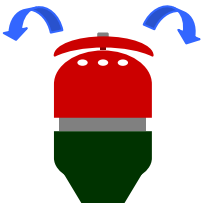
Sustainable Irrigation Projects for Rural South Africa



Project Goal:

To implement ram pump irrigation and other sustainable engineering techniques to enhance crop productivity in community gardens surrounding Richmond, KwaZulu-Natal

Sizanani community

The Need

KwaZulu-Natal, South Africa suffers from a 39.1% HIV/AIDS prevalence rate, much higher than the 29% national average. Elderly grandmothers (ngogos) are left with the responsibility of caring for orphans and vulnerable children of afflicted parents.

To provide for their family's needs, the ngogos manually carry water from nearby streams, causing physical stress and taking away time for them to tend to crops, the children and their education.

Mapaphateni garden

Project History:

We have travelled 10 times between 2006 and 2010 to perform assessments and implementations.

TOTAL:
8 community gardens and
11 ram pump systems installed

The EWB-JHU Response

- Locate community gardens with various needs, including water delivery, plant growth, protection from animal interference
- Assess garden sites for water accessibility, potential community involvement, and sustainability
- Install relevant technical solutions with environmental and social factors in mind
- Educate the community on system maintenance
- Monitor success of garden after implementation
  - Crop yield
  - Health of community and environment
  - Sustainability
  - Improvement of economic responsibility

Ngogo at Maphephetheni

Technical Solutions

In 2005, EWB-JHU established contact with Mr. David Alcock, who has decades of in-country experience in rural agriculture, as well as strong ties with the rural South African communities. Working hand-in-hand with Mr. Alcock and other in-country partners (notably Zakhe Agricultural College, or ZAC), our group initially focused on implementations of the "Alcock ram pump system" and on helping with fencing and other garden needs. The Alcock pump uses stream flow alone to pump water to high elevations without need for fuel or electricity. With only two moving parts, the ram pump is made primarily from recycled tires and steel parts with little value. These pumps serve as low-cost, low-maintenance solutions toward increasing annual crop yield and improving the diet and income of the communities. They eliminate a major task in farming that is taxing for the elderly by directly providing water near the crops.

The Past Year and Beyond

The team last travelled in August 2010. They assessed the Ndaleni site and implemented a ram pump system in Sizanani of Ndwedwe as part of a separate project overseen by Rotary International. At ZAC, a Hopkins-created flow-rate lab was introduced to the students to teach them about how ram pumps work. The team also performed maintenance work at the Mary Grey site, Esimozomeni, and Mapaphateni.

The focus for the 2011-2012 academic year is on a program oriented toward assuring the long-term sustainability of all the EWB-JHU installed ram pump systems as well as working closely with a yet to be determined community garden. We hope to raise enough funds to continue working with the communities, further develop the ram pump operating manual, continue our conversations with new Rotary partners, and assess current sites for possible expansion into new sustainable technologies.

2010-2011 team

Funding and Donors:

Fundraising was a major effort that included community outreach, professional organizations (ASCE, National and International Rotary Clubs, JHU Alumni Association, JHU DoGEE), and personal contacts.

EWB-USA

Engineers Without Borders is a non-profit organization established in 2000 to partner with developing communities worldwide in order to improve their quality of life. The Johns Hopkins University chapter (EWB-JHU), established in Spring 2005, seeks to fulfill these goals through the participation and partnership of students, professors, and professionals.

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ADDITIONAL INFORMATION

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Tax-deductible donations can be made by checks to "Johns Hopkins University" with "EWB-JHU South Africa" in the memo line.:

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