Decentralized Multi-stage Household Level Waste Water and Solid Waste Management Approach, Southern Syria

Project name	Decentralized multi-stage HH level waste water and solid waste management approach
Project region	Southern Syria
Summary	The project aims to introduce new eco-friendly and cost efficient decentralized approaches to manage generated waste water and organic solid waste on the HH, considering the current gaps in the sanitation and energy sector.
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Context Description

The sanitation situation in Southern Syria is particularly affected by the protracted conflict, which resulted in increased damage to infrastructure and an alarming reduction in essential services at both the community and governorate levels. As a result, several systems have ceased to operate because of damage or stolen equipment and the incapacity of the communities to carry out repairs and maintenance.

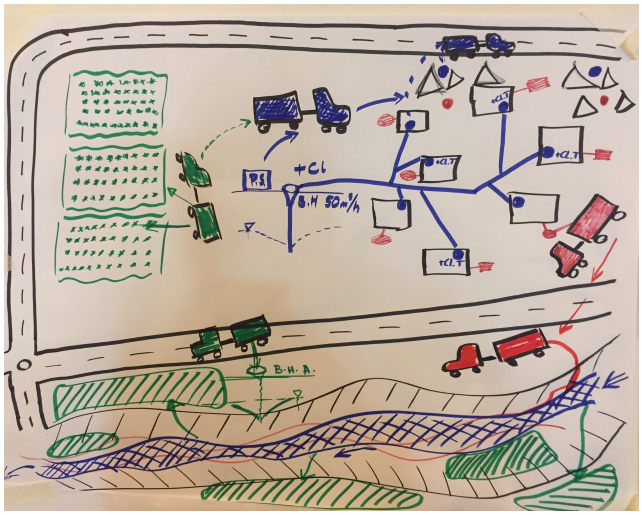
Problem Statement

The current sanitation and solid waste management measures in the typical Southern Syria context lack treatment and any reuse/recycling processes. This, as a result affects the underground water, surface water, the environment as well as the hygiene and human health on HH (Household) and communal levels. Current disposal methods comprise of individual non-sealed septic holes, infiltrating into the underground water and frequently requiring dislodging by trucks, adding up pressure and causing floods and wastewater ponds at the neighborhood level. On the other hand, the dislodged wastewater is disposed in the Wadi, where there is a running surface water used by the community for agricultural crops irrigation.

This case study is built for 5,000 residents and 2,000 IDPs living in rural southern Syria governorates.

Solution (including developed graphics)

To address the issues of sanitation and solid waste management systems and to complement the limited energy sector, decentralized wastewater and a Solid Waste Management system is proposed in order to help the community resilience building starting with the HH level and integrating to the neighborhood and community levels.



Location Map

This decentralized sanitation system comprises of several integrated treatment stages that are eco-friendly, cost efficient and energy conservative; starting by disengaging the HH wastewater outlets from the individual septic pits and redirecting the HH wastewater outlets to a neighborhood-level biogas digester, which is meant to separate the wastewater to sludge and solid free wastewater. Hence, the solid waste management approach on the HH level will be initiated allowing for the use of organic waste in the biogas generation process. The sludge plus the organic waste from the neighboring HH will accumulate in the biogas settler allowing for biogas generation, while it will allow free solid wastewater to be further treated using the BIOPIPE technology.

The BIOPIPE will act as a secondary treatment method for the effluent out of the biogas settler and will use all of vertical aligned looped pipe lines, circulation booster pumps run by solar energy, plus the cartridge and UV filters that will allow for full aerobic treatment process in an confined space with both low capital and operational costs and provide adequate irrigation water.

Generated biogas could be used at the neighborhood or community level for cooking, lighting or heating.