

# WCRP Open Science Conference (OSC) 2023

## LEARNING LAB: Democratizing climate science: making it meaningful at local scales

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## Authorship and publisher's notice

This report was authored by the WCRP My Climate Risk Lighthouse Activity

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## Introduction

In the context of the **World Climate Research Programme (WCRP) Open Science Conference (OSC)** which took place in **Kigali, Rwanda in October 2023**, a **Learning Lab** called: **“Democratizing climate science: making it meaningful at local scales”** was held. A total of approximately 50 people participated in the event, including early career and senior academics from different Earth Science disciplines as well as representatives from governmental institutions.

This Learning Lab was organized by **WCRP My Climate Risk (MCR) Lighthouse Activity**, which is dedicated to comprehending and making meaningful climate science at the local (community-based) scales. MCR comprises an international network of regional communities of practice (hubs) that prioritize the formulation of alternatives to current climate science and institutional frameworks. These efforts aim to provide insights and support locally driven climate solutions.

The organization of this activity involved 3 months of regular one- to two-hour virtual meetings where the MCR Scientific Steering Group, representatives of several of the MCR regional hubs and WCRP Secretariat staff met to discuss the focus of the activity, what outcomes were desired and how to implement it.

**This Learning Lab aimed for the participants to share practices, lessons learned and experiences based on their personal experiences in using the bottom-up approach to climate risk at local and regional scales.** We therefore proposed to jointly explore umbrella questions and derivative questions of each one, around the following topics:

- Long-term partnerships
- Education
- Local knowledge
- Local scales

This 1 hour Learning Lab started with 10 minutes of introduction about MCR and the presentation of the activity. After that, the Learning Lab took the following steps:

1. (10 min) For each umbrella question, one of the derived questions was presented to the participants. They had to answer them individually, so that each participant had a moment of reflection on their own.
2. (5 min) Each person chose an umbrella question that interested them the most



and moved to one discussion table of that topic. For each umbrella question there were two different discussion groups, moderated by a representative of the MCR regional hubs.

3. (15 min) At each table, the three derived questions of each topic were discussed and the answers stuck onto a poster.
4. (10 min) Within each group the umbrella question was discussed and the answers were stuck onto the poster.
5. (10 min) To close the activity, the moderators briefly shared the main ideas of what was discussed at their table.



## Summary of main outcomes

### How can long-term partnerships be established between researchers and communities, private and/or public sectors in the context of climate risk?

Group moderator: Lucía M Cappelletti (CONICET Hub, Argentina)  
Summary (based on the discussion notes of the group): Lucía M Cappelletti

This table centered around long-term partnership between researchers and communities in the context of climate risks. A few key questions were discussed: 1. What practices build trust between researchers, communities and stakeholders on climate risk adaptation? How can those practices be changed to incorporate indigenous knowledge? 2. How could researchers continue a collaboration with a community during periods without financing? 3. How can researchers become aware of their own privilege relative to the community they are working with? Is this important to make collaborations truly equitable? These were the questions the group discussed around the umbrella question: **How can long-term partnerships be established between researchers and communities, private and/or public sectors in the context of climate risk?**

The discussion around the first question, **"What practices build trust between researchers, communities, and stakeholders in climate risk adaptation? How can those practices be changed to incorporate indigenous knowledge?"** reveals a series of key strategies for establishing lasting trust relationships. Participants emphasized the importance of building emotional bonds through shared experiences and exchange with local communities and stakeholders taking into account their languages. Transparency in the agenda and objectives, as well as the incorporation of indigenous knowledge in surveys and interviews, was highlighted as crucial practices. Visiting communities, active engagement, and including locals in the decision-making process were also mentioned as essential elements to demonstrate genuine engagement. Continuity and sustained engagement was also identified as critical to building trust.

In response to the second question, **"How could researchers continue a collaboration with a community during periods without financing?"** several points were proposed. Financial intervention through the engagement of corporate bodies and communities was highlighted as an effective approach. Additionally, maintaining connection based on results and local collaborators at the community level (local-local collaborations) was suggested to ensure project continuity. Transparent and local communication, along with shared ownership of the project, emerged as key elements to ensure sustainability during financially challenging periods.

