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Vulnerability assessment in a participatory approach to design and implement community based adaptation to drought in the Peruvian Andes

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The livelihoods of people in the Andes are expected to be affected by climate change due to their dependence on glacier meltwater during the growing season. The observed decrease in glacier volume over the last few decades is likely to accelerate during the current century, which will affect water availability in the region.
This paper presents the implementation of an approach for the participatory development of community-based adaptation measures to cope with the projected impacts of climate change, which was implemented jointly by the local community and by a team consisting of an NGO, Peruvian ministry of environment, research organisations and a private sector organisation.
It bases participatory design on physical measurements, modelling and a vulnerability analysis. Vulnerability to drought is made operational for households in a catchment of the Ocoña river basin in Peru. On the basis of a household survey we explore how a vulnerability index (impacts divided by the households' perceived adaptive capacity) can be used to assess the distribution of vulnerability over households in a sub catchment. The socio-economic factors water entitlement, area of irrigated land, income and education are all significantly correlate with this vulnerability to drought. The index proved to be appropriate for communicating about vulnerability to climate change and its determining factors with different stakeholders.
The water system research showed that the main source of spring water is local rainwater, and that water use efficiency in farming is low. The adaptation measures that were jointly selected by the communities and the project team aimed to increase water availability close to farmland, and increase water use efficiency, and these will help to reduce the communities vulnerability to drought.