



**GLOBAL WATER
ALLIANCE**

CONFERENCE PROCEEDINGS

GWA 9th Annual Conference

April 6th, 2016

Temple University

Global Water Alliance

In 2006, inspired by the UN Millennium Development Goals, water professionals from the Philadelphia, PA [USA] area and University of Pennsylvania students founded the Philadelphia Global Water Initiative [PGWI] as an organization dedicated to helping those in developing countries find access to water, sanitation, and hygiene [WASH] services. These professionals came from government, business, academia, and NGOs. In 2013, PGWI changed its name to the Global Water Initiative [GWA] and today its focus is helping the poor meet the challenges of the UN Sustainable Development Goals [SDG] for WASH.

GWA is a network of organizations and people from the Philadelphia area and beyond who have the common interest of addressing WASH issues in developing countries. Each of these organizations have its own interests, goals, and approaches to these problems. Some are NGOs who focus on on-the-ground projects in a particular part of the world. Others have business-related objectives in the WASH field. And others focus on education, both for students and the general public. These organizations share a common goal of helping the less fortunate in the world.

GWA serves many functions including helping organizations find the needed expertise for their projects in developing countries, providing education on WASH issues through its Annual Conference and through its members teaching undergraduate and graduate courses [eg, at the University of Pennsylvania, Drexel University, and Temple University], making presentations to schools and civic groups, conducting WASH research, assisting and mentoring students, and promoting the exchange of the latest innovative ideas related to WASH. One of the strengths of GWA is that it provides a multi-sector and multi-disciplinary perspective. It provides expertise from the government, business, academic, and NGO sectors and from numerous disciplines including science, engineering, public health, project management, government policy, law, and business. Members of GWA have conducted WASH projects in India, Kenya, The Philippines, Haiti, Mexico, Cameroon, Afghanistan, and other countries.

The GWA Board consists of the following members Angelita Fasnacht-Cuellar [President, GWA], Kosovo-Addis; Dr. Christiaan Morssink [Treasurer, GWA] University of Pennsylvania; Greg Kelder [Secretary, GWA], Brandywine Group of Insurance and Reinsurance Companies, a Chubb Company; Walt Walker, Engineers Without Borders; Dick Riegler, Aqua America, retired; Tony Sauder, Pennoni Associates; Dr. Shannon Marquez, Drexel University; Mark Freed, The Freed Law Firm; Ed Grusheski, Philadelphia Water Department, retired; Dr. Heather Murphy, Temple University; Dr. Arun Deb, Weston Solutions, retired; Vince Uhl, Uhl Associates; and Stan Laskowski, University of Pennsylvania.

GWA is a 501[c] 3 organization consisting almost entirely of volunteers and more information can be found at the website which is now under construction www.globalwateralliance.net . If you are interested in volunteering at GWA please contact one of the following Board members: Angelita Fasnacht-Cuellar- angelita@kosovo-addis.com, Christiaan Morssink- christiaanmo@yahoo.com, or Stan Laskowski- stanlaskowski7@gmail.com.

Conference Proceedings

Conference Facilitator:

Lisa Hilmi, Fellow, Center for Global Women's Health, University of Pennsylvania

8:30-8.45AM

Session: Welcoming Remarks:

Temple University and Global Water Alliance

Speaker name and title:

Dr. David Sarwer- VP Research, College of Public Health, Temple University

Highlights/major points:

- Key to water sustainability is to build the trust between public and water. For example, Flint Water crisis highlights that any plan related to water supply or treatment must protect and emphasize public trust. Because of crises like this one, the public trust that our water systems are safe and drinkable has been jeopardized.
- Water issues are entangled with hygiene and public health. Examples of innovative way to increase water sustainability awareness in public health: Plastic surgeons save water by keeping the water faucet closed when they don't use water during scrubbing before an operation.
- Water sustainability is also food/energy sustainability. Encouraging obese people to drink water instead of beverage can be part of the greater plan to sustainability.
- The GWA conference, being hosted at Temple University, brings minds together and allows students to engage in conversations.

Speaker name and title:

Angelita Fasnacht-Cuellar, GWA Board President

Highlights/major points:

- Water issues are not tangible only in the developing world, but also in the developed world. Example: Flint water crisis. Thus, best practices must be shared between developed and developing world.
- The GWA conference today takes place in name of the people who cannot stand up and speak for themselves. The conference brings today a diverse audience together.