The third question, **"How can researchers become aware of their own privilege relative to the community they are working with? Is this important to make collaborations truly equitable?"** generated responses that highlight the need to understand the realities and

challenges of the community. Visiting communities and being aware of the privilege of scientists and collaborators from private sectors before initiating collaboration were highlighted as fundamental practices. Recognizing the diversity of those involved and understanding how privilege can affect power dynamics in collaboration was also emphasized. Awareness of more privileged individuals and their commitment to equity were pointed out as critical elements to achieve genuinely equitable collaborations.

Integrating these responses into the context of the overarching question, **"How can long-term partnerships be established between researchers and communities, private and/or public sectors in the context of climate risk?"** reveals a comprehensive approach to building sustainable and equitable collaborations:

**Trust** is key, built through transparency, respect, and community participation. Incorporating indigenous and local knowledge not only strengthens the scientific database but also ensures that proposed solutions are culturally appropriate and acceptable. The continuity of collaboration during periods without financing could be supported, while seeking to diversify funding sources, through links generated based on the outcomes of the partnerships, and the active involvement of the parties through local-local partnerships and fostering a sense of shared ownership.

**Awareness of the privilege** wielded by scientists and collaborators from the private sectors, as discussed, is a crucial element in establishing equitable relationships. This awareness prompts researchers to recognize and address power disparities, to be humble, ensuring inclusive decision-making and respecting local knowledge and experiences.

Building long-term partnerships in the context of climate risk requires a holistic approach that goes beyond simple scientific collaboration. It involves recognizing and valuing local knowledge, transparency in communication, diversification of funding sources, and, fundamentally, actively acknowledging the privileges on the part of scientists to ensure that collaborations are genuinely equitable and sustainable. This comprehensive approach not only strengthens responsiveness to climate change but also builds lasting relationships that transcend financial challenges and consolidate community resilience to climate risks.





**Figure 1. Word cloud of notes taken during group discussions on Topic 1.**

## **What role does education (from elementary to post-secondary and beyond) play in democratizing climate science and society through a whole-of-community approach to climate risk?**

Group 1 moderator: Daniel Ratilla (ADMU Hub, Philippines)

Group 2 moderator: Nadia Testani (CONICET Hub, Argentina)

Summary (based on the discussion notes of the group): Nadia Testani

When we discuss about democratizing science, **we first need to understand what and who is that science democratizing**. For example, who is taking the actions to map out the non-formal education landscape? Moreover, beyond democratizing climate science, **how do we democratize climate action?** During the group discussions, we worked with three specific topics: **1) Teaching climate as a cross-cutting concept across subjects in different educational levels, 2) Whole-of-community approach applied across different levels of education, 3)**

### **Non-formal education.**

Firstly, **teaching climate as a cross-cutting concept across subjects in different educational levels** demands a holistic approach. This includes being taught in different subjects or creating multidisciplinary teams with teachers of various specialities to give specific courses. It also requires concepts to be related to daily life and experiences at local scales. Although the way of teaching climate must be contextual, teaching such concepts before teaching climate change can be a good approach: climate may first be introduced as a fact through the question *who does it affect?* Students would naturally raise the *climate change question*. However, none of these educational strides can be done if structural support is not provided to overworked and underpaid teachers across different educational levels. Further discussion around training and capacity-building is needed.

Secondly, a **whole-of-community approach applied across different levels of education contributes to democratizing science**. In that sense, scientists/researchers should be humble to have a “two-way learning” with their “publics” that many times are also “climate experts” through their experience. Moreover, practical and participatory activities, like installing rain gauges to measure precipitation in schools, not only aid learning but also foster student engagement, who can extend their knowledge to their families.

Last but not least, **non-formal education has a huge foundational role in democratizing climate science and society**, not only helping climate information to reach different segments of society but also reintegrating society's demands to feed back into the conduct of climate science and research itself. However, non-formal education and training should come from reliable sources to gain legitimacy: there is a need to build trust if we want people to adapt to climate change. Particularly, social media as an educational or exposure tool has the potential to also measure/track conversation/trends around the world to identify key areas for more effective communication.

