

**NC STATE UNIVERSITY**

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## **Measuring Impact in Global Engineering**

Friday, Feb. 14, 2020 at 12:50PM

Mann Hall, Room 323

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. In particular, in-situ “Internet of Things” (IOT) sensor technologies directly measuring water service delivery and relaying data over satellite and cellular data networks can enable improved feedback and accountability.

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. Two ongoing experimental evaluations, in Kenya and Ethiopia, will establish our impact.

These efforts are incorporated into an emergent area of teaching and research – Global Engineering. Global Engineering combines education, research, and partnerships to positively impact vulnerable people and their environment by improving development tools and practice. Global Engineering envisions a world where everyone has safe water, sanitation, energy, food, shelter, and infrastructure.

**This is a joint presentation from:  
Environmental Water Resources and Coastal Engineering Seminar  
NC State University Global WaSH Cluster Speaker Series**