



Purification of Rural Drinking Water Supply Based on Renewable Energy



Sustainable Development Goals Addressed



Organization, Institution or Company
<p>Prototype and demonstration project of Massachusetts Institute of Technology (MIT) in Calamul Campeche Municipality, Mexico, with funding support by W.K. Kellogg Foundation</p>
Location of project site, Country
<p>Unión Veinte de Junio / La Mancalona village, Calamul Campeche, Yucatan, Mexico</p>
Brief narrative objective/description of project/activity/initiative
<p>Access to clean and affordable drinking water is a great challenge in many rural areas of developing countries. In Unión Veinte de Junio, also known as La Mancalona, a small rural village with 450 inhabitants on the Yucatan peninsula in Mexico, researchers of the Massachusetts Institute of Technology (MIT), with financial support of the W.K. Kellogg Foundation, have helped to set up a 1,000 liters per day prototype solar photovoltaic-powered reverse osmosis (PVRO) water purification station.</p> <p>The system uses solar panels to charge batteries, which then power pumps that push brackish well water and collected rainwater through filtration membranes. The batteries also supply the ultra violet sterilization bulbs with electricity.</p> <p>All parts used in the system can be obtained commercially within Mexico, and the technology and the project concept can easily be replicated in other rural locations.</p>
Economic, environmental and climate benefits/challenges/lessons learned
<p>Villagers have been trained to operate and maintain the PVRO system, which has greatly improved their lives. The water purification station has created a viable business opportunity for the village.</p> <p>The locally produced clean water is sold for 5 pesos per 20-liter bottle, which is 1/10th of the cost of bottled water that would otherwise need to be bought from another village about an hour away. During its first year of operation the water purification systems earned the community revenues of 49,000 pesos, or US\$3,600 equivalent, which fully cover maintenance cost, and leaves some savings to meet urgent village community needs. Similar systems are being installed in two more villages in the province.</p> <p>The MIT pilot and demonstration project has shown how renewable energy can be used in decentralized and even in remote location to purify local water for human consumption. The project is expected to make a significant positive contribution not only to the health o the population, but also to the local economy in the concerned villages.</p>

Additional information on the project is available to facilitate replication of the technology and business model in other developing country locations, where local water resources are scarce or contaminated.

Additional information: website addresses and contacts

Sources: Massachusetts Institute of Technology (MIT), MIT News, 2015

<http://news.mit.edu/2015/mexican-village-solar-power-purify-water-1008>

MIT Video Clip: <https://www.youtube.com/watch?v=Rx7iBw086u8>

Elsaad, H., et.al. (2015): Field evaluation of a community scale solar powered water purification technology: A case study of a remote Mexican community application, in: Desalination (Elsevier), Vol 375, November 2015, Pages 71- 80.

Mexico News Network

<http://www.mexiconewsnetwork.com/en/news/adventure/solar-power-purify-water-mexico/>



Photos by Leah Kelley / MIT News