WASH Capacity Building and Action Research in Developing Countries
A Collaboration between the Desert Research Institute, Drexel University and World Vision

Braimah Apambire¹, Shannon Marquez², David McGraw¹, Abiodun Oluyomi² and Sean Kerrigan³

Desert Research Institute¹
Drexel University²
World Vision International³

OU WaTER Conference, Norman

September 21, 2015
Issue and Need

• Still a huge gap in WASH, especially among the poorest of the poor

• Insufficient human resource capacity in WASH to provide services.
  - Universities and training institutions focus primarily on theoretical training and less on practical considerations and the critical challenges in WASH
  - Large, experienced international, regional and national non-governmental organizations (NGOs) in the WASH field, but there are a number of local/in-country NGOs that lack the necessary technical capacity to deliver positive WASH solutions
Issue and Need

• Difficult to design program covering the WASH continuum
• Need for better information regarding management of environmental resources, especially water, is critical
• Lack of innovative approaches
Issue and Need

- Critical to bridge gaps between scientific research and applied problem-solving in the context of developing nations to ensure that optimal solutions are discovered and applied.

- Demand for more water (increased access to potable water, improved basic sanitation, and irrigation water) is occurring in the midst of climate change impacts, exacerbating already existing problems in water resources management.

- Long-term sustainability
Issue and Need

- The expansion of WV programs requires capacity building
- Mentoring of staff
- Cross-cultural experience
Through grants from the Conrad N. Hilton Foundation, DRI has been involved in providing technical capacity building to water project staff, mostly from World Vision, in West Africa since 1991 in:

1) The use of appropriate groundwater exploration methods and techniques to increase the success rate of water well drilling;

2) Water quality analysis and interpretation of results;

3) Investigation of the use of local geomaterials to treat contaminated water;
Previous Work

4) Assistance with the development and use of hydrogeological and water quality data management systems; and

5) The training of staff through short courses and hands on experience at DRI and graduate degree programs at the University of Nevada, Reno.

6) Lately DRI has been conducting geological mapping for shallow-well drilling using satellite imagery
   - In Ghana and Mali, DRI has conducted watershed studies to evaluate the sustainability of water resources.
Goal is to capitalize on DRI’s expertise in environmental sciences to conduct interdisciplinary research, and provide both information and technical capacity to universities, gov’t and NGOs working to identify and solve problems related to human health and management of environmental resources. Objectives:

- Undertake capacity building activities on sustainable WASH services and environmental management issues focused specifically on challenges in the developing world.
- Engage in interdisciplinary, applied environmental research focused on addressing WASH issues specific to developing countries.
- Develop and disseminate relevant information to enhance human development and environmental science in developing countries.
- Provide consulting services to funders, including the Hilton Foundation, and international NGOs on the technical aspects of WASH interventions.
Drexel School of Public Health

Mission

The mission of the Drexel University School of Public Health (SPH) is to improve the health of communities and populations through innovative education and training programs, cutting edge research and scholarship, and cooperative partnerships with other civic, business and academic institutions committed to solving our world’s most difficult health challenges.
Drexel’s public health programs

• Problem-based learning with case studies and practical hands-on experience

• 10 week quarter and semester schedule – fast paced exposure to a greater variety of courses

• **Collaborative action-research with community groups, NGOs and agencies**

• **Students/faculty engage in comprehensive community-based research projects around the world**

• Human rights, social justice, and global public health perspective; collaborate with engineering
World Vision’s WASH Programming

- **1960s & 1970s**: Primarily small undertakings in individual communities.

- **1983**: Increased substantially when sub-Saharan Africa suffered massive drought in the early 1980s. Africa Task Force created by World Vision to study the problem, recommended the establishment of the Africa Drought Program in 1984, with 55 relief projects for $3.2 million.

- Beyond giving immediate relief to people facing severe famine, the Africa Drought Program sought to lessen the impact of future drought and see communities become self-sufficient in water and food. To do this, the program recommended that World Vision invest in large-scale programs costing at least $1 million each. They would focus on a combination of factors needing improvement – water, infrastructure, health, food, income generation, etc.
World Vision’s WASH Programming


• 1986: USAID awarded World Vision a three-year grant for the Africa Water Program. The grant’s primary purpose was to strengthen World Vision’s institutional capability to plan and manage large-scale water and sanitation programs. Operations covered Ghana, Kenya, Malawi, and Senegal.

