

Valuing Water Provisioning Service of Broadleaf and Chir Pine Forests in the Himalayan Region

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Abstract

Inhabitants of the upper Himalayan regions entertain a belief that the Chir Pine trees are ingressing the Broadleaf forest areas and that these areas are gradually turning into water stressed regions as Chir Pines adversely influence water recharge and water availability. This paper examines whether and to what extent the Chir Pine forest areas are water stressed compared to Broadleaf forest areas by studying the household coping cost in relation to water stress. We use the coping cost differences thereafter to value the relative water provisioning services of forest types. We conduct multiple focus group discussions, a questionnaire survey and statistical analyses to derive the results. Results show all households, except the ones living near Deodar forest, to face water stress in summer but the Chir Pine areas are the most water-stressed. Both comparison of mean and multivariate regressions of water collection time and other coping costs show that the villagers surrounded by Deodar, Deodar mix pine, Broadleaf mix bush or Broadleaf mix pine forests spend much less time for water collection and spend less on water treatment and storage compared to the villagers surrounded by Chir Pine forest irrespective of elevation, aspect or model used. These differences in water collection time amount to a wage income loss between USD 31 and USD 318 in India, and between USD 23 and USD 238 in Nepal per year per household, in Chir Pine areas compared to other forest areas.