

MatchMaker Resource Package
 2019 – WASH 1: Water Point
 Monitoring System (Somalia)

Welcome!



Congratulations! You have been accepted into the MatchMaker program. We have created this resource package based on the application criteria you filled out on the Response Innovation Lab website and the interactions you had with the RIL MatchMaker in your country.

This resource package contains the top three organizations that we think offer the best solutions to your challenge. Within each of these summaries we will tell you about the organization, their key value to you, and how they meet your match criteria.

We will also share with you next steps and contact info at each of these organizations. We intend to sustain an added value relation with you, so we will keep in touch to support you and hear your thoughts and feedback.

Summary

LOCATION

Somalia

ORGANIZATION & WEBSITE

WASH Cluster Somalia |

<https://www.humanitarianresponse.info/fr/operations/somalia/somalia-wash-cluster>

SECTOR

Water, Sanitation and Hygiene (WASH)

DEMOGRAPHIC

The main demographic of people benefitted by this solution would be communities, typically consisting of agro-pastoral households in South West State, with around 6 members per household, and a lot of children in households. Some families are very poor, relying on subsistence farming. There are many internally displaced people living from day labour or subsidies. Villages typically consist of around 200 households.

HUMANITARIAN NEED

- Reduced incidence of diarrhea through clean and safe drinking water
- Maintaining and monitoring the availability of clean, safe drinking water for communities in South West State, Somalia

PROBLEM DESCRIPTION

The WASH Cluster is seeking an affordable way to monitor and maintain data on water points in South West State. The Somali Water Ministry has a database populated with information from 2016/ 2017 about improved water points. It wants to find an affordable way to maintain this information as a valuable reference for investment decisions, planning and emergency response. Water quality and quantity need to be tested in order to ensure ongoing access to potable water and determine whether any action is needed.

CONTEXT

Only 38 per cent of the population in Somalia have access to an improved water source, and only 40 per cent have access to safe sanitation. Drought, pollution of groundwater and contamination of water leading to diarrheal diseases including cholera are some of the challenges faced in providing access to potable water. Lack of water security increases the potential for migration in this region, and a lack of safe water and sanitation also contributes to high rates of malnutrition.

The government developed a database of water points, however it is difficult to maintain this data, and to monitor the availability of water and water quality. There is a need to monitor how water points are performing over time. The water points include boreholes, shallow wells, and water reservoirs, and currently there is only ad hoc research available on water quality with inconsistent parameters.

Huge assessments have been done previously where water samples have been taken, but these have been long and costly. Accessibility is an ongoing challenge, due to the fragile context and security issues. In addition, there are some staffing constraints, and some restrictions from donors to implementing agencies. There is an appetite for PPP solutions in Somalia, and where there are capacity and staffing challenges for government or NGOs, private operators will usually spring up to fill the need. While the WASH Cluster have submitted the challenge and would like to find a cluster member to initially implement the solution, in the long-term the challenge owner is the Government and communities, and they would be responsible for maintaining any solution.

DESIRED SOLUTION CRITERIA

The WASH Cluster is seeking a solution that is at least at the piloted stage and that has already been tested in a similar context (in Africa). The ideal solution would monitor both water quality and flow remotely, and use a cloud-based platform that would be make data accessible to end-users, government and other relevant stakeholders.

The desired solution is one that is low-cost, low-tech and easy to implement and maintain. It would require low-energy and be self-contained. The water sensors must be low-tech but also able to provide real-time data on basic water quality metrics (sediment, pH), to see if action is required. WV Somalia would need implementation support from a partner who works directly with the innovation solution.

The solution would also need to comply with the requirements of: the Development Plan and Policies of South West State in Somalia, regulations of the Federal Ministry of Water of Somalia, the National Development Plan as well as the Rehabilitation and Resilience Framework of Somalia.

Some important factors that need to be considered in the context are:

- No internet or unstable internet
- Remote management / access issues
- Insecure environment
- Low or unreliable power access
- Protracted conflict

BUDGET & TIME

Budget: \$50,000 - \$100,000

Implementation Timeline: Immediate



Overview

Somali RIL convened two workshops in August and September, 2018 to look at water challenges and necessary innovations in Somalia. During the workshops, the most pressing water challenges were identified. Participants included the Ministry of Water, WASH cluster members, technology providers, and businesses from Somalia and Kenya that work on water issues. Three challenge statements were developed.

