



## Local Communities and Glacial Lake Outburst Flood Mitigation: Lessons from Peru

Mark Carey

Department of History, Washington and Lee University, Lexington, VA 24450, USA

Discourse in recent years among scientists and non-scientists increasingly promotes the involvement of local people in hazard mitigation, including inhabitants of floodplains in valleys below moraine-dammed glacial lakes. Despite advances in understanding human vulnerability to glacial lake outburst floods, there has been much less research on how these vulnerable populations are involved (or ignored) in the actual outburst flood mitigation process. Which groups should be involved? Are they in fact participating? Is that involvement successful?

Peru's Cordillera Blanca mountain range provides an ideal site to help answer these questions because its moraine-dammed glacial lakes have produced more than a dozen outburst floods since ~1860. After floods in 1941, 1945, and 1950 killed approximately 6,000, the national government created a state agency, which still exists today, to monitor glacial lakes and prevent future outburst floods. Using this region as a case study to answer the above questions, this paper has three components. First, it provides historical examples of local people's participation in disaster mitigation, but shows that the outcome of such local involvement frequently turned out differently than scientists, engineers, and planners anticipated. Second, it shows the challenges and difficulties of involving local groups. Recent efforts in workshops, aid projects, and government programs show only limited success in community participation in disaster mitigation agendas. Third, the paper suggests that in many cases local indigenous people, as icons of the Andean region but often not the most vulnerable group, are disproportionately victimized and tacitly invited into disaster mitigation discussions. Poor urban residents inhabiting floodplains are often neglected, even though they are the most vulnerable to outburst floods.

As other world regions such as the Himalayas increasingly contend with potential glacial lake outburst floods, these lessons from the Peruvian Andes may help make mitigation efforts elsewhere more successful and less contentious.