WASH Learning Paper

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mWater: Lessons learned from Concern Worldwide's experience in Somaliland.

This learning paper captures lessons from piloting the mWater platform for water point mapping and WASH data management in Somaliland.

Context

Somaliland, located in the Horn of Africa was declared independence from Somalia in 1991. It has its own government, institutions, and democratic system, with Hargeisa serving as the capital city. The region has experienced relative stability and economic growth compared to many neighbouring areas. Livestock production, trade, and remittances are important sources of income for the population.

Water is a vital resource in Somaliland because of its dry climate and limited rainfall. Most communities depend on groundwater from boreholes, shallow wells, and water reservoirs to meet domestic and livestock needs. Frequent droughts, population growth, and climate variability place significant pressure on water resources. Reliable water information is essential for planning, managing water supplies, improving service delivery, and ensuring sustainable access to safe drinking water.

mWater is a digital platform used for collecting, managing, and analysing water and sanitation data. It allows organizations to map water sources, monitor water systems, assess water quality, and track service coverage using mobile devices and online dashboards. The platform supports evidence-based decision-making by providing accurate and up-to-date information. In Somaliland, mWater helps government agencies and development partners improve water resource management, identify service gaps, prioritize investments, and strengthen access to safe and sustainable water services for communities.

Overview

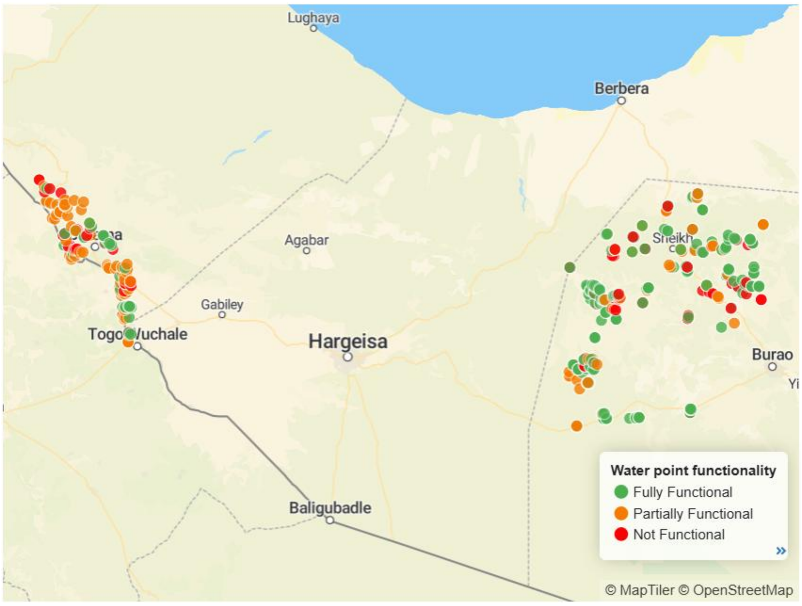
Concern Worldwide has been implementing evidence-based WASH programmes since 2010, in a context of recurrent droughts, climate variability, and rising pressure on water infrastructure from human and livestock populations. Across 3 districts (Borama, Sheikh, and Odweyne), communities rely heavily on rainwater-harvesting systems (particularly berkads; underground rainwater infrastructure) alongside shallow wells, dams, and a small number of boreholes and springs. These locations were identified, based on needs with support from Irish Aid. However, functionality gaps are common: in Borama District, only 67 of 202 mapped water points were fully functional (33%), while 135 (67%) were partially functional or not functional, indicating significant and long-standing rehabilitation needs.

This learning paper captures lessons from the 6-month pilot (November 2025 until May 2026) of the mWater platform for water point mapping and WASH data management in Somalia/Somaliland. mWater is a free, open-access mobile and web-based platform that supports GPS-enabled data collection, customisable surveys, offline capture with later synchronisation, dashboards, and collaboration/data-sharing across organisations. By applying a district-wide digital census approach, teams produced georeferenced inventories of water points, assessed functionality and usage, and generated actionable insights to prioritise rehabilitation, strengthen governance (for example by establishing Water Management Committees (WMC's), and improve coordination with partners and government.

