

Unlocking the Value of Soil and Water Conservation Ecological Products: Insights from the Qingshui River Basin (Yellow River)

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Abstract

The value realization of soil and water conservation ecological products constitutes an important pathway for reconciling ecological protection with economic development in the Yellow River Basin. This study develops a four-dimensional analytical framework of “Environment–Institution–Technology–Market” (EITM). This paper takes the Qingshui River Basin in Ningxia—a typical tributary in the upper reaches of the Yellow River—as its primary research subject. Drawing on the “first transaction” of soil and water conservation carbon sinks in the Yellow River Basin (conducted in the Licha Small Watershed, Pengyang County) and Ningxia's first batch of large-scale contracted transactions of these products in 2025, we systematically analyze the evolutionary logic, practical constraints, and optimization pathways for their value realization. The findings show that the value realization of soil and water conservation ecological products in the Yellow River Basin is shifting from “single-point pilot projects” to “systematic integration”; however, no stable coordination mechanism has yet been established among environmental constraints, property rights governance, accounting accuracy, and market risks. Soil and water conservation ecological products in the Qingshui River Basin feature three attributes: ecological primacy, regional specificity, and significant externalities. Their value realization faces four major constraints: a strained ecological carrying capacity and narrowing room for incremental growth, poorly defined property rights and fragmented compensation mechanisms, insufficient accounting accuracy and lagging monitoring systems, and an imbalanced product structure coupled with a lack of green financial instruments. Accordingly, this paper proposes a systematic optimization pathway comprising four elements: environmental zoning and control, clarification and optimized allocation of property rights, standardized accounting and monitoring, and financial-market synergy. This aims to provide a theoretical reference and practical support for the value transformation of soil and water conservation ecological products in the Yellow River Basin and similar arid and semi-arid regions.

Keywords

Yellow River, Soil and Water Conservation Ecological Products, Value Realization, EITM Framework, Qingshui River