Decentralized use of grey water and treated wastewater for agriculture in the Middle East

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Transferability of water management and policy approaches and lessons learned (both + and -)
Shafdan WWTP – Centralized Treatment prior to reuse
Using soils to provide additional treatment; aquifer storage before reuse

By the Shafdan Facility in Israel
Water reuse – Centralized
Decentralized Reuse of Treated Wastewater and Grey Water
Emek Hefer-Tulkarem-Nablus
Tans-border Cooperation

Cooperation Between Emek Hefer and Tul Karem for a Solution to the Environmental Problems

Emergency Solution for the Sewage from the Nablus Stream
Secondary Treated Effluent used to irrigate trees on Israel side of the Green Line.
Grant application in for upgrade to treatment system.

Raw sewage from Nablus aerated in pond.

Some waste from Nablus is now being treated but there is still untreated sewage being discharged.
Trans-border Cooperation

United States Mexico Workshop and Binational Advisory Committee meeting
Pilot Grey Water System in Deir Alla Region, Jordan Valley

November 2011
Opportunities to address water quantity and quality issues

• Jordan is located in an arid to semi arid area and is one of the top water scarce countries in the world. Therefore, water reuse is a high priority.
• Agriculture is the major consumer of water in Jordan, where about 64% of water demand goes for agricultural uses.
• Grey Water Recycling can alleviate the water shortage and reduce environmental pollution.
Project Purpose

• Innovation of a multi-layer filter for treating grey water consist of natural adsorbents and combined with solar cells and disinfection unit and storage

• Saving fresh water and money on local community water bills and on their cesspools.

• Adapting the proposed filtration system within the waste water management policy in the rural communities in Jordan.

• Primary Collaborators: Dr. Ayoup Ghrair and Dr. Othman Al-Mashaqbeh of the Royal Scientific Society, Amman, Jordan.
Methodology

The methodology consists of two phases:

Phase One:

• Conducting questionnaire, adopting interviews, and upraise awareness for the local community.
• Collecting and analyzing grey water samples from the studied area.
• Designing a multi-layer filter to be scale up for the field as a pilot scale.
• Installing and running the grey water treatment systems

Note: Phase one of the project was funded in part by USAID/SABEQ program
Grey Water Reuse for Agricultural Purposes in the Jordan Valley: Household Survey Results in Deir Alla

Othman A. Al-Mashaqbeh ¹,*, Ayoup M. Ghrair ¹ and Sharon B. Megdal ²
Survey Results

• The survey results showed that the socio-economic situation is generally very difficult. The families are poor and with low education levels. The main source of income for the local people is derived from agricultural activities.

• However, people are still willing to accept the reuse of grey water and to adapt its treatment in order to secure their water needs for irrigation.

• Increasing awareness and education, reforming of policy and law, developing and commercializing new technology, as well as training of local community on best practices of grey water treatment and reuse, are important.
Further results and future phases

• Workshop held at the University of Arizona in October 2012
• Second paper due out soon on initial water quality results
  – Initial water quality results are good.
• Additional water quality and filtering system research
• Installation of additional pilot system
• Researcher exchanges
• Identification of funding opportunities and development of grant proposals
Desalinated and brackish water for agricultural water use
Thank you!

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