

## **Ecosystem Services and Agricultural Land Use Practices: A Case Study of the Chittagong Hill Tracts of Bangladesh**

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### **Abstract**

Accelerated land degradation, stemming from inappropriate agricultural practices, and associated environmental and social effects, has underlined the importance of measurement of environmental costs and benefits associated with agricultural practices in order to improve decision making in public policy in regard to land use and agriculture. Using non-market valuation techniques, this paper estimated the value of environmental services associated with four agricultural land-use systems practiced in Chittagong Hill Tracts of Bangladesh, and compared their relative profitability from private and social perspectives. The financial analysis revealed annual cash crops as the most profitable land use, and agroforestry as the least, with horticulture and farm forestry providing benefits intermediate between these two systems. The relatively higher returns from annual cash cropping was accrued at the expense of higher environmental costs, such as soil erosion, carbon sequestration and biodiversity loss. When the environmental costs are taken in account, annual cash crops appeared to be the most costly land use system, with agroforestry and farm forestry becoming economically more profitable. The findings demonstrate that there is a trade-off and synergies between environmental friendly and damaging land use practices. Financial incentive needs to be given towards environmental friendly agriculture practices to transform trade-off into synergies. Different mechanisms of financial incentives including payments for environmental services are examined and policy recommendations are made.

**Key words:** agricultural land use, market failure, cost-benefit analysis, ecosystem services, Chittagong Hill Tracts, Bangladesh

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