

Perú

Scaling-up Mountain Ecosystem-based Adaptation: building evidence, replicating success, and informing policy



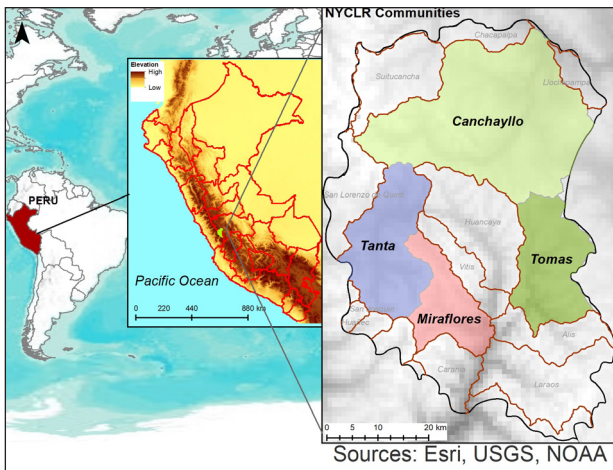
Background

The South American Andes mountain range extends from north to south along Perú. This chain of snow-capped mountains is the longest range in the world and the highest mountain range outside Asia. This mountain range and its diverse landscapes shapes Perú's geography, culture, history and people.

About 36% of Perú's nearly 33 million people live in the rural, mountain areas of the Andes, relying on the essential services that these mountain ecosystems provide. In addition, nearly 60% of the country population live on the desert coast and heavily depends on the water coming from the mountains, as do export agriculture and hydropower

production.

The warmest five-year period ever recorded on Earth is between 2015 and 2019, 1.1°C higher than before the Industrial Revolution. The impacts of this warming are now affecting more people and more severely in Perú. Glaciers are melting faster, increasing the threat of glacier lake outburst floods (GLOFs). Concurrently, declining glaciers mean that there are changes to the hydrological regimen, impacting water availability, particularly during dry seasons. In this context of glacier retreat, the health of mountain ecosystems is critical for water regulation and storage, especially in the Peruvian Andes where the rainy season is less than six months a year.



Scaling-up Mountain Ecosystem-based Adaptation in Perú

Local-level EbA measures (consolidation and replication)

Following up on the success of the flagship mountain EbA project from 2011-2016, the Scaling-up Mountain EbA project was implemented by Instituto de Montaña with the Nor Yauyos Cochis Landscape Reserve (NYCLR) and the communities of Miraflores, Canchayllo, Tanta and Tomas to consolidate EbA measures from the previous phase, as well as implement new EbA actions in Tomas.

The predominant ecosystems in the region are Puna grasslands and high Andean wetlands or peatlands (locally known as bofedales) and the main livelihood is agro-pastoral.

Consolidation of community-based EbA measures: sustainable management of water and native grasslands

In this region, climate change is causing changes in rainfall patterns, including the timing and intensity of rain, frosts, and drought. The lack of water during drought is exacerbated by underuse and abandonment of indigenous hydraulic and water management systems. This means that in some areas of communal grasslands, there is a dearth of water for livestock herds. This, in turn, results in livestock farmers not following the agreed pasture rotation system. Understanding that water security is critical for lives and livelihoods of communities in these sites, the focus of the Scaling-up Project at the local level for consolidation remained the sustainable management of water and native grasslands, using a three-pronged plan of action in Miraflores, Canchayllo, Tanta and Tomas.

1. Strengthening local capacities and knowledge

This component was implemented using an inter-cultural approach (a dialogue between traditional or local knowledge and scientific knowledge), by bringing communities and their pastures together with water specialists.

 - Participatory rural appraisals and climate risk assessments were conducted and focused on, inter alia, water, pastures, as well as agricultural and livestock productivity.
 - Capacity building of community members and park rangers on pasture fencing, water conservation and water distribution was carried out. The field team facilitated the development of a model for managing and maintaining pastures and water in the communities' common areas.
2. Establishing green-grey infrastructure
 - In Miraflores, using a combination of traditional knowledge and modern techniques of green-grey infrastructure, the flagship project restored an ancient water management system comprising six pre-Inca dams and a channel. Also, five hectares of wetlands around the dams were protected and a new livestock rotational area of 160 ha of native grasslands was developed with fences and five drinking fountains, because of the restored water system. During the scaling-up phase, the project repaired, expanded and improved green-grey infrastructure.



- In Miraflores, the fence surrounding six ancient water dams, grasslands and peatlands was maintained with more durable materials and a live fence with native species, for protection from damage by animal. The vegetation growing in the ponds filters water and improves its quality. In addition, a channel restored during the flagship programme was maintained. The implementation of the green-gray infrastructure in 165 ha of the community, with capacity building and strengthening of local organisations catalysed a better livestock management system in more than 6,054 ha of Puna grassland in the community. Because of better grassland management and water availability, ecosystems recovery has been initiated in this area.
- In Canchayllo, the Chacara dam was repaired and an ancient water channel, now unused, was restored, with the installation of pipes (because there is no labour for maintenance, as a consequence of out-migration and changes in social patterns).
- In Tanta, sheds were built to protect livestock from extreme weather events (such as frost and hail), that are becoming more intense and frequent because of climate change.

3. Strengthening community organisation and institutions

- With active community participation, a pasture and water management plan was developed to ensure better and integrated management of water, grasslands and livestock resources, throughout the common areas of the Miraflores and Canchayllo.
- Included in the plan was the establishment of a committee that would operate and maintain the restored water management infrastructure. This would ensure a sustained flow of water for livestock and for the irrigation of the grasslands.
- A total of 1,676 persons (46% women) have benefitted from all the above EbA actions. The breakdown by site is shown below.

Site	No. of households	No. of persons	% of women
Miraflores	60	240	53.7%
Canchayllo	175	700	50.5%
Tanta	75	300	47.3%
Tomas	109	436	49.2%

- In 8,600 ha (786 in Tanta, 560 in Canchayllo and 7,254 in Miraflores), there has been continued sustainable land management following EbA approaches that were begun in the flagship phase.
- The above EbA actions have ensured the

¹ says Señora Aurora Guerra of Miraflores.



ecosystem service of provision of year-round water and water security for communities. With improved pasture management, there is more milk yield in Miraflores, so the milk fetches more income. With the provision of genetically improved cattle and improved grasslands, cattle can now be sold at a much higher price. According to a villager, “EbA has significantly improved local livelihoods in Miraflores”¹.

- For replication, a second site in Tomas was selected with community involvement to manage native grasslands, water and breeding of South American camelids, vicuñas (*Vicuna vicugna*), the national animal of Perú. In this site, reduced snowfall and increased frosts reduce the availability of water and pastures in the area, in turn, reducing available grazing grounds for semi-captive vicuñas.
- The EbA action involved enlarging a vicuña fence for semi-captive animals from 31 to 241 hectares and repairing some sections.
- There was also capacity building for the Vicuña Committee, a six-member organisation that is part of the Tomas community, in charge of arranging all activities related to the vicuñas raised in semi-captivity. The project team linked the vicuña committee members to competent national institutions with competence the National

Forest and Wildlife Service (SERFOR); the National Agricultural Health Service of Perú (SENASA); and the National Agrarian University and facilitated training in the vicuña law; sustainable management of the vicuña, pastures and water; the procedures for organising the chaccu (a method of communal corralling of vicuñas by tightening fences to allow for sheering of their extremely valuable wool); capture and sheering (necessary because of the vicuña national status); diseases and sanitary treatment and the procedures and legalities for the sale of vicuña wool.

- Vicuña wool is considered the rarest and most expensive wool in the world, formerly known as the Gold of the Andes, worn only by Inca royalty. Currently a kilo of unprocessed wool can fetch up to 340 USD, and with little processing (descerdado) can be sold in 700 USD. Establishing this EbA action will not only contribute to the conservation of this species but will also ensure substantial improvement to livelihoods and to household income and the quality of lives of villagers engaging in this activity.

Local government engagement

As described above, the project has worked very closely with local level government officers.

- In particular, technical officers of the Nor Yauyos Cochas Landscape Reserve (NYCLR) have been engaged in key community activities. Through this engagement, and technical support provided by the field team, Nature-based Solutions (NbS) and EbA have been included in the updated NYCLR master plan.
- EbA approaches have been integrated in the Tanta District development plans, in collaboration with the NYCLR and the National Center for Strategic Planning.

Scaling-up: integration of EbA at the National Level

The scaling up of EbA in Perú has also been very effective at the national level, as shown below by the list of project inputs:

- Instituto de Montaña, the Ministerio del Ambiente del Peru (Ministry of Environment) (MINAM), the Servicio Nacional Forestal (Department of Forestry (SERFOR), the Servicio Nacional de Áreas Naturales Protegidas por el Estado (National Service of Natural Areas Protected by the State) (SERNANP) and GIZ jointly convened a workshop on ecosystem restoration, as part developing the NDCs.
- The Instituto de Montaña participated in the discussion on the climate change by-law, inserting inputs related to EbA, climate risk analysis and other experiences.
- The IdM team presented the project experience and provided inputs at a national workshop (of about 100 people), hosted by SERNANP (including chiefs of all national protected areas), that finalised an EbA handbook for Natural Protected Areas.

- The IdM team provided inputs – such as about climate risk assessments – during the participatory workshops for the NAP.

Advancing the spread of the use of EbA in Perú through the sharing of knowledge and experience

- The Instituto de Montaña hosts the Nature-based Solutions Initiative in Perú (NbSI Perú). NbSI is an interdisciplinary programme of research, education and policy advice based at the University of Oxford.
- The proposed 'Resilient Puna' project, where EbA experiences from NYCLR will be scaled-up in the Southern High Andes of Perú) by the Ministry of Agricultural Development and Irrigation (MIDAGRI), the Instituto de Montaña, GIZ and others.
- The NDC-Perú project (funded by IKI and GIZ) has invited the Instituto de Montaña for support to develop a Climate Risk Assessment Handbook for river basins. The project team has already developed a model for three watersheds in Perú and are now developing another for the Urubamba river basin in Cusco.

Conclusions

The EbA approach under this project in Perú has been a great success in terms of consolidating effective EbA actions, introducing new measures, ensuring active community participation and seeing that this participation translates into community ownership in two communities (Miraflores and Tomas). This means that the EbA measures in these areas will be self-sustaining. In the other two communities, actions are effective, but will need more time to become self-sustaining.

Through the project, EbA has been integrated not only at the community level, but knowledge has been shared into by-laws, plans and other projects also at regional and national levels.

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