

MatchMaker Resource Package
 2019 – WASH 2: Safe Urban Water
 (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

Community: urban or peri-urban households in Mogadishu, around 6 members per household, may be female-headed, lots of children. Many internally displaced people (IDPs) living from day labour or subsidies.

HUMANITARIAN NEED

- Reduced incidence of diarrhea through clean and safe drinking water
- Ongoing water quality monitoring
- Community satisfaction

PROBLEM DESCRIPTION

Mogadishu is the capital city of Somalia with a population of around 2.4 million people. Most districts are overcrowded, without proper urban planning and most residents rely on contaminated shallow wells as their main drinking water source. A high density of water points and sanitation facilities has resulted in the contamination of aquifers and there is no municipal water supply system in place.

The Somali WASH Cluster is looking for a solution to be implemented in the short-to-medium term, to supply urban communities of Mogadishu with safe, potable water for domestic purposes, with a simple and sustainable technology using shallow wells as the water source. Most shallow wells in Mogadishu are saline and bacteriologically contaminated but they are the only local source of water.

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.

Water points in Mogadishu are mostly shallow wells that have high salinity levels due to ongoing drought and overuse, and most of the water is contaminated. There are reverse osmosis and tissue filter solutions being used, as well as some solar and wind powered devices, however most of these interventions are costly, and would not be scalable. No detailed geographic data is currently available on the water points. There is no current WASH policy in place. UNICEF and the Somalia WASH cluster is collaborating with ministries on an ongoing basis to develop regulatory framework.

Accessibility is an ongoing challenge, due to the fragile context and security issues. There are a number of staffing challenges including the skill level and capacity of staff, as well as staffing numbers and ability to reach the water points for monitoring and interventions. The solution would need to be operated and maintained by local communities. The WASH Cluster has some constraints due to donor and sponsor obligations.

DESIRED SOLUTION CRITERIA

The WASH Cluster is seeking an innovation that is able to purify water at community collection points, typically shallow wells, desalinating saline water and removing all pathogens to deliver safe drinking water to communities. The WASH Cluster is seeking low-tech solutions that have already been tested in low and middle income countries. The WASH Cluster does not require implementation support.

The preferred solution would need to be easy to implement and maintain, and be operated and maintained by local communities. Ideally the solution would be able to be scaled in Somalia and potentially also in other countries with a similar context.

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
- Rapid onset
- Urban
- Protracted conflict
- Cholera prone

BUDGET & TIME

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

Implementation Timeline: In a few months



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 desalinate and purify water, so the team's research centered around innovations that were able to meet these requirements, and were appropriate for the Somalia setting. One component of the challenge in Mogadishu is the salinity of the water, so some water purification solutions were found not to be suitable.

When developing the shortlist, special attention was given to finding a solution that had been created or tested in a commensurate environment to Somalia. As the solution will be maintained by the community, the team focused on finding a solution that would be easy to maintain.

Although it is the most expensive innovation out of the top 3 solutions, Moerk Water Solutions is recommended as the best solution as they have done some work in Somalia and other African countries, their system is modular, suitable for scale up, and their approach is community-empowerment and market-based. They have already been working with UNICEF in other parts of Africa.

Moerk Water Solution

Small-scale, reverse-osmosis desalination units

Trunz Water Systems

Self-contained, solar-powered, reverse-osmosis systems

Solar Water Solutions

Modular reverse-osmosis brackish-water systems

Moerk's systems deliver safe water to remote communities through simplified desalination technology powered by renewable energy.

Moerk Water Solutions



ABOUT THE ORGANIZATION

Moerk Water Solutions Asia-Pacific is an Australia-based company, using German technology, that consists of a team of engineers, water treatment experts and desalination specialists who provide reliable water supply to those that need it most. They deliver safe, holistic and simple water solutions to remote and arid areas of the Asia-Pacific, Australia and East Africa.

KEY VALUE

Moerk Water Solutions develops small-scale, self-contained, renewable energy-powered reverse-osmosis desalination units that deliver safe, potable water: free of salt, pathogens and chemicals. Each unit is customised according to the requirements of the community and environment. Moerk has been providing water services to the private and public sector throughout East Africa and Asia-Pacific since 2011.

