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## Exploring local perceptions of water quality in the upper Santa River, Peru

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Water quality is an integral part of water security, but water quality itself is complex, due to its multifaceted nature. Measuring the physico-chemical indicators for water quality (e.g. pH, turbidity, heavy metal content) can provide an objective picture of water health, but it does not provide information on how it integrates and expresses the human perspective. Perceptual information and local ecological knowledge on water quality can help to understand the usability of water and support better conservation strategies. Therefore, the aims of the Nuestro Rio project were to investigate local perceptions of water quality in the upper Santa River basin, Peru. Walking interviews (n = 99) were conducted in the field between July-August 2021 to assess community members perceptions of their local rivers and streams. Through qualitative data analysis in two rural communities in the glaciated Santa River basin, we collected local perspectives on good and poor water quality, identified some of the key water concerns of the population, and explored the importance of emotions for determining water quality perceptions. Overall water quality perspectives differed within, and between, the two communities. Yet, it was possible to identify several characteristics and concerns that the population has been perceiving in recent years, as well as their causes, both natural and anthropogenic. Both communities felt the main cause of poor water quality was pollution due to the presence of minerals in the water, “invisible” aspects of water quality. We found that local perceptions on water quality also depend on water use as it has an important effect on local organisation. Emotions, on the other hand, reflect the population’s concern, fear, anger, and even frustration, when perceiving poor water quality, and happiness, trust, and even affection, when perceiving good water quality. More inclusive science that asks people what they observe, think and feel about the quality of their rivers and water can help provide a much deeper contextual understanding (e.g. useability of water, changes over time, traditional ecological knowledge) of local dynamic human-water systems, and improve science communication and policy implementation.