8:45-9:00 AM

Speaker name and title:

Christine Knapp, Director, Office of Sustainability, City of Philadelphia

Highlights/major points:

- Office of sustainability, Philadelphia, was created 8 years ago to make it one of the most sustainable cities in the US. Out of the 15 targets originally set, many were achieved: recycled rate is tripled; 15% reduction in greenhouse gas; nearly 5000 acres of stormwater management system or green infrastructure were built; 100 miles of bike lanes. Many of the goals, however, require long-term work and won't see results in 8 years.
- "Greenworks" was adopted to attract people to Philadelphia and improve the quality of life of Philadelphians, as opposed to manage resources (which is the case in other cities like New York).
- Philly Food Finder helps people to find food resources near to their community so that they can drive less.
- Stormwater management program in Philadelphia is the first in the country, resulting in socioeconomic benefits, creation of jobs, increase in property values, and reduction in crime.
- 20% of total energy supply in Philly comes from renewable source, and this number is expected to grow over the next 50 years as more homes use renewable energy.
- Greenworks and the SDGs have parallel goals in relation to reducing climate emissions. Philadelphia has been predicted to become warmer and wetter in the coming years, so the upcoming focus of the Greenworks program is to protect residents, communities, and city assets. This involves obtaining precise information about the outcomes in the next 6 years. Visit phila.gov/green for more information.

9:00-9:35AM

Session: Keynote Address:

“Achieving the SDG targets for drinking water, sanitation and hygiene”

Speaker name and title:

Thomas Slaymaker, Senior Statistics and Monitoring Specialist, UNICEF

Highlights/major points:

- JMP (Joint Monitoring Program) monitors programs that are involved with water supply and sanitation. Between 2000 and 2015 the dataset increased 10 fold to nearly 2000 pieces of data.
- The Millennium Development Goals (MDGs) were not as successful as the UN hoped they would be. The MDG for drinking water has been met, but the MDG for sanitation has not been met.
- Sustainable Development Goals (SDGs) have recently been introduced to replace MDGs. MDGs are applied primarily to developing countries whereas SDGs are applied to all countries. The idea with SDGs is that sustainability can only be achieved when no one is left behind.
- SDGs are far more comprehensive than MDGs. MDGs had 8 goals with 21 targets. SDGs have 17 goals with 169 targets.
- SDG goal #6 is clean water and sanitation. One of the targets of this goal includes achieving universal and equitable access to clean drinking water by 2030.
- Data is being continuously collected to monitor water programs. This data helps JMP to identify areas that need improvement or more attention. For example, improvement in water availability and sanitation in India is greater in rich areas compared to poor areas.
- The data collected includes household surveys (demographics, health, living standard measurements), censuses, and administrative records. Areas are tested for availability, accessibility, and quality of water sources.
- JMP uses service ladders to rank the situations in certain countries. Safely managed water would rank at the top of the ladder. Basic water and unimproved water would rank in the middle, and no service to water would rank last on the ladder. The service ladder also includes progressive realization (it explains why the water source is currently ranked the way that it is).

- In order to be accurate with solutions to water crises, JMP disaggregates data. The data is broken down into urban and rural areas, the different wealth groups, levels of affordability, different geographic areas, and disadvantaged groups.
- Visit www.wssinfo.org for more information

9:35-10:25AM

Session:

Panel A: Evaluating WASH Efforts—Lessons Learned

Moderator:

Seung Lee, Senior Director, Save the Children School Health and Nutrition Team

Panelists:

1. Lonna Shafritz, FHI 360, An integrated WASH+nutrition program in Northern Mali,
2. Christina J. Bowles, Dornsife School of Public Health at Drexel University, World Vision, Rural Water Point Sustainability in Zimbabwe
3. Leah Popek, Dornsife School of Public Health, Drexel University, Marks of Failed and Successful Mechanized Borehole Systems in Zambia

Highlights/major points:

Lonna Shafritz

- Worldwide WASH interventions can prevent up to 860,000 child deaths each year. The 2015 infant mortality rate in Mali was 115 per 1,000 live births.
- Objective of the WASH program in Mali: Improve nutritional status of 19,000 children in 180 rural villages.
- The WASH program resulted in greatly reduced rates of open defecation, construction of latrines and handwashing stations, improved water sources, dramatic decreases in malnutrition, reduction of women's workload, and many educational sessions on water treatment and breastfeeding.
- This project showed that a long-term strategy is needed and that coordinated community participation is essential.

