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Global Environmental Health: Sustainability

Editor's Note: NEHA strives to provide up-to-date and relevant information on environmental health and to build partnerships in the profession. In pursuit of these goals, we feature a column from the Environmental Health Services Branch (EHSB) of the Centers for Disease Control and Prevention (CDC) in every issue of the *Journal*.

In this column, EHSB and guest authors from across CDC will highlight a variety of concerns, opportunities, challenges, and successes that we all share in environmental public health. EHSB's objective is to strengthen the role of state, local, and national environmental health programs and professionals to anticipate, identify, and respond to adverse environmental exposures and the consequences of these exposures for human health. The services being developed through EHSB include access to topical, relevant, and scientific information; consultation; and assistance to environmental health specialists, sanitarians, and environmental health professionals and practitioners.

The conclusions in this article are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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One definition of “sustainability” is the capacity to endure. In the realm of global environmental health, sustainable health interventions—for example, water, sanitation, and hygiene education programs—are community investments that should not only improve health, but should continue to provide benefits over time.

Goal 7 of the Millennium Development Goals (MDGs) (United Nations, 2009) by the United Nations seeks to ensure environmental sustainability and reverse the loss of

environmental resources. Specifically, one target for 2015 is to “reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation.” The problem is that traditionally, after these interventions have been provided, little information becomes available on the longevity of their health-related effects and behavior changes.

Thus, measuring intervention sustainability is a crucial factor in maintaining a community's health and well-being. The Centers

for Disease Control and Prevention (CDC) and the American Red Cross (ARC) are collaborating on identifying and understanding the factors that promote sustainability.

In 1998, Central America (El Salvador, Guatemala, Honduras, and Nicaragua) was struck by Hurricane Mitch—the deadliest Atlantic hurricane since 1780 (National Oceanic and Atmospheric Administration [NOAA], 2009). After the hurricane, ARC responded to the disaster and provided community- and household-level water, sanitation, and hygiene education to hundreds of communities. This project began as a disaster response/reconstruction in 1998, and developed into a study of the long-term sustainability of water, sanitation, and hygiene interventions.

ARC asked CDC to evaluate their post-disaster program to determine the program's health effects. CDC's findings focused on a subset of communities and results indicated the need to continue evaluating these interventions over time, especially after ARC no longer provided technical support. Typically, factors that go beyond the interventions are not evaluated nor are they followed out for more than a few months or, in some cases, a few years.

In this project, however, sustainability surveys were completed four and seven years after the initial interventions. Survey results showed that on a regional basis, the ARC interventions were generally sustainable after seven years. CDC also found that community involvement was a key part of ARC's program to ensure participation and community acceptance. In many communities today, physical infrastructure—such as water systems

and sanitation facilities—is still present, and, to a certain degree, is still functioning. Four indicators (Billig, Bendahmane, & Swindale, 1999) measured changes in water, sanitation, and hygiene education interventions.

Additional information from the community provided a better picture of intervention sustainability problems. Community-managed water systems were well run but experienced periodic service disruptions due to seasonal flood damage. Sanitation facilities constructed as part of the initial project were still present but were reaching their maximum capacity and in some cases were no longer usable. Very little health education had been provided since completion of the original interventions, and no significant improvements had been achieved in hygiene education measures. Results from the two sustainability surveys showed that the studied communities continued to experience the same issues: water systems needed repair and sanitation facilities needed maintenance. Significant changes were nonexistent and—with the exception of one community that received government funding to expand its water system—improvement was barely measurable.

Communities did address some of these problems but, for example, did not have the funds or technical expertise to improve or expand capacity of water systems to meet community needs. Large-scale changes in population (typically growth) were noted, which affected water service. The same issue was found with sanitation coverage: new homes

lacked sanitation facilities, and the current facilities were reaching maximum capacity.

Results from these sustainability surveys can guide funding allocation in future emergency responses and longer-term development projects. Such results will ensure that the issues noted are addressed, project success is maximized, and project investment is protected.

In the CDC survey, specific findings relating to sustainability included the following.

- Project design: to address population growth, planners need to better define appropriate water fees, site selection/local demographic trends, employment opportunities, seasonal changes (dry vs. rainy seasons), and water source capacity.
- Partnerships: assign defined roles to and work with local partner organizations. Include local Ministries of Health and Environment and host-country Red Cross Societies, and provide sufficient training to the local administrative structures to operate water and sanitation infrastructure.
- Hygiene education: identify a local partner to continue providing hygiene education to communities to support the interventions. Additional health education would ensure continued proper use and maintenance of water and sanitation interventions and reinforce good hygiene practices.
- Water-quality monitoring: regularly test the water system and water source for chlorine, bacteria, or both.

These findings can improve sustainability and in turn maintain a community's health.

Note that “hardware” interventions such as infrastructure do not automatically lead to behavior change; health promotion and motivation must be included to make these changes sustainable. Read more about this project at www.cdc.gov/nceh/ehs/GWASH/publications.htm. 🌐

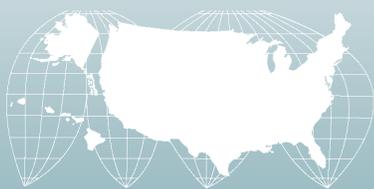
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