



Issue 221 | March 21, 2016 | Focus on Water Quality, Supply, and Livelihoods

This issue contains resources on water quality and supply in water, sanitation, and hygiene (WASH) programs, including reports, published articles, and videos. Some of the content of this issue reflects World Water Day, which is held annually on March 22 as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources.

Each year, World Water Day highlights a specific aspect of freshwater. In 2016, the theme is "Water and Jobs." As noted on the World Water Day web page, "Today, almost half of the world's workers—1.5 billion people—work in water related sectors and nearly all jobs depend on water and those that ensure its safe delivery. Yet the millions of people who work in water are often not recognized or protected by basic labor rights." The theme this year focuses on how enough quantity and quality of water can change workers' lives and livelihoods—and even transform societies and economies.

REPORTS AND BRIEFS

Valuing Water, Valuing Livelihoods: Guidance on Social Cost-Benefit Analysis of Drinking-Water Interventions, with Special Reference to Small Community Water Supplies, 2011. World Health Organization. [Link](#).

This publication addresses the broader issues of social cost-benefit analysis performed on options to invest in drinking-water supplies. Written by a multidisciplinary team, this report is based on experience on the ground and provides many practical examples of how to deal with economic issues of drinking-water supply in the context of the livelihood strategies and public health priorities of people living in small communities, from policy to practice.

JOURNAL ARTICLES

Improving Health in Cities through Systems Approaches for Urban Water Management. *Environmental Health*, March 2016. L Rietveld. [Link](#). (Summary of the study noted below is reposted from *Sanitation Updates*.)

This article discusses the quandary that, as human populations become more and more urban, decision makers at all levels face new challenges related to both the scale of service provision and the increasing complexity of cities and the networks that connect them. Accordingly, systems approaches are becoming recognized as critical to understanding and addressing such complex problems, including those related to human health and well-being.

Management of water resources in and for cities is one area where such approaches hold real promise, according to the authors.

Water Quality Index for Measuring Drinking Water Quality in Rural Bangladesh: A Cross-Sectional Study. *Journal of Health, Population and Nutrition*, Feb. 2016.

T Akter. [Link.](#)

To assess drinking water quality, researchers measured multiple chemical parameters in drinking water samples from across Bangladesh with the aim of improving public health interventions. In this cross-sectional study conducted in 24 randomly selected *upazilas*, arsenic was measured in drinking water. Of the total sampling sites, 33 percent had good-quality water for drinking based on the Water Quality Index. However, the majority of the households (67 percent) used poor-quality drinking water; higher values of iron, manganese, and arsenic reduced drinking water quality. The authors concluded that awareness-raising on chemical contents in drinking water at the household level is required to improve public health.

Climate Change Impacts on Water Resource Management and Community Livelihoods in the Southern Highlands of Tanzania. *Climate and Development*, Feb. 2016, R Kanglawe. [Link.](#)

This paper is based on studies conducted in the southern highlands of Tanzania to assess the impacts of climate change on natural and socio-economic environments. Results indicated concerns on the progressive decrease of water flows and increasing seasonality of rivers and streams and drying up of some wetlands. Climate change is locally perceived as the main driver of such changes. Climate change is also locally perceived to have reduced the overall amount of water coming into the wetlands and has led to limited agricultural productivity in these areas. The authors concluded that findings point to the need for appropriate water resource management strategies to ensure environmental sustainability and community livelihoods.

Intermittent vs. Continuous Water Supply: What Benefits do Households Actually Receive? *Carolina Digital Repository*, 2015. K Onda. [Link.](#)

This article presents a study that investigates the way to upgrade from intermittent to continuous water supply and its effects on domestic water demand and coping behaviors. The study was conducted through fieldwork in Nagpur and Amravati in India. The results of the study show that the proposed benefits do not automatically affect the water consumers.

Upgrading a Piped Water Supply from Intermittent to Continuous Delivery and Association with Waterborne Illness: A Matched Cohort Study in Urban India. *PLoS Medicine*, 2015. A Ercumen. [Link.](#)

In the article, researchers assessed the association between continuous versus intermittent water supply and waterborne diseases, child mortality, and weight for age in Hubli-Dharwad, India. They found that continuous water supply had no significant overall association with diarrheal disease or ponderal growth in children under 5; this might be due to point-of-use water contamination from continuing household storage and exposure to diarrhea-related pathogens through nonwaterborne routes. Continuous supply was associated with lower prevalence of dysentery in children in low-income households and lower typhoid fever incidence.

Public Perception of Potable Water Supply in Abeokuta South west, Nigeria. *Journal of Applied Sciences and Environmental Management*, 2015. E Odjegba. [Link.](#)

The perception of residents towards the supply of potable water to Abeokuta was assessed with the aid of a questionnaire. Sixty-eight percent of the respondents attested that the quality of the water supplied was unsatisfactory, while 36 percent agreed that they had contracted water-related diseases from public water taps. Sixty-five percent of the respondents used less than 120 liters of water daily, while 77 percent attested that the water supplied did not meet their daily demand. It was advised that issues of inadequate water supply and coverage should be addressed speedily and residents should subject water obtained from alternative sources to treatment.

Analysis of Accessibility to Water Supply and Sanitation Services in the Awutu-Senya East Municipality, Ghana. *Journal of Sustainable Development*, 2015. C Peprah. [Link](#).