Plants have been set up in Kenya and Somalia. One unit is supplying clinic staff and patients with water at Kismayo Hospital, and two units are supplying the community with water at a settlement in Mogadishu. Moerk has also been working with UNICEF on two projects in Ethiopia, for two water stations providing 80m³ and 40m³ of water per day, including one site with high salinity.

Their units are modular meaning the solution can be scaled. And they offer portable systems that are easily transported. A 20-30Ltr/Hour system is suitable for a small community or health facility, including solar panels. Discounts are available for multiple unit purchase.

Moerk works closely with communities and beneficiaries to ensure that the system meets their needs, and is easy to use. They take a market-based approach, training local people to maintain and operate the technology to promote social development and generate employment opportunities with integrated business models. They build local capacity so that the community can maintain, operate and take ownership of the plants

Key Information

Moerk Water Solutions develop small-scale, renewable energy-powered reverse osmosis desalination units that deliver clean, safe potable water to communities, using simple technology that's locally managed.

1. SECTOR

Water

2. INTERESCTIONS

Water purification and desalination for communities in Asia-Pacific and East Africa.

3. FOUNDED

2011

4. KEY PEOPLE

Barbara Brezger | Phone: +61 481 470 490

Email: barbara.brezger@moerkwater.com.au

5. LOCATION & WEBSITE

MOERK WATER SOLUTIONS Asia-Pacific Pty Ltd,
8/10 Rawlinson Street, O'Connor, WA 6163,

Australia www.moerkwater.com.au

6. RESULTS & IMPACT

Moerk has been developing and implementing water purification and desalination plants across Asia-Pacific and East Africa, with each plant providing potable water to communities of up to 1,000 people.

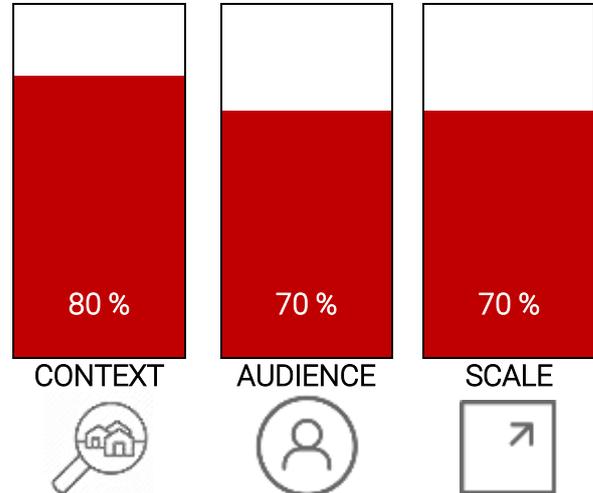
7. KEY ACTIVITIES

- Desalination plants providing potable water for rural and remote communities
- Water supply systems for farming and agricultural use

8. NEXT STEPS

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

OVERALL MATCH



IMPLEMENTATION

Difficulty:

Plants are easy to operate and maintain, and Moerk can provide training to the community.

Time:

Moerk has implemented its systems in a similar context, but will require time to tailor the solution to this challenge. Remote support and training may require more time. Training may be in Nairobi; this could be discussed and agreed upon with Moerk.

Barriers:

Would rely on long-term commitment and support from the local community and local entrepreneurs who would need to be engaged from the outset.

Cost:

Price per unit (USD): \$21,000 – \$45,000 (discounts for multiple units).

Technical Information:

- **Filter type:** Reverse osmosis technology
- **Capacity (ltr/ hour):** 30-500Ltr/Hour
- **Energy consumption:** solar panels included

Trunz Water Systems has converted its vision of self-sufficient, compact and highly automated water treatment and desalination systems into practice. Powered by renewable energy, the systems can operate virtually anywhere in the world.

Trunz Water System



ABOUT THE ORGANIZATION

Trunz Water Systems is a Swiss company with a mission to provide efficient solutions for drinking water supply in challenging applications (such as remote areas, mobile applications, defense and disaster missions). The company has installed over 1,000 water treatment and desalination units worldwide. Trunz promotes sharing and transfer of knowledge and supports clients with additional services such as engineering support, installation assistance, and technical trainings.