• Lessons learned from 1985 to 1990 helped World Vision establish water programs in Ghana and Senegal that provided a sustainable impact.
  - Capacity building and M&E through USAID-funded WASH

• 1990: Conrad N. Hilton funding for Ghana program. Increased sanitation and hygiene activities
  - Capacity building through DRI, Cornell, New Mexico Tech
World Vision’s WASH Programming

- 2002s large-scale programs through WAWI, Ethiopia and Zambia etc. Became more sophisticated
  - Global Center Strategies
  - Capacity building through WVUS and WVI
  - CoPs

- 2010-2016 WASH business strategic plan under “Every Child” Campaign
  - Most difficult operational challenge is finding, hiring, and retaining highly qualified and motivated staff. Expects to hire and maintain over 200 staff with expertise in WASH and monitoring and evaluation (M&E)
  - Plans to hire 225 staff members next year, including 55 technical, 150 community, and 80 project management and support staff members.
  - Learning Centers
  - Staff will need to be trained, mentored and exposed to the global WASH sector and the most beneficial practices of this sector. This is particularly important because most WV staff members are usually nationals so they will need mentoring and exposure to be able to interact with the international community.
DRI, Drexel and WV WASH Capacity Building Program Goal and Objectives

• The goal of the program is to provide training to increase the technical capacity of World Vision staff, and to improve both WASH and ADP programming, which is a cornerstone of the overall World Vision WASH strategy. Objectives

  - Undertake capacity building activities on WASH issues focused specifically on challenges in the developing world
  - Engage in action research focused on addressing WASH issues in World Vision Program Countries
  - Develop and disseminate relevant information and best practices to enhance World Vision’s programs and the WASH sector
Approach

- Literature reviews and sector leader interviews
- Develop and implement curricula, workshops, courses, and action research projects
- Identify appropriate areas for capacity building, research, and knowledge
- Review of existing networks of African WASH NGOs
- Meetings with WV WASH leadership
- Review of reports and documents
- Literature reviews and sector leader interviews
- Develop and implement curricula, workshops, courses, and action research projects
- Review of existing networks of African WASH NGOs
- Meetings with WV WASH leadership
- Review of reports and documents
- Literature reviews and sector leader interviews
Activities

- Traveled to Africa to conduct site visits, meet with World Vision field staff and discuss possible opportunities for capacity building collaboration.

- Formal interviews at the three World Vision WASH Regional Centers to prioritize capacity building and action research needs.

- Designed survey questionnaire and administered to World Vision WASH staff across Africa.

- Conducted a high-level environmental scan and situation analysis of existing WASH networks and training institutions for African WASH NGOs, including investigating the resources and platforms available to support these networks, and broader knowledge management.
DRI and Drexel administered surveys to 120 World Vision staff across the three regions of Sub-Saharan Africa to assess the capacity assets and needs of the World Vision WASH staff. The overarching goal was to specifically evaluate WASH and/or health capacity building activities that are directly related to WASH. In this regard, capacity building activities were defined as follows:

- short and longer trainings, workshops and courses; as well attendance at professional meetings and conferences, to strengthen the skills of World Vision WASH staff in Africa, and provide an opportunity for World Vision field staff to improve performance and meet the needs for expertise in working on complex WASH projects.

- participation in webinars, mentoring, long distance learning, and formal college/university education.