The WASH Cluster's challenge statement was investigated by a collaborative effort of the Somali RIL, the Global RIL, George Washington University, and the Somali Disaster Resilience Institute (SDRI). This process utilized the broad networks and contacts within the Humanitarian Sector and Private Sector, as well as WASH experts, to source solutions that met the criteria and needs outlines in the challenge submitted by the WASH Cluster.

The request was for a solution that would allow for remote monitoring and testing of water quality and quantity. Given the nature of the database, and the issues of accessibility due to the remote location and security issues for some of the water points, the team's investigation centered around innovations that could be managed remotely and maintained with minimal need for operation by skilled WASH professionals.

There are many water sensors that are being used globally that can be monitored remotely, however most only measure water quantity or flow and not water quality. On-site testing kits that measure water quality and can easily be operated by community members are typically very costly.

While the WASH Cluster submitted the challenge and would want one of its members to be responsible for the initial implementation of any solutions in partnership with the solution provider, in the long term the solution would need to be operated and maintained by government and the community. Special attention was given to finding an innovation that would be easy to implement, as this will be crucial to the success of any solution.

PicoBRCK

Reporting tool for real-time monitoring of water flow and quality developed with UNHCR

mWater

Cloud-based platform to map and monitor water and sanitation sites, and water quality test kits

Charity: Water

Water sensor developed by the charity to monitor its own water projects

PicoBRCK for WASH is a custom 'internet of things' reporting tool, developed in partnership with UNHCR, for Dadaab Refugee Complex, Kenya, to enable remote monitoring of water in humanitarian camps.

PicoBRCK



ABOUT THE ORGANIZATION

BRCK is a Kenya-based internet provider and producer of communications hardware. UNHCR (WASH) was having difficulty determining how much water was being used in Dadaab refugee camps in Kenya due to security concerns when staff were traveling between metered boreholes. BRCK, UNHCR and partners developed a custom 'internet of things' reporting tool to enable remote monitoring of water usage and chlorine levels in humanitarian camps. This collaboration is still at pilot state, but it has the potential to address the challenge.

KEY VALUE

The PicoBRCK provides a map of water point sensor locations showing real-time water flow and real-time water quality. The tool collects and transmits data without requiring in-person visits – an advantage in situations where security is a concern. The PicoBRCK Dadaab solution is customized for the Dadaab context, but has potential to be applied in a range of other contexts where accessibility of water points is a challenge. Minimal training is required to install the PicoBRCK solution, and no tampering of the water line is required.

PicoBRCK is rugged, solar-powered and lasts indefinitely. A low cost, reliable sensor gateway. It's designed to operate in remote and difficult environments, and the team has experience in Kenya.

Key Information

A custom 'internet of things' reporting tool, developed by BRCK, UNHCR and partners, that enables real-time remote monitoring of water usage and chlorine levels. The tool collects and transmits data without requiring in-person visits.

1. SECTOR

Internet provider/ communications hardware

2. INTERESCTIONS

Data mapping; remote water quality monitoring; remote water flow monitoring

3. FOUNDED

2013

4. KEY PEOPLE

Kurtis Unger | Email: kurt@brck.com

Lillian Owino | Email: lillian@brck.com

5. LOCATION & WEBSITE

2nd Floor, Bishop Magua Centre, George Padmore Lane, Nairobi, Kenya

<https://www.brck.com/2018/02/picobrck-wash-dadaab-refugee-complex/>

6. RESULTS & IMPACT

It's hoped that the pilot will produce a map of sensor locations showing real water flow and real water quality. This map will inform agencies about the delivery of water, with an expected outcome of faster response rates, and higher water availability.