The Approach

The purpose of using the mWater tool was to strengthen water interventions and data management. A comprehensive mWater survey for water point mapping was developed to systematically capture key variables, including site identification (GPS coordinates and village name); water point type (berkad, borehole, shallow well, dam, spring); functionality status (functional, partially functional, non-functional); maintenance history and repair needs; implementing organisation and construction/rehabilitation date; management structure and access modality (free/paid/seasonal).

The approach follows a clear results pathway: Data Collection → Analysis → Prioritisation → Rehabilitation/Investment → Improved Water Services → Reduced WASH Risks.



Example of mapping water points using the mWater tool.

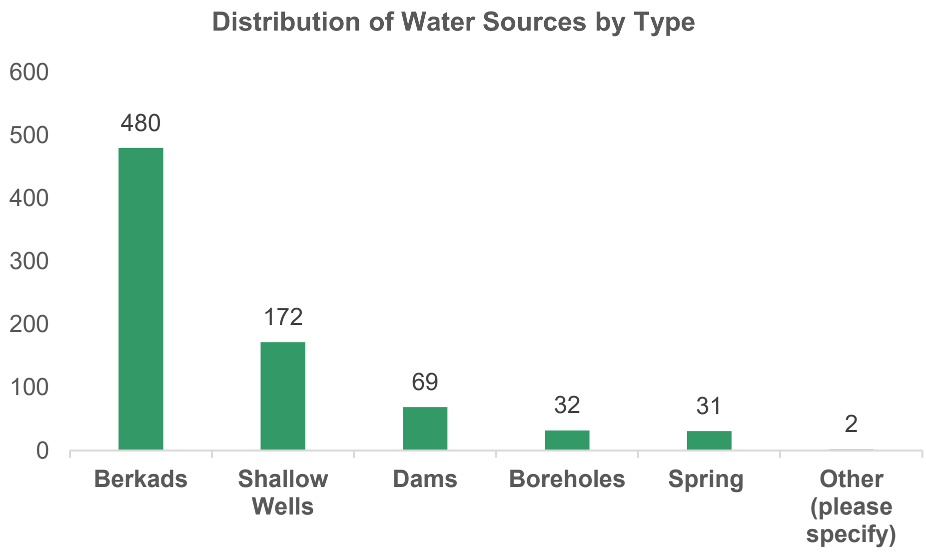
Concern enumerators subsequently conducted digital census-style mapping (district-wide where feasible, and in target villages under the Climate Resilience and Environmentally Sustainable Solutions programme (CRESS), uploading data for cleaning, validation, and analysis to generate district summaries and village-level insights.

Data obtained from the tool will be used to map all water points, support resource prioritisation, and strengthen advocacy efforts with the government to ensure the sustainability of water infrastructure and long-term access to safe water services.

Results

The mapping recorded 786 water points across Borama, Sheikh and Odweyne, providing baseline information on their distribution, type, functionality, ownership and operational characteristics. The dataset can support the identification of infrastructure and management priorities.

The mapping found that berkads were the predominant water source, representing 61.1% (480) of all recorded sources, followed by shallow wells at 21.9% (172) and dams at 8.8% (69). Boreholes accounted for 4.1% (32), while springs represented 3.9% (31). Other water source types (small pits dug in valley areas where communities collet water for domestic use during the rainy season) made up 0.3% (2) of the total.



Of the 786 water points assessed, 54.3% (427) were fully functional, 24.8% (195) were partially functional and 20.9% (164) were non-functional. This means that 45.7% of mapped water points were not providing a fully functional service at the time of assessment, indicating a substantial maintenance and rehabilitation requirement.

The most frequently reported problems were structural damage, accounting for 31.3% (210) of recorded issues; lack of maintenance, 28.3% (190); and seasonal dryness or absence of water, 24.1% (162). Together, these represented 83.7% of recorded issues, pointing to a combination of infrastructure, maintenance and seasonal water-availability constraints.

Borama district

A total of 202 water points were mapped in Borama. Berkads were the most common source (94), followed by shallow wells (50), dams (31) and boreholes (24). Only 33.2% (67) of mapped water points were fully functional; 43.6% (88) were partially functional and 23.3% (47) were non-functional. Borama therefore had the lowest proportion of fully functional water points among the three assessed areas.

Boreholes served an average of 176.7 households each. The dataset records approximately 1,500 households relying on a single borehole in Quljeed village, illustrating the potential consequences of failure at a high-use source.

