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WETLAND ECOSYSTEM SERVICES BASED ON EMERGY ANALYSIS OF LAKE NANSI IN SHANDONG, CHINA

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Abstract

Adopting the theories and methods of emergy analysis, the annual average emergy input-output of the Lake Nansi wetland ecosystem is calculated. Further, the emergy analysis chart is drawn to evaluate the energy flow and the economic value of the lake. The structure and functions of the Lake Nansi wetland ecosystem are analyzed as a whole. The results showed that the amount of the input solar emergy (including sunlight, wind and rainfall) of the Lake Nansi is 1.11×1021 10^{21} solar emergy joule/year (sej/a), and the output solar emergy is 1.73×1020sej/a. The primary productivity is 1.61×1020sej/a. Non-renewable resources is 1.03×1021 sej/a. At the same time, the ecological benefits of aquatic vascular plants and fish of the Lake Nansi are significant. The energy investment ratio of the lake is 0.0009. The net emergy yield ratio is 165.23 and environmental load ratio is 14.22. The high net emergy yield ratio and environmental load ratio show that Lake Nansi wetland ecosystem has a great contribution to local economy. The regional economic development is low and vastly depends on nature environment.

Key words: ecosystem services, emergy analysis, Lake Nansi, wetland

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