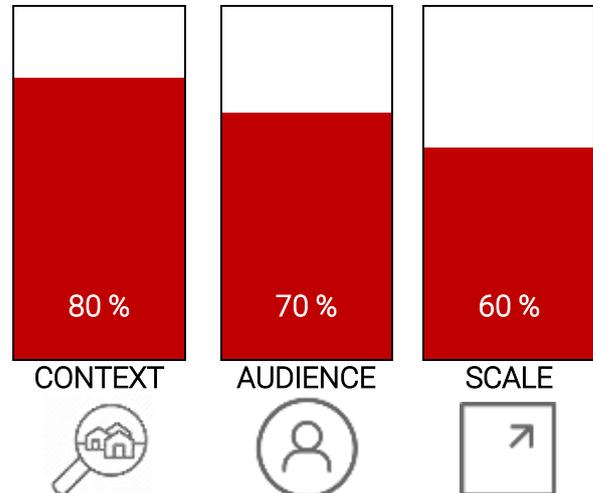
7. KEY ACTIVITIES

Internet provider; communications hardware; WASH monitoring

8. NEXT STEPS

SomRIL and its contacts could facilitate an introduction to BRCK for further discussions.

OVERALL MATCH



IMPLEMENTATION

Difficulty:

Easy to use, minimal training for installation.

Time:

Some time may be required to tailor the solution to the Somalia context. Dashboard to display PicoBRCK's readings will need to be approved by WASH staff to confirm it displays the information they require.

Barriers:

- The product will have to be installed at all improved water points.
- Only chlorine dose is monitored; not many parameters can be monitored.
- GSM or long range frequency communication is required.

Cost:

Unknown, still at pilot stage.

Technical Information:

- **Data mapping:** map of sensor locations shows real-time water flow and water quality
- **Water flow monitoring:** remote, solar or battery powered
- **Water quality monitoring:** yes, monitors chlorine dose only

mWater is dedicated to creating world changing technologies for water and health. Over 40,000 users in 158 countries map and monitor water and sanitation sites, using its platform.

mWater



ABOUT THE ORGANIZATION

mWater provides a platform to map and monitor water and sanitation sites, perform mobile surveys and share results in real time. Does data mapping for 40,000 users, including WV, in 158 countries. Works with a wide range of NGOs, governments and community groups, including WV, USAID, UNICEF and WHO.

KEY VALUE

A secure, cloud-based platform to map and monitor water and sanitation sites, with single-use water quality test kits for on-site testing. mWater follows an open access business model, with a free version of the app, as well as whitelabel and customized versions. The mobile water mapping platform allows you to either import existing data, or start collecting data on water points. Their platform is probably the easiest to use of all of the innovations considered for this challenge.

mWater's single use water quality test kits are designed for frontline health workers, utility water managers, and local organizations. The kits measure critical drinking water quality parameters, and can be applied to tap water, shallow wells, springs, tube wells, boreholes, treated water and household storage.

The organization has experience in the region, and has worked in similar contexts, as well as partnering with WV in other locations. mWater worked with WV and Haiti Outreach to create a monitoring system to track water infrastructure in Northern Haiti.

They have worked with WaterAid Australia, IRC and DFAT to create RapidWASH service tool to assess the current status and sustainability of water and sanitation infrastructure in a community. They provide on-demand support, on-site training (further investigation needs to be undertaken on feasibility of on-site training in Somalia), and virtual training for surveys.

Key Information

A secure, cloud-based platform to map and monitor water and sanitation sites, with single-use water quality test kits for on-site testing.

1. SECTOR

WASH / Technology

2. INTERSECTIONS

Data mapping; monitoring water quality

3. FOUNDED

2012

4. KEY PEOPLE

Annie Feighery, CEO

LinkedIn: <https://www.linkedin.com/in/afeighery>

John Feighery, COO

LinkedIn: <https://www.linkedin.com/in/johnfeighery>

(Can be contacted via website Contact Us page)

5. LOCATION & WEBSITE

New York, USA | <https://www.mwater.co/>

6. RESULTS & IMPACT

Data mapping 40,000 users, including WV, in 158 countries, mapping and monitoring water and sanitation sites, conducting mobile surveys, and collaborating with local governments.