The survey was designed to: (1) capture the human capital assets of World Vision country/regional staff members and (2) assess WASH training needs, based on the perceptions of World Vision country/regional staff members.
Results from Survey Monkey & Environmental Scan

- DATA ANALYSIS TECHNIQUES AND METHODS
  - Quantitative data analysis methods
    - Basic data exploration was conducted, scanned and plotted in different ways to understand the dataset and look at correlations, anomalies, trends and distribution using standard statistical techniques. This initial step helped in identifying primary, secondary, quantitative and qualitative responses and determining how further analysis could be done on the dataset. The data were analyzed using simple correlations and aggregations. Responses to particular questions were categorized by factors such as gender, region, education level, and employment sector. The purpose of the quantitative analysis was to summarize responses and classify specific responses to demographic factors such as gender, level of education, geographic location, and sector.
Results from Survey Monkey & Environmental Scan

• DATA ANALYSIS Techniques AND METHODS
  - Qualitative data analysis methods
    • Basic analysis on a ten open-ended questions was conducted from the survey using analytical protocols that are suitable for qualitative data.
  - Environmental Scan
    • A high-level environmental scan and situation analysis of existing WASH networks and training institutions for African WASH NGOs was conducted.
### Results from Survey Monkey & Environmental Scan

<table>
<thead>
<tr>
<th>Region</th>
<th>count</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Africa Region</td>
<td>62</td>
<td>53%</td>
</tr>
<tr>
<td>Southern Africa Region</td>
<td>35</td>
<td>30%</td>
</tr>
<tr>
<td>East Africa Region</td>
<td>18</td>
<td>15%</td>
</tr>
<tr>
<td>South Asia and Pacific</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Support Office</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>117</td>
<td></td>
</tr>
</tbody>
</table>

![Pie chart showing regional distribution]
The majority (65%) of respondents work in the WASH sector, followed by ADP Programs and Health. Most of the respondents are WASH facilitators, ADP Managers, or Engineers. Several respondents selected more than one sector, resulting in 126 responses from 117 respondents.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASH</td>
<td>76</td>
<td>60%</td>
</tr>
<tr>
<td>ADP Programs</td>
<td>27</td>
<td>21%</td>
</tr>
<tr>
<td>Health</td>
<td>11</td>
<td>9%</td>
</tr>
<tr>
<td>Admin</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>DME</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>126</strong></td>
<td></td>
</tr>
</tbody>
</table>
## Results from Survey Monkey & Environmental Scan

<table>
<thead>
<tr>
<th>Job title</th>
<th>count</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASH Facilitator</td>
<td>39</td>
<td>33%</td>
</tr>
<tr>
<td>ADP Manager</td>
<td>15</td>
<td>13%</td>
</tr>
<tr>
<td>Hydro/Water Engineer</td>
<td>15</td>
<td>13%</td>
</tr>
<tr>
<td>Program and WASH Manager/Officer/Director</td>
<td>13</td>
<td>11%</td>
</tr>
<tr>
<td>WASH Coordinator</td>
<td>13</td>
<td>11%</td>
</tr>
<tr>
<td>Admin and Finance</td>
<td>9</td>
<td>8%</td>
</tr>
<tr>
<td>Team Leader</td>
<td>7</td>
<td>6%</td>
</tr>
<tr>
<td>DME Officer</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Construction Coordinator</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>National Director</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>117</strong></td>
<td></td>
</tr>
</tbody>
</table>
Half of the respondents' highest education level is a Certificate, 64% of respondents have a bachelors or below. This result reveals the importance of World Vision having to build the capacity of their staff. The result will be significant when determining the level of training required by each participant.

<table>
<thead>
<tr>
<th></th>
<th>count</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>50</td>
<td>42%</td>
</tr>
<tr>
<td>Diploma</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Bachelor</td>
<td>23</td>
<td>20%</td>
</tr>
<tr>
<td>Master</td>
<td>41</td>
<td>35%</td>
</tr>
<tr>
<td>PhD</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>total</td>
<td>117</td>
<td></td>
</tr>
</tbody>
</table>
Results from Survey Monkey & Environmental Scan

• The length of employment (tenure) varies significantly.
  • 35% of the respondents have been with World Vision less than one year
  • 54% have less than three years tenure
  • More than a third have been with World Vision more than five years.

