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VERTICAL GREEN WALL GREYWATER TREATMENT AND REUSE SYSTEM

The system

The Vertical Green Wall Greywater Treatment and Reuse System is currently being tested as a pilot project in several Bedouin communities in Israel's Negev region. Here, it provides an innovative solution to limited access to water, sanitation, and electricity these communities face. However, the same model could potentially be used in the tourism industry for a sustainable approach to greywater treatment and reuse.



It is common in rural areas in Mediterranean countries to suffer from frequent electricity shortages, and other effects of weather, temporarily cutting them off from water, sewage and/or electricity access. While these challenges can be solved with generators and other alternative offers, this is often not a financially viable option for small businesses in the tourism industry. Implementing an off-grid water treatment systems would allow them to continue offering some of their services during prolonged electricity cuts, and reduce waste of greywater that is expensive to recycle institutionally. It is also a more environmentally friendly option.

The system includes three solar panels that allow it to function completely off-grid, and batteries which are being charged during the day for the technology to continue running smoothly at night.

System stages

Pre-treatment stage: anaerobic digestion via plastic polypropylene (PP) fixed substrate to reduce by 40% the organic load (e.g.: fats, oils, grease), tube clarifier for organic biomass settling, the secondary sludge breaks down to CO_2 and CH_4 (there is no sludge build-up).

Treatment stage: vertical green wall bio-filtration trickling filter that produces effluent for irrigation. The system includes a 3 day emergency tank for Influent and Effluent.



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Process flow diagram (PFD) of the Vertical Green Wall Technology

