for daily uses, industry and agriculture and other economic sections, hydro-power generation, navigation, and aquatic products. Water ecological services play an even more important role in the society than its products.

【Key Words】 : **surface water systems ecosystem services ecological economic value assessment**

【Fund】 : 国家水利部水利与国民经济协调发展研究资助项目 ; 国家自然科学基金重点基金资助项目 (3 0 2 3 0 0 9 0) ; 中国科学院知识创新工程资助项目 (KZCX2 - 4 0 5) ~ ~

【CateGory Index】 : X171


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