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Valuation of Ecosystem Services for Driving Community-assisted Forest Landscape Restoration in Endane Biodiversity Corridor, Sri Lanka

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Abstract

The ecosystem services: direct or indirect benefits of ecosystems to human well-being, need to be recognized in conservation and restoration decision-making. In the human-dominated southwest Sri Lanka, we have established a forest landscape restoration project (Endane Biodiversity Corridor) linking a peripheral forest reserve to Sinharaja Rainforest Complex. The ecosystem services provided by tea monocultures, abandoned tea lands, and lowland home gardens were estimated employing a range of methods for estimating respective ecosystem service values with data collected from household surveys, key stakeholder interviews, and survey of tree flora in 20 m × 20 m plots for estimating aboveground carbon stock. The benefit transfer approach was used to value the supporting and regulating services. The total value of ecosystem services provided by this forest corridor landscape was 6,465 USD ha/yr in 2021. This amount included: provisioning services of 1,950 USD ha/yr, supporting services of 645 USD ha/yr, regulating services of 3,807 USD ha/yr, and cultural services of 38.8 USD ha/yr. Overall, our forest corridor landscape of 59.3 ha provided 382,362 of USD of ecosystem services a year. In comparison to tea monoculture, species-rich home gardens generate a high amount of provisioning services. Our study site is prone to ecosystem degradation due to human activities like forest land encroachment, illegal gem mining, and over-harvesting of forest products. However, we recognize the opportunity of enhancing the biodiversity of monoculture tea gardens and home gardens of the corridor following the principles of agroforestry and enrichment planting. These results i.e., the ecosystem service values among different land uses, are imperative for financing and encouraging community participation for forest restoration activities.

Keywords: Forest resources assessment, Forest restoration, Common-based restoration