“The Desert Research Institute’s WASH Capacity Building Efforts in West Africa”

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The primary purposes of the Institute are to:

- Foster and conduct fundamental scientific, economic, social or educational investigations and applied research for industry, governmental or private agencies or individuals.
- Encourage and foster a desire in students and faculty to conduct research.
- Discover and develop talent for conducting research.
- Acquire and disseminate knowledge related to the projects undertaken.
- And to promote all research for higher education and State of Nevada.

Campus and Field Facilities Sites
Nevada’s national, global laboratory
Research Structure

Research Divisions:

- Atmospheric Sciences
- Earth and Ecosystem Sciences
- Hydrologic Sciences

Integrated Science Centers:

- Center for Advanced Visualization, Computation, and Modeling (CAVCaM)
- Rogers Center for Environmental Remediation and Monitoring (CERM)
- Watersheds and Environmental Sustainability (CWES)
- Clean Technologies and Renewable Energy Center (CTREC)
DRI’s Involvement in WASH Programming

- DRI’s work began in the early 1990s and provided technical support and capacity building of staff
- Grants from the Hilton Foundation
- Working with World Vision
- In the Greater Afram Plains of Ghana
DRI’s Involvement in WASH Programming

- use of appropriate groundwater exploration methods and techniques to increase the success rate of water well drilling;
DRI’s Involvement in WASH Programming

- Water quality analysis and interpretation of results
- Water Quality lab
- Investigation of the use of local geomaterials to treat contaminated water
DRI’s Involvement in WASH Programming

- assistance with the development and use of hydrogeological and water quality data management systems; and

- the training of staff through short courses at DRI and graduate degree programs at the University of Nevada, Reno.
DRI’s Involvement in WASH Programming

- 2002 expanded work to Mali and Niger

- Active sub-grant from Hilton Foundation through World Vision for training, hydrogeological research and use of satellite imagery to locate sites for shallow well drilling

- World Vision/Hilton’s work has helped to provide safe drinking water to more than 3 million people
  - DRI has been a significant partner to this

- Helped to eradicate guinea worm in the Greater Afram Plains of Ghana
Global Water, Development and Sustainability

- Grant from the Conrad N. Hilton Foundation to establish an International Water and Sustainability Center

- Goal is to address gaps that exist in knowledge, research, and human resource capacity that persist in developing countries
  - Assist in reducing health related issues and design of sustainable WASH programs.
Objective #1

Undertake capacity building activities on water and environmental management issues focused specifically on challenges in the developing world

- Accomplished by offering short courses and workshops at DRI
- Semester-long graduate and under-graduate courses at UNR that focus on International development
- DRI and UNR will develop programs with African Universities to build capacity, and explore existing networks
  - University of Development Studies in Ghana as the hub for capacity building and research needs for international water and global sustainability issues
Objective #2

Engage in interdisciplinary, applied environmental research focused on addressing WASH issues specific to developing countries

- Not just focusing on water issues, DRI research will be directed toward topics including climate change, desertification, and WASH programming

- Enhancing IWRM activities for all developing countries
Objective #3

Develop and disseminate relevant information to enhance human development and environmental science in developing countries

- Create web-based catalogs of information and publications
  - Cell-phone/internet-based technologies to monitor water systems
- Evidence-based advocacy and partnerships
- DRI will disseminate guidelines on best practices created from work done in developing countries
Objective #4

Provide consulting services

- to funders, including the Hilton Foundation, and international NGO’s on the technical aspect of WASH interventions
- Advice to funders about where to invest
Proposed/Current Activities

- Capacity building, training and Courses
  - University of Developmental Studies – DRI is working with the University of Developmental Studies in Northern Ghana to establish a joint program to serve as the hub for training of NGO staff and students
  - DRI, Drexel and World Vision
  - US Universities WASH Consortium
  - MS University, India
  - Circuit Rider Program – long-term sustainability
Proposed/Current Activities

- Applied/Action Research
  - Coastal Salinity Research in Gujarat, India
Proposed/Current Activities

- Action Research with World Vision & Drexel
  - Improving equity in WASH
  - Models for scale-up
  - Assessing governance
  - Site-specific IWRM, recharge sources, water budgets
  - Big Data Analytics
  - Water Quality and Health
  - Climate Change
  - Desertification
  - Measuring cumulative impacts
  - Single vs. multiple interventions
Proposed/Current Activities

- Applied/Action Research
  - Watershed studies in Mexico
  - Burkina Faso watershed research with One Drop
Summary of Opportunities for DRI

• Capacity building, training, courses and faculty exchange

• Monitoring, evaluation and long-term sustainability of water systems

• Big data analytics

• Water use has been growing at more than twice the rate of population increase in the last century
  – Water budget studies, modeling
  – Efficient use of water

• Degradation of groundwater and surface water quality
  – IWRM
  – Coastal aquifers
  – Water Safety Plans
  – Biodiversity

• Climate change
  – develop adaptation strategies
  – pay more attention to water resource sustainability

• Environmental and Health
  – Air quality, ARI, water quality
Thank you!!!