KEY VALUE

Trunz Water Systems are self-contained, solar-powered systems, with no consumables, that can be easily operated by locals. Their reverse-osmosis systems remove salt, bacteria, viruses and cysts down to a size of 0.0004 micron without requiring toxic chemical treatment. Trunz Brackish Water Systems are designed for max. salinity of 18'000 TDS. The reverse osmosis filtration technology is based on a multi-layer membrane that filters the water under high pressure. In order to reduce energy consumption, the Trunz brackish water units include an energy recovery pump.

Trunz water systems have been designed and manufactured specifically for remote communities in hostile natural environments (hot, humid, salty). Its water systems have been implemented in drought stricken and developing country settings in the middle east and Asia, and the company has conducted roadshows in Kenya, taking a trailer fitted with a Trunz water system to remote villages to demonstrate its effectiveness.

Key Information

Trunz Water Systems are self-contained, solar-powered systems, with no consumables, that can be easily operated by locals. Their systems have been designed and manufactured specifically for remote communities in hostile natural environments.

1. SECTOR

Water

2. INTERESCTIONS

Water purification and desalination. Successful implementations in similar contexts.

3. FOUNDED

Part of Trunz Group, founded 1972

4. KEY PEOPLE

T +41 71 447 85 45

water@trunz.ch

5. LOCATION & WEBSITE

Trunz Water Systems AG Technologie Center,
Ahornstrasse , CH-9323 Steinach

<https://www.trunzwatersystems.com>

6. RESULTS & IMPACT

Trunz has installed over 1,000 water treatment and desalination units worldwide. They have implemented water systems in drought-stricken and developing countries, and have some experience in Uganda, Kenya, Tanzania and South Africa.

7. KEY ACTIVITIES

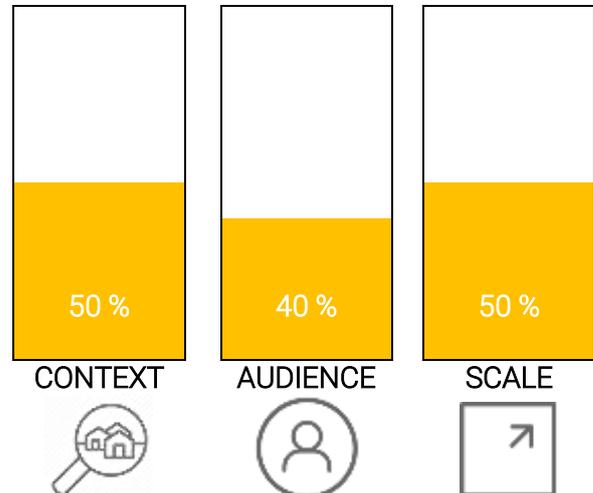
Water desalination and purification including:

- Engineering and Technical Advisory
- Installation assistance
- Technical training and knowledge transfer
- Maintenance, repair and overhaul

8. NEXT STEPS

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

OVERALL MATCH



IMPLEMENTATION

Difficulty:

Trunz provides installation support and is able to provide technical training during installation.

Time:

Trunz has implemented its water systems in similar settings, and may need some time to tailor its solution to meet UNICEF's needs – there is no indication they have worked with UNICEF before. They haven't worked in Somalia context, and may require more time.

Barriers:

Trunz may be less familiar with the context, and while they've conducted roadshows in Kenya, they may have less on the ground support in the region.

Cost:

Price per unit (USD): unknown (probably similar range to Moerk).

Technical Information:

- **Filter type:** Reverse osmosis technology
- **Capacity (ltr/ hour):** < 18'000 ppm, 30L, 600L and 1,200L
- **Energy consumption:** solar add-on

Solar Water Solutions' systems are able to produce drinking water from any lake, river, borehole or sea, and is the only purification system that can run on solar power without batteries.

Solar Water Solutions



ABOUT THE ORGANIZATION

Finland-based Solar Water Solutions (SWS) has developed a solution that turns brackish water and seawater into drinking water with pure renewable energy using reverse osmosis. The company has grown from an innovation to a family enterprise whose mission is to make sustainable drinking water that people can afford.

KEY VALUE

SWS's SolarRO system produces clean drinking water from saline or contaminated water with pure solar power. All equipment is designed and manufactured in Finland. The company claims its systems are able to produce drinking water from any lake, river, borehole or sea, and is the only purification system that can run on solar power without batteries. They state that quality drinking water production costs as low as USD0.001 per litre and the system can start, operate and stop automatically. The innovation has been implemented previously in Kenya, in partnership with World Vision.