Christina Bowles

- Bowles participated in a 10-week internship in Zimbabwe to examine WASH programs.
- Zimbabwe was not meeting the MDG targets; the access to clean water actually seemed to be regressing.

- The lack of water means a high level of female burden. In 81% of households, women retrieve the water.
- The purpose of the program was to improve implementation, accountability, and community support. The goal was to identify the factors affecting water point sustainability.
- 27 water point user committees (WPCs) were interviewed to determine specific water point issues.
- The study concluded with various recommendations for the communities. These recommendations include improving the supply chain of replacement parts, annual refresher courses for WPCs, avoiding the mentality that ‘water is free,’ providing skills for income generating activities, and developing partnerships.

Leah Popek

- Popek conducted research in Zambia. This research served to identify health and social markers of successful communities and to identify areas of WASH programs that need improvement.
- The results found that piped water was the main source of water, and it was available only 1-5 hours each day. It was also found that there were a limited amount of operational pit latrines, limited handwashing, and complacency.
- Sustainable actions to be take: communication with stakeholders, accurate statistics, building capacity, acquiring knowledge about how to build long-lasting latrines with alternative methods.

10:45-11:35AM**Session:**

Panel B: Promoting Behavior Change

Moderator:

Elizabeth Jordan, Environmental Health Advisor, USAID

Panelists:

1. Hanna Woodburn, Global Public-Private Partnership for Handwashing, New thinking about hygiene behavior change in the SDG era
2. Mom TatahMentan, Drexel University Global Public Health Initiative, World Vision, Community Based Environmental Health Promotion in Byiringiro Area Development Program
3. Dr Heather Murphy, Temple University, POU water treatment in rural Cambodia

Highlights/major points:**Hanna Woodburn**

- Partnerships on projects in developing countries can lead to conflict particularly when goals and time lines do not align. An example of this is when there are fiscal and higher level pressures to produce measurable results on one side but not the other side.
- October 15th is Global Handwashing Day. This was started by the private sector, and it has been successful thus far in spreading the word about handwashing.
- The public sector focuses on equity and access for all. The public sector is more willing than the private sector to discuss the topic of menstruation.
- Collaboration is very important in promoting behavioral changes.

Mom TatahMentan

- TatahMentan discussed sanitation education in Rwanda using Community-based Environmental Health Promotion Program.
- This study was based on focus groups and personal interviews. These interviews focused primarily on orphans and vulnerable youth.
- The results from the study have shown that diseases have decreased because of more access to clean water.
- The program improved the water supply, sanitation, and hygiene practices. Better health outcomes have led to higher economic productivity for community members.

Heather Murphy

- Murphy discussed point of use (POU) water treatment in rural Cambodia.
- The purpose of POU is to reduce contamination of water from source to home and to improve the microbial contamination of water.
- The 2 POU technologies that are the most widely used are ceramic water filters and biosand filters.
- The elements for success in any study include quality control, maintenance practices, quality control, sustainability, health & hygiene control, user feedback & satisfaction, affordability, and technology delivering & monitoring.
- Technology must be chosen based on a local context. One size does not fit all.

11:35-12:35PM

Session:

Panel C: Technical Solutions

Moderator:

Vince Uhl, President, Uhl Associates, GWA Board Member

Panelists:

1. David Favazza, Tetra Tech, Sustainable Piped Drinking Water in Liberia's Secondary Cities
2. Rupert Whiting BEng, President, ClearGold Water Restoration Company Limited
3. Matthew Lisle and Adrian Lievano, Everwaters, LLC, Water, Plants, Humanity and the Future

Highlights/major points:

