

An Investigation of Community Vulnerability and Response to Glacial Retreat in the Lunana Valley, Royal Kingdom of Bhutan

Sarah J. Halvorson

Associate Professor,
Department of Geography, The University of Montana,
Missoula, Montana, USA, 59812

Abstract:

High mountain glaciers located in the Eastern Himalaya serve as the main water reservoirs for communities in the Royal Kingdom of Bhutan and for millions of people living downstream. In the warming of the current inter-glacial period, the glaciers of the Eastern Himalaya are experiencing pronounced wastage. Regardless of the anthropogenic contributions to the warming, the effects of warming on glaciers are observable and measurable. At present, Bhutan is experiencing several threats from glacial ablation including the risk of glacial outburst floods (GLOFs) and reduced downstream water reliability. The risks and hazards associated with glacial recession have local and international implications for water security, rural livelihoods, energy development, ecosystem services, and human well-being. The government of Bhutan and several international organizations have undertaken studies to measure the trend toward deglaciation; however, little work has been done to assess the impacts of and responses to deglaciation at the community scale. The project proposed herein aims to undertake community vulnerability assessments in Lunana Valley in order to examine the relationship between glacial retreat, water availability, livelihood security, and household well-being. The overarching goal of the study is to identify sustainable strategies for coping with glacier-related hazards and for reducing risk and vulnerability.