Sheikh district

Sheikh had the largest mapped dataset, comprising 351 water points. Berkads accounted for 236 sources, followed by shallow wells (60), springs (30), dams (17) and boreholes (8). Of all mapped water points, 59.8% (210) were fully functional, 17.7% (62) were partially functional and 22.5% (79) were non-functional.

Although only 8 boreholes were recorded, each served an average of approximately 1,317 households. This concentration of users increases the importance of preventive maintenance and timely repair for these sources.

Odweyne district: selected CRESS target villages

The mapping covered 233 water points in selected CRESS target villages and does not represent the district. Berkads accounted for 150 mapped sources, shallow wells for 62 and dams for 21; no boreholes were recorded in the assessed villages. Overall, 64.4% of water points were fully functional, 19.3% were partially functional and 16.3% were non-functional.

Private or personal ownership accounted for 187 water points (80%), while government ownership or contribution was recorded for 2 water points (1%). The ownership profile suggests that planning for maintenance and rehabilitation will need to take account of the role of private owners and the limited direct public-sector presence in the assessed villages.

The district findings point to different operational priorities. Borama had the lowest proportion of fully functional water points, indicating a comparatively greater rehabilitation and maintenance requirement. In Sheikh, the small number of boreholes served high average numbers of households, making continuity of these services particularly important. In the assessed Odweyne villages, the high proportion of privately or personally owned water points highlights the need to engage owners in maintenance and governance arrangements. These differences show the value of using district- and source-level data, rather than water-point totals alone, to guide decisions.

Challenges

Key challenges encountered during the pilot which have been shared with the local Government include the following:

Capacity and change management: Expanding data collection from a limited group of trained staff to community-based enumerators or larger field teams requires substantial investment in training, mentoring, and ongoing technical support. Ensuring a common understanding of survey questions, functionality classifications, and data collection protocols is essential for maintaining data quality and consistency. During the pilot, differences in experience and digital literacy among data collectors highlighted the need for regular refresher training and close supervision to minimise variations in reporting and interpretation.

Connectivity constraints: In several remote and rural locations, unreliable internet and mobile network coverage limited the ability of field teams to submit data in real time. Although the mWater platform allows offline data collection, records often had to be stored on devices and synchronised later when connectivity became available. For example, enumerators working in remote pastoral settlements were sometimes required to travel to district centres before completed surveys could be uploaded, creating delays in data availability and dashboard updates.

Data quality assurance: Maintaining high-quality data across a large and geographically dispersed dataset requires continuous validation and oversight. Common challenges include incomplete survey responses, inaccurate GPS coordinates, duplicate records, and inconsistencies in the classification of functionality status or repair needs. For example, a water point may be reported as functional during data collection, while accompanying observations or photographs indicate operational problems that require further verification. Regular supervisory reviews, spot checks, and data-cleaning processes are therefore essential to ensure the reliability of the information used for planning and decision-making.

Operational sustainability: The mapping exercise highlighted sustainability challenges that extend beyond the physical condition of water infrastructure. While many water points were operational at the time of assessment, a significant proportion lacked active WMCs, formal maintenance arrangements, or reliable cost-recovery mechanisms. In many communities, water is provided free of charge, which improves accessibility but can limit the availability of funds for routine maintenance and emergency repairs. For example, a borehole may be fully functional today but remain vulnerable to prolonged interruption if a pump failure occurs and there is no established mechanism to mobilise resources for repairs. These findings emphasise the importance of strengthening governance, community management structures, and financial sustainability alongside infrastructure investments.

Lessons Learned

Standardised indicators enable comparability: The use of a consistent data collection framework across all assessed water points proved essential for generating comparable information across districts and regions. Collecting standardised information on water source type, functionality status, user population, downtime, ownership, access modality, and management arrangements allowed stakeholders to identify patterns, compare performance, and prioritise interventions based on objective evidence. For example, applying the same functionality criteria across different districts made it possible to distinguish areas with relatively high service reliability from those experiencing widespread operational challenges.

Functionality data is as important as coverage data: The mapping exercise demonstrated that the presence of water infrastructure alone does not provide a complete picture of service availability. Areas with a relatively high number of water points may still face significant service gaps when a substantial proportion of those facilities are partially functional or non-functional. Incorporating functionality assessments alongside coverage data helped reveal hidden vulnerabilities and provided a more realistic understanding of water service access. For instance, a district may appear well served based on the number of mapped water points, yet a detailed functionality assessment may show that many sources require repairs or rehabilitation to provide reliable services.

