



Pedro Cárdenas Gamarra points to a recent landslide that has taken away seven homes and valuable cropland from the community of Lucmabamba.

— Photo Marius Keller, IISD

## CRiSTAL Supports Climate-Resilient Development in the Peruvian Andes

By Marius Keller (IISD) and Tatiana Farfán de la Vega (CARE Peru)

Tucked away in a deep valley, not far from the world-famous Inca site of Machu Picchu, the municipality of Santa Teresa has long become used to extreme weather events and their consequences. In 1998 a gigantic mudslide caused by torrential rainfall all but erased the main town. Climate change is adding to the stress by melting away the glaciers that help to regulate river run-off and by changing growing conditions for crops. But it has also brought increased attention to the need for climate-resilient local development in this far-flung region that survives on subsistence agriculture, selling coffee and catering to rare adventure tourists.

Over the past years, CARE Peru has been a strategic partner in implementing the Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes Project (PRAA) in Santa Teresa and elsewhere in the Peruvian Andes. “We applied the Community-based Risk Screening Tool – Adaptation and Livelihoods [CRiSTAL], along with CARE’s Climate Vulnerability and Capacity Analysis [CVCA] manual, in 14 communities to identify adaptation measures that are tailored to the risks perceived by the local population,” says Tatiana Farfán de la Vega, who leads the PRAA project in the region.

**Pedro Cárdenas Camarra can now produce a variety of vegetables because he is a beneficiary of a model farm with drip irrigation and shade nets. Positive results have already convinced other farmers to invest in similar risk reduction measures with their own means.**

In each of the 14 communities, a number of stakeholder workshops were held to identify key issues with risk mapping and other participatory methods. The situation varies from place to place, but most locals identified landslides due to excessive rains, unpredictable rainfall and dry periods, changing temperatures, water scarcity and the increasing occurrence of plant diseases as important challenges that can put local livelihoods at risk—for example, by reducing crop yields or by cutting off market access.

To counter these risks, a range of adaptation measures were proposed and prioritized in discussions with the communities and are now being implemented. Pedro Cárdenas Gamarra can now produce a variety of vegetables because he is a beneficiary of a model farm with drip irrigation and shade nets. “Unstable rain and sunshine affects plants much less in

here,” he explains. “It’s also much easier to control plant diseases.” Positive results have already convinced other farmers to invest in similar risk reduction measures with their own means.



Beekeeping helps Martha Villena and Justa Ortiz de Orue from the community of Sullucuyoc to generate better incomes and increase adaptive capacity. — Photo Marius Keller, IISD

Other activities promote diversification of livelihoods. The proximity to Machu Picchu is an opportunity for communities to cater to tourists who hike along the ancient Inca trail that passes through the area. CARE Peru has supported local entrepreneurs who invest in small hotels, restaurants and camping sites so they can generate additional income sources that are not exposed in the same way as agriculture to climatic hazards.

Community consultations and the subsequent CRiSTAL analysis have also shown that women are often more vulnerable to climate variability and change than men, primarily because they lack access to and control over important resources such as income, technical skills and information. As a result, CARE Peru has decided to strengthen the capacity of women in generating incomes, defending their interest and getting access to credit. Women from the beekeeping association *Sumac T'ika* in the community of Sullucuyoc have been able to expand their bee-keeping enterprise and generate higher incomes from selling honey and derivative products. “We were also able to open up a common bank account, to which we all contribute every month,” says Martha Villena Contreras, the treasurer of the association. “We can use these savings in an emergency, for health, education or when there is a natural disaster.”

The continued engagement of the municipal government in the process of applying CRiSTAL and CVCA has led to the inclusion of climate change adaptation into local development plans. Several measures, including model farms, fuel-efficient stoves and reforestation programs are already being actively supported

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CARE Peru

and promoted by the local government. Furthermore, other municipalities in the vicinity have shown interest and are starting to integrate climate change adaptation into their own local development plans.

Tatiana Farfán de la Vega is convinced that the use of CRiSTAL has made a big difference to the outcomes of the PRAA project: “CRiSTAL has not just helped us to identify adaptation measures that really confront climatic risks as communities perceive them, but the participatory process has also allowed us to generate a space for discussion among a wide range of stakeholders. The proposed solutions are not only technically sound but are also in line with the local culture and tradition, which is essential for successful implementation.”

To learn more about **CRiSTAL** and associated training opportunities, please contact: Marius Keller ([mkeller@iisd.org](mailto:mkeller@iisd.org)) or Anne Hammill ([ahammill@iisd.org](mailto:ahammill@iisd.org)) [www.iisd.org/cristaltool](http://www.iisd.org/cristaltool)



Key climate risks to livelihood resources were identified through participatory methods such as this risk map. — Photo Marius Keller, IISD

