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Initial Results from a Study on Greywater Reuse in Qatar: Economic Benefits and Public Opinions

Jordan M. Lee*, Dr. Laurent A. Lambert

Social and Economic Survey Research Institute (SESRI) at Qatar University
* sesri.Jordanlee@qu.edu.qa


Due to low annual rainfall and depleted groundwater resources, Qatar relies on expensive and energy-intensive desalination and retreatment plants to meet its growing water demand. With a high consumption rate of 557 liters/day/inhabitant, the cost of desalinating, transporting, and retreating water represents an unnecessarily large financial burden for the state. The Tarsheed national awareness campaign and tariff increases in Qatar are helping temper the rise of these costs, but additional tools are required to counter growing water demand. This study explains how recycling greywater can mitigate the growth of Qatar's water expenditure by slowing the increase in demand for desalinated seawater and retreated wastewater. Greywater is gently used water from showers, washing machines, swimming pools, air conditioning units, and lavatory sinks. Greywater is distinct from more heavily polluted blackwater, which comes from toilets, kitchen sinks, and dishwashers. Recycling greywater can generate savings because, with little or no treatment, greywater can replace more expensive water resources for several purposes, especially garden irrigation and landscaping. For example, using greywater instead of desalinated water for landscaping can slow the growth of demand for desalinated water in Qatar, thereby tempering the increasing cost of desalination subsidies. Capturing and reusing greywater will also slow the growth of the quantity of wastewater that is transported to retreatment plants and purified, which will generate further savings for the state. While there is a small cost to install a greywater capture and treatment system on a building, it pales in comparison to the cost of the desalinated and retreated water that would otherwise be used. This study provides quantitative information on the annual savings that can result from recycling different

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percentages of Qatar's greywater resource. Savings were calculated by assuming a quantity of greywater to be recycled (ranging from 5% to 30% of total greywater in Qatar), and then determining the cost of desalination, transport, and retreatment for that quantity of water. The savings from recycling the selected quantity of greywater equal the sum of the desalination, transport, and retreatment costs. Using this process, this study finds annual savings ranging from QAR 50 million to QAR 755 million. The large range in savings estimates is due to differences in the amount of greywater recycled, and differences in cost estimates for desalination and wastewater transport and treatment. Cost data were collected through interviews with water provision stakeholders, from executives to workers in the field, as well as a review of literature on the industry. In addition to this economic analysis, this study uses SESRI survey data to show that Qatar's population is highly accepting of greywater use, with 82% of Qatari citizens and 91% of white-collar expatriates saying that they are willing to use greywater for landscaping. The survey was conducted by telephone and includes data from a nationally representative sample of 746 Qatari citizens and 740 white-collar expatriates. The findings of this research align well with those of greywater research projects in Oman, which have concluded that recycling greywater will generate notable savings, and that there is strong public support for use of the resource. By recycling greywater, Qatar can slow the growth of its water provision costs, improve its water security, and advance its goal of sustainable development.