

# **KEEPING THE WATER FLOWING**

UNC study commends World Vision's approach as a key factor to sustainability

In 2015, World Vision and the University of North Carolina Water Institute announced the results of an independent study examining the key factors affecting sustainability of water sources in rural Africa. The dramatic results proved that World Vision water sources were the highest rated for functional success and longevity.

#### THE NEED FOR SUSTAINABLE WATER SOURCES

Access to safe drinking water and sanitation are critical to human health and development. However, more than 663 million people lack access to safe drinking water from an improved source and an estimated 1,000 children die every day from diseases related to unsafe drinking water and basic sanitation. In rural sub-Saharan Africa, millions of households depend on boreholes with handpumps for drinking water, **yet 30-50% of these handpumps may not be functional at any given time.** 

#### THE RESULTS: KEY FACTORS FOR SUSTAINABILITY

Research showed how an identifiable water committee and evidence of charging a fee for use of the water were the main reasons associated with the continued functionality of the water points. In addition to these best practices, World Vision's community engagement model also includes training local people as mechanics to repair pumps when they break down, contributing greatly to the longevity of World Vision-installed water points.

An integrated community engagement approach sets the standard for sustainability. The study found the odds of non-World Vision water sources being functional decreased by an average of 2 percent each year, whereas the functionality of water sources installed by World Vision did not significantly decrease with age.



The funcationality rate of non-World Vision water sources decreased by 2% each year, while the functionality of World Vision-installed water sources did not decrease over time.

## STUDY CHARACTERISTICS

- Cross-sectional study of 1470 water sources in 570 communities in the Greater Afram Plains (GAP) region of Ghana.
- Study communities were communities in which World Vision had installed at least one water source between 1973 and 2010.
- Data were collected by Water and Sanitation for Africa, a Pan-African humanitarian organization, as part of a project funded by the Conrad N. Hilton Foundation. Following the conclusion of this project, the data were anonymized and analyzed by researchers at the University of North Carolina.
- A Bayesian Network model was used to analyze multiple interacting determinants of functionality.

## WATER SOURCE CHARACTERISTICS

- Nearly 80% of 1470 water sources studied in the Greater Afram Plains were functional.
- 88% of sources were boreholes with handpumps, while 12% were other source types.
- 898 sources were constructed by World Vision; 672 constructed by other implementers.
- The average reported number of users per water source was 115.

# **RESULTS HIGHLIGHTS**

- Water source functionality is highly dependent on management team presence and quality.
- Management variables may interact synergistically to impact functionality.
- The collection of a tariff (or user fee) for collecting water in the community increased the odds of a water source in that community being functional.
- Functionality decreased slightly with age for all water sources studied, but did not significantly decrease with age for the 898 water sources installed by World Vision.
- Functionality can be understood as a dynamic equilibrium between breakdowns and repairs.



#### For more information, visit us online at www.worldvision.org/water and www.waterinstitute.unc.edu





Source for full study: Fisher, M. B., Shields, K. F., Chan, T. U., Christenson, E., Cronk, R. D., Leker, H., Samani, D., Apoya, P., Lutz, A. and Bartram, J. (2015), Understanding handpump sustainability: Determinants of rural water source functionality in the Greater Afram Plains region of Ghana. Water Resour. Res.. Accepted Author Manuscript. doi:10.1002/2014WR016770