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## **How to connect local knowledge with non-local scientific knowledge to assess climate risk?**

Group 1 moderator: Chi Huyen Truong (HUC Hub, Nepal)

Group 2 moderator: Sue van Rensburg (SAEON Hub, South Africa)

Summary (based on the discussion notes of the group): Camila Prudente (CONICET Hub, Argentina)

During the group discussions, we worked with three questions: **1) How is local knowledge regarded in research communities and in society in general? 2) How can communities be more aware of climate risks and conceptualize them? 3) What strategies work for overcoming political resistance as a barrier?**

Addressing the first guiding question, the discussion revealed diverse perspectives. Local knowledge, sourced from individuals with scientific training, emerged as a valuable tool for translating climate information into accessible content for communities. However, it was noted that the scientific community tends to underestimate local knowledge due to differences in language, a challenge that could be addressed through increased cooperation. Conversely, society tends to overestimate local knowledge, particularly in the context of long-term traditional knowledge which, being based on experiences, can better explain past situations than present ones. Recognizing the qualitative nature of local knowledge underscored the call for scientists to engage and even move physically to the territories of study. Bridging the perception gap in the physical, social, and applied sciences, with a willingness to consider indigenous perspectives in specific situations, was deemed crucial. The discussion further highlighted the importance of formally integrating local knowledge, even without quantification, as it aids in interpreting scientific data and can increase confidence in models. The delicate balance needed when integrating local knowledge into formal research processes and the significance of belief systems were also emphasized. Examples were cited where respecting local knowledge enhanced research outcomes, emphasizing the need for researchers to be an integral part of the local community, appreciate and include local beliefs from the start of studies, and involve local researchers in the peer review process at the local level.

Exploring the second guiding question revealed a sparse discussion. The dilemma highlighted in the notes revolves around the intersection of numerous communities requiring climate risk assessments, where local knowledge is crucial for contextual understanding. However, a significant challenge arises due to limited resources available for integrating local knowledge and engaging with local communities.

The discussion around the third question emphasized the necessity of transparent communication with communities, requiring trust and education to convey the limitations of scientific predictions and acknowledging the value of community input. Establishing feedback loops and long-term partnerships, building trust, understanding scientific limitations, and recognizing stakeholders were identified as vital in addressing uncertainty. Additionally, the discussion highlighted the use of scenarios and climate narratives to



## **What are the current barriers to addressing climate risk at a local scale and considering uncertainties? How can these barriers be overcome?**

Group 1 moderator: Christopher Jack (UCT Hub, South Africa)

Group 2 moderator: Elena Saggioro (Walker Institute Hub, UK)

Summary (based on the discussion notes of the group): Anna Sörensson (CONICET Hub, Argentina)

During the group discussions, we worked with three questions: **1) What resources are necessary to help local communities address climate risk at local levels? 2) How can communities be more aware of climate risks and conceptualize them? 3) What strategies work for overcoming political resistance as a barrier?**

There is a broad spectrum of resources that would be necessary to **help local communities address climate risk**, ranging from purely financial in terms of insurance that covers climatic disasters to political arrangement to ensure involvement of the community in decision making. In terms of knowledge as a resource, climate-relevant observations in a salient form are suggested, with an overall framework to help interpret them. These could be long-term time series, maps or photos of impactful events. This knowledge could be integrated with traditional practices to produce user-driven knowledge, such as early warning systems and forecasts on different timescales suitable for the community. Here, scientists, practitioners and people from the local community all need to be dedicated, open to listening and to be partners. This is more likely to occur if the scientists and practitioners speak the local language. Finance is crucial for this to work in practice: infrastructure investment for data centralization, funding for workshops and meetings, as well as for hiring the practitioners involved. Organizational or political arrangements are also important, such as the national policy to fund these activities in the long term, so that information can be shared across national and regional organizations, and that the local community has space and time for periodic meetings to discuss problems and solutions.

The question on **how communities can be more aware of climate risks and conceptualize them** was rephrased by one of the discussion groups into three new questions: “How can scientists be more aware of real climate risks and conceptualize them for meaningful policy action?”, “How can communities engage with different governance levels to ensure meaningful policy action?” and “How can we (scientists) understand community understanding of risk & use this to inform policy & planning?”. As to the first question, it was considered that differentiated narratives are better suited to conceptualize risk than probabilities. As to the second question it was mentioned that communities have different indices and tools to measure climate risk and that climate and socioeconomic risks are linked at the local scale. The second group worked on the original question and thought that games and experiments could make communities be more aware of risk, as well as the use of examples from their day-to-day life.