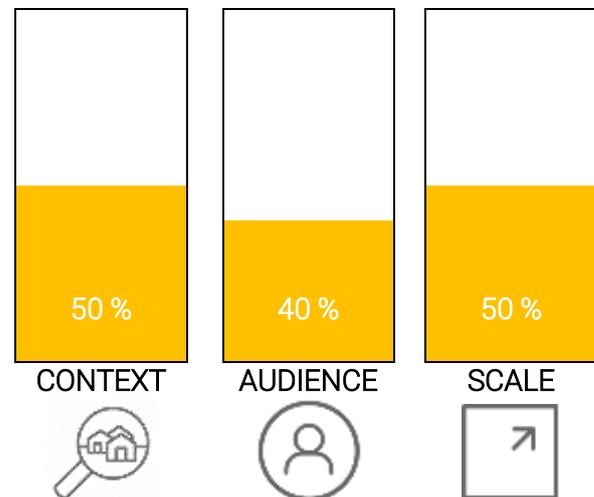
7. KEY ACTIVITIES

WASH monitoring

8. NEXT STEPS

SomRIL and its contacts could facilitate an introduction to mWater for further discussions.

OVERALL MATCH



IMPLEMENTATION

Difficulty:

mWater offers training and technical support for its mobile platform. The water quality test kits have been designed to be simple to use.

Time:

Time needed for initial implementation would be limited, with a short time required to train users on mobile app. mWater can train anyone to use its water testing kits in less than a day – with no prior water quality experience.

Barriers:

Doesn't include water quantity measurement. While water quality can be integrated into data collection, this requires additional manpower to do the water testing on-site using their test kit.

Cost:

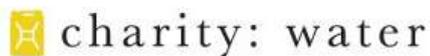
Survey App and Data Portal are free. Customized service starts from USD 20K. Water quality test kits are USD200 for 20 tests (USD10 per test).

Technical Information:

- **Data mapping:** easy to use data mapping
- **Water flow monitoring:** No
- **Water quality monitoring:** can be integrated into data collection, requires manpower

“Keeping clean water flowing is critical to our mission, so we developed a comprehensive remote monitoring tool using cutting-edge IoT (Internet of Things) sensors and cloud computing technology to equip local leaders with real-time data on water system performance.”

charity: water



ABOUT THE ORGANIZATION

charity: water is a global non-profit organization bringing clean and safe drinking water to people in developing countries. The organization builds sustainable, community-owned water projects around the world.

KEY VALUE

charity: water developed a water sensor in order to monitor its own water projects, and measure water flow in the long term. Their sensors are now manufactured at scale, to industrial standards. Inside each one, sensors measure the physical level of water in the wellhead twice every second, which is then converted to liters per hour that are flowing through the pump.

charity: water's sensors automatically geolocate, eliminating the need for additional training requirements or installation equipment. As data is gathered, it's analyzed in the cloud using advanced IoT and analytics tools provided by Amazon Web Services, then customized insights are emailed directly to monitoring teams.

The sensors are capable of transmitting data from remote, low connectivity areas, they're also smart enough to learn the 'normal' behaviour of a well and report immediately when there is significant behaviour change. Charity: water has some experience using the sensors in the region and in similar contexts, including in Ethiopia.

Key Information

charity: water needed a reliable system status solution for its water projects. So they built one with technology partners. The 'smart' sensors are used to remotely monitor water flow from the charity's water points.

1. SECTOR

Water

2. INTERESCTIONS

Remote monitoring of water flow; data mapping.

3. FOUNDED

2006

4. KEY PEOPLE

Brian Hoyer, Director of Program Operations

LinkedIn: <https://www.linkedin.com/in/brian-hoyer-45731816>

Phone: 1 (646) 688-2323

5. LOCATION & WEBSITE

40 Worth Street, Suite 330, New York, NY, US

<https://www.charitywater.org/projects/sensors>

6. RESULTS & IMPACT

The organization has helped fund 24,537 projects in 24 countries, benefiting over 8.2 million people.

Charity: water's water sensors have been used in the NGO's own projects to provide accountability, and also to monitor water flow of its water points.

