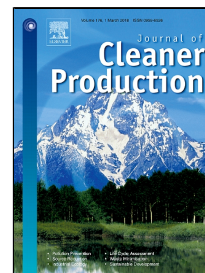


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A Top-down Framework for Cross-regional Payments for Ecosystem Services

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Abstract: Payments for Ecosystem Services (PES) has been assumed as an innovative approach to integrate ecological conservation and economic development, but are challenged in cross-regional issues. There are difficulties in identifying service sellers and buyers, disagreement of various payment criteria, and high transaction cost due to administrative obstacles. To address these problems, a top-down government-financed framework has been proposed by translating lateral payment relationship into vertical relationship and balancing regional supply and demand of ecosystem services (ES). This framework was demonstrated on provincial (31 provinces of Mainland China) and city (Beijing with 16 districts) levels in China based on 2010 data, to illustrate its robustness in coping with complex payment relationship associated with multi-level administrative actors. The results show this framework presents good feasibility in dealing with cross-regional payment issues. In provincial level, Shandong would have to pay the highest net payment, RMB 31.30×10^9 while Yunnan would receive the highest net income of RMB 38.16×10^9 ; Beijing should pay RMB 1.24×10^9 , which should to be balanced among different districts. Chaoyang district of Beijing would bear the highest net payment of RMB 2.35×10^9 while Yanqing district would receive the highest net income of RMB 0.13×10^9 . The proposed framework has the advantage of, (1) transforming the lateral payment relationship into vertical relationship; (2) providing an effective policy instrument for decision-makers to regulate actors' incentives; (3) presenting flexibility of scale matching.

Keywords: Payments for ecosystem services (PES); Cross-region; Supply and demand; Pigouvian type

1. Introduction

Natural environment delivers the services that are critical in supporting human being, yet

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