

## **A conceptual framework and preliminary evidence on evaluating net effects of watershed service payments on coupled natural-human systems in Mexico**

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**Abstract.** As global concern over water scarcity and declining water quality grows, payment for watershed services (PWS) programs, whereby land users receive payments in exchange for adopting practices favorable to water resources, are becoming increasingly popular. PWS programs are typically designed with the primary goal of providing clean and plentiful water by eliciting certain desirable decisions and actions by the social systems through incentives provided by the economic systems. Thus, PWS policies inherently operate within coupled natural-human systems (CNH), often producing complex feedbacks, interactions, and tradeoffs that can potentially lead to unpredictable, unintended, and often surprising consequences. Nevertheless, our understanding of PWS-CNH dynamics is extremely poor, limited primarily to anecdotal evidence and rarely including actual assessments of watershed services and larger issues of watershed sustainability. Mexico has over a decade of experience implementing its PWS program, and provides an ideal experimental context for understanding the complex dynamics emerging between PWS policies and the CNH system they aim to influence. This presentation will present a conceptual framework for assessing PWS-CNH dynamics and preliminary data from research by a team of interdisciplinary scientists to elucidate the complex linkages between Mexico's PWS program, watershed services, and the dynamics of CNH that determine watershed sustainability.