This paper examined accessibility to water supply and sanitation and the accompanying consequences. About 45 percent of the water sources are salty and 28 percent are impure and contaminated. Management of sanitation in the municipality has also proven to be daunting for authorities. The factors that lead to poor sanitation in the municipality are diverse, ranging from weak institutional capacity to wrong attitudes. The authors conclude that the Municipal Assembly should issue a minimum water quality requirement to all identified private water operators.

Analysis of Quality of Drinking Water of Private Bore-Well and Piped Water Supply in Jaipur City, Rajasthan, India. *Research Journal of Recent Sciences*, 2015. S Namita. [Link](#).

In Jaipur the main source of water supply is ground water that is either supplied by piped line by the Public Health and Engineering Department, or households have their own personal bore-wells at their premises. For the study, 20 samples were collected from 10 randomly selected wards, one each from bore-well and piped water supply. Results revealed that water samples did not fully meet the Bureau of Indian Standards norms of potable water. The samples of bore-wells were worse in quality than piped water supply. Fluoride and nitrates were found in private bore-well samples. Drinking water was contaminated with E-coli in both sources. The study concluded that water treatment is necessary.

A Basic Bottom-Up Approach for Small Systems of Safe-Water Supply: A Decentralized Case Study in Uganda. *Journal of Water Supply: Research & Technology-AQUA*, 2015. M Andreolli. [Link](#).

This study summarizes work that introduces a bottom-up approach for the implementation of a borehole installation in conjunction with proper water handling in rural areas. Information was collected regarding the water source, health status, water-related behavior, hygiene, and on other issues. Prior to the intervention the monthly diarrhea incidence was estimated to be around 22 percent among children. After the intervention, the monthly diarrhea incidence dropped to 10.2 percent among children. Even though this represents a positive result, the authors concluded that more intervention projects at household level are required to further reduce the diarrhea incidence.

Domestic Private Sector Participation in Small-Town Water Supply Services in Ghana: Reflections on Experience and Policy Implications. *Public Organization Review*, 2015. E Ameyaw. [Link](#).

This article discusses public-private partnerships (PPPs) with domestic private operators that were introduced in Ghana to improve water supply services, ensure management and operational efficiencies, and expand access. Based on two case studies carried out in the

Ghanaian small-town water subsector, this paper explores the specific characteristic of the applied management model, takes stock of the experiences of projects implemented under the model, and provides useful lessons and policy actions for policy makers and urban planners.

The Effect of Improved Water Supply on Diarrhea Prevalence of Children under Five in the Volta Region of Ghana: A Cluster-Randomized Controlled Trial.

International Journal of Environmental Research and Public Health, 2015. S Cha. [Link](#).

Although a number of studies have been conducted to explore the effect of water quality improvement, the majority of them have focused on point-of-use water treatment, and the studies investigating the effect of improved water supply have been based on observational or inadequately randomized trials. This study is a matched cluster randomized trial investigating the effect of improved water supply on diarrheal prevalence of children under 5 living in rural areas of the Volta Region in Ghana, and provides a basis for a better approach to water quality interventions.

Problems of Rural Drinking Water Supply Management in Central Kyrgyzstan: A Case Study from Kara-Suu Village, Naryn Oblast. *Environmental Earth Sciences*, 2015.

K Rost. [Link](#).

Since the independence of Kyrgyzstan in 1991 and the subsequent dissolution of the collective/state farm system, the drinking water supply system in rural communities has been deteriorating much faster than in urban areas. This paper demonstrates the actual problems of the drinking water supply system of a small village in the Naryn Oblast. Much of the water supply infrastructure is out of operation and many villagers are forced to set up private solutions. The local administration is unable to maintain the infrastructure and to provide a reliable water supply. Nevertheless, an increased responsibility of all stakeholders to manage the local water supply system is crucial.

TOOLS

Manual on the Human Rights to Safe Drinking Water and Sanitation for Water and Sanitation Practitioners, March 2016. International Water Association. [Link](#).

The manual focuses on the implications of new legislation and new components for existing legislation that address the human rights principles of equality, nondiscrimination, accountability, participation, access to information, and sustainability. It also promotes informed decision making by operators, managers, and regulators in their daily routine, as well as to encourage them to engage actively in the national debates that are taking place in many countries. In most countries, creating such an enabling environment will, in fact, be the first critical step in the process toward the realization of the rights, followed by the allocation of roles and responsibilities to the various actors at national and local levels.

PRESENTATIONS AND EVENTS

Launch of the United Nations World Water Development Report, March 22, 2016, in Geneva, Switzerland. [Link](#).

The World Water Development Report 2016, titled "Water and Jobs," will be launched during the official celebrations of World Water Day on March 22. The launch of the report is at the core of the World Water Day celebrations. During the event the main findings will be revealed to the audience and to the mass media. Check the link above on March 22 to obtain additional information.

WEBINARS AND VIDEOS

Official Trailer: World Water Day, 2016. [Link](#).

The animated video promotes this year's World Water Day theme: the power of water and jobs to transform people's lives.

WASHplus Weeklies highlight topics such as Urban WASH, Household Air Pollution, Innovation, Household Water Treatment and Storage, Handwashing, Integration, and more.



About WASHplus - WASHplus, a multi-year project funded through USAID's Bureau for Global Health, supports healthy households and communities by creating and delivering interventions that lead to improvements in access, practice and health outcomes related to water, sanitation, hygiene (WASH) and household air pollution (HAP). WASHplus uses at-scale, targeted as well as integrated approaches to reduce diarrheal diseases and acute respiratory infections, the two top killers of children under five years of age globally. For information, visit www.washplus.org or email: contact@washplus.org.