

MIT engineer works toward clean water, more

March 5 2007

An MIT engineer working toward clean drinking water in Nepal describes in a recent issue of the *Journal of International Development* how people from developed and developing countries can work together to solve key humanitarian problems, ultimately meeting the basic human needs for security, broadly defined.

Such a collaboration "begins with a relationship among partners in the global village, taking into consideration the specific conditions of the local culture, environment and location," said Susan Murcott, a senior lecturer in MIT's Department of Civil and Environmental Engineering (CEE).

Murcott has personal experience of a global engineering partnership of this kind--she calls it "co-evolutionary engineering design"-through her work in developing countries.

She and students in MIT's CEE master of engineering program have worked for years with citizens of Nepal and, since 2005, of Ghana, to design, test and distribute inexpensive household water filters that simultaneously remove arsenic and microbial contamination from the available water supply. Murcott notes that some 150 million people worldwide are affected by arsenic-tainted water, while an estimated 1 to 5 billion people worldwide lack access to microbially safe water.

As of December 2006, more than 5,000 such filters are operating across Nepal, serving some 40,000 people. An additional 5,000 filters are slated

for sales and distribution in 2007 in Nepal, with further outreach into Vietnam, Cambodia and Bangladesh underway.

"The students and I are trying to make a positive contribution to people's lives and to improve our collective chances of development and security," said Murcott.

With co-evolutionary design, technical designers from developed countries become partners with the user communities, who are experts in their local conditions. With the MIT Nepal Water Project, Murcott points out, "Our team's partners have included university-educated people and illiterate peasant farmers. We have identified a common need-safe, clean drinking water for all-and we have worked together successfully for seven years so far."

Any system to provide clean water should consider factors such as sustainability, green engineering and World Health Organization guidelines. In addition, the system must meet the requirements of the local women who typically haul and store water, as well as being affordable to people earning one dollar a day. The same general principles also apply to other co-evolutionary design projects.

Murcott is currently focusing her energies in the northern region of Ghana, thanks to a two-year grant from the Conrad N. Hilton Foundation. Here, a social enterprise-"Pure Home Water," initiated by Murcott with Ghanaian partners-is marketing ceramic water filters in one of the poorest regions of Ghana, where cholera, typhoid, guinea worm and other waterborne diseases are rampant. Two Ghanaian social entrepreneurs, together with MIT engineering and Sloan School of Management students, hope to spread ceramic filters to reach more than a million people in northern Ghana in the coming years.

Murcott is also leading MIT teams to Nicaragua, Haiti, Peru and Kenya

to address water and sanitation issues in those countries.

She concludes, "We hope to increase awareness of health and safe water issues among the least educated people in remote areas of Nepal and Ghana, subsidize filters for the very poorest people, insure that locally made units are built correctly, and make sure that future teams will effectively and passionately carry the work forward.

"We are confident that this work provides a model of engaged, cross-cultural cooperation that builds self-reliant solutions, at the same time providing a renewed understanding that security for most people in the world relates not to armed conflict but to 'common good' social, environmental and economic challenges, for example, the simple need for safe water."

The Murcott team's efforts have been honored with several awards, including a Wall Street Journal Innovation Technology Award (environment category) and the World Bank Development Marketplace Competition.

Source: MIT

Citation: MIT engineer works toward clean water, more (2007, March 5) retrieved 25 April 2024 from <https://phys.org/news/2007-03-mit.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.