

Innovations in Global Health and Water Resource Management

Nearly a billion people in the world lack access to safe drinking water, two billion have inadequate sanitation facilities, and three billion use firewood for their daily energy needs. Combined, these resource limitations are among the leading causes of death, and economic and political insecurity. Exacerbating these problems are the global effects of climate change. In many countries, service providers are often utilities providing access to clean water, safe sanitation, and affordable energy. However, in many developing countries, there remains a significant gap between the intent of service providers and the impacts measured over time.

A combination of technologies may help address these information asymmetries and enable improved decisions and response. Remote sensing from satellite based instruments can forecast drought, floods and famine. A new generation of cubesats can provide global data coverage. In-situ sensors can monitor water resources, air quality, and global health program delivery.

In this seminar several programs designed and managed at CU will be discussed. Presently, a group of partners are currently installing satellite connected sensors on boreholes in the arid regions of Northern Kenya and Afar and Somali Regions, Ethiopia. Today we are monitoring over 3 million people's water supply, scaling to 5 million in 2020. Roughly half of water systems are functioning at any given time. Our intervention is aimed at achieving continuous functionality of services. In a water filter and cookstove program in Rwanda, instrumentation was used to monitor health behaviors, correlate adoption to health outcomes, and monetize program impact through carbon finance and "health credits". The program has to-date reached over 1.6 million people across over 350,000 households and demonstrated a 30% reduction in the prevalence of diarrhea and respiratory illness among children under 5.

Evan Thomas, PhD, PE, MPH | Associate Professor
Mortenson Endowed Chair in Global Engineering

Director, Mortenson Center in Global Engineering
University of Colorado at Boulder

evan.thomas@colorado.edu | <http://www.colorado.edu/center/mortenson>
US: + 1 303 550 4671 Kenya: +254 741 257 392