Development of a New Framework for Non-Monetary Accounting on Ecosystem Services Valuation

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ABSTRACT

To appropriately support green development practices, there is an urgent need to improve Ecosystem Services Valuation (ESV) accounting approaches. This paper establishes a non-monetary accounting framework for ESV, which classifies the ES into direct services (directly related to the stock and flow), indirect services (through the functioning of ecosystem processes that produce the direct services) and existence services (cultural services and global benefit). New framework tries to (1) construct system emergy flow diagram and merging calculation method to avoid double counting; (2) propose new methods for biodiversity and climate regulation; and (3) bridge the non-monetary and economic values. Taking the forest ecosystem in Jing-Jin-Ji urban agglomeration as a case, this study made detailed calculations of 9 ecosystem services and compared the Em¥ with economic values based on Emergy Money Ratio. The results show that emergy can be used to record environmental debt and establish a balance sheet to state the economic conditions and the environmental contribution to economic development. However, emergy is not an alternative method to the economic assessment, but a complementary and systemic approach to highlight the donor-side value of ES. The new framework is needed to realize the return of wealth including all “stakeholders” of nature.

Citation
