

Understanding the Relationships in Nature-Human Systems to Improve Social-Ecological Resilience in the Hindu-Kush Himalayas

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ABSTRACT

Biodiversity provides vital ecosystem services that contribute to human societies and economies, as well as resilience of ecosystems to adjust to disturbances, such as fires, floods, climate change, etc. However, biodiversity is threatened by anthropogenic pressure and habitat loss. Life in the Hindu Kush Himalayas (HKH) is based on a fundamental principle of interdependence and mutual respect between Nature and humans, one of give and take. Deep understanding of the extent and magnitude of this dependence plays a critical role in strengthening of ecological and social resiliencies, which are critical for adaptation to changing natural resources, especially in the wake of global climate change. Based on the HKH region of Bhutan, we explore fundamentals of Nature and human systems and identify opportunities for sustaining interdependence to enhance ecological and social resilience. Our findings indicate that humans and Nature have a healthy interdependence in Bhutan. Rural communities are heavily dependent on Nature for agriculture, livestock, non-timber forest products, and religious celebrations. It is also evident that this close interface sometimes sparked heavy losses to farmers especially from livestock predation and crop damage, motivating retaliatory actions. In addition, stresses from climate change, forest fire, hydropower and other infrastructure projects are exacerbating environmental degradation as well as threatening human livelihoods. Despite these challenges, communities in Bhutan welcome biodiversity conservation because they are aware that their future depends on the health of their environment. This is manifested in Bhutan maintaining not only pristine, but fully functional ecosystems that are increasingly becoming rare in the world. We propose ecofriendly interventions to sustain this interdependence between Nature and humans in a highly vulnerable landscape.

Key words: Biodiversity, Hindu-Kush Himalayas, Bhutan, interdependence, resilience, climate change