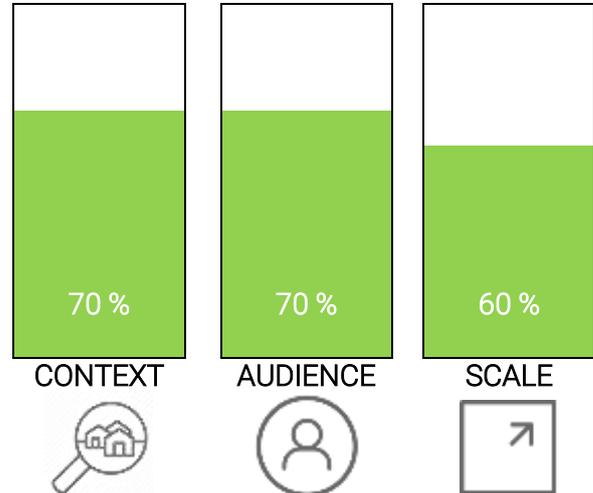
7. KEY ACTIVITIES

Building clean water projects

8. NEXT STEPS

SomRIL and its contacts could facilitate an introduction to charity: water for further discussions.

OVERALL MATCH



IMPLEMENTATION

Difficulty:

The sensor design is open source but it may be possible to engage with charity: water to see if there is any possibility to bring this solution to Somalia.

Time:

RIL would need to discuss with charity: water whether it could support with implementation.

Barriers:

- Accuracy of data
- Water tight seals
- User experience in the field
- Existing GSM network coverage
- Unlikely there is dedicated support by charity: water

Cost:

USD \$150 per unit.

Technical Information:

- **Data mapping:** yes, not key product offering
- **Water flow monitoring:** remote monitoring, sensor lasts 10 years without battery change;
- **Water quality monitoring:** none

Additional Insights

The following additional insights were explored as part of RIL's research process. While these were not deemed to be strong matches with the challenge, they are nonetheless interesting aspects that the WASH Cluster may like to explore in future or as complementary options.

Akvo

<https://akvo.org/>

Monitors water quality and provides data mapping, but doesn't measure water flow. Large footprint in Africa and offers remote water quality monitoring.

Mobi-water

<http://www.techwatersolutions.com/>

Point-of-use water level monitoring to help B.O.P. water providers monitor and manage water in tanks/reservoirs. System measures internal water level in a tank/reservoir and relays in real time via SMS or its app.

Aquaread

<https://www.aquaread.com/>

Manufactures a wide range of indicators, sensors and many other kits and packages to help you with your water analysis. Has distribution in Somalia.

UDUMA

<https://www.uduma.net/en/>

Improves access to drinking water in rural areas of sub-Saharan Africa by taking charge of water supply equipment and ensuring proper operation and maintenance. Operates and manages manual pumps and small piped networks.

LORENTZ

<https://www.lorentz.de/company/about-lorentz>

German company that produces solar-powered water pumps with digital controller. Offers smart water dispenser off-grid system for revenue collection.

Due Diligence

The solutions presented as part of this Resource Package are provided based on the criteria that the MatchMaker applicant submitted in their application to the Response Innovation Lab (RIL) MatchMaker online tool. Wherever possible the RIL has provided solutions which align to the challenge and requirement criteria provided by the requesting agency. The suggested solutions are by no means an exhaustive list but provide insight and research into the challenge.

Risks and Due Diligence

As with all humanitarian programming, risks exist and the need for comprehensive due diligence is required. Before implementing any program, it is the responsibility of the implementing agency to undertake robust due diligence processes.

Humanitarian operating environments are complex, local dynamics can be fluid and understanding the local context is paramount in such environments to ensuring that humanitarian standards are reached and quality programming is delivered. It is for the implementing agency to consider in detail the local context, carry out due diligence checks, engage with local communities for feedback and to manage risks associated with programming. And it is within this context that this MatchMaker Resource Package is provided.

For further information and support please contact:

Further Support

Nishant Das, Somali Response Innovation Lab (SomRIL) Manager
Email: somalia@responseinnovationlab.com

SERVICES WE PROVIDE



1 CONVENE

- Discuss areas you want to improve, for better understanding and solutions
- Find innovations you can use in country
- Find innovators that you can work with in country
- Access innovation forums
- Join a community of innovators

- Refine your humanitarian challenge
- Search our networks for existing solutions, globally and locally
- Be paired with tested innovations that meet your challenge
- Get evaluation and implementation support



2 MATCHMAKER SERVICE

- Access funding pathways
- Get referrals to global innovation networks
- Plan your financial model
- Get support with monitoring and evaluation of innovation projects, business models ethics, intellectual property and so much more.
- Test, pilot, and scale innovations



3 SUPPORT