Their reverse osmosis brackish-water systems are modular, meaning they can easily be scaled based on the needs of the community. They specialize in desalination, and with partners can add solar panels, pumps and tanks. The filters are easy to use and replace, and the system is fully automatic. The system can operate directly with solar panels, or switch to grid or generator during non-solar hours.

Key Information

SWS's SolarRO system produces clean drinking water from saline or contaminated water with pure solar power. Their reverse osmosis brackish-water systems are modular, meaning they can easily be scaled based on the needs of the community.

1. SECTOR

Water

2. INTERSECTIONS

Water purification and desalination. Previous experience in Kenya.

3. FOUNDED

2015

4. KEY PEOPLE

Antti Pohjola, CEO |Phone + 358 50 66866

Email: antti.pohjola@solarwatersolutions.fi

5. LOCATION & WEBSITE

Solar Water Solutions Ltd., Keilaranta 1, 02150 Espoo, Finland | <https://solarwatersolutions.fi>

6. RESULTS & IMPACT

The innovation has been piloted with World Vision in Kenya, and pilot is currently being explored in Sri Lanka and Indonesia in partnership with World Vision and Asia P3 Hub. The company has won a 'Save the Baltic Sea' Award for their solar-powered water purification system.

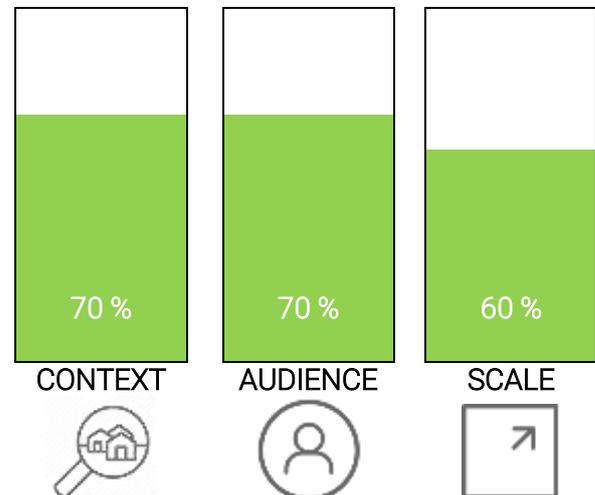
7. KEY ACTIVITIES

Water purification and desalination

8. NEXT STEPS

SomRIL and its contacts could facilitate an introduction to Solar Water Solutions for further discussions.

OVERALL MATCH



IMPLEMENTATION

Difficulty:

The unit is easy to use and implement, and ready to use when delivered from the factory. The filters are already installed. The user only has to attach the inflow, outflow and production tubes to the unit using the clamps that come with the package.

Time:

The units are ready to go when they are shipped, meaning the time needed for set up and installation would be limited.

Barriers:

Systems are manufactured in and shipped from Finland. SWS is interested in a market based approach but doesn't have experience yet. Late-stage startup, with limited capacity.

Cost:

Price per unit (USD): \$10,000, excluding taxes and transport.

Technical Information:

- **Filter type:** Reverse osmosis technology
- **Capacity (ltr/ hour):** 120-500Ltr/Hour
- **Energy consumption:** Solar add-on

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.

SkyHydrant

<https://www.skyjuice.org.au/>

Australia-based company that produces an ultrafiltration solution, engineered for harsh, remote environments, delivering safe clean drinking water using world class water treatment technology. Only treats non-saline water. This innovation would have been the top choice if salinity wasn't an issue.

Solar Gen

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

Somali company that offers solar solutions. They don't manufacture, but do last mile delivery and have a strong network in Somalia. May want to consider Solar Gen as a complimentary solution provider (for distribution and solar) in partnership with Moerk Solutions or Solar Water Solutions.

Ampac USA

<https://www.ampac1.com/products/seawater-desalination/>

USA-focused company, Ampac USA has been designing and manufacturing Seawater Desalination Systems for on-shore and off-shore industries. Their systems can convert seawater or salty brackish water to fresh drinking water.

Parker Hannifin

<http://ph.parker.com/us/20551/en/watermaker-membranes-and-filters-941281>

Parker has a wide range of membranes and filters for water purification. Their products can remove harmful impurities, such as salt, minerals, and organics, from sea water, brackish water, fresh water and tap water

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