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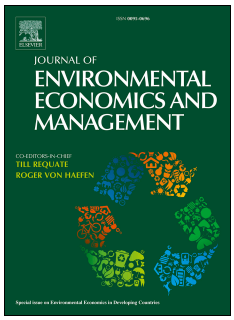

Rethinking the commons problem: Technical change, knowledge spillovers, and social learning

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Rethinking the Commons Problem: Technical Change, Knowledge Spillovers, and Social Learning

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Key Words: common resources, technological change, knowledge spillovers, social learning, commons externality, endogenous growth, fundamental equation of renewable resources

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Abstract:
The commons problem is even more severe than standard economic analysis suggests due to accumulated and new technology accompanied by spillovers of nonrival knowledge, creating a second market failure. The resulting endogenous dynamic increasing returns to scale external to producers that create endogenous growth of production lead to ongoing and accelerating rates of natural capital depletion. Optimum and open-access steady-state equilibriums indicated by canonical models may not exist, and corresponding resource stocks vary considerably from conventional wisdom. Market-based solutions alone for the commons problem are insufficient to achieve optimal economic welfare, and require a complementary technology policy for the second market failure and dynamic increasing returns to scale arising from nonrival ideas and knowledge spillovers and social learning. An empirical example illustrates the impact of technological change and accompanying knowledge spillovers and social learning.