David Favazza

- Before Ebola conflict, 10 cities had piped water systems constructed in 70-80s with donor support
 - Current reliance on shallow wells surface water
- USAID developed the Liberia Municipal Water Project to design water infrastructure in 3 county capitals (with population around 30,000) and to help establish local capacity to sustainably operate and manage water. Currently, unmaintained treatment plants have concrete surfaces.
- The technical design solution proposed is powered by a hybrid solar-diesel system, which has high up-front cost, but low management cost and low life-cycle cost. Water treatment is performed using slow sand filters, reducing demand of chemicals and pumping. The non-engineering constraints of the project include convoluted policy and legal systems, overlapping mandates/jurisdictions, centralized management (based in Nairobi), limited or nonexistent information about monitoring and evaluation, willingness and ability to pay and manage, history of corruption and conflict, land tenure systems.
- In the LWMP, sustainability monitoring data is reported monthly. A household survey links respondents to source and tracks changes each year, such as evolution of pipelines and kiosks, average distance between household and drinking water source, and daily jerricans sold from Robertsport to study impact on sales.

Rupert Whiting, Six Degrees Water Co

- There is a preconception that the private sector is comprised of major multinational corporations exclusively
- Six Degrees Water Co has been aiming to take technology from the developed to the developing world, with less focus on developed-country issues in order to address them in the developing world. The idea is to change the way the world treats water: not a disposable resource, but a recyclable resource.
- The pilot plan consists on a shipping container where people can bring their bathing water. This provides a community-based, safe, clean point of capture to treat water. This project can be hard to implement, since it changes the way people view water, but opens up new possibilities, since containers can be stackable units that optimize space use.
- Businesses in India that have developed attractive street toilets have been successful, which shows that people are willing to pay for this!
- The Ganges River is currently used for bathing and for burning bodies, which poses a health risk due to an uncontrolled proliferation of bacteria. The solution proposed involves an oxidation process performed in the shipping containers to remove bacteria from water without filters.
- With this solution, the lack of flushing water lack is addressed, since there is no need to capture more water when it is recycled.

Matthew Lisle and Adrian Lievano, Everwaters

- Everwaters is a for-profit social enterprise that developed a water treatment process based on a protein extracted from the Moringa tree.
- Common products in Kenya for water treatment are ceramic pot filters, multi-stage filters, and chemical solutions, but local communities don't really like these treatment methods.
- *Moa* is a plant-based filter that uses coconuts, ceramic, and moringa tree. In it, the filter media (negatively charged) does not interact with anionic solutes (negatively charged); thus, the Moringa coating (positively charged) on filter media pellets attracts contaminants.
- Moringa habitat regions overlap with water scarcity regions. Thus, the Moringa can be integrated with the economy: Everwaters would buy farm waste and sell fertilizer to farms.
- Additionally, Everwaters would develop an integrated supply chain all over the world to supply Kenya

12:35- 2:00 PM

Lunch Keynote Presentation:

"School WASH Programs - Development and Implementation for Sustainability"

Introduction:

Dr Arun Deb, GWA Board member; India WASH expert

Keynote Speaker:

Mr. Ansuman Das, Executive Director, Sabuj Sangha, NGO in West Bengal, India

Highlights/major points:

- Sabuj Sangha is an NGO based in West Bengal, India with the mission to ensure equal access to life quality, providing integrated sustainable development through community development: WASH is integrated with education, health, women's empowerment, and environment disaster response.
- It operates in 4 regions in West Bengal with two components: WASH in schools and WASH in the community.
- The school is the gateway to effect change in entire communities, so the "WASH in schools" program addresses the lack of access to safe drinking water and toilet facilities in urban and rural schools, where there are many challenges: no separate toilets for girls, unclean or non-functional facilities, no running water or electricity, no Menstrual Hygiene Management (MHM) facilities, lack in culture of use and maintenance, lack of funds for maintenance.
- In this program, facilities are constructed and installed only after an agreement from all stakeholders for sustainable operations and management, with a detailed estimate of maintenance costs.
- WATSAN (Water Sanitation) committees in all schools encourage student involvement by selecting representatives of students (especially girls) and teachers.
- Other initiatives are: the "Drop a coin and save a child" campaign was established to support the WATSAN committees to function effectively; and training "water facility entrepreneurs" to repair drinking water facilities.
- Case Study: A girls school was revamped with a grant from the Global Water Alliance. Existing infrastructure in bad condition was improved by repairing toilets, adding faucets, and considering MHM. There was data collection performed in two stages:
 - Pre-project: collecting information of school and impacts on students and community through questionnaires on two main areas: Student information and Household information.
 - Post-project: similar questionnaires.

