

JHU Global Water Program

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There is a growing body of evidence indicating that many regions of the world are facing critical issues relating to water quantity and quality as the result of human pressures and climate trends. A major global challenge is to ensure the availability

of water of sufficient quantity and quality for human consumption and ecosystem sustainability (Fig. 1). In short, we need to better answer the following critical question: *How can we predict and better manage the availability and quality of water for the sustained health of humankind and ecosystems, now and for future generations?* In seeking an answer to this question, there is a clear need to think locally and act globally (i.e., to better understand and measure the most salient community-specific characteristics and to undertake integrated research that will lead to sustainable global

solutions). In other words, we must seek solutions that will function in an efficient and sustainable way within each given local human and ecological environment. The goal of the JHU Global Water Program is to support interdisciplinary research and education in all areas relating to water quality and supply and in the context of both human health and ecosystem management. This program will provide infrastructure to support a worldwide safe water supply and sanitary waste disposal. Research is needed to develop an improved understanding of the design and implementation of an appropriate

of water of sufficient quantity and quality for human consumption and ecosystem sustainability (Fig. 1). In short, we need to better answer the following critical question: *How can we predict and better manage the availability and quality of water for the sustained health of humankind and ecosystems, now and for future generations?* In seeking an answer to this question, there is a clear need to think locally and act globally (i.e., to better understand and measure the most salient community-specific characteristics and to undertake integrated research that will lead to sustainable global

solutions). In other words, we must seek solutions that will function in an efficient and sustainable way within each given local human and ecological environment. The goal of the JHU Global Water Program is to support interdisciplinary research and education in all areas relating to water quality and supply and in the context of both human health and ecosystem management. This program will provide infrastructure to support a worldwide safe water supply and sanitary waste disposal. Research is needed to develop an improved understanding of the design and implementation of an appropriate



Figure 1. Inadequate access to clean water is a growing problem worldwide.

treatment and conveyance infrastructure for water and sanitation, with a focus on addressing needs in both developed and developing nations. Solutions require integrated approaches that use evidence-based methods and incorporate an understanding of public health, policy, human behavior, and science and engineering (Fig. 2).

This program will also balance demands for water, energy, and food with the needs of human health protection and ecosystem management under the constraints resulting from global climate change. In contrast to maintaining silos of understanding in water, energy, and agriculture, a full and proper analysis requires a rigorous systems-based approach. Water is the fundamental link



Figure 2. Components of the JHU Global Network for Water and Health Research.

in finding new means to properly balance energy needs, food production, and human health, all juxtaposed within the uncertainty of climate change permutations. Finally, emerging anthropogenic threats to water quality and supply will be identified and managed. Through the technological capabilities developed at APL and the scientific understanding developed at the Bloomberg School of Public Health and the Whiting School of Engineering, JHU is well poised to contribute to the continuing struggle to be proactive in protecting human and environmental health.

As a result of this continuity of focus and breadth of expertise, JHU is uniquely well positioned to identify and apply the right blend of public health understanding, innovative technological solutions, and policy programs to address any type and scale of problem. Rather than promoting standardized solutions through massive funding and implementation programs, we need to design and implement the most appropriate solutions for certain “patterns” of geographic, demographic, social, political, and economic situations. Such solutions require at least 5–10 years of contiguous funding support to develop, but the associated programs and models would find multidisciplinary and interdisciplinary outlets for dissemination and could thus fundamentally change how water interventions are implemented.

For further information on the work reported here, see the reference below or contact charles.young@jhuapl.edu.

¹Commission on Sustainable Development acting as the preparatory committee for the World Summit on Sustainable Development, *Implementing Agenda 21: Report of the Secretary General*, E/CN.17/2002/PC.2/7, <http://www.un.org/jsummit/html/documents/prepcom2.html> (19 Dec 2001).