

Local Innovation Keeps BĀRĀN Running

Progress Report (April 2026 - July 2026)

SmartPhones4Water (S4W)



Quarter at a Glance

-  Monitoring sites remain active
-  Daily rainfall observations continue
-  Data quality checks and validation
-  Journal paper preparation has begun
-  Citizen scientists remained actively engaged
-  Planning for future network expansion
-  Rain gauge repaired locally after damage

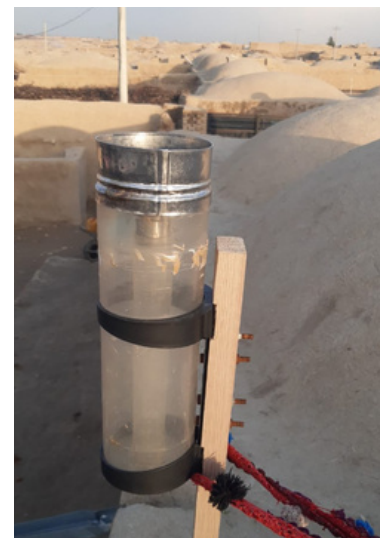


When a Broken Rain Gauge Didn't Stop the Science

One of our rainfall monitoring stations recently faced an unexpected setback when strong winds knocked over the rain gauge, leaving it damaged and unusable. In many projects, replacing the equipment would have been a simple solution. However, in Afghanistan, obtaining new rain gauges is far from straightforward. These specialized instruments are not available locally and must be imported from abroad. Due to international sanctions and logistical constraints, importing replacement equipment is both difficult and time-consuming.

Rather than allowing observations to stop, our citizen scientist took the initiative to find a local solution. The damaged rain gauge was brought to a neighborhood steel workshop, where a skilled metalworker carefully repaired the instrument and restored it to working condition. Within a short time, daily rainfall observations resumed without the need for a replacement.

This small but meaningful story reflects the resilience and dedication of the people behind the BĀRĀN project. It shows that the success of our rainfall monitoring network depends not only on the equipment we provide, but also on the ingenuity, commitment, and sense of ownership demonstrated by our citizen scientists. Even in challenging circumstances, they continue to ensure that valuable rainfall data are collected every day for the benefit of their communities and future scientific research.



How It Worked



Monitoring Sites

Spread across rural and urban districts of Balkh Province



Citizen Scientists

Trained community members recorded rainfall each day



Smartphones

for data reporting

Data submitted via ODK Collect, an open-source smartphone app



3 Months of Monitoring

Daily observations collected from January 2026 to March 2026



~2160

Daily Rainfall Records

Consistent daily submissions verified, and quality checked



Low-cost

Model

Cost per observation: ~\$1, proving affordable and effective

What We Learned

Rainfall monitoring is possible—even in fragile settings



Local volunteers submitted rainfall data consistently, achieving a 96% daily reporting rate across 24 sites.

Ground truth matters



Citizen data helped identify where satellite estimates (CHIRPS) were inaccurate—especially in capturing light rainfall or mountainous areas.

Simplicity works



Low-tech tools, minimal training, and regular check-ins created a reliable, low-cost monitoring system.

Youth engagement is key



Younger volunteers showed the highest consistency, especially when recruited through personal networks.

Cost-efficient data collection



The entire project operated on ~\$2,100, averaging ~\$1 per data point — far less than traditional weather stations.

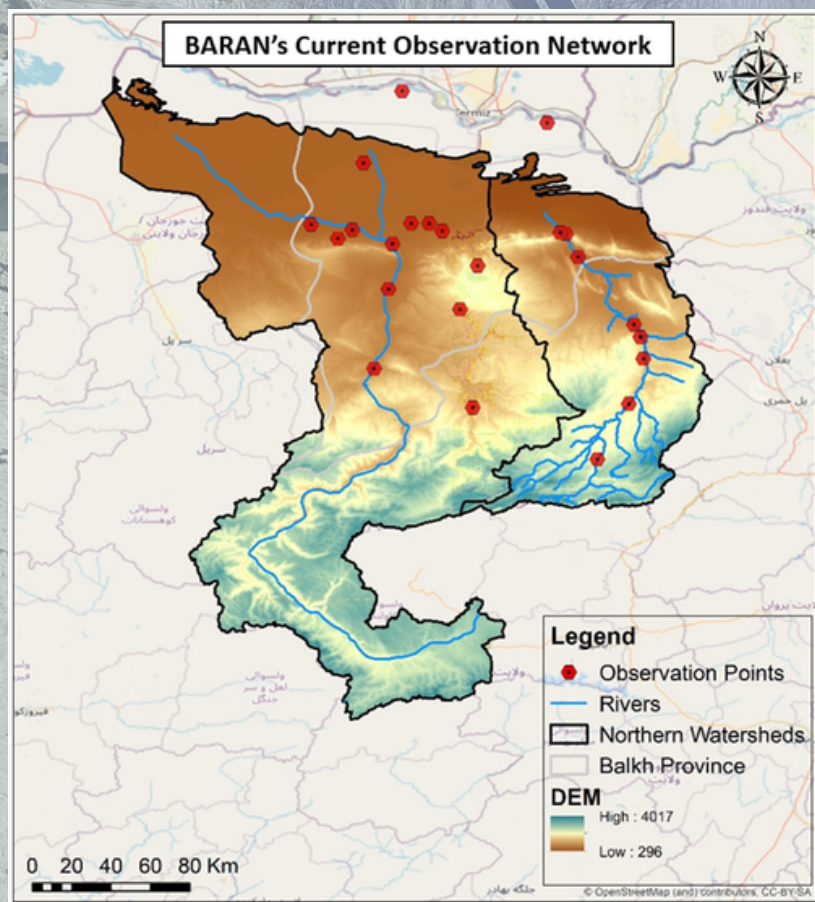
Looking Ahead

Over the coming months, we will continue uninterrupted rainfall monitoring across our existing network while working to maximize the value of the nearly two years of data collected through the BĀRĀN project. Our priorities are to:

- Continue daily rainfall observations across the network
- Prepare and submit a scientific journal paper based on the two-year dataset
- Expand the monitoring network as resources become available
- Support citizen scientists with equipment maintenance and training

Every contribution helps sustain this community-led scientific network and transforms locally collected observations into knowledge that benefits both Afghanistan and the global scientific community.

We are deeply grateful to everyone who supports this initiative. Your generosity enables local communities to continue rebuilding Afghanistan's climate observation capacity—one rainfall measurement at a time.



Thank you for being part of this effort.

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