2:00-3:00 PM

Session:

Panel D: Listening to Future Leaders

Moderator:

Dr. Stan Laskowski, University of Pennsylvania

Panelists:

Reeba Mathen, Michael Rosen, Marwa El-Hajmoussa, Arjona Papaj

University students presented their best WASH ideas looking toward the year 2030; GWA Student Competition prize presented to Reeba Mathen.

Highlights/major points:

- Reeba and Arjona (both Social Media and Sciences major) discussed the challenges of bridging education and resources.
- Marwa (Public Health major) discussed the challenges of lack of education and not knowing proper WASH practices.
- Michael (Environmental Health major) discussed the challenges of maintaining technologies as opposed to just developing them. He emphasized that problems are slowly solvable.
- It was emphasized that individuals need to understand the people that they are trying to help. This means that individuals must respect cultures. The focus should be on bettering the lives of others from a health perspective; it should not be about changing their world views.
- Cultural needs are emotional not intellectual. People need to feel a sense of ownership within their community. We spend a lot of money right now creating incredible inventions that other people do not want. For them to want these inventions, we need to convince them that their system is broken. This is not effective.
- There should be a clear focus on cultural empowerment and grassroots organizations. It is important to look closely at what a community wants and needs to thrive.

3:00-4:00 PM

Session:

Panel E: Sustainable water, sanitation, and hygiene for all! —how are we going to do that by 2030? We will ask the experts!

Moderator:

Sasha Koo-Oshima, Director of US-China Clean Water Action Plan, Senior International Water Advisor, EPA Lead on International Water Program, U.S. Environmental Protection Agency

Panelists:

1. Tom Slaymaker, UNICEF
2. Mr. Ansuman Das, Executive Director, Sabuj Sangha, NGO in West Bengal, India
3. Seung Lee, Senior Director, Save the Children School Health and Nutrition Team
4. Vince Uhl Vince Uhl, President Uhl Associates

Highlights/major points:

- It is important to set ambitious but achievable targets.
- The vast majority of funding comes from national governments. It is important to shift away from the idea of relying on external aid. A wide variety of financial sources would be the most beneficial.
 - The government can work with private sector to get better pricing for certain constituencies: public and private collaboration.
 - The EPA works with private sector to bring innovation into WASH programs.
 - Bottom-top efforts are important: consider grassroots projects first, then government.
 - In order to do more with WASH, there needs to be an universal agenda with universal targets, creating public and private funding approaches. The government needs to know how much funding comes from households to know what is needed from the government.
- There needs to be a global movement to put the word menstruation into action; currently, there is a fear of using this word.
 - There needs to be 90-100% enrollment rates in schools for girls today.
 - If facilities are not provided to deal with menstruation, girls will skip school.
 - It is important to discuss the ways in which both the public and private sectors can make a difference. Private sectors can provide funding; they can sell pads to girls.

- The Sustainable Development Goals need government structure, but they cannot function without communities.
 - There is currently a shortcoming with working with national governments. There needs to be a set framework to get mandates into place.
 - There is a more coherent framework starting to take place. For the first time ever, China, U.S., and Ethiopia are sitting together in a room exchanging ideas.
- How to deal with corruption?
 - The EPA tries to have transparency in place before committing to a project.
 - In India, there is corruption up to local government and NGOs.
- Science and technology can be very important in effectively implementing SDGs.
 - Data revolution will play a large part in implementing SDGs.
 - If a program with rigorous assessment is focused in a couple of districts, the collected data can be used more efficiently.
 - Over time, there needs to be substantial investment in the ability to collect and analyze data.
 - There is currently a lack of facilities in other countries to gather data. Capacity building is very important to ensure countries are able to retrieve and analyze data.
 - Collection of data used to be national, but now is performed by institutions, mostly academic. It needs to be done at national and supranational levels.

Thank you to all those who took notes throughout the day and made this document possible.

*Sanjay Mohanty
Stan Laskowski
Yvette Bordeaux
Tony Sauder
Angelita Fasnacht-Cuellar
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Gerardo Cedillo*

A special thank you to Gerardo Cedillo and Emma Shenton for compiling this document.