• This information will also be useful in developing a training plan.
## Results from Survey Monkey & Environmental Scan

<table>
<thead>
<tr>
<th>Key Challenge</th>
<th>total</th>
<th>&lt; 1yr</th>
<th>1-3 yrs</th>
<th>&gt; 3-5 yrs</th>
<th>&gt; 5-10 yrs</th>
<th>&gt; 10-15 yrs</th>
<th>&gt; 10 yr</th>
<th>&gt; 20 yr</th>
<th>&gt; 25 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing</td>
<td>48</td>
<td>12</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>15</td>
<td>13</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>too few capacity building opportunities</td>
<td>41</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>11</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>unaware of capacity building opportunities</td>
<td>29</td>
<td>14</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Language</td>
<td>23</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Location</td>
<td>21</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>limited relevance to current work</td>
<td>16</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>too many capacity building opportunities</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>87</td>
<td>9</td>
<td>13</td>
<td>2</td>
<td>48</td>
<td>55</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
# Results from Survey Monkey & Environmental Scan

## Areas of training most needed to be able to perform your duties

<table>
<thead>
<tr>
<th>Areas of training</th>
<th>total</th>
<th>&lt; 1yr</th>
<th>1-3 yrs</th>
<th>&gt; 3-5 yrs</th>
<th>&gt; 5-10 yrs</th>
<th>&gt; 10-15 yrs</th>
<th>&gt; 10 yr</th>
<th>&gt; 20 yr</th>
<th>&gt; 25 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>monitoring evaluation learning sustainability</td>
<td>72</td>
<td>21</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>21</td>
<td>16</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>project design management</td>
<td>61</td>
<td>17</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>17</td>
<td>16</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>hygiene promotion</td>
<td>53</td>
<td>22</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>11</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>sanitation</td>
<td>48</td>
<td>17</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>12</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>health aspects of WASH</td>
<td>48</td>
<td>19</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>10</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>WASH policy</td>
<td>48</td>
<td>13</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>13</td>
<td>10</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>basic training in WASH</td>
<td>45</td>
<td>18</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>11</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>social aspects of WASH</td>
<td>44</td>
<td>13</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>13</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>technical engineering</td>
<td>42</td>
<td>17</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>12</td>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>cross cutting issues</td>
<td>39</td>
<td>12</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>9</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>field methods class</td>
<td>35</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td>9</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>action research</td>
<td>32</td>
<td>11</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>11</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>total</td>
<td>192</td>
<td>34</td>
<td>32</td>
<td>10</td>
<td>143</td>
<td>120</td>
<td>36</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Word Frequency Analysis (Word Cloud)

Variable: If you were to design a capacity building program for World Vision WASH, what would it include?
WASH Program

• DRI and Drexel courses are offered for credit and taught in the field as well as online. There are two tracks for the program:
  - Certificate in International WASH at DRI/University of Nevada, Reno (UNR)
  - Certificate in Public Health (Global WASH) at Drexel University.

• Credits earned can be applied toward a bachelor's, master's or PhD degree in International WASH should the students want to pursue one of these programs.
WASH Program

- DRI/UNR courses in the program are:
  - International Water, Sanitation and Hygiene (I WASH);
  - Project Development and Management for WASH Managers and Leaders;
  - WASH Policy, Communications and Advocacy;
  - Crosscutting Issues in WASH;
  - WASH Field Methods;
  - Water Supplies and Environmental Management in Developing Countries; and
  - WASH Action Research in Developing Countries.

- Other courses that are being developed are 1) Market-based approaches to
  WASH; 2) Long-term Sustainability of WASH Services; 3) Sustainable
  Development Goals and WASH; 4) IWRM in Developing countries; and 5) Water
  Safety Planning.

- Two courses are being offered by DRI to 30 World Vision staff in 18 African
WASH Program

• Drexel University courses in the program are:
  - Monitoring & Evaluation;
  - Sanitation;
  - Hygiene Promotion;
  - Behavior Change,
  - Social and Software Aspects of WASH;
  - Health Aspects of WASH.

• Two courses are being offered by Drexel to 24 World Vision staff in 18 African
WASH Program

- Discounted fees by DRI/Drexel
- Partnering with other Universities in Africa
- Evaluation and outcome indicators
  - Matrix has been developed
  - Academic Evaluation, Feedback and Intervention System (AEFIS) is the web-based assessment management solution that facilitates the collection and application of real-time assessment data. The scalable platform enables the continuous quality improvement of curriculum and fosters personalized learning
- After pilot phase, program will be expanded to other regions, NGOs and Government staff