



Climate-resilient WASH and climate projections

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27 July 2021

Climate change is firmly set as a priority issue for the water, sanitation and hygiene (WASH) sector. As governments and NGOs develop strategies for tackling climate change impacts on WASH at local levels, they are seeking guidance to inform these strategies. In our own experience with applied research on climate change and WASH, we often encounter WASH professionals who see climate projections as the primary source for this guidance. Indeed, one thing that WASH resilience tools developed by [UNICEF/GWP](#) (the UN Children's Fund and the Global Water Partnership), [WHO](#) (the World Health Organization) and [USAID](#) (the US Agency for International Development) have in common is that they all start with an assessment of future climate hazards based on climate projections.

But do all strategies for [integrating climate risk](#) into WASH planning at local levels need to start with deference to climate projections? Here, we outline some limitations in relying too heavily on climate projections for informing WASH planning at local levels. We also profile a project that drew on local knowledge of society and nature to inform WASH resilience-building instead of climate projections.

Climate projections are less accurate at local levels. The models that produce climate projections generally have a resolution of [200 to 300 km](#) grid cells. Due to variable topography, differences in land use and cover, and other factors, there can be significant climatic variations within those cells that aren't captured by the projection. Downscaled climate models that produce finer projections exist, but they are resource-intensive to create and low- and middle-income countries typically [depend on](#) wealthier countries to produce them.

There is significant uncertainty in climate projections, especially for rainfall. Future changes in rainfall may have the greatest impact on WASH of any climate variable. Projections often produce a 'best guess' of how future average rainfall will change, but with

a caveat that there is significant uncertainty (particularly for the Asia-Pacific region). For example, researchers at Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) painstakingly simulated future rainfall changes in Eastern Indonesia at a 14 km resolution, but [ultimately concluded](#) that "adaptation strategies should really take into account that there is uncertainty in the range of projected rainfall futures - that is, preparations should be made for a significantly drier future, and for a significantly wetter future."

Climate projections don't tell you the local impacts. Even if one were able to get an accurate local projection, more research would be needed to predict the ensuing impacts. What would a 15% decrease in dry season rainfall mean for a village? Would their wells run dry? This depends on characteristics of the aquifer, infiltration capacity of the soil, future water demand, and other factors. Climate projections also don't provide insights on social factors that influence WASH access within communities.

Climate projections can be disempowering for those without specialist knowledge. Climate data and jargon can be confusing or inaccessible to local WASH stakeholders (and the rest of us, for that matter). In many cases, local stakeholders will depend on national or international actors to access and interpret climate projections for them. Further, if WASH implementing agencies are not careful in presenting climate information to local stakeholders, they risk causing people to disengage from discussions out of confusion or frustration.

This isn't to say that climate projections are useless for WASH planning at local levels. Uncertainty notwithstanding, they give a best guess at what challenges need to be overcome. Projections are documented evidence that unprecedented environmental changes are happening, which may persuade decision-makers to act. Climate information can also be communicated effectively to local communities if crafted and delivered carefully.

So, how can action be taken locally without relying on climate projections? [The Climate Change Response for Inclusive WASH](#) (CCRIW) project, conducted by the [University of Technology Sydney](#), [Plan International](#) and [WaterAid](#), developed guidance materials for drawing on local knowledge of climate impacts to inform climate resilience building for rural water and sanitation.

In CCRIW, community members participated in activities such as [climate-sensitive community mapping and transect walks](#) to identify how climate hazards create barriers to sanitation access based on their own experiences. Climate change will worsen hazards that people already deal with, so these activities generate rich insights into what the problem

will look like locally without the need for high-resolution climate projections.

CCRIW also facilitated community members to explore how social norms shape how impacts are experienced locally. For example, community members identified changes in gendered WASH workloads that occur during extreme dry and wet seasons. Social processes shape [climate impacts on WASH](#) as much as biophysical processes, and local people know more about relationships in their community than anyone else. These complex social aspects are best assessed within the community or household, and are not captured at all with climate projections.

Finally, CCRIW helped community members identify their own [strengths](#) for addressing climate impacts on WASH. By enabling community members to frame the problem using participatory activities, then subsequently reflect on their own available resources, they can take control over their own development. They take ownership of adaptations, advocate for government support where needed, and situate solutions to climate impacts amongst their everyday challenges and priorities. It's easier for community members to develop solutions to problems they've framed, rather than problems presented in a hard-to-understand, scientific way.

We need to find the right balance, as there are limitations to an over-reliance on local knowledge as well. First, [not all adaptation is local](#) – some climate change issues can only be tackled beyond local scales where projections may be more useful. Second, some impacts of climate change will be unprecedented so local people will have no experience with them. Finally, local people cannot be expected to have all the knowledge to resolve complex environmental and technical challenges. Specialist expertise and financing that are unavailable at local scales are also needed.

The key message is that climate projections do not need to be the starting point for local climate-resilient WASH planning. In many cases, they may serve better as complementary inputs to a contextual, place-based approach.

Disclosure

Related research carried out by the authors was supported by the Department of Foreign Affairs and Trade-funded Water for Women Fund. The views are those of the authors only.

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Link: <https://devpolicy.org/climate-resilient-wash-and-climate-projections-20210727/>

Date downloaded: 1 May 2024



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