Citizen-led water quality data collection: Experiences from the Santa River basin, Peru

Rangecroft, S

https://pearl.plymouth.ac.uk/handle/10026.1/22395

Citizen-led water quality data collection: Experiences from the Santa River basin, Peru

Sally Rangecroft[1,2], Rosa Maria Dextre[1,3], Isabel Richter[4], Claire Kelly[1], Cecilia Turin[5], Beatriz Fuentealba[6], Claudia V. Grados Bueno[6], Mirtha Camacho Hernández[6], Sergio Morera[3], John Martin[1], Adam Guy[1], and Caroline Clason[1]

[1]School of Geography, Earth and Environmental Sciences, University of Plymouth, Plymouth, UK (sally.rangecroft@plymouth.ac.uk)

[2]School of Geography, College of Life and Environmental Sciences, University of Exeter, Exeter, UK

[3]Instituto Geofísico del Perú (IGP), Lima, Peru

[4]Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway

[5]Instituto de Montaña, Lima, Peru

[6]Instituto Nacional de Investigación en Glaciares y Ecosistemas de Montaña (INAIGEM), Huaraz, Peru

Water quality is a key consideration for both socio-economic and environmental sustainability (UN Sustainable Development Goal 6: Clean Water and Sanitation). However due to both natural and anthropogenic pressures, water quality is known to be threatened in many regions around the world. In this GCRF funded project, Nuestro Rio ("Our River"), we focus on water quality across the Santa River basin in Peru. To gain insights into water quality perspectives in upstream rural regions as well as downstream, urban regions in the Santa Basin, we designed and launched a citizen science app to assess community perceptions and collect images of water quality (April - August 2021). Here we will reflect on the lessons learnt from our interdisciplinary, citizen-led data collection within rural Peruvian communities, with results aimed at improving our understanding and science communication practice within the region.

One key insight we gained throughout the project is that direct interactions with local participants during fieldwork offers invaluable benefits that largely outweigh the monetary and temporal costs and, at the same time, addresses the research fatigue in the region through quality instead of quantity. The Nuestro Rio app and dataset is the result of a year-long interdisciplinary and international collaboration. Whilst the data collection through the app resulted in 350 data entries, the majority of these entries were associated with fieldwork and direct engagement with communities. Uptake of the app by participants who did not directly engage with researchers in the field was poor, demonstrating the importance of relationship building and direct interaction that can help to bridge barriers such as insufficient ability to handle technology or a lack of trust. Furthermore, as a topic for data collection, we found water quality to be a complex concept to gather perceptions on. The term water quality was interpreted differently by various groups of respondents, and often needed clarification during the field-based data collection, especially in rural areas. This issue also confirms the importance of fieldwork to capture this diversity and provide direct communication with participants for better understanding. Our results also

indicated a community desire for engagement and openness to the co-design of solutions. The lessons learned from this project offer important considerations for the design of future citizen engagement for data collection and dissemination around environmental issues such as water quality in this region.