Usage metrics help identify critical risk points: Information on the number of users served by each water point highlighted facilities whose failure would have particularly severe consequences for communities. High-capacity sources, such as boreholes, dams, and strategic communal water systems, often support large populations and livestock-dependent livelihoods. Mapping user dependency enables sector actors to prioritise preventive maintenance, monitoring, and rapid-response repairs for these critical assets. For example, the temporary failure of a borehole serving several villages can have a far greater impact than the failure of a small privately managed source serving a limited number of households.

Governance arrangements influence long-term sustainability: The assessment reinforced the importance of effective management structures in maintaining water services over time. Water points supported by active WMCs, clearly defined maintenance responsibilities, and community oversight were generally better positioned to address operational issues and mobilise resources for repairs. On the other hand, facilities without established management arrangements often faced greater risks of neglect and prolonged interruption. This finding highlights the need to strengthen local governance mechanisms alongside investments in physical infrastructure.

Digital platforms strengthen sector coordination and evidence-based planning: The use of mWater provided a centralised and georeferenced database that can support improved coordination among government institutions, NGOs, and development partners. Real-time access to mapped water points, functionality information, and service indicators enhances transparency, reduces duplication of interventions, and facilitates more targeted resource allocation. For example, stakeholders can use the platform to identify underserved areas, track the status of previously rehabilitated water points, and coordinate investments based on verified field data rather than isolated assessments. The exercise demonstrated that digital monitoring systems can serve as valuable tools for ongoing sector planning, reporting, and accountability.

Limitations

The water point mapping exercise was subject to several limitations that should be considered when interpreting the findings:

- Data collection was conducted by enumerators rather than specialized WASH engineers, which may have limited the technical detail captured for some water infrastructure.
- In Odweyne District, the mapping covered only selected CRESS target villages and therefore does not represent the entire district.
- Water quality testing was not conducted as part of the mapping exercise, so water quality conditions were not technically verified.
- Some GPS coordinates may contain minor inaccuracies due to signal limitations or device-related errors during field data collection.

Recommendations

Institutionalise mWater for routine monitoring: Use mWater as a live monitoring platform (for example under CRESS), integrating key indicators into routine monitoring and evaluation processes to track functionality trends and emerging risks.

Prioritise rehabilitation by impact: Combine functionality status, years of non-functionality, and user pressure (households served) to prioritise rehabilitation, especially for high-use boreholes and dams and long-down berkads.

Strengthen water governance: Establish or reinforce WMC's for communal and high-capacity water points; provide basic training on operation, maintenance, accountability, and conflict resolution.

Support sustainable financing: Where appropriate, promote locally acceptable cost-recovery mechanisms and routine maintenance planning to reduce long-term downtime and reliance on external repairs. For example, a community-managed borehole could collect a small fee per jerrycan or a modest monthly household contribution, with the funds reserved specifically for pump servicing, spare parts, and emergency breakdown repairs. Such arrangements can help ensure that repairs are undertaken promptly, reducing service interruptions and extending the operational lifespan of water infrastructure.

Improve field implementation readiness: Invest in enumerator training, supervision, and data-quality checks; design workflows that accommodate low connectivity (offline collection and scheduled synchronisation).

Testimonials

"This initiative, supported by the Concern Worldwide team, will help the Ministry improve access to accurate water point information and strengthen prioritization of water needs across Somaliland. We see strong potential to pilot and expand this approach nationally, and we value Concern Worldwide's continued technical support and collaboration." The Director General of the Ministry of Water Development, Somaliland.

Conclusion

The mWater pilot demonstrated that a digital, GPS-enabled census approach can rapidly generate reliable water point baselines and make functionality gaps visible at district and village level. Across Borama, Sheikh, and Odweyne, results show heavy reliance on berkads and substantial maintenance and governance needs, alongside high-risk dependency on a small number of high-capacity sources. Scaling this approach combined with strengthened data quality assurance, connectivity-adapted workflows, and reinforced local management structures can improve prioritisation, coordination, and sustainability of WASH interventions.

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