Wastewater Treatment and Energy Production in Southern Syria

Project name	Wastewater Treatment and energy production in Southern Syria
Project region	Southern Syria
Summary	Treat the WW of a village in south Syria that has a sewerage network in the aim of reusing it in agricultural activities and the production of electricity through the collected biogas from the process and agricultural organic matter.

Context Description

The setting is in a small village in southern Syria where approximately 300 houses exist with an average of 5 inhabitants living in each one. The villagers produce some of the products they need by practicing agriculture in lands adjacent to their houses. Some larger scale agricultural activities are being practiced. The products are sold in a vegetable market in the village. Water is supplied to the houses by water network from a private well. Wastewater is collected by a sewage network which disposes it directly to a nearby Wadi without any treatment.

The traditional concept of cleanness among the people entitles the extensive use of detergents and disinfectants. Women are generally the ones responsible for the house work.

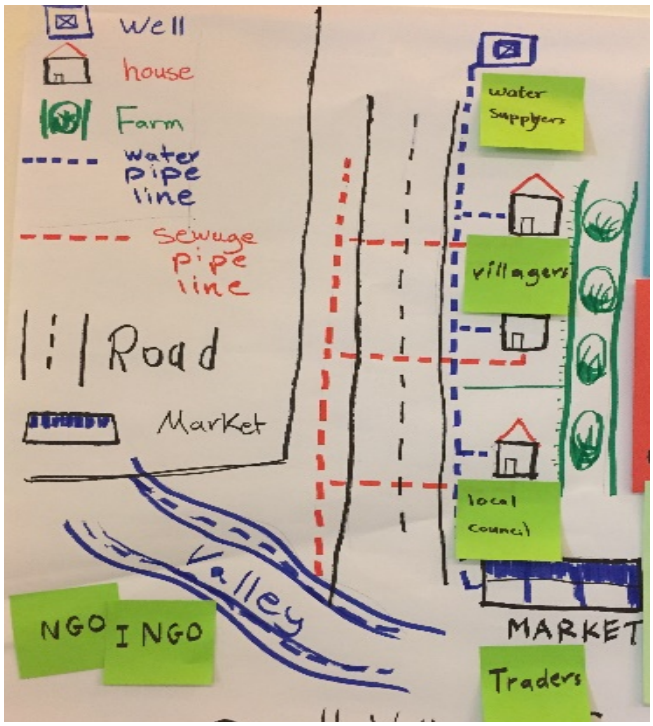
Solid waste is collected by trucks, which is organized by the local council. The collected waste is to be afterwards burnt in a land near the village.

Problem Statement

Untreated wastewater is being dumped directly into the river that passes near the village. Moreover, Water shortage is a characteristic of the village. Additionally, Extensive usage of chemicals at the household level is strongly present; namely detergents and cleaning substances, which affects the situation of current sanitation management even more negatively. Furthermore, no waste management practices are currently being implemented in the village. Electricity cuts has been experienced in the village.

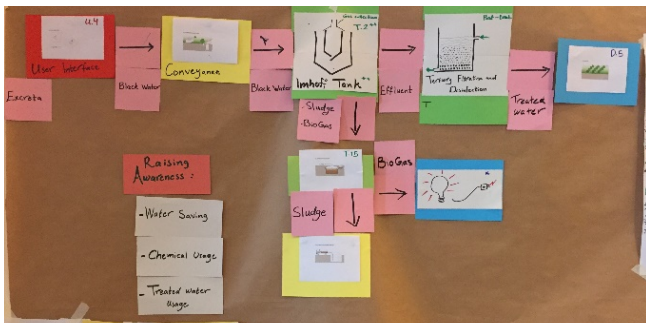
Solution (including developed graphics)

The original idea was to separate and treat both grey water and black water at the household level.



Location Map

However, after studying the context thoroughly, it was clear that another solution is more feasible and appropriate. The proposed solution is to centralize the treatment of wastewater at the end of the existing sewerage line using techniques that produce biogas and thus contribute to energy production. An improved Imhoff tank will be used as a first step of treatment. Afterwards, the effluent will undergo tertiary filtration while the sludge enters a biogas reactor, where it will be mixed with the shredded organic matter coming from waste management. The sludge then will be discharged by trucks for safe disposal while treated wastewater will be delivered to the farmer by trucks as well.



Sanitation and solid waste management design