University of Applied Sciences and Arts of Southern Switzerland
SUPSI

Centre for Development and Cooperation
University of Applied Sciences and Arts of Southern Switzerland

Foto: Daniel Pitteri

Project title

CLARA: Arduino-based appropriate solution to disinfect water at community scale in Ethiopia

Thematic focus

WASH, water treatment,community involvement, social business

Year

2019

Project location

Hawassa, Southern Nations Nationalities and Peoples' Region, Ethiopia

Swiss Institution

Donato Patrissi (donato.patrissi@supsi.ch), Centre for Development and Cooperation, Hawassa

Partner Institutions

SAED Ethiopia
FabLab Ivrea by “Accademia del Software e dell’Hardware libero Adriano Olivetti”

Description

A study conducted within a Master Thesis by ETHZ, SUPSI and EAWAG evidenced poor water quality conditions in some peri-urban and rural communities around the city of Hawassa. Chlorine water treatment is performed at central level, but faecal contamination was found in the jerry-cans used to fetch water.
Causes of this poor treatment process can be found in operational errors and infrastructure or technology conditions.
Enough Free Residual Chlorine amount at the point of delivery is a solution to prevent recontamination.

CLARA is a pilot system to improve water disinfection and to guarantee an adequate concentration of FRC. The system is composed by two ferro-cement tanks, aiming at avoiding lack of water due to frequent electric black outs, and an Arduino controller to automatically insert the right amount of sodium hypochlorite.
Inclusion of Arduino Technologies for customized Chlorine treatment at up-dated water points promotes appropriate, easy and low-cost methods for drinking water disinfection and supply.
The solution of sodium hypochlorite will be prepared by the cooperatives managing the systems, thanks to the WATA device that uses only kitchen salt, electricity and water.

Development relevance (Agenda 2030)

The project aims “to ensure availability and sustainable management of water and sanitation for all” as stated in **SDG 6**. More in detail, the targets **6.1** (“achieve universal and equitable access to safe and affordable drinking water for all”) and **6.4** (“increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity”) are the main goals of the project.
Also, local cooperatives managing the systems and producing the disinfectant solution will be in phase with target **6.B**.

Title image 1
CLARA logo

Title image 2
Water point in a sub-urban area of Hawassa.