Sustainable management of contested area using ecosystem services approach

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Ecosystem services could be a part of a national strategy for sustainable livelihoods improvement and environmental protection; however, spatial analysis of the biophysical, economic and environmental impacts of ecosystem services is limited. This paper develops a spatially integrated conceptual framework on ecosystem service modeling approach taking the case of the President Churia-Tarai-Madhesh Conservation (PCTMC) program of Nepal that has faced several management controversies while serving the downstream communities.

The area of PCTMC extends from east to west and covers 12.76 percent of Nepal’s total area. Till the 1970s, it provided ecosystem services to downstream communities without any management controversies. Overtime, as forest resources were excessively extracted to meet constructional materials in the Indian markets, the ecosystem services from PCTMC deteriorated. Such action not only has periled the future of the downstream Indo-Gangetic belt of Nepal and India, but also it has endangered the livelihood of lowland dwellers in Bangladesh from sea surface rise due to excessive ocean sedimentation, which at present contributes 10 percent at global scale. By redefining watersheds as service providing units (SPU), different from the long-adapted five major river-based basins, this study uses spatial models to analyze the possible ecosystem services from biodiversity, global climate change mitigation, timber production, water recharge and soil water conservation that PCTMC could offer to downstream communities. It also explains how properly regulating forest-based ecosystem services would become instrumental in managing contested areas like PCTMC. The policy implications of this research finding are discussed in the context of the working of PCTMC program which has